

INDEPENDENT AUDIT OF THE

# Molonglo Valley

STRATEGIC ASSESSMENT

APRIL 2018



COMMISSIONER  
FOR SUSTAINABILITY  
AND THE  
ENVIRONMENT

ARUP

*Considering its long term future*

## Commissioner's Foreword

In response to State of the Environment Reports (Commonwealth and Australian Capital Territory), it is very clear we must continue to take action to protect the environment, including threatened and endangered species and ecological communities. Climate change makes this responsibility all the more urgent.



Professor Kate Auty  
ACT Commissioner for Sustainability and the Environment

*“It is part of our responsibility [to be] looking after our country. If you don’t look after country, country won’t look after you.”*

April Bright<sup>1</sup>

This *Independent Audit of the Molonglo Valley Strategic Assessment* is the first independent audit of the protection of Matters of National Environmental Significance under the Molonglo Valley Strategic Assessment.

*Continue reading*

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<sup>1</sup> Bright, A., accessed 9 February 2018

Strategic assessments are long-term environmental protection initiatives which are designed to protect Matters of National Environmental Significance in keeping with the requirements of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. They operate to streamline development processes by removing the need for site-by-site assessment of Matters of National Environmental Significance within the strategic assessment area. The opportunities and challenges associated with this approach to environmental protection are discussed in the body of this audit.

Governments are required to comply with commitments made in plans developed for strategic assessment requirements. In this audit the relevant plan is the *Molonglo*

*Valley Plan for the Protection of Matters of National Environmental Significance: NES Plan September 2011.*<sup>2</sup>

This audit process is required to be repeated at five yearly intervals over the 30 year timeframe of the Molonglo Valley Strategic Assessment.

The audit process is guided by the *Independent Audit and Audit Report Guidelines 2015* (Commonwealth)<sup>3</sup> and the audit specifications provided by the ACT Government. This audit does not include an examination of the financial underpinnings of the agreed commitments as the ACT Government advised that they will undertake this analysis separately, as part of the annual reporting process.

The ACT Government has committed to 61 commitments to address *Environment Protection and Biodiversity Conservation Act 1999* concerns about five Matters of National Environmental Significance across the areas subject to development pressures in the Molonglo Valley. These matters include the Pink-tailed Worm-lizard; White Box–Yellow Box–Blakely’s Red Gum Grassy Woodland and Derived Native Grassland; Natural Temperate Grassland; the Superb Parrot; and the Swift Parrot.

In this audit we identify broad systemic risks and commitment specific risks to the ability to meet the commitments of the Molonglo Valley Strategic Assessment and the protection of the relevant Matters of National Environmental Significance.

Broad systemic risks to the commitments to protect the Matters of National Environmental Significance in the Molonglo Valley include:



ensuring there is appropriate resourcing and funding to effect implementation



documenting analysis of monitoring data to determine if the ecological condition of MNES has been maintained and enhanced



responding to the adaptation challenges of climate change



maintaining clear documentary evidence trails



finalising key documents in a timely fashion to support progress



urgently establishing the Kama Nature Reserve buffer



ensuring that the Land Management Agreements on rural leaseholds are adjusted to protect Matters of National Environmental Significance

<sup>2</sup> NES Plan, accessed 6 March 2018

<sup>3</sup> Independent Audit and Audit Report Guidelines, accessed 6 March 2018

# Molonglo Valley

# Did you know...

Pink-tailed Worm-lizard



Source ©Alexander Dudley



The finalisation of the Kama Buffer is a key, broad risk which relates to several commitments (7, 27 and 34).

The issues of concern are:

- there is currently a lack of definition of the width of the Kama Buffer zone, and
- there is a lack of clarity over responsibility for management and monitoring requirements of the buffer area.

The Kama Nature Reserve buffer remains in limbo pending the *Estate Development Plan* for Whitlam being finalised. The failure to deliver on the Kama Nature Reserve buffer commitment is observed as a risk to the ultimate delivery of the *Molonglo Valley Strategic Assessment*.

In respect of specific commitments under the *Molonglo Valley Plan for the Protection of Matters of National Environmental Significance: NES Plan September 2011*, a number of risks have also emerged. These include:

- the development and finalisation of the *Molonglo River Park Reserve Management Plan*,
- the development of a management plan for Patches I, L, M and P, (see **Figure 2**) and
- the development of a management plan for other areas of Pink-tailed Worm-lizard high and moderate quality habitat.

Ongoing compliance with the Molonglo Valley Plan for the Protection of Matters of National Environmental Significance: NES Plan September 2011 will depend on several critical requirements being finalised.

These are the:

1. Kama Nature Reserve buffer,
2. Molonglo Stage 3
  - Planning and Design Framework
  - Estate Development Plan, and
3. Molonglo River Reserve Management Plan (due in April 2014, draft released in February 2018 for public consultation).

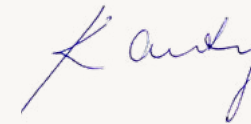
A total of four Corrective Action Requests have been issued:

- CAR 1 – Provide the final draft Molonglo River Reserve Management Plan to the Minister by 31 July 2018.
- CAR 2 – Finalise the operational plan for Patch P to ensure appropriate management is occurring by 31 December 2018.
- CAR 3 – Incorporate actions and monitoring requirements into relevant Land Management Agreements for the protection of the ecological condition of Matters of National Environmental Significance within Patches I, L and M by 31 December 2018.
- CAR 4 – Finalise the operational plan for the Pink-tailed Worm-lizard Conservation Area in the Molonglo River Reserve by 30 April 2018.

I am pleased to acknowledge the contributions from Associate Professor Phillip Gibbons of the Fenner School of Environment and Society at the Australian National University and Adjunct Associate Professor Will Osborne of the Institute of Applied Ecology at the University of Canberra, both of whom assisted by providing scientific case studies about significant issues considered in this audit.

I also thank Dr Therese Flapper of Arup as the lead auditor.

We must not rest on our laurels in the important endeavour of protecting our ecological values. Retaining our biodiversity underpins our ability to sustain our bush capital characteristics and charm.



**Professor Kate Auty**

Commissioner for Sustainability  
and the Environment  
Australian Capital Territory



## Background

### INTRODUCTION

# Requirements for development in the Molonglo Valley are outlined in the Molonglo Valley Plan for the Protection of Matters of National Environmental Significance: NES Plan September 2011 (the NES Plan).<sup>1</sup>



#### The NES Plan:

reflects the development activities proposed for the Molonglo Valley as set out in the Molonglo and North Weston Structure Plan (the Structure Plan), and establishes the Australian Capital Territory (ACT) Government's commitments to protect Matters of National Environmental Significance (MNES) within the strategic assessment area.

The NES Plan was endorsed on 7 October 2011 under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act). The actions associated with urban development in East Molonglo were approved on 20 December 2011.

The NES Plan commits the ACT Government to certain scheduling requirements. Commitments must either commence or be completed within a specified period of time after the strategic assessment endorsement date of 7 October 2011.

As a result of approval of the strategic assessment, the NES Plan has streamlined the development process by removing the need for site-by-site assessment of the MNES. Commitments in the NES Plan are required to be met as a function of approval by the Commonwealth.

The Molonglo Valley Strategic Assessment was developed in order to protect the MNES that occur in the area.

This independent audit ensures accountability and verifies that the ACT Government is delivering its commitments in the NES Plan to protect MNES.

*The Molonglo River from Barrer Hill. Source Kate Auty*

<sup>1</sup> ACT Planning and Land Authority, 2011, *Molonglo Valley Plan for the Protection of Matters of National Environmental Significance: NES Plan September 2011*, accessed 22 February 2018

## Background

### INTRODUCTION

# The Matters of National Environmental Significance in Molonglo

There are five MNES in the Molonglo Valley, each with unique and interesting characteristics.



## Background

### INTRODUCTION

#### 1 **PINK-TAILED WORM-LIZARD** (*Aprasia parapulchella*)

listed as Vulnerable under the EPBC Act

The Pink-tailed Worm-lizard is an unusual species and there is still much to learn about it.



The lizard lives in the burrows of ant nests in soil beneath rocks, where it feeds on the eggs and larvae of ants within these nests.

The lizard has a pink tail as a survival mechanism. Birds are attracted to their tail which they can then drop off to escape. If lost, the tail slowly regrows.<sup>2</sup>



Source ©Alexander Dudley

<sup>2</sup> [Action Plan for the Pink-tailed Worm-lizard](#), accessed 27 February 2018



## Background

### INTRODUCTION

## 2 WHITE BOX–YELLOW BOX–BLAKELY’S RED GUM GRASSY WOODLAND AND DERIVED NATIVE GRASSLAND (*Box-Gum Woodland*)

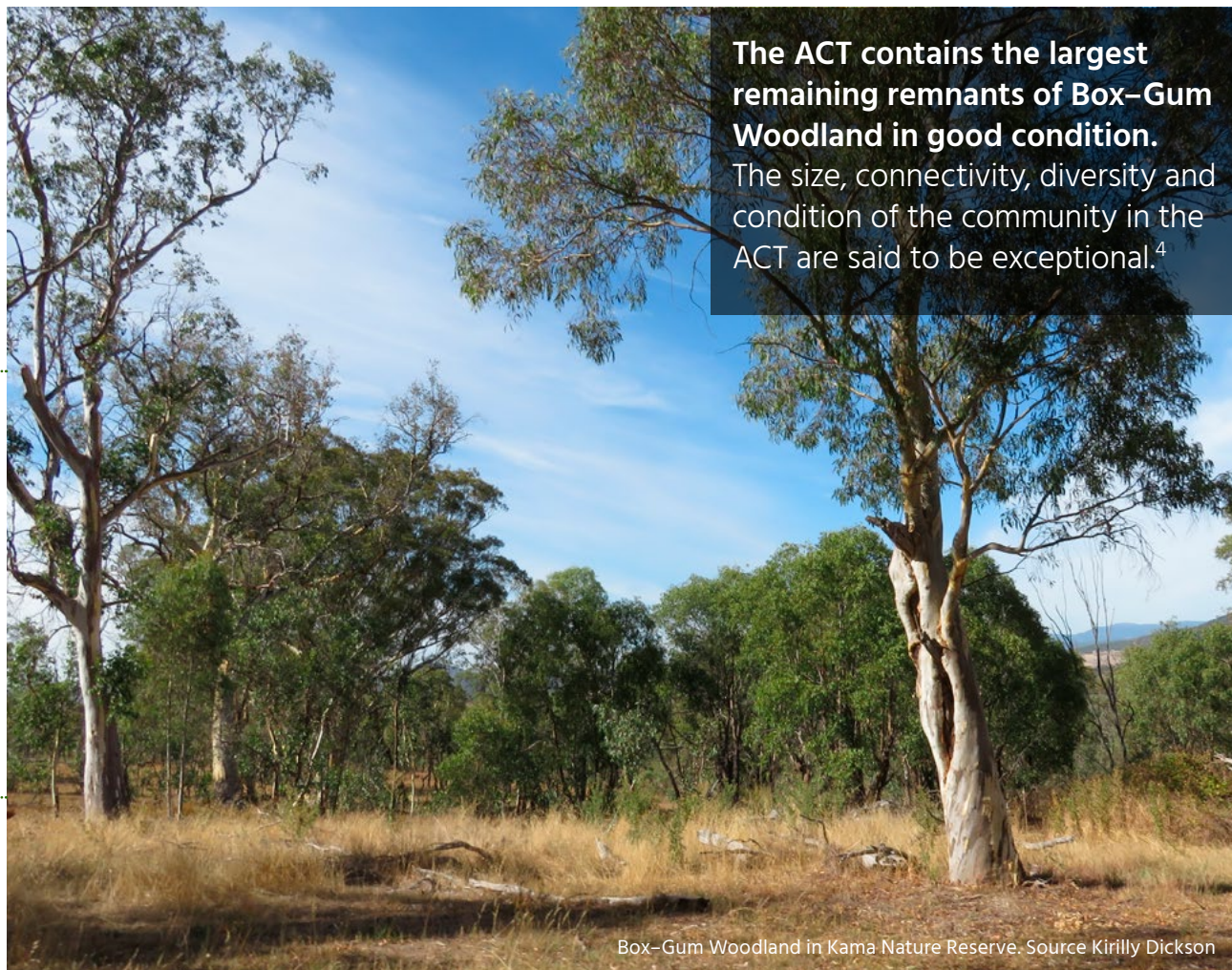
listed as a Critically Endangered Ecological Community under the EPBC Act

Prior to European settlement, Box–Gum Woodland covered several million hectares in the eastern part of the wheat-sheep belt and tablelands, including some coastal regions. Only **405,000 hectares** are estimated to remain in Australia today.

Box–Gum Woodland is ‘one of the most poorly represented ecological communities in the national conservation reserve system. Due to the occurrence of the community on high fertility soils, much of it is on privately owned land, existing as isolated patches within an agricultural matrix of cropping, improved pastures and/or disturbed vegetation communities.’<sup>3</sup> The ACT is an exception to this as most of the Box–Gum Woodland here is protected in public reserves. This has assisted in maintaining relatively large, high condition patches of the ecological community. As such, the areas of Box–Gum Woodland in the ACT are some of the best in the country.

<sup>3</sup> White Box–Yellow Box–Blakely’s Red Gum Grassy Woodland and Derived Native Grassland National Recovery Plan, accessed 4 January 2018

<sup>4</sup> Ecological Australia Pty Ltd, 2011, Molonglo and North Weston EPBC Act Strategic Assessment: Supplementary Report, prepared for ACTPLA



The ACT contains the largest remaining remnants of Box–Gum Woodland in good condition. The size, connectivity, diversity and condition of the community in the ACT are said to be exceptional.<sup>4</sup>

Box–Gum Woodland in Kama Nature Reserve. Source Kirilly Dickson



## Background

### INTRODUCTION

# 3

## NATURAL TEMPERATE GRASSLAND OF THE SOUTHERN TABLELANDS OF NSW & THE ACT

(Natural Temperate Grassland)

listed as a Critically Endangered Ecological Community under the EPBC Act

Grasslands are often overlooked by the community as they appear as simply a paddock of grass. However, they are actually very significant areas that provide habitat and a source of food for several of our endangered species.

Different threatened fauna species require different grass lengths for survival, for example the Striped Legless Lizard prefers a moderate extent of grass litter throughout the paddock, while Grassland Earless Dragons and Golden Sun Moth require more open grasslands.<sup>6</sup> Therefore, the grassland needs to be managed according to the species it is providing habitat for. *See following diagram.*

Fauna is an integral component of Natural Temperate Grassland. Fauna is essential for pollination and dispersal of many grassland plants, nutrient cycling and maintenance of soil condition.



'Grasslands are distinctive in that they require active management. To not act is to fail.'<sup>5</sup>

<sup>5</sup> Natural Temperate Grassland of the Southern Tablelands (NSW and ACT), accessed 4 January 2018

<sup>6</sup> Ibid, p.3

## Background

### INTRODUCTION

Different grass heights  
required for threatened  
species in the A.C.T.

Grasslands are often overlooked by the  
**community** as they appear  
as simply a paddock of grass.

2000-4000 kg/ha BIOMASS

Tall dense grass limited short  
grass and forbs

1000-2000 kg/ha BIOMASS

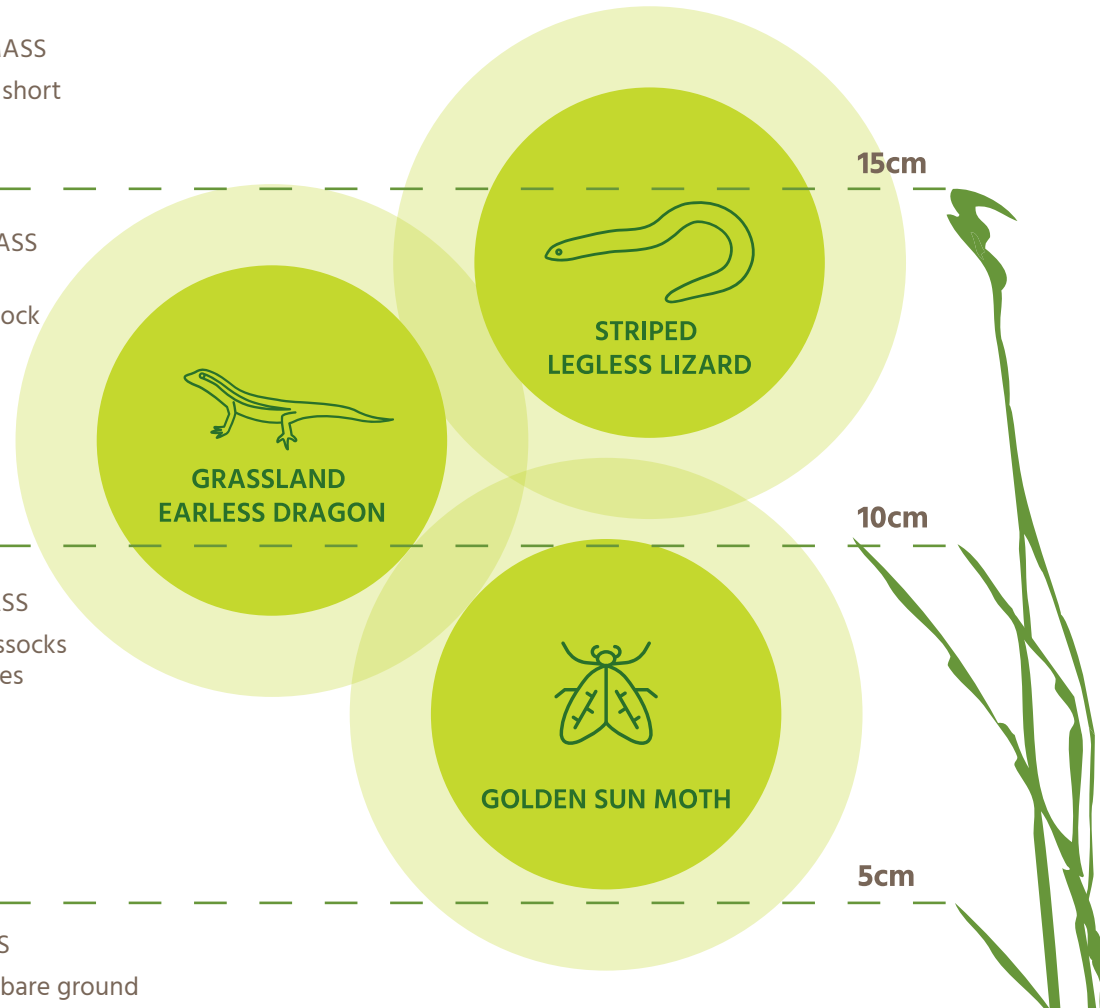
Many medium height  
tussocks with inter-tussock  
spaces for short grass  
and forbs

500-1000 kg/ha BIOMASS

Few medium height tussocks  
with inter-tussock spaces  
including bare ground

150-500 kg/ha BIOMASS

Short grass, with some bare ground





## Background

### INTRODUCTION

#### 4 SUPERB PARROT (*Polytelis swainsonii*)

listed as Vulnerable under the EPBC Act

Critical habitat features for Superb Parrots are clusters of large, mature living and dead trees for nesting sites. The highest threat to the Superb Parrot is the removal of this habitat.<sup>7</sup>

Superb Parrots often return to nest in the same hollow in the same tree year after year, but the birds rotate between the hollows.

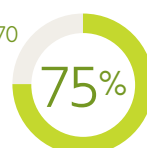
'Bioclimatic modelling has shown that the Superb Parrot is highly sensitive to climate change. Recent modelling ... has shown the bioclimatic range of the Superb Parrot will decline by around 47 per cent by 2050 and 75 per cent by 2070. The future bioclimatic core range of the Superb Parrot will likely focus around the ACT and an area to the immediate north.'<sup>8</sup>



By 2050 the  
bioclimatic  
range will  
decline around



By 2070



Source Geoffrey Dabb

<sup>7</sup> ACT Lowland Woodland Conservation Strategy, accessed 4 January 2018

<sup>8</sup> Threatened Species Scientific Committee Conservation Advice for the Superb Parrot, p.3, accessed 4 January 2018

## Background

### INTRODUCTION

# 5 SWIFT PARROT (*Lathamus discolor*)

listed as Critically Endangered under the EPBC Act

The wild population of Swift Parrots is now likely to be considerably **less than 2,000 birds**.<sup>9</sup>



The Swift Parrot migrates north to mainland Australia over winter from breeding areas in Tasmania. Sparse records in the ACT represent the sporadic nature of the distribution of the species on the mainland during winter months.<sup>10</sup>

Birds disperse widely on the mainland to forage on flowers and psyllid lerps in eucalyptus trees. These eucalypts are a critical habitat feature for the bird.

Ongoing habitat loss, particularly within the primary breeding areas in Tasmania, represents the single biggest threat to the survival of the Swift Parrot in the wild, particularly as this loss appears to enhance nest predation by introduced sugar gliders.<sup>11</sup>



Source Geoffrey Dabb

<sup>9</sup> Threatened Species Scientific Committee Conservation Advice for the Swift Parrot, accessed 1 March 2018

<sup>10</sup> ACT Lowland Woodland Conservation Strategy, accessed 4 January 2018

<sup>11</sup> Threatened Species Scientific Committee Conservation Advice for the Swift Parrot, accessed 1 March 2018



## Background

### INTRODUCTION

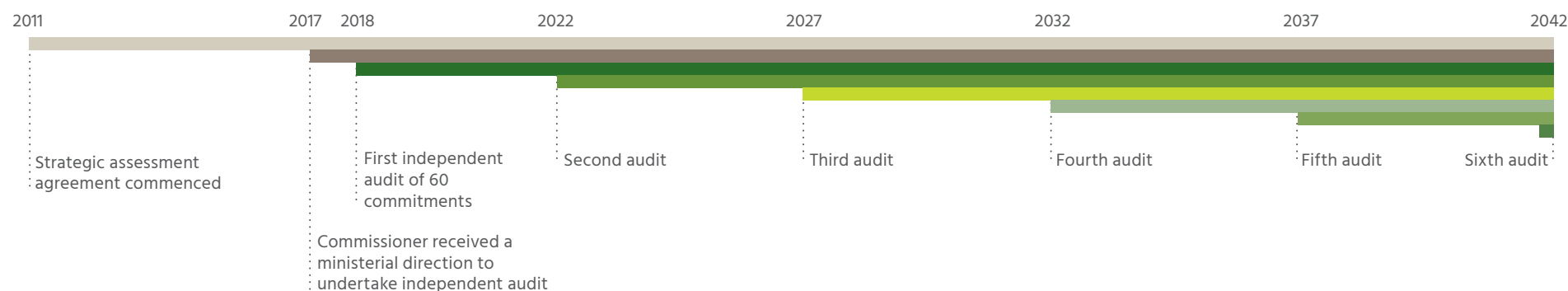
## Reporting requirements for the Molonglo Valley Strategic Assessment

Reporting requirements for the NES Plan over a **30 year period** are:

1. annual reports every year, and
2. an independent audit every five years.

The independent audit will ensure that:

1. commitments made in the NES Plan are being adhered to, and
2. conservation outcomes for MNES are being achieved.



The Commissioner will provide the report to the Environment, Planning and Sustainable Development Directorate (EPSDD), which will then provide it to the Commonwealth Department of Environment and Energy.

The independent audit considered the compliance of the 44 actions outlined in the NES Plan. These are termed *Commitments* in the Audit Table.

The audit also considered the compliance of 16 additional actions as reported in the *Molonglo Valley Strategic Assessment*

*Annual Report 2016–17*.<sup>12</sup> These are termed *Items* in the Audit Table.

The Commissioner is specifically required not to audit the commitment in relation to the Treasury Directorate ensuring funding for the commitments (Item 17 of the *Molonglo Valley Strategic Assessment Annual Report 2016–17*). ACT Government has advised the Commissioner that this will be undertaken separately as part of the annual reporting process.

The total number of commitments audited in this independent audit was 60.

This audit of commitments is a compliance audit delivered in accordance with the Commonwealth *Independent Audit and Audit Report Guidelines*.<sup>13</sup>

This audit does not scrutinise or evaluate the deliberations which produced the Molonglo Valley Strategic Assessment and the NES Plan.

<sup>12</sup> Molonglo Valley Strategic Assessment Annual Report 2016–17, accessed 1 March 2018

<sup>13</sup> <http://www.environment.gov.au/epbc/publications/independent-audit-report-guidelines>, accessed 2 March 2018

## Background

### OVERVIEW

# A strategic assessment takes place early in the planning process for major projects or developments that trigger the EPBC Act.

Strategic assessments examine the potential impacts of actions which might stem from one or more policy, program or plan on environmental systems and MNES. Strategic assessments involve individuals or agencies such as local councils, state ministers or government departments which are responsible for implementing the policy, plan or program.<sup>1</sup>

## PRODUCTIVITY COMMISSION'S REPORT ON STRATEGIC ASSESSMENTS

'Major projects are, by their very nature, complex developments'<sup>2</sup>

The Australian Government Productivity Commission released a research report in November 2013 on Major Project Development Assessment Processes.<sup>3</sup> The report recommended Australia make greater use of strategic assessments:

'Strategic Planning and Assessment can take into account the cumulative impacts that arise from multiple projects and other activities on landscape-scale ecosystems. In turn, this can result in subsequent project assessment and approval processes being less resource intensive and time consuming, since some of the issues have already been handled.'<sup>4</sup>

Although introduced in 1999, strategic assessments have only recently become frequently used. It is important to build on lessons learnt to ensure benefits are derived and the process improves.

The Productivity Commission report recommended changes to major development approval conditions to improve outcomes. These changes included:

- publishing all conditions that are attached to approved major projects, with an explanation of how they mitigate a risk,
- refraining from imposing conditions where legislation already exists to achieve an outcome,
- undertaking public consultation on the assessment agency's draft recommendation, including proposed approval conditions, and
- providing scope to remove, alter or add conditions when a strong case to do so exists – for example, if evidence shows that conditions are no longer meeting objectives, or that compliance with a condition would have unintended adverse consequences.<sup>5</sup>

This final recommendation is especially relevant to strategic assessments. If adopted, it would result in the appropriate elevation of adaptive management in these processes.

<sup>1</sup> Commonwealth Department of the Environment, 2013, Strategic Assessments under the EPBC Act, accessed 10 November 2017

<sup>2</sup> Ibid, page 9

<sup>3</sup> Australia Government Productivity Commission, 2013, Major Project Development Assessment Processes, accessed 2 November 2017

<sup>4</sup> Ibid, page 12

<sup>5</sup> Ibid, page 26

## Background

### OVERVIEW

## Opportunities and Challenges of Strategic Assessments

In 2009, Dr Allan Hawke undertook an independent review of 10 years of the EPBC Act. This review received a large number of submissions during public consultation. One of the key topics scrutinised was the emerging strategic assessment instruments.<sup>6</sup>

Submitters suggested numerous mechanisms by which the quality of strategic assessments could be improved. Three themes that arose in these submissions were that strategic assessments should be:

- rigorous, of high quality and deliver environmental outcomes,
- sufficiently flexible and capable of adaptive management, and
- efficient, provide certainty and benefit proponents by reducing regulatory burden.<sup>7</sup>

One of the advantages of using a strategic assessment approach is that it enables long-term monitoring of the environment.

Long-term monitoring:

- provides essential evidence upon which to base good environmental decisions,
- needs to adapt to remain effective, and
- ensures monitoring is maintained and used to inform actions, and demonstrate that partnerships are crucial.<sup>8</sup>

Strategic assessments of developments are recognised as providing clear benefits (opportunities) over alternative approaches using smaller release areas. Implementation of conservation actions for MNES is coordinated across the entire area.

Strategic assessments also have challenges. They cover broad areas which makes them more complicated and any challenges are amplified as a result.

The specific wording in the original agreement of the strategic assessment is also critical, as it is not intended that commitments be altered. This makes adaptive management challenging.



Barrer Hill Restoration Plantings. Source Kirilly Dickson

<sup>6</sup> Hawke, Allan, 2009, [www.environment.gov.au/resource/independent-review-environment-protection-and-biodiversity-conservation-act-1999-interim](http://www.environment.gov.au/resource/independent-review-environment-protection-and-biodiversity-conservation-act-1999-interim), accessed 15 March 2018

<sup>7</sup> Ibid

<sup>8</sup> Lindenmayer, D., 2017, *Five things about long-term monitoring: good decisions for the environment need an eye on the longer term*, Decision Point, July 2017

## Background

### OVERVIEW

## Opportunities and Challenges of Strategic Assessments

### OPPORTUNITIES

- 1 Longer, temporal and larger landscape scale conservation outcomes
- 2 Assessment of Matters of National Environmental Significance early in planning process
- 3 Cumulative impacts of development are considered cohesively
- 4 Ensures coordinated implementation of actions on offset sites
- 5 Streamlines development application processes

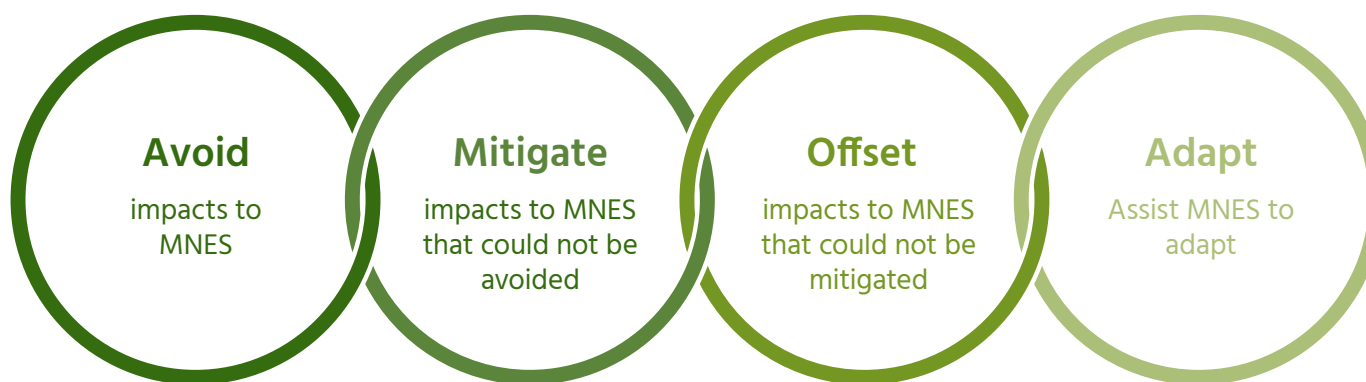
### CHALLENGES

- 1 No alterations of agreed commitments once endorsed by Commonwealth
- 2 Lack of compliance and enforcement of strategic assessments in Commonwealth Legislation
- 3 High staff turnover in ACT or Commonwealth Government affects coordination and implementation of this long-term project
- 4 Budget cycles are short-term and establishment costs are higher than ongoing costs which is not suited to long-term land management

## Background

### OVERVIEW

Key steps for achieving positive outcomes for MNES in potential development areas are understood to be:



Strategic assessments follow this process in an integrated and strategic way.

23 strategic assessments have been developed across Australia.

Only 12 strategic assessments have been officially endorsed and commenced. Three of these 12 are in the ACT – the Molonglo Valley Strategic Assessment, the Gungahlin Strategic Assessment and the West Belconnen Strategic Assessment.<sup>9</sup>

The Molonglo Valley Strategic Assessment was one of the first three strategic assessments to commence in Australia. Accordingly, the entire process including the independent audits of compliance are in their infancy.<sup>10</sup> Governments and agencies could benefit from reviewing lessons learnt from independent compliance audits in early cases.

This audit is understood to be amongst the first independent audits of a strategic assessment in Australia.<sup>11</sup> The results of the Molonglo Valley Strategic Assessment audit provide an opportunity to reflect on how well the strategic assessment approach is working on a broader scale.

<sup>9</sup> Australian Government Department of Environment and Energy (DoEE), accessed 23 February 2018

<sup>10</sup> WWF, 2009, Response to the Australian Government's Discussion Paper seeking views to inform the Independent Review of the EPBC Act, accessed 8 November 2017

<sup>11</sup> Pers comms, staff from Monitoring and Assurance in the DoEE, 15 February 2017



## Background

### BACKGROUND

Early in 2008 the ACT recognised that the proposed development in the Molonglo Valley would be complex and involve multiple stakeholders

As such, it was considered that a strategic assessment under Part 10 of the EPBC Act would be preferable to assessing projects on a case by case basis.

On 16 September 2008, the ACT and Commonwealth Governments entered into an agreement to conduct a strategic assessment.<sup>1</sup> See **Figure 1** for the regional location of the strategic assessment area.

See **Figure 2** for the area included in the Molonglo Valley Strategic Assessment.

<sup>1</sup> ACT Planning and Land Authority, 2011, Molonglo Valley Plan for the Protection of Matters of National Environmental Significance: NES Plan September 2011, accessed 22 February 2018



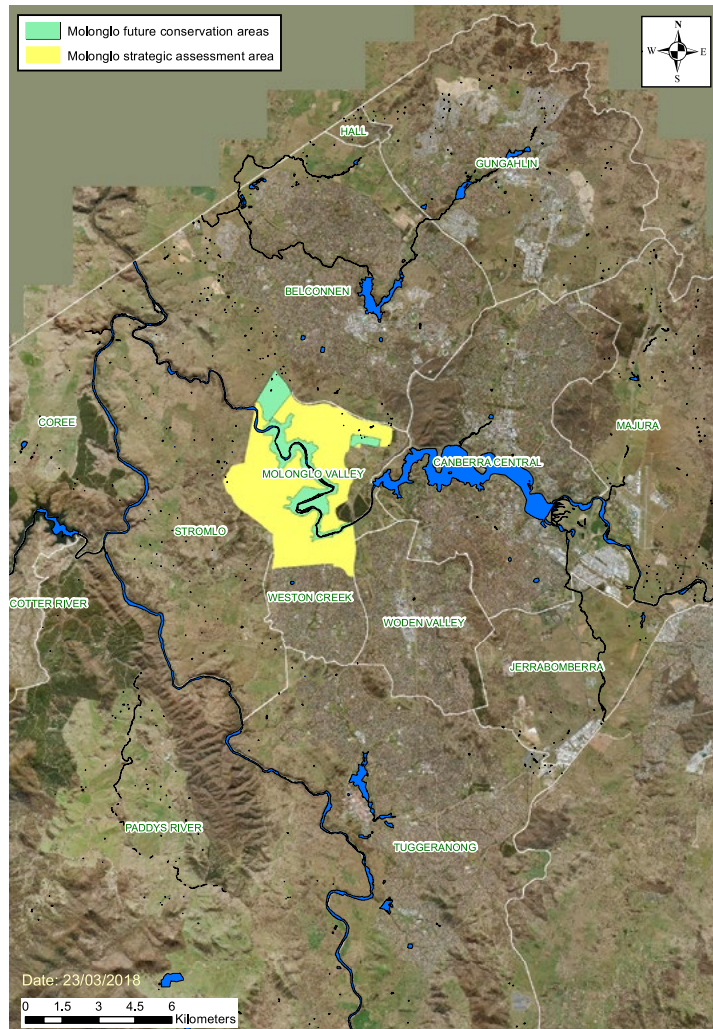
Button Wrinklewort plantings. Source Richard Milner



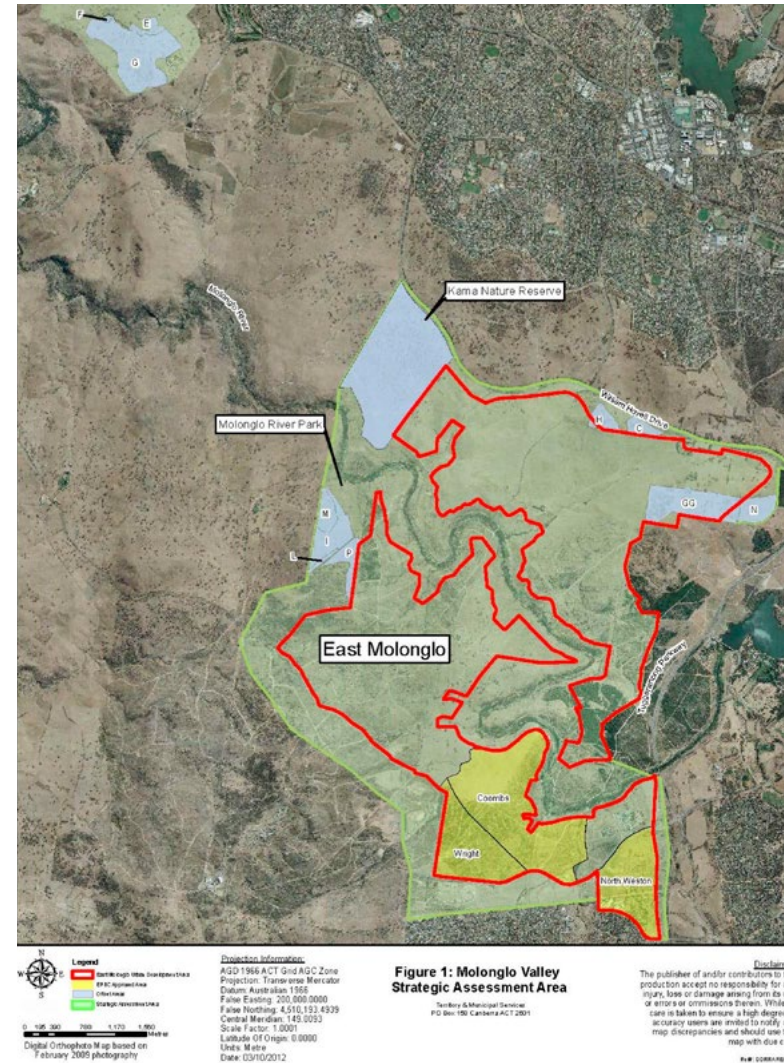
## Background

### BACKGROUND

**Figure 1:**  
REGIONAL  
LOCATION OF  
THE MOLONGLO  
VALLEY STRATEGIC  
ASSESSMENT AREA



**Figure 2:**  
THE MOLONGLO  
VALLEY STRATEGIC  
ASSESSMENT AREA



## Background

### BACKGROUND

The strategic assessment includes all of East Molonglo, with the exception of the suburbs of North Weston, Wright and a portion of Coombs (see **Figure 2**). These three suburbs gained prior approval from the Commonwealth under the EPBC Act (Reference numbers: 2009/5041, 2009/4752 and 2009/5050) and are therefore not included in the analysis or outcomes of the strategic assessment process.<sup>2</sup>

#### Key Legislation

In addition to the EPBC Act, there are four key pieces of legislation pertinent to the planning and management of conservation matters in the Territory:

- The Commonwealth *Australian Capital Territory (ACT) (Planning and Land Management) Act 1988*, which establishes the National Capital Plan to ensure that Canberra and the Territory are planned and developed in accordance with their national significance.
- The ACT *Planning and Development Act 2007* which seeks to provide a planning and land system that contributes to orderly and sustainable development of the ACT.
- The ACT *Nature Conservation Act 2014* (NC Act) which establishes a framework for the conservation and protection of biodiversity through the listing of threatened species and communities, and the establishment of Action Plans and management of reserved areas, among other administrative functions.
- The ACT *Pest Plants and Animals Act 2005* which aims to protect the ACT's land and aquatic resources from threats of pest plants and animals by means of strategic and sustainable pest management.



©Istock

<sup>2</sup> ACT Planning and Land Authority, 2011, Molonglo Valley Plan for the Protection of Matters of National Environmental Significance: NES Plan September 2011, accessed 22 February 2018



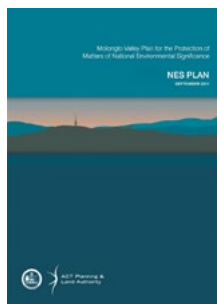
## Background

### BACKGROUND

## The NES Plan

The Molonglo Valley Strategic Assessment comprises three key documents:

1. The draft Strategic Assessment Report (March 2010) which was publicly exhibited and provided a detailed assessment of the implications of the draft NES Plan.
2. The Supplementary Assessment Report (17 July 2011) which addresses the issues raised in the public exhibition process and analyses the outcomes of the final NES Plan.
3. The final NES Plan was endorsed on 7 October 2011. This document identifies the commitments and undertakings of the ACT Government for the protection and management of MNES protected under the EPBC Act.



The NES Plan reflects the agreement for the strategic assessment in the Molonglo Valley between the ACT and Commonwealth Governments. It provides for urban development within the Molonglo Valley and establishes the ACT Government's commitments to protect MNES. The conservation measures to protect MNES are formed around two processes:

1. avoidance and mitigation of impacts on MNES, and
2. on-ground management and offsetting, to provide maintenance and improvement of MNES values in important areas.

A summary of these processes is provided in the NES Plan and a map of the agreed direct offset areas can be found at **Figure 3**.<sup>3</sup> Three offset areas have been agreed to under the Molonglo Valley Strategic Assessment – Kama Nature Reserve, the Molonglo River Park and Patch GG. The total size of these areas is just under 700 hectares.

East Molonglo is expected to support a population of 55,000–60,000 within a 30 year planning horizon. The total area of the development is 1356 hectares which is divided by the Molonglo River into two distinct sections.

The Molonglo River corridor between the northern and southern areas will be important for both conservation and recreation.

The planning and development in East Molonglo is anticipated to occur in three stages (see **Figure 4**).<sup>4</sup> Stage 1 and 2 are under construction, Stage 3 has not yet commenced construction.

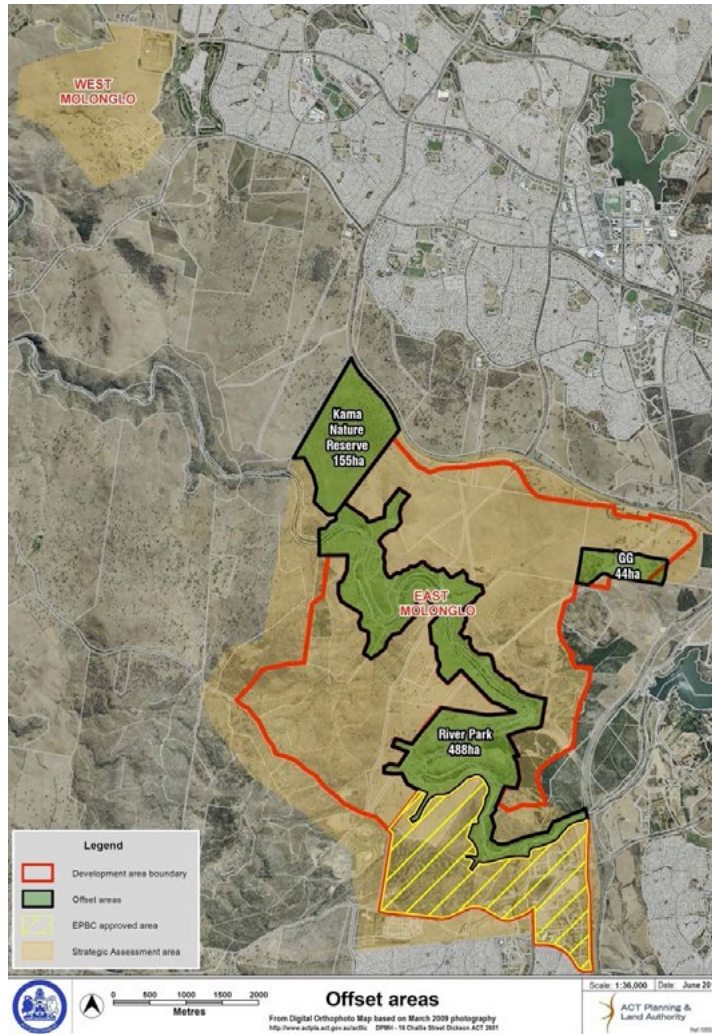
<sup>3</sup> ACT Planning and Land Authority, 2011, Molonglo Valley Plan for the Protection of Matters of National Environmental Significance: NES Plan September 2011, accessed 22 February 2018

<sup>4</sup> Ibid

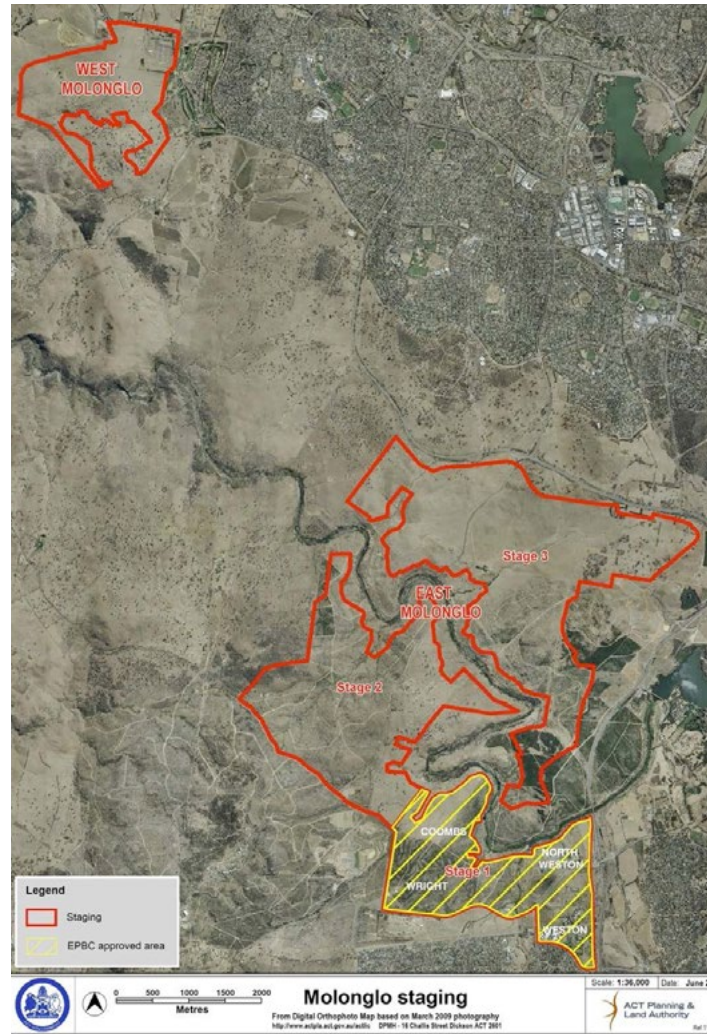
## Background

### BACKGROUND

**Figure 3:**  
AGREED DIRECT  
OFFSET AREAS



**Figure 4:**  
STAGES OF  
DEVELOPMENT FOR THE  
MOLONGLO VALLEY  
STRATEGIC ASSESSMENT





## Background

### BACKGROUND

## The Commitments for Protection of MNES

As discussed, there are five MNES protected under the strategic assessment agreement for the Molonglo Valley. There are specific commitments attributed to Box–Gum Woodland, Natural Temperate Grassland and the Pink-tailed Worm-lizard.

Due to the clear link between Box–Gum Woodland areas containing over-storey and habitat values for the Superb and Swift Parrots, the conservation outcomes and actions for the ecological community are intended to provide positive outcomes for these bird species. As such, there are no specific commitments for the Superb and Swift Parrots. The most important of these conservation outcomes is the protection and ongoing management of Kama Nature Reserve which includes approximately 117 hectares of Box–Gum Woodland.<sup>5</sup> The intention of protection of the two parrots being achieved in the commitments regarding Box–Gum Woodland will be tested through monitoring.<sup>6</sup>

<sup>5</sup> [ACT Planning and Land Authority, 2011, Molonglo Valley Plan for the Protection of Matters of National Environmental Significance: NES Plan September 2011](#), accessed 22 February 2018

<sup>6</sup> [ACT Territory and Municipal Services, 2013, Molonglo Adaptive Management Strategy](#), access 23 February 2018



Box–Gum Woodland and passing hawk at Kama Nature Reserve, Source Kirilly Dickson

## Background

### BACKGROUND

## The Adaptive Management Strategy

The *Molonglo Adaptive Management Strategy* (AMS) is a key commitment arising out of the NES Plan. It forms the foundation on which the MNES values in the Molonglo area are to be protected and enhanced through ongoing improvement in management practices.<sup>7</sup>

The AMS adopts a set of measures that are designed to achieve the conservation outcomes and performance targets for MNES in the Molonglo Valley Strategic Assessment area. It sets out how the MNES of the area will be assessed, monitored and adaptively managed.

The AMS deals with the human-induced pressures of urban development, as well as natural uncertainties such as climate change.

It provides a plan for:

- establishing the current ecological condition and value of MNES within the Molonglo Valley Strategic Assessment area,
- identifying performance targets and objectives,
- monitoring and evaluation of management actions,
- revising actions as required, and
- ensuring that the NES Plan's objectives for MNES continue to be met.<sup>8</sup>

**Figures 5** and **6** provide an overview of the areas of Box–Gum Woodland, Natural Temperate Grassland and Pink-tailed Worm-lizard habitat within the strategic assessment area.

Note that potential Superb and Swift Parrot habitat is predominantly associated with the areas of Box–Gum Woodland, and therefore is not mapped separately.



<sup>7</sup> ACT Territory and Municipal Services, 2013, *Molonglo Adaptive Management Strategy*, access 23 February 2018

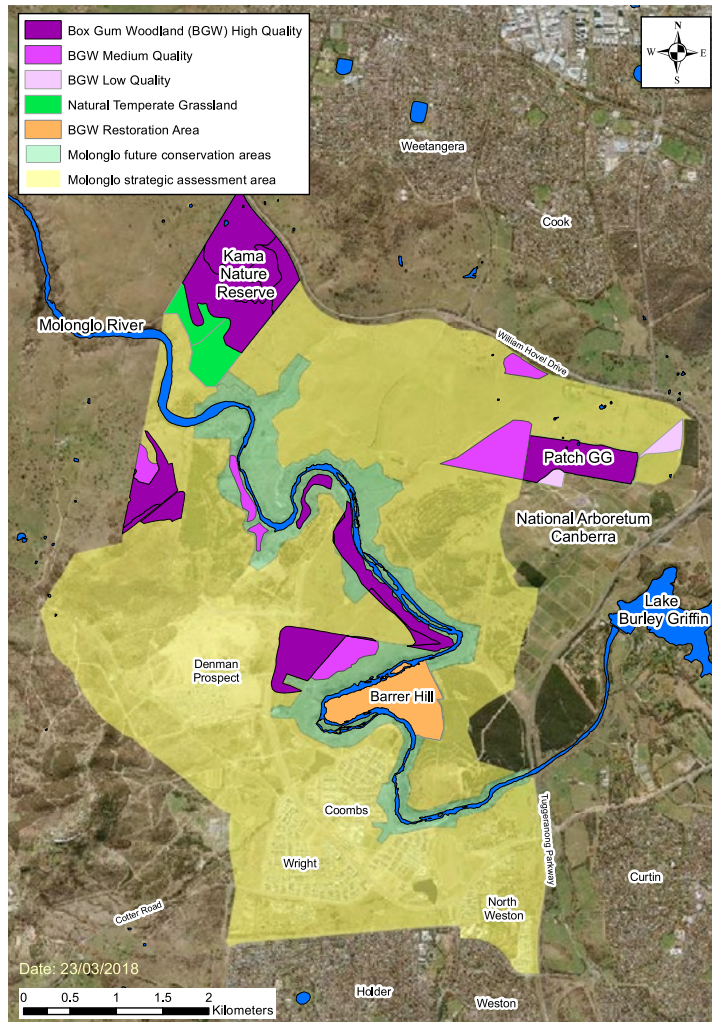
<sup>8</sup> Ibid



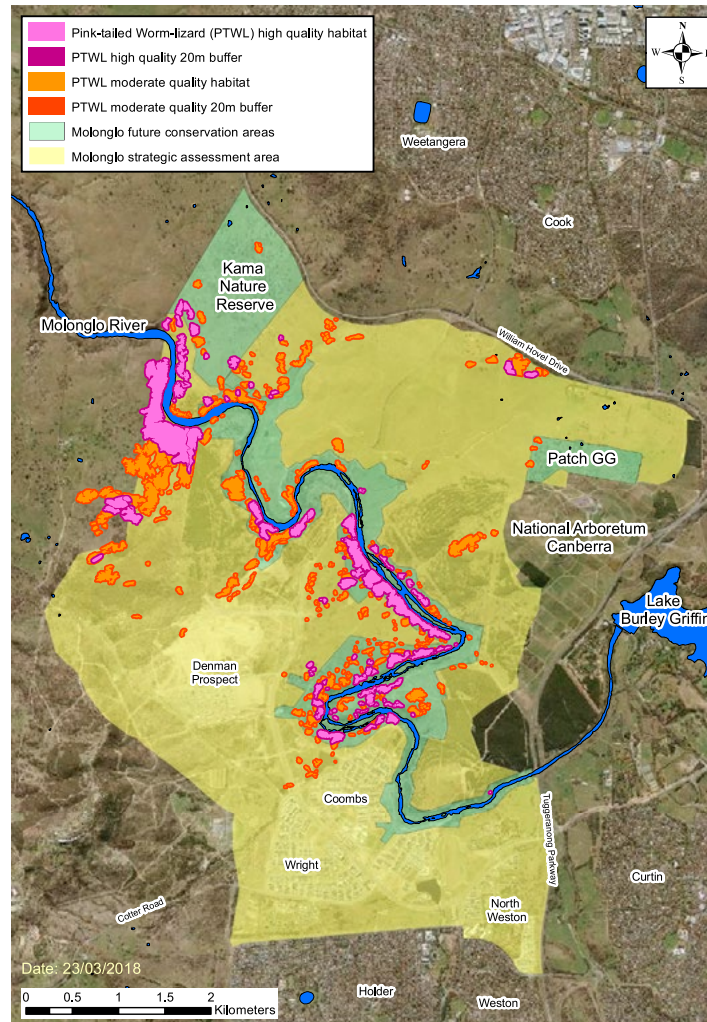
## Background

### BACKGROUND

**Figure 5:**  
BOX-GUM  
WOODLAND AND  
NATURAL TEMPERATE  
GRASSLAND



**Figure 6:**  
PINK-TAILED  
WORM-LIZARD  
HABITAT



## Background

### BACKGROUND

## Key Threats

The AMS outlines the key threats to the achievement of conservation outcomes and performance targets for MNES:

- weeds,
- pests,
- fire and fuel suppression,
- impacts from recreation,
- soil and water contamination,
- soil erosion,
- tree planting in Natural Temperate Grassland and tree planting or revegetation projects in the Pink-tailed Worm-lizard habitat, and
- increased resource competition from both native and exotic species.<sup>9</sup>

The adaptive management of these issues is addressed through the setting of objectives for each threat and through the monitoring of MNES to ascertain where any changes to management may be required. Ongoing monitoring of MNES is a key component of the AMS. Monitoring provides the opportunity to understand whether performance targets and management objectives are being achieved, and to determine if changes to ongoing management are required.

The planning framework for the AMS is outlined in

**Figure 7.**



In terms of adaptive management, the operational plans are of most significance. These plans have no statutory prescriptions and so are best placed to respond to the evaluation results and recommendations arising from the monitoring program.

In order to evaluate and review the AMS, an expert panel of scientists and land managers with established expertise in Box-Gum Woodland, Natural Temperate Grassland, Pink-tailed Worm-lizard, and Superb and Swift Parrot ecology will be created. At a minimum, this panel will convene every five years and provide a report containing advice and recommendations for any amendments necessary to ensure the operational plans are achieving the conservation outcomes and performance targets for the MNES.<sup>10</sup>

## Uncertainties

Key uncertainties for the management of MNES in the Molonglo Valley Strategic Assessment area:

- the best methods for restoration and rehabilitation of Box-Gum Woodland,
- how to monitor populations of the Pink-tailed Worm-lizard in a low impact way, and
- the best methods for restoration of Pink-tailed Worm-lizard habitat.

Targeted studies will be undertaken to address each of these issues and results will be incorporated into ongoing management.

Edge effects in the Molonglo Valley are an important issue to consider as there is an expansive area where the river reserve will be directly adjacent to the suburbs on both sides. Generally:

- the longer the edge – the larger the disturbance,
- the more angular the edges – the larger the disturbance,
- the smaller the reserve – the larger the disturbance, and
- the longer the reserve – the larger the disturbance.<sup>11</sup>

For an expanded commentary on these issues, refer to the expert commentary box, *Edging into Natural Areas*.

9,10 ACT Territory and Municipal Services, 2013, Molonglo Adaptive Management Strategy, accessed 28 February 2018

11 <https://www.globallandrepair.com.au/wp-content/uploads/2011/02/The-Edge-Effect.pdf>, accessed 4 January 2018

## Background

### BACKGROUND

## The Provision of Urban Open Space

The *Molonglo River Park Concept Plan Report*<sup>12</sup> provides a summary of the background investigations, key issues and design strategies that form the fundamental structure of the concept plan. This document aims to outline an approach to protect the MNES and enhance their habitat, protect the new residents from fire, as well as catering for their recreation and social needs.

*‘Surrounding the sensitive habitats of the Molonglo River Park, the new community will be settled at a density of about 3300 people per square kilometre on average lot sizes of 350 square metres. This compares to the current average in Canberra of 1450 people per square kilometre and 650 square metres respectively. The provision of neighbourhood and urban open space (i.e. open space within the residential development area) will be less than one third of the Canberra average at 2.4 hectares/1000 people versus 8.6 hectares/1000 people for the Canberra average. As a result, a significant component of the new residents’ recreation and social needs must be met within the less environmentally sensitive areas of the future park.’<sup>13</sup>*

It is important to be cognisant of the pressure that will be placed on the Molonglo River Park with the increasing population of the Molonglo Valley as new suburbs are completed over the next 25 years.

### Indirect Offset 1

#### BOX–GUM WOODLAND OFF–SITE RESTORATION PROJECT

##### (Commitment 23)

The indirect offset project for Box–Gum Woodland is designed to provide long term conservation outcomes. It addresses one of the key challenges in relation to woodland restoration and rehabilitation, that of limited information. It also addresses the need for the highest level of certainty possible in relation to the design of indirect offset projects.

The ACT Government will deliver an off-site restoration project in collaboration with local partners with expertise in the field of land restoration. The program will involve seed collection from within the strategic assessment area with a view to using that resource for Box–Gum Woodland restoration within the Barrer Hill Restoration Area (see **Figure 5** for location). Seed will also be stored for potential use in future restoration projects.

The program will be delivered through six key restoration stages. The activities are outlined in the NES Plan and will include engaging with local stakeholder groups and project partners, referencing current plans and strategies and applying best practice techniques. An adaptive management process will be used so that restoration interventions can be tailored based on system responses and changing circumstances.

## Indirect Offsets

Two major restoration projects are outlined in the NES Plan to meet the indirect offset requirements of the Molonglo Valley Strategic Assessment.

<sup>12</sup> Hassel, 2012, *Molonglo River Park Concept Plan Report*, prepared for the ACT Government Environment and Sustainable Development, August 2012

<sup>13</sup> Ibid, p.1

## Background

### BACKGROUND

#### Indirect Offset 2

##### **PINK-TAILED WORM-LIZARD RESEARCH PROJECT**

(Commitment 43)

Scientific data, especially in relation to the management and conservation of the Pink-tailed Worm-lizard in, and adjacent to, areas of urban development, is incomplete.

The potential indirect effects of urban development include weed spread, increased feral animal predation, direct disturbance by people traversing habitat, construction of urban infrastructure such as roads and inappropriate management of asset protection buffers.

It is an objective of the ACT Government to ensure that the potential for residential impacts on the Pink-tailed Worm-lizard be avoided or mitigated. To better understand how to achieve this objective, the ACT Government is undertaking an indirect offset in the form of a research project examining the long term survival of the Pink-tailed Worm-lizard in an urbanised landscape.

The research project will adopt a tri-staged approach:

1. Mount Taylor, a reserve unit within Canberra Nature Park, is surrounded by an urban matrix (housing, roads, facilities, easements etc). The focus of this first stage of the study will be:
  - a. habitat disturbance, including fragmentation, and the effect of habitat proximity to urban areas, and
  - b. in accordance with the draft National Recovery Plan for Pink-tailed Worm-lizards (Brown 2010), develop low-impact survey and monitoring techniques for the species.

The outcomes of this research will be applied to management within the East Molonglo strategic assessment area.

2. The results of the Mount Taylor study will be incorporated into the second stage of the project. The second stage will involve the following sub-projects:
  - c. extensive survey work to determine population densities in areas of low, moderate and high quality Pink-tailed Worm-lizard habitat in the strategic assessment area,
  - d. field trials, to be conducted in areas of low quality habitat only, involving different methods of translocation, and
  - e. research and field trials involving methods for reducing habitat fragmentation and increasing connectivity.

3. The NES Plan commitments include the monitoring of Pink-tailed Worm-lizard in the strategic assessment area. This monitoring is vital to ensure the long term survival and enhancement of the lizard population. Monitoring also provides a warning system should the population and/or habitat begin to show any signs of decline.

This third stage of the project provides a link between the stage two research and the monitoring of Pink-tailed Worm-lizard in the strategic assessment area. Where population and habitat monitoring show any change to baseline data (established prior to Stage 2 development) the results of the stage two research will be applied to establish possible causes and to mitigate adverse impacts.



## Background

### BACKGROUND

**Figure 7:**  
MANAGEMENT  
PLANNING  
FRAMEWORK FOR  
THE MOLONGLO  
VALLEY STRATEGIC  
ASSESSMENT

## Management Planning Framework for the Molonglo Valley Strategic Assessment

### NES Plan

### Adaptive Management Strategy

#### Kama Nature Reserve

- Statutory Plan of Management
- Ecological Management Guidelines
- Operational Plan

#### Patches GG and N

- Ecological Management Guidelines
- Operational Plan

#### Molonglo River Corridor

- Molonglo River Park Concept Plan
- Statutory Plan of Management
- Ecological Management Guidelines
- Operational Plan

#### Patches I, L, M and P

- Ecological Management Guidelines
- Operational Plan

#### Patches C and H

- Ecological Management Guidelines
- Operational Plan

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### EXPERT COMMENTARIES

#### EDGING INTO NATURAL AREAS



Dr Philip Gibbons

Associate Professor, Fenner School of Environment and Society, the Australian National University

Urban development poses several threats to biodiversity. However, there are actions that governments and residents can take in the Molonglo Valley to minimise these impacts.

#### Edge effects

Suburbs pose several threats to native flora and fauna in neighbouring bushland: unrestrained pets, invasive plants and animals, stormwater runoff and bushfire.

Pet cats in Australia collectively kill around 167,000 birds per day.<sup>1</sup> They also kill a range of small reptiles, mammals and even invertebrates such as butterflies. A cat containment policy is an important conservation measure in suburbs within 1 kilometre of natural areas since pet cats can roam this distance.<sup>2</sup>

Although there is mandatory cat containment in all new suburbs of the Molonglo Valley, there is evidence from the RSPCA that compliance with cat containment declines with time.<sup>3</sup> Ongoing education and enforcement of cat containment is therefore critical.



*Cat containment is therefore an important conservation action in urban areas. Source Philip Gibbons*

**167,000** birds  
are killed by pet cats in  
Australia per day

Development of new suburbs in Canberra has coincided with declines of native birds from adjacent bushland.<sup>4</sup> Reasons for this are unclear, but some of Australia's most aggressive native birds such as the Red Wattlebird, Noisy Miner, Rainbow Lorikeet and Pied Currawong thrive in suburbs and may be pushing other native birds out of neighbouring bushland. Avoiding garden plants that attract these aggressive species to our suburbs (e.g., nectar-rich Grevilleas and Callistemons and prolific fruiting plants such as Cotoneaster) may be one solution.<sup>5</sup>

<sup>1</sup> Woinarski, J., et al., *How many birds are killed by cats in Australia?* *Biological Conservation*, 2017. 214: p. 76-87

<sup>2</sup> Meek, P.D., *Home range of house cats Felis catus living within a National Park.* *Australian Mammalogy*, 2003. 25(1): p. 51-60

<sup>3</sup> Brown, A., *Cats captured from Canberra's cat containment suburbs on the increase*, in *The Canberra Times*. 2017, Fairfax Media: Canberra

<sup>4</sup> Rayner, L., et al., *Are protected areas maintaining bird diversity?* *Ecography*, 2014. 37(1): p. 43-53

<sup>5</sup> Ikin, K., et al., *Key lessons for achieving biodiversity-sensitive cities and towns.* *Ecological management & restoration*, 2015. 16(3): p. 206-214

## Case studies

### EXPERT COMMENTARIES

Approximately 15 per cent of Australia's plant species are exotic and this is increasing at the rate of about 10 new species annually.<sup>6</sup> Weeds represent a threat to biodiversity in Australia because they displace native plants and change habitat; and are virtually impossible to eradicate once established.

Urban areas are a known source of weeds that invade adjacent bushland. Garden escapes in the ACT include Cootamundra Wattle, Common Pampas Grass and Cotoneaster. Urban open space in Canberra's suburbs often becomes dominated by two significant weeds: African Lovegrass and Chilean Needlegrass. Weed control within reserves is undermined where adjacent suburbs support large source populations of invasive plants.

Suburbs contain many hard surfaces such as roofs, roads and footpaths and therefore represent a source of considerable stormwater runoff. Stormwater runoff carries large quantities of sediment and nutrients from lawns, leaves, wildlife faeces and leaking sewage infrastructure. This all drains into adjacent waterways. Blooms of blue-green algae in Canberra's waterways have been traced to these sources.<sup>7</sup> Unless managed carefully, stormwater from new suburbs in the Molonglo Valley will impact upon native species in the Molonglo River and downstream, such as the Platypus, Murray Cod and Murray River Crayfish.

Bushfires represent a threat to urban communities located next to bushland, but protecting urban communities from bushfires can also represent a threat to wildlife. Asset Protection Zones (APZs) cleared of most trees and shrubs are maintained around suburbs adjacent to bushland in the ACT.



*Rock removed from urban developments has been used to create habitat for the Pink-tailed Worm-lizard in the Molonglo Valley and at the same time reduce bushfire hazard. Source Phillip Gibbons*

Good planning can limit the impact of APZs on biodiversity. Designing new suburbs so the perimeter is a road and APZs are within the urban footprint—rather than adjacent bushland—reduces impacts on native wildlife.

Some ecological restoration can be undertaken within APZs without increasing the risk to houses during bushfires. For example, rock quarried from new suburbs in the Molonglo Valley has been used to create additional habitat for the Pink-tailed Worm-lizard (a Vulnerable species). These areas also support low levels of fire fuel hazard.<sup>8</sup>

<sup>6</sup> Department of the Environment and Energy. Why are weeds a problem? 2017

<sup>7</sup> Neil, R., *Report on the state of the watercourses and catchments for Lake Burley Griffin. Part 1. The Report*. 2012, Office of the Commissioner for Sustainability and Environment: Canberra

<sup>8</sup> McDougall, A., et al., *Restoration rocks: integrating abiotic and biotic habitat restoration to conserve threatened species and reduce fire fuel load*. Biodiversity and conservation, 2016. 25(8): p. 1529-1542



## Case studies

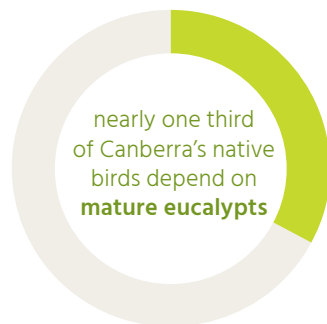
### EXPERT COMMENTARIES

#### Connectivity

Urbanisation also contributes to the fragmentation of wildlife populations. Connectivity between wildlife populations is important because it reduces inbreeding, facilitates recolonisation of bushland patches when species have become locally extinct (e.g. because of bushfire) and it allows species to move across landscapes, which is important for those affected by climate change.

Stepping stones of suitable habitat within urban areas helps connect wildlife populations.

For example, one study found that nearly a third of Canberra's native birds depend on mature eucalypts.<sup>9</sup> However, most mature trees are cleared as suburbs are developed and those retained are often removed when they begin senescing. Retention and protection of mature eucalypts within the suburbs of the Molonglo Valley will improve connectivity for native birds and bats.



*Mature, dying and dead eucalypts represent important stepping stones for native birds and bats in urban areas. Source Philip Gibbons*

Roads represent a physical barrier to movement by some native species and a significant source of mortality for others. On Tasmanian roads it is estimated that 290,000 native animals are killed annually—or 33 animals every hour.<sup>10</sup> The list of native species that are killed on roads in Australia includes numerous mammals, birds, reptiles and amphibians. Increased roads and traffic in the Molonglo Valley will represent an increasing threat to native fauna. Underpasses, barrier fencing and speed limits have all been suggested as ways to mitigate impacts of roads on wildlife.

#### No silver bullet

Threats work together to impact upon biodiversity in urban areas. For example:

- nectar-rich plantings in gardens attract hyper-aggressive birds to suburbs,
- APZs on the edges of suburbs provide less cover for small birds seeking to evade these hyper-aggressive species, and
- cats are more effective hunters of small birds in these open habitats.

Thus, there is no silver bullet for conserving biodiversity in or adjacent to urban areas.

Effective conservation in the Molonglo Valley will require a series of coordinated actions by government and the community.

<sup>9</sup> Le Roux, D.S., et al., *Single large or several small? Applying biogeographic principles to tree-level conservation and biodiversity offsets*. Biological Conservation, 2015. 191: p. 558-566

<sup>10</sup> [roadkilltas.com.au](http://roadkilltas.com.au). Available from: <http://roadkill.imaginocan.com.au/>

## Case studies

### EXPERT COMMENTARIES

#### REHABILITATION OF HABITAT IS A IMPORTANT COMPONENT OF THE RECOVERY AND FUTURE VIABILITY OF THE NATIONALLY VULNERABLE PINK-TAILED WORM-LIZARD (*Aprasia parapulchella*) IN THE LOWER MOLONGLO VALLEY



Dr Will Osborne  
Adjunct Associate Professor  
Institute for Applied Ecology, University of Canberra

The Pink-tailed Worm-lizard (*Aprasia parapulchella*) is a threatened species found mainly in the Canberra region,<sup>11,12</sup> It was described in 1974 from specimens collected on the rocky slopes of the Molonglo River at Coppins Crossing in the ACT.<sup>13</sup> Because it lives in ant nests beneath rocks, it is rarely observed and can be very difficult to find, even if present at a site.

Most records of the Pink-tailed Worm-lizard are from the ACT, although in recent years there have also been an increasing number of records from NSW at very widely-separated locations along the foothills of the western slopes of the Great Dividing Range. Most of these sites in NSW are very isolated and threatened by weed invasion, pasture improvement, cropping and urban expansion.<sup>14</sup> Because of the lease system for farmland in the ACT there has been less pasture improvement and this is one explanation for the much higher abundance of the lizards in the ACT.<sup>15</sup>



Pink-tailed Worm-lizard. © Alex Dudley

<sup>11</sup> ACT Government, 2017, *Pink-tailed Worm-lizard Threatened Species Action Plan*, ACT Government, Canberra

<sup>12</sup> Wong D. T. Y., Jones, S. R., Osborne, W. S., Brown, G. W., Robertson, P., Michael, D. R. and Kay, G. M., 2011, *The life history and ecology of the Pink-tailed Worm Lizard Aprasia parapulchella Kluge – a review*. Australian Zoologist 35, 927-940

<sup>13</sup> Kluge, the A.G., 1974, *A taxonomic revision of the lizard family Pygopodidae*, *Miscellaneous Publications of the Museum of Zoology University of Michigan* 47, 1-221

<sup>14</sup> Wong D. T. Y., Jones, S. R., Osborne, W. S., Brown, G. W., Robertson, P., Michael, D. R. and Kay, G. M., 2011, *The life history and ecology of the Pink-tailed Worm Lizard Aprasia parapulchella Kluge – a review*. Australian Zoologist 35, 927-940

<sup>15</sup> Wong, D.T.Y., Osborne, W.S., Sarre, S.D. and Gruber, B., 2018, *Remotely sensed agricultural modification improves prediction of suitable habitat for a threatened lizard*, *International Journal of Geographic Information Science*



## Case studies

### EXPERT COMMENTARIES

#### Genetics of Pink-tailed Worm-lizard populations

There has been one study of genetic variation in Pink-tailed Worm-lizards.<sup>16</sup> This study reported that there were high levels of genetic variation in the ACT populations and that levels of genetic differentiation between sites was also high, indicating high levels of subdivision between almost all populations sampled. This indicates that there has been no modern dispersal between the sites sampled (all sites were separated by at least one kilometre). The differences in genetic variation were best explained by the presence of biogeographic barriers such as rivers, exotic pine forest and a lack of rocky habitat.

The data from the genetic study by Knopp *et al.*<sup>17</sup> provides important confirmation of the isolation of individual populations and supports the view that the lizards have been mainly confined to patchy, open, rocky landscapes. This finding is of considerable importance in the context of protecting the species' habitat within landscape corridors such as in the Lower Molonglo Valley where former pine plantations, pasture improvement and roads have further fragmented their habitat.

#### Distribution and Abundance in the ACT

The first records of Pink-tailed Worm-lizards were from the ACT and, as mentioned above, all were from Coppins Crossing in the Molonglo Valley (just upstream of the present day bridge). Follow-up surveys confirmed that the species has a much broader distribution in the ACT.<sup>18 19</sup> The most extensive populations occur along the slopes of the Molonglo and Murrumbidgee River Corridors and on many adjacent outlying hills that still support native ground cover (e.g. Mount Taylor, Cooleman Ridge, Urambi Hills, The Pinnacle and Mount Stromlo).<sup>20</sup> Most sites with the species in the ACT occur within nature reserves (Canberra Nature Park, Murrumbidgee River Corridor, Molonglo River Corridor). The highest densities and largest known populations of the species have been recorded in the Lower Molonglo Valley where the species is patchily distributed along the entire 20 kilometre length of the Molonglo River Corridor reserve network.<sup>21 22</sup>

There are also records of the species in the Molonglo Valley from leasehold farmland (e.g. the Huntly and Spring Valley properties) where the lizards are confined to suitable habitat that has not been ploughed or pasture improved.

Many sites in the Molonglo Valley are located within or at the edge of areas that are currently being developed as urban areas in the Molonglo Valley and at west Belconnen.

#### Importance of Habitat in the Lower Molonglo Valley

From what is known, the Molonglo Valley has the largest population of the lizard within its known range in Australia. Moreover, habitat quality in the Molonglo Valley Strategic Assessment area is particularly high (most habitat patches were assessed to be of a high quality).<sup>23 24</sup>

The ACT region provides the main stronghold for the Pink-tailed Worm-lizard.<sup>25</sup> This extensive population links with other populations in the Murrumbidgee River Corridor. For these reasons the Molonglo population is considered to be of national conservation significance (*Commonwealth Environment Protection and Biodiversity Conservation Act 1999*) and the ACT community holds considerable responsibility for the protection of this Vulnerable species.

Potential habitat for the Pink-tailed Worm-lizard in the Molonglo Valley Strategic Assessment area and along the

- 16 Knopp, T., Gruber, B., Osborne, W., Wong, D. and Sarre, S., 2012, *Conservation genetics of the pink-tailed worm lizard (Aprasia parapulchella) in the ACT: What can population genetics tell us about habitat fragmentation and conservation priorities in the face of urban expansion?* Report to the ACT Government, Institute for Applied Ecology, University of Canberra
- 17 Knopp, T., Gruber, B., Osborne, W., Wong, D. and Sarre, S., 2012, *Conservation genetics of the pink-tailed worm lizard (Aprasia parapulchella) in the ACT: What can population genetics tell us about habitat fragmentation and conservation priorities in the face of urban expansion?* Report to the ACT Government, Institute for Applied Ecology, University of Canberra
- 18 Osborne, W.S. and McKergow, F.V.C., 1993, *Distribution, population density and habitat of the pink-tailed legless lizard, Aprasia parapulchella in Canberra Nature Park*, ACT Parks and Conservation Service, Technical Report 3
- 19 Osborne, W.S., Lintermans, M.A. and Williams, K.D., 1991, *Distribution and conservation status of the endangered pink-tailed legless lizard Aprasia parapulchella* (Kluge), Research Report 5, ACT Parks and Conservation Service, Canberra
- 20 Wong D. T. Y., Jones, S. R., Osborne, W. S., Brown, G. W., Robertson, P., Michael, D. R. and Kay, G. M., 2011, *The life history and ecology of the Pink-tailed Worm Lizard Aprasia parapulchella Kluge – a review*. Australian Zoologist 35, 927-940
- 21 ACT Government 2017, *Pink-tailed Worm-lizard Threatened Species Action Plan*, ACT Government, Canberra
- 22 Wong D. T. Y., Jones, S. R., Osborne, W. S., Brown, G. W., Robertson, P., Michael, D. R. and Kay, G. M., 2011, *The life history and ecology of the Pink-tailed Worm Lizard Aprasia parapulchella Kluge – a review*. Australian Zoologist 35, 927-940
- 23 Osborne, W. and Wong, D., 2010, *Extent of potential Pink-tailed Worm-lizard (Aprasia parapulchella) habitat in the Stage 2 Investigation Area - East Molonglo*, Report commissioned by ACT Planning and Land Authority. Institute for Applied Ecology, University of Canberra
- 24 Wong, D. and Osborne, W.S., 2010, *Confirmatory surveys for Pink-tailed Worm Lizards (Aprasia parapulchella) and additional mapping of habitat along the Molonglo River Corridor between Coppins Crossing and Tuggeranong Parkway, ACT*, Report commissioned by ACT Planning and Land Authority. Institute for Applied Ecology, University of Canberra
- 25 Wong D. T. Y., Jones, S. R., Osborne, W. S., Brown, G. W., Robertson, P., Michael, D. R. and Kay, G. M., 2011, *The life history and ecology of the Pink-tailed Worm Lizard Aprasia parapulchella Kluge – a review*. Australian Zoologist 35, 927-940



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entire length of the Lower Molonglo River Corridor Reserve has now been completely mapped by the ACT Government (see **Figure 6**). However, some areas on adjacent farmland to the west of the strategic assessment area have been mapped only by remote sensed imagery and have not been checked on the ground.<sup>26</sup> Habitat in very good condition (mapped as “high” quality and “moderate” quality) occurs in extensive patches along the entire 20 kilometre length of the Molonglo River Corridor. The most extensive habitat occurs along the southern bank of the river (i.e. the north-facing slopes).

### Importance of Connectivity of Habitat

Maintaining potential in the landscape for dispersal between different populations is an important consideration in the conservation of wildlife.

Connectivity helps prevent the processes that affect very small populations – reduced gene flow, inbreeding, genetic drift and the loss of small populations due to unpredictable events. The hill-side slopes and gorges associated with the Molonglo River provide a very important potential linkage between near urban populations of Pink-tailed Worm-lizards at Kama and Pinnacle Nature Reserves, Spring Valley Farm (conservation agreement ANU), Mount Stromlo Forest Park, the Murrumbidgee River Corridor and west Belconnen area. Fortunately, much of this landscape is now protected in a series of linear conservation reserves. By contrast, most populations within Canberra Nature Park are now completely isolated by the suburbs that surround the reserves.

Preventing the development of infrastructure in the Molonglo Valley that will further isolate populations of



*Pink-tailed Worm-lizard habitat restoration and fence. Source Kirilly Dickson*

Pink-tailed Worm-lizards is of paramount importance to the effective long-term conservation of the species in this part of the ACT.

Moreover, implementing measures to increase connectivity at locations where past human activities have impacted on habitat within wildlife corridors is a very high priority (e.g. areas that were pine plantations, degraded areas and major roads).

Constructing bridges in such a way that suitable habitat is maintained beneath major bridges is a challenge, and requires further planning. Recent successful protection of occupied habitat during construction of the main trunk sewer and footbridge immediately downstream of Coppins Crossing provides a good example of how this might be achieved. However, the increased shading and lack of rainfall under very wide or low bridges is likely to be a challenge for constructing and maintaining habitat that Pink-tailed Worm-lizards and other reptiles might move through.

<sup>26</sup> Wong, D. T. Y., 2013, *Environmental factors affecting the occurrence and abundance of the Pink-tailed Worm-lizard (Aprasia parapulchella) in the Australian Capital Territory*, PhD thesis, University of Canberra

## Case studies

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#### Restoring Pink-tailed Worm-lizard Habitat

The ACT Government, in co-operation with the Fenner School at ANU, has established field research plots in the Molonglo Valley Strategic Assessment area. These plots involve the use of habitat manipulations (placement of surface rock combined with plantings of suitable native grasses) to determine an optimal approach to managing suitable habitat for Pink-tailed Worm-lizards. A second aim of the study is to examine approaches to reducing fire risk.

The trials are still underway, however the responses after one year were encouraging: rock restoration combined with herbicide application was found to meet the widest range of restoration goals. Lizards colonized the restored habitat within a year, the restoration reduced fire fuel load, increased ant occurrence (the primary prey of the lizards), and increased the growth and survival of native grasses. Despite this promising start, continued studies are needed to confirm the suitability of this technique in the longer term. It is possible, for example, that the experimental sites will become over-grown with tall, rank vegetation (including weeds) and become shaded, thus reducing suitability for the lizards and ants. Continued monitoring of the plots is being undertaken to address this and other possibilities. Successful techniques will later be applied at a landscape scale across a number of areas within the Molonglo River Reserve, aiming to improve habitat connectivity while also controlling fuel loads.

In a second experiment in the Molonglo Valley Strategic Assessment area, the ACT Government has commenced research into techniques for rehabilitating Pink-tailed

Worm-lizard habitat that were previously disturbed by human activity (e.g. in parts of the Molonglo River Corridor Reserve that were previously pine forest). Rock of a suitable size obtained from nearby development sites has been used to make artificial habitat islands that form a series of “stepping stone” patches linking occupied habitat on either side of disturbed areas downstream of Coppins Crossing. These habitat patches have been constructed to mimic the natural density and extent of surface stones at typical sites that support the lizards. The construction of the first set of trials involved a set of eleven habitat “islands” (patches) bridging a distance of one kilometre.

Early indications are that this project has been successful with ten of the eleven previously unoccupied patches now occupied by at least a few individuals that have moved in from nearby occupied habitat. The challenge remaining will be to see if any habitat patches constructed in other areas that are important for rehabilitation, but which are more isolated from existing populations, will also become occupied. Priority for future habitat construction and rehabilitation should focus on increasing connectivity through the landscape near Coppins Crossing, including any areas that will be disturbed during the construction of new bridges over the Molonglo River. Connectivity of habitat on the north side of the river is naturally quite low, and an assessment should be made as to whether some of these areas would benefit from the construction of additional habitat. An important area for rehabilitation of habitat is the area that was pine forest at Misery Point (now Barrer Hill). These management activities will require long-term monitoring to gauge the extent of their success.

#### 20m wide buffer zones around all Pink-tailed Worm-lizard habitat areas

#### Effective use of Buffer Zones to Protect Habitat

In keeping with Commonwealth policy, the ACT Government has adopted the use of 20 metre wide buffer zones around all Pink-tailed Worm-lizard habitat areas in the Molonglo Valley Strategic Assessment area.<sup>27</sup> The function of the buffer zone is to assist in the protection of the habitat areas. It should be noted that the 20 metre wide buffer is located outside of the actual habitat, extending outwards from the edge of the actual habitat. Well-managed buffer zones can be very effective at protecting habitat areas from disturbances such as trampling, weeds, pollutants and the spread of sediments.

It is very important that buffer zones are not confused with inner and outer asset protection zones.

The fire prevention activities that are likely to occur within asset protection zones are not compatible with conservation of Pink-tailed Worm-lizard habitat. Adherence to the management procedures recommended in the reserve and offset areas management plan<sup>28</sup> will comprise an important part of ensuring that effective and well-managed buffer zones continue to play an important role in the protection of populations in the Molonglo Valley Strategic Assessment area.

<sup>27</sup> ACT Planning and Land Authority, 2011, *Molonglo Valley Plan for the Protection of Matters of National Environmental Significance (the NES Plan)*, ACT Planning and Land Authority, Canberra

<sup>28</sup> ACT Government 2015, *Molonglo Reserve and Offset Areas, Ecological Management Guidelines*, ACT Government, Territory and Municipal Services Directorate, Canberra

## Case studies

### CASE STUDY 1



Added tree structure on Barrer Hill. Source Kate Auty

#### **BARRER HILL RESTORATION PROJECT: BIRDS, BATS AND BUGS**

##### The installation of vertical habitat structures

The vertical habitat structures project is an innovative restoration initiative at Barrer Hill, in the Molonglo River Reserve. In collaboration with ANU researchers at the Fenner School of Environment and Society, this study will shed light on the effectiveness of this restoration method for biodiversity in modified landscapes.

In a place where there are few trees, these vertical habitat structures provide a space for roosting birds and insects. This project has been underway since 2014 and includes a 50 hectare area on the northern bank of the Molonglo River, across from the new suburb of Coombs.<sup>29</sup>

Restoration work has included removal of pine trees. They have been replaced with native shrubs and trees, and the community assisted with these plantings. Extensive weed removal has also taken place.

A key part of the project has been to return **habitat structures** to the area to **provide shelter for native wildlife** while the planted trees grow. This has been in the form of salvaged rocks, logs and dead trees.<sup>30</sup>

EPSDD completed Stage 3 of the Box–Gum Woodland restoration project in 2016–17.

As part of Stage 3, ten vertical habitat structures, 400 course woody debris logs and 80 tonnes of surface rock were installed in the restoration area to provide habitat for threatened and non-threatened Box–Gum Woodland species. The ten habitat structures were made up of five utility poles and five relocated mature trees, enriched with carved hollows and artificial bark providing habitat for invertebrate, bird, bat and marsupial species. Within hours of installation, insects arrived and a bird roosted immediately.

An Australian National University (ANU) honours project (Fenner School of Environment and Society) on the effect of installation of these artificial habitat structures on bird and bat species, has produced interesting results. As expected, the relocated trees proved to be more beneficial than the installed utility poles for increasing bird species richness in this modified landscape. The artificial structures had no effect on bat species richness or composition, however a *Nyctophilus* species was observed roosting on an artificial structure immediately following installation.

The retention of large mature trees in the landscape is critical, as the artificial structures were unable to replicate their function. However, in a degraded landscape where mature trees are not present, artificial structures do provide temporary habitat while plantings are becoming established.<sup>31</sup>

<sup>29</sup> ACT Government, Barrer Hill Restoration Project, accessed 13 February 2018

<sup>30</sup> Ibid

<sup>31</sup> Hannan, L. 2017, *Artificially replicating mature trees for birds and bats in modified landscapes*, Fenner School of Environment and Society, Australian National University



## Case studies

### CASE STUDY 1



Plantings at Barrer Hill. Source Kate Auty

The installation of pink tree guards to protect the newly planted seedlings

At the site visit on 3 January 2018, the restoration work undertaken on Barrer Hill was observed, with the seedlings protected by tree guards. Approximately 50,000 shrubs, trees and grasses have been planted in this area. Species were selected to reduce the fire danger of the area, given the close proximity to residential areas.

The tree guards are designed to protect seedlings from:

- herbicide drift,
- wind,
- predation from hares, rabbits and wallabies, and
- adverse conditions such as sand blasting and frost.

They also increase humidity and concentrate carbon dioxide levels which improves plant growth.<sup>32</sup>

**WHY PINK?** During the process of photosynthesis, green leaves absorb light from the red fraction of the visible light spectrum. As such, research undertaken in the ACT has demonstrated that pink reflects and focuses the red fraction of the spectrum onto the plant inside the tree guard which will concentrate the photosynthetic energy and enhance plant growth<sup>33</sup>

**50,000<sup>+</sup>** shrubs, trees and grasses have been planted

#### Training up students as part of the Molonglo Valley Strategic Assessment

*"The opportunity to work on this project for my honours year was by far the highlight of my university experience and one which should be offered to more students. It gave me the ability to work with and learn from experienced ecologists working on pressing environmental issues and to make a genuine contribution to the literature and research in this area of conservation and restoration.*

*It provided me with useful career skills and experience, such as developing monitoring techniques and research design. Whilst many honours projects provide this experience, working on this project was different due to its novel and ambitious nature. It was also different due to the ACT Government ecology staff who consistently went above and beyond in assisting with the research design and survey implementation. In comparison to my undergraduate courses, this experience provided me with skills which broadened my career options and introduced me to an area I am now passionate about."*

Lucy Hannan, 21 February 2018.

32, 33 <https://www.globallandrepair.com.au/products/the-ultimate-tri-cone-tree-guards/>, accessed 19 February 2018

## Case studies

### CASE STUDY 2

#### HABITAT CONNECTIVITY — WHETHER YOU ARE A BIRD OR A LIZARD

##### Restoration of Pink-tailed Worm-lizard habitat

One of the key focuses of the Molonglo Valley Strategic Assessment is the protection and enhancement of Pink-tailed Worm-lizard habitat. The area is a hotspot for the reptile in the ACT and nationally.

Not a great deal is known about this species. They have been described as 'cryptic'.

Particularly challenging is orchestrating habitat restoration to join several fragmented populations of the Pink-tailed Worm-lizard. This is being undertaken in the Molonglo Valley as is required by the indirect offset requirements in the strategic assessment.

Pink-tailed Worm-lizard is typically associated with rocky areas within Natural Temperate Grassland. These sites tend to be well drained and contain numerous scattered rocks (between 10–30 centimetres in diameter), partially embedded in the soil and grass. The lizard feeds on the eggs and larvae of the ants within the nests under these rocks.<sup>34</sup>

The habitat restoration to date has been extensive, with approximately 3000 tonnes of rock being placed strategically into the river corridor reserve to encourage Pink-tailed Worm-lizards to colonise the area.<sup>35</sup>

As a result of a history of agriculture and forestry in the area, the populations of Pink-tailed Worm-lizard within the Molonglo Valley are now severely fragmented.



*Pink-tailed Worm-lizard habitat restoration opposite Barrer Hill.  
Source Kate Auty*

#### Pink-tailed Worm-lizard is typically associated with **rocky areas** within **Natural Temperate Grassland**

The objective of habitat restoration is to connect these fragmented populations. Maintaining potential in the landscape for dispersal between different populations is an important consideration in the conservation of this species. Connectivity helps prevent the processes that negatively affect very small populations, such as reduced gene flow, inbreeding, genetic drift and the loss of small populations due to unpredictable events.

Over the past four years, the ACT Government has undertaken habitat restoration for the species in the Molonglo Valley by placing scattered surface rock between isolated rocky patches to improve habitat connectivity and facilitate dispersal of individuals. 11 habitat islands were established across the former Blewett's pine plantation. The objective of the restoration works was to improve habitat connectivity between the two genetically distinct populations.

Pink-tailed Worm-lizards have subsequently been detected in ten of the 11 habitat islands since their establishment in 2014. This leaves only one island to be colonized before the two populations are effectively reconnected (see **Figure 8**).<sup>36</sup>

<sup>34</sup> Pink-tailed Worm-lizard Action Plan, accessed 27 February 2018

<sup>35</sup> Pers comms Ecologist, Parks and Conservation Service Projects, site visit 3 January 2018

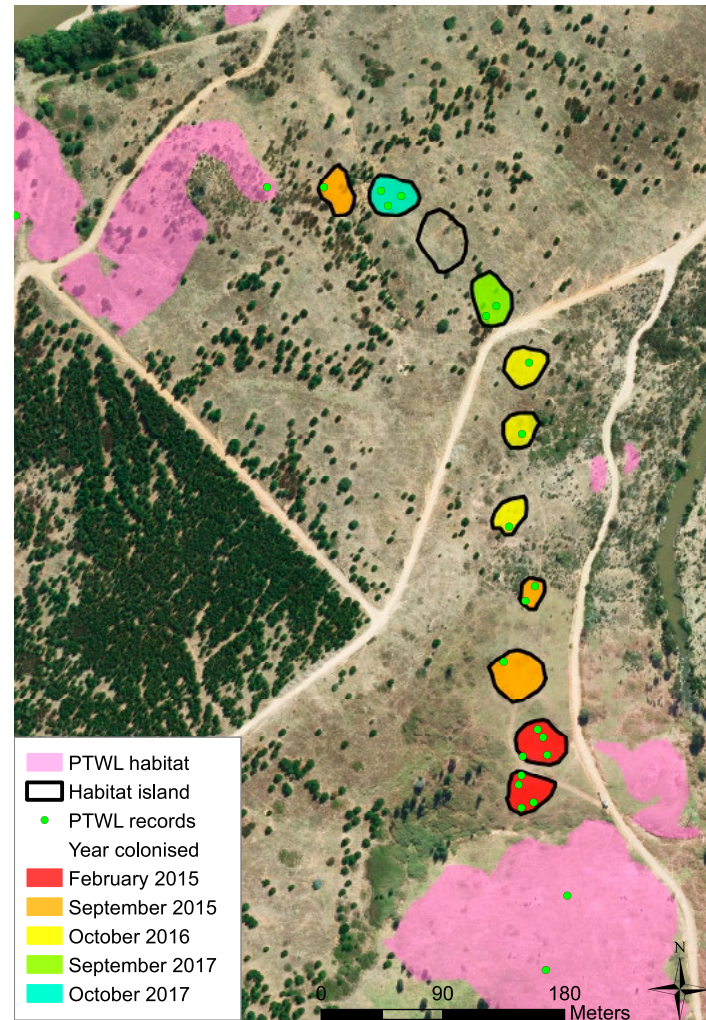
<sup>36</sup> Pink-tailed Worm-lizard Action Plan, accessed 27 February 2018



## Case studies

### CASE STUDY 2

**Figure 8:**  
PINK-TAILED WORM-LIZARD HABITAT  
EXTENSION 2018





## Case studies

### CASE STUDY 2

#### Superb Parrot breeding and climate change

The Superb Parrot is one of the MNES protected within the Molonglo Valley Strategic Assessment area as part of the commitments relating to maintenance and enhancement of Box-Gum Woodland.

This parrot relies on nesting trees in the Molonglo Valley and Throsby (Gungahlin).<sup>37</sup>

The presence of breeding populations of the Superb Parrot within the ACT is a relatively recent phenomenon; until 2005–06, the species was rarely recorded breeding here.<sup>38</sup>

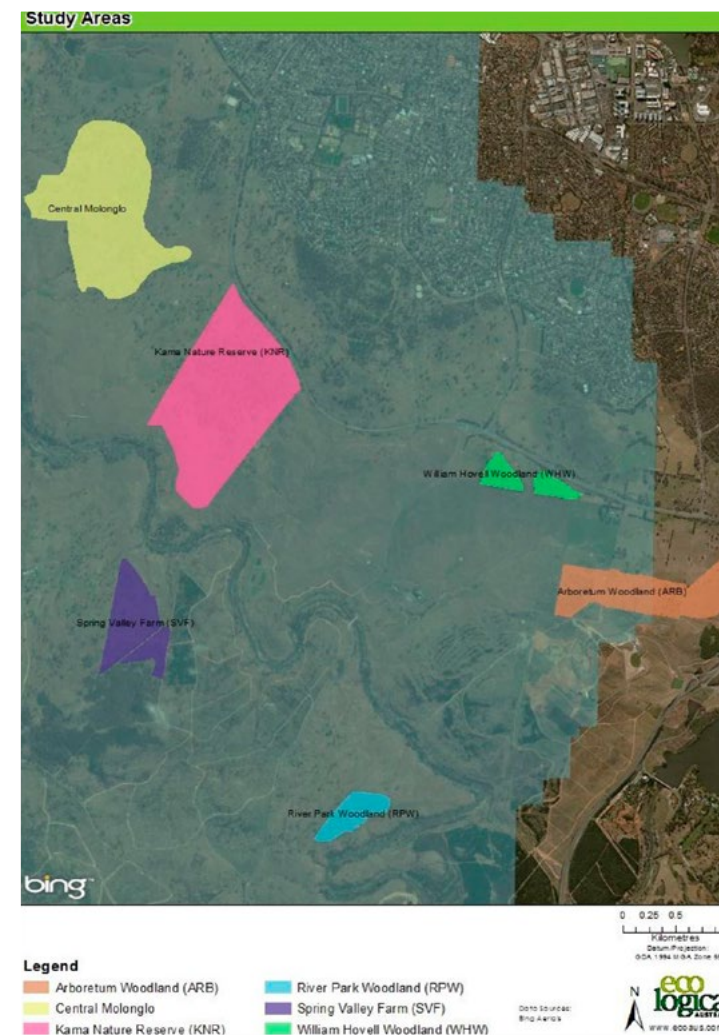
In surveys undertaken in 2013, the species was recorded as breeding at two locations in the Molonglo Valley; Spring Valley Farm (adjacent to Patches I, L, M and P in the strategic assessment area) and Central Molonglo (north-west of Kama Nature Reserve). For locations of these two areas, see **Figure 9**.<sup>39</sup>

The Superb Parrot has been observed foraging within Kama Nature Reserve and within native and non-native vegetation in the broader Belconnen area. The bird is highly mobile and will take advantage of foraging resources some distance from breeding areas. This confirms the importance of retaining the links between Central Molonglo, Spring Valley Farm and other woodland patches in the Molonglo Valley in order to retain habitat requirements for the bird to continue to breed in this location.

Further surveys were undertaken in spring and summer of 2015. These surveys identified foraging by Superb Parrots in the Spring Valley area but it was not considered to be a critical breeding area.<sup>40</sup>

Surveys undertaken from September 2016 to January 2017 identified no trees being used for nesting within Spring Valley, despite extensive searches in 469 trees. Numbers of parrots breeding in Throsby (Gungahlin) was also lower than previous years.<sup>41</sup>

**Figure 9:**  
STUDY AREA OF  
THE 2013 SUPERB  
PARROT SURVEYS



<sup>37</sup> ACT Commissioner for Sustainability and the Environment, 2017, *Independent Audit of the Gungahlin Strategic Assessment*

<sup>38</sup> Ecological Australia Pty Ltd, 2014, *Molonglo NES Plan Superb Parrot Survey: Baseline Survey 2013*, prepared for Territory and Municipal Services

<sup>39</sup> ACT Commissioner for Sustainability and the Environment, 2017, *Independent Audit of the Gungahlin Strategic Assessment*

<sup>40</sup> Rayner, L., Stojanovic, D., Heinsohn, R. and Manning, A., 2016, *Technical Report: Breeding ecology of the Superb Parrot *Polytelis swainsonii* in northern Canberra*, Fenner School of Environment and Society, ANU

<sup>41</sup> Rayner, L., Stojanovic, D., Heinsohn, R. and Manning, A., 2017, *Technical Report: Breeding ecology of the Superb Parrot *Polytelis swainsonii* in northern Canberra, 2016 Nest Monitoring Report*, Fenner School of Environment and Society, ANU

## Case studies

### CASE STUDY 3

#### COMMUNITY ENGAGEMENT

Boardwalk designed to avoid damaging primary Pink-tailed Worm-lizard habitat



The Holdens Creek Boardwalk provides a rare opportunity for members of the public to enter into and examine Pink-tailed Worm-lizard habitat while having minimal impact.

The impact of the boardwalk was minimised by having a specialist ecologist on site during construction to identify the route with the least impact on the surrounding Pink-tailed Worm-lizard habitat. This was achieved by ground-truthing habitat mapping and choosing a route that did not impact on any areas of high or moderate quality habitat. The final route of the boardwalk largely followed a well-used animal track that was heavily weed infested in sections and supported minimal rock habitat.

Impacts were further reduced by maximising light penetration below the boardwalk – this was achieved by using large mesh diameter grating and elevating the boardwalk as high as possible.

Extensive weed control work has been undertaken adjacent to the boardwalk and native grass seeding was undertaken following construction.<sup>42</sup>

The **Holdens Creek Boardwalk** provides a **rare opportunity** for members of the public to enter into and examine Pink-tailed Worm-lizard habitat



*The Holdens Creek Boardwalk. Source Kate Auty*

*Holdens Creek lookout showing the sun reaching the Pink-tailed Worm-lizard habitat underneath through the mesh. Source Richard Milner*

<sup>42</sup> Pers comms Ecologist, Parks and Conservation Service Projects, email sent 5 January 2018



## Case studies

### CASE STUDY 3

#### Forb restoration at Barrer Hill

Ground cover restoration has been an ongoing challenge at this site. Due to the history of the area (which has included pasture improvement and heavy grazing), one of the key barriers to restoration was weed management, particularly Blackberry and Phalaris. In order to start a clean slate for restoration, the top 15 centimetres of the soil was scalped, and native seed from 45 species was sown directly into the area. Within a couple of years, approximately 30 native plant species have been identified. Seedlings of the Button Wrinklewort and Hoary Sunray have also been planted in this area.

The Land Development Agency and Greening Australia collaborated to create the Molonglo Valley Local Native Plant Guide to assist residents in selecting plants for their gardens.

This guide describes groundcovers, grasses, shrubs and small trees and provides details about frost or drought tolerance. It also outlines which native birds or insects will use the plant as a food source. It guides residents in choosing local plant species to encourage native fauna into their backyards.<sup>43</sup>



*Barrer scrape site before scraping. Source Richard Milner*



*Barrer scrape site 18 months after scraping and seeding. Source Richard Milner*

<sup>43</sup> [http://suburbanland.act.gov.au/plantguide/native\\_plant\\_guide.html](http://suburbanland.act.gov.au/plantguide/native_plant_guide.html), accessed 19 February 2018



## Case studies

### CASE STUDY 3

#### Restoration of Natural Temperate Grassland Elsewhere in the Region

Greening Australia have undertaken extensive restoration of Natural Temperate Grassland at the Scottsdale Reserve five kilometres north of Bredbo in NSW. This project is a great example of how Greening Australia engages the community across the region in native grassland conservation. Citizen scientists can see the positive results from targeted restoration techniques. This case study can be considered as a means to guide the Natural Temperate Grassland restoration in the Molonglo Valley.

In April 2014, two patches of weedy grassland were fenced and prepared for restoration using a combination of scraping, burning and weed spraying. A specialised grass-seeding machine was used to sow a mix of 11 native grasses and 30 wildflower species directly into the soil.

In November 2014, a preliminary assessment was undertaken which identified 19 of the 41 species sown in the site, with a number of other natives. The rate of germination was around 80 plants per square metre. By October 2016, the coverage of native species was impressive (see photo opposite).

Maintenance of the grassland sites at Scottsdale has involved a significant workforce of volunteers, providing a valuable opportunity for community engagement in grassland conservation.

*Images L to R: Yellow Box site before treatment. Source Greening Australia, Yellow Box scalp looking south. Source Greening Australia, Yellow Box site October 2016. Source Greening Australia, Hoary Sunray in Yellow Box site, October 2016. Source Greening Australia*



Key areas of community engagement in this project were:

- weed control mostly being undertaken by hand which requires the volunteers to develop good plant identification skills,
- supplementary planting being undertaken by volunteers in areas of the grassland where seedling germination was sparse. The tubestock planted was propagated from seed collected on Scottsdale, and grown in the community nursery on the reserve, and
- volunteers collected significant quantities of seed from the restoration sites to use in future restoration activities. This seed is often difficult to collect from wild populations in any meaningful amounts.<sup>44</sup>

<sup>44</sup> Taws, N. updated 2018 *Native Grassland Restoration at Scottsdale Reserve*, Greening Australia

## COMMUNITY ENGAGEMENT DURING EARLY STAGES OF THE STRATEGIC ASSESSMENT

The *Molonglo River Concept Plan Report*<sup>1</sup> seeks to address sensitive issues for a range of community and government stakeholders.

From the time of project inception on March 2011, selected community environmental and recreation groups were consulted on the development of the Molonglo River Concept Plan Report. This included:

- The Molonglo Community and Industry Reference Group, and
- The Conservation Council ACT Region.

Input was sought from the community through workshops, field trips and the Molonglo community forums held in March, May and June 2011.

Consultation on the Molonglo River Concept Plan Report revealed support for:

- management impacts of the urban area of Pink-tailed Worm-lizard,
- provision of funding for effective long-term management of weed and restoration of habitats,
- requirement for an established scientific baseline for effective monitoring, evaluation and reporting of change in condition of habitats and species,
- further scientific research regarding the ecological requirements of the Pink-tailed Worm-lizard, and
- impacts of fire management requirements in APZs on areas of quality habitat.<sup>2</sup>

The Molonglo River Concept Plan Report provides a framework for the preparation of the statutory management plan for the Molonglo River Reserve. This management plan is subject to approval by the Conservator of Flora and Fauna and the Legislative Assembly.

The Molonglo River Reserve Draft Reserve Management Plan was released for public comment on 8 February 2018. Comments received will be considered as part of finalising the management plan.

<sup>1</sup> Hassel, 2012, Molonglo River Park Concept Plan Report, prepared for the ACT Government Environment and Sustainable Development, August 2012, accessed 1 March 2018

<sup>2</sup> Ibid

## COMMUNITY ENGAGEMENT DURING IMPLEMENTATION OF THE STRATEGIC ASSESSMENT

### Mingle – Community Development in the Molonglo Valley<sup>3</sup>

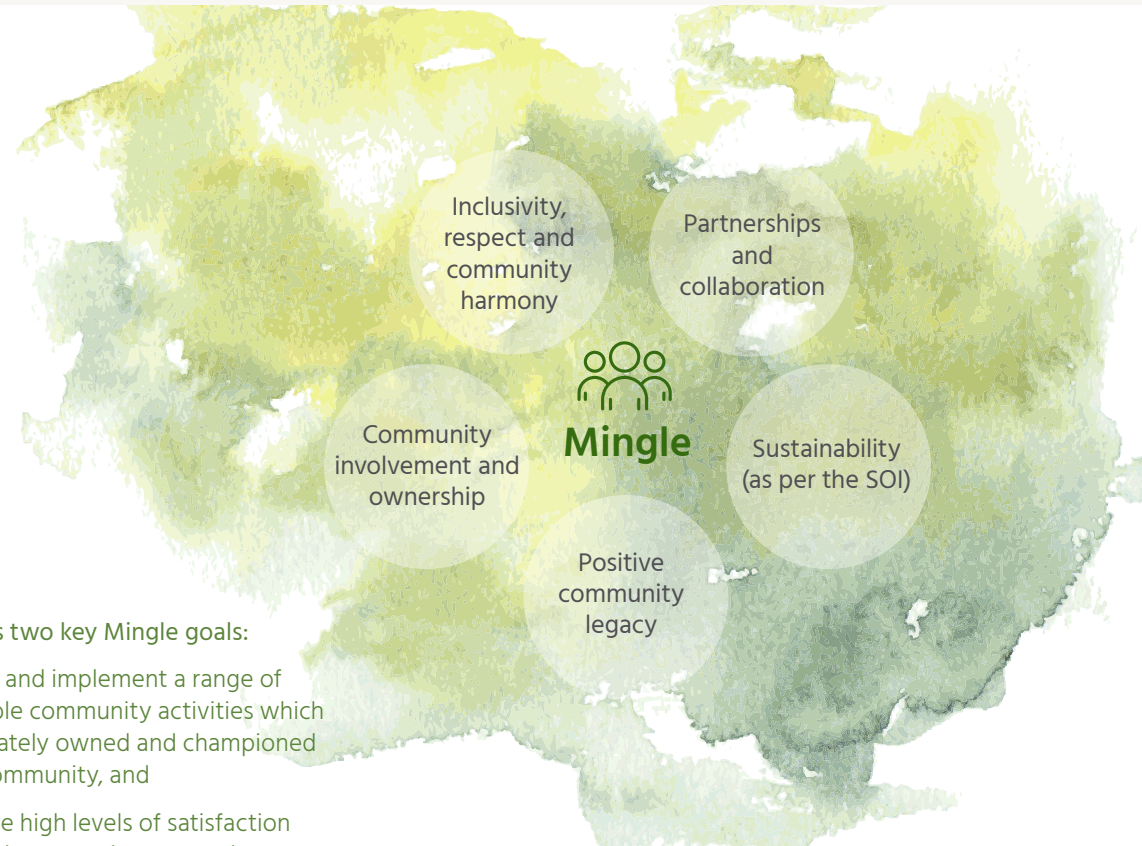


The Suburban Land Agency (SLA) recognises the importance of complementing its master planning, land development and sales activities with a focus on the social and community aspects of establishing and developing new and sustainable communities.

The SLA's community development program, **Mingle**, is designed to build local communities within new ACT Government greenfield estates. The program aims to achieve a number of social objectives based around encouraging new residents to feel part of the community and become involved in community life and activities. Mingle assists residents to create networks, groups and programs that will ultimately become self-sustaining.

The program is tailored for each suburb to suit demographics, resident feedback and proximity to surrounding services. This may include the partnership with local community service organisations such as Communities@Work. The SLA works closely with other ACT Government Directorates to help meet program objectives and to deliver events.

The Mingle Community Development Program responds to a broader view of sustainability where the social aspects of land development are considered equally with environmental and economic issues. It is also recognised that creating communities that are enjoyable, interesting and responsive to peoples' needs, is something that the SLA would like to see.



The SLA has two key Mingle goals:

1. to create and implement a range of sustainable community activities which are ultimately owned and championed by the community, and
2. to achieve high levels of satisfaction from local community groups, key stakeholders and residents throughout the lifetime of the project – which is approximately 2–5 years from the commencement of Mingle in a development.





*Checking out the invertebrates under the installed bark.  
Source Molonglo Mingle Program*

### Guiding principles

Five guiding principles have been identified and referred to in the development of the Mingle Business Plan. These principles serve both as a guide and reference point to check progress of the plan and ensure it is meeting project objectives in the way that is intended.

### Mingle program objectives

- Provide opportunities that encourage new residents to feel a part of the community, become involved in community life and participate in community building events.
- Provide and promote opportunities for social interaction and the development of social networks within the community.
- Support the establishment and growth of community initiatives, interest groups and community organisations.
- Promote identity and sense of place through community and cultural development activities and strategies.
- Promote a range of activities and programs that meet the social, leisure, educational and recreational needs of residents.
- Develop strategies which assist the new community to integrate with the surrounding existing communities.

**111** Mingle events / activities were delivered for **Wright and Coombs residents** in the past 5 years



## Mingle community engagement summary

Total Mingle events/activities delivered for Wright and Coombs residents from 2013 – 2018 = 111.

<b>Activity delivery summary</b>	fitness classes, tree planting, ranger walks, wine tasting, barista session, Biggest Morning Tea for Cancer Council, Dogs Day Out, Seniors catch up, Stromlo Cottage history session, energy efficiency workshops, Brumbies promotions, Christmas Carols, Eid Fest, Easter Egg Hunt, Astronomy Night, Movie Night, Technology Education, play group, Community Sports Day.
<b>Community involvement</b>	pop up cafe, volunteer program, book boxes (Charles Weston School, Wood Workers Guild), gift giving initiative for St Vincent de Paul raising over 400 items, establishment of a Molonglo Valley Community Group, monthly resident meetings, newsletter walking delivery group.
<b>Industry</b>	first ACT group Work for the Dole project to deliver a six month landscaping project for Stromlo Cottage (76 participants).
<b>Innovation</b>	first ACT Government Community Information Session using Facebook live streaming – November 2016.
<b>Community surveys</b>	reviewing event program and event delivery.
<b>Sports/fitness</b>	engagement with Molonglo Hornets Touch Football, local fitness trainers, development of local fitness guide encouraging activation of fitness equipment.
<b>Parks and Conservation</b>	delivery of Ranger Walks (October 2015, April 2017) and tree planting activities (May 2014, August 2016, August 2017)
<b>Education</b>	links to existing school programs and for Charles Weston School involvement in the 'Passions and Pursuits' Program, Actsmart energy efficiency, ranger walks and tree planting
<b>Sustainability</b>	partnership with the ACT Government's Actsmart program to deliver a series of free sustainable workshops to purchasers, tree planting, communal composting trial in Stromlo Terrace apartments (2017–18).
<b>Heritage</b>	partnership with ACT Property Group to refurbish the Stromlo Cottage property for use as a Mingle community facility.



Book Box in the Molonglo Valley. Source Molonglo Mingle Program

## Interpretive Signage

The interpretive signage installed in the Molonglo River Reserve to communicate the work that is being undertaken to implement the Molonglo Valley Strategic Assessment is extensive and impressive. Signage included details on the Barrer Hill Box-Gum Woodland restoration site and the Pink-tailed Worm-lizard habitat enhancement areas, as well as a map of the Molonglo River Reserve and details on the aquatic species that can be found in the river.



*Weeds to Wildflowers signage. Source Kate Auty*

It is important to strike a balance between engaging the community by generating interest in the natural areas that surround the suburbs and ensuring that appropriate protection is given to the threatened species that live in these nature reserves. This is demonstrated in the photo of the Pink-tailed Worm-lizard sign outlining details of the species and what individuals can do to help the lizard in the area, while separating the restored habitat from easy public access with a fence. This fence was chosen as it has an open design which enables people to see the habitat without disturbing the lizards.



*Pink-tailed Worm-lizard interpretive signage and fence around habitat to keep visitors out. Source Kate Auty*





## ENGAGING THE COMMUNITY THROUGH THE MEDIA

One of the ways in which the community has been, and continues to engage with the Molonglo Valley Strategic Assessment, is through the media.

During the time of the independent audit, the Molonglo Valley area featured in the news on several occasions. Topics included the Superb Parrot nesting sites shifting due to climate change, repair of erosion control work for Coombs ponds and a call for volunteers to assist in identifying photos for the Superb Parrot research project.

Superb Parrots are listed as Vulnerable species in the EPBC Act and surveys are being undertaken in the ACT to increase our understanding of these special birds. The research is showing that Superb Parrots are being pushed out of their natural range by climate change and land clearing, and this issue requires urgent, long-term action.<sup>4</sup>

Superb Parrots migrate over a large area of eastern Australia, settling in southern areas (including ACT) in spring to nest and breed. Approximately 95 per cent of the Box–Gum Woodland, breeding habitat for the parrot, has been cleared. As a result, the Superb Parrot is forced to compete for nesting hollows with more aggressive bird species.

“While we were seeing some positive signs for the Superb Parrot in Canberra, we were also seeing some concerning trends elsewhere in their range.”

—Dr Laura Rayner, ACT Government ecologist.

<sup>4</sup> Allen, C., 2017, Canberra becoming superb parrot central for not-so-superb reasons, accessed 7 December 2017

7 DECEMBER 2017

## Canberra Becoming Superb Parrot Central for not-so-superb Reasons (*ABC News*)



*Superb Parrot chicks are hatched inside gum tree hollows. Source ABC News article*

Sightings of the bird are becoming more common in the ACT. Climate modelling undertaken by researchers at ANU suggests that the changing climate is already causing the birds' natural range to contract. The modelling predicts that in 50–70 years, the breeding areas in the ACT will become Superb Parrot central and are likely to be the most important areas for the population in Australia as discussed in the case study on page 44 of this report.

In order to cope with this increase in Superb Parrot numbers, the ACT Government needs to start preparing these landscapes to provide more nesting hollows.

**“So we need to start preparing now because, as most people would appreciate, you can’t grow a tree hollow in five years, [or] 10 years, it takes 50 years.”**

**—Dr Laura Rayner, ACT Government ecologist.**

Suburban development in the Molonglo Valley will bring urban areas closer to these Superb Parrot nesting sites. This represents an opportunity learn more about how the species responds to disturbance and how to make our suburbs more wildlife friendly.

**20 February 2018**

## Audit Finds Builders’ Lax Approach to Erosion Control in the ACT *(Canberra Times)*

A report by the ACT Auditor-General highlighted a number of key failings in the processes for handing over stormwater assets, as well as the damage caused to them after handover. Due to the combined failure to install erosion controls and a lack of the ACT Government enforcing erosion and sediment rules, the ACT Government paid \$750,000 to undertake erosion repair work on the Coombs ponds last year.<sup>5</sup>

**20 FEBRUARY 2018**

## Snap And Save Superb Bird *(Northside Chronicle)*

The ACT Government recently installed more than 32 cameras at the entrances to tree hollows, which have captured over a million wildlife images, ranging from possums to galahs. This article called for volunteers to help identify these images to assist in answering questions about Superb Parrots. Questions include ‘how much competition is the Superb Parrot facing’, ‘are they losing these important hollows to competitor birds’ and ‘can they hang onto their spot once occupied?’ Climate change research (ANU) suggests that the key breeding areas of the Superb Parrot may move south-east, increasing populations in the ACT. This would mean the Territory could become a critical space for Superb Parrot breeding, and thus the long-term survival of the species in Australia.<sup>6</sup> For this reason this citizen science contribution, encouraged by the media, is of vital importance.

<sup>5</sup> Burdon, D. in the Canberra Times on 20 February 2018, accessed 28 February 2018

<sup>6</sup> McNamara, B. in Northside Chronicle 20 February 2018, *Snap and save superb bird*



## Audit

### METHODOLOGY

## Approach to the Audit and Methodology

The audit team was established in November 2017, comprised of staff from OCSE and Arup. The audit team and their experience is reflected in the Appendix.

An audit plan was developed by the audit team to outline the approach to the audit and identify roles and responsibilities. The roles and responsibilities of different parties in relation to the Molonglo Valley Strategic Assessment are outlined below.

### Roles and Responsibilities in Relation to the Molonglo Valley Strategic Assessment



#### Commonwealth Government



Initial agreement of the Molonglo Valley Strategic Assessment made under Part 10 of the **Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)**



Annual reporting back to the Commonwealth



#### Auditee ACT Government

Environment, Planning and Sustainable Development Directorate



#### Auditors – every 5 years

##### Office of the Commissioner for Sustainability and the Environment

Independent statutory body



##### CONSULTANT

Subcontracted

- Office of the Commissioner for Sustainability and the Environment (OCSE) – independent authority created under the Commissioner for Sustainability and the Environment Act 1993 (ACT)
- OCSE subcontracted the audit out to a consultant
- OCSE and the consultant undertook a collaborative approach in assessing the commitments within the Molonglo Valley Plan for the Protection of Matters of National Environment Significance, NES Plan
- Consultant, as the qualified auditor, had final sign off on the audit



## Audit

### METHODOLOGY

#### Methodology of the Audit

The Audit Criteria Methodology Template which has guided this audit is found at Appendix B of the *Independent Audit and Audit Report Guidelines for controlled actions which have been approved under Chapter 4 of the EPBC Act*.<sup>1</sup>

The ISO19011 audit process,<sup>2</sup> the international standard that provides guidelines for management systems auditing, has also been referenced.

#### Audit Assessment Criteria

The objectives of this audit are guided by Ministerial Terms of Reference, which include:

1. assessment of all approval commitments as being *Compliant*, *Non-compliant* or *Undetermined*,
2. issuing corrective actions as appropriate, and
3. noting any observations.

Further assessment criteria were established by the audit team, namely:

- compliance was assessed against the commitments as phrased and approved,
- compliance was assessed in terms of the status in meeting the requirements of each commitment, against dates and timelines specified in the NES Plan,
- where a commitment output had been officially endorsed or accepted by the Commonwealth, the commitment has been deemed compliant, and
- where required, the NES Plan was referenced to assist interpretation of the meaning of commitments in relation to the required deliverable.

#### Risk Assessment

A risk rating has been applied to all commitments.

The risk assessment methodology used is the ACT Insurance Authority Risk Matrix which is outlined below. Risk rating is a function of the likelihood of the impact occurring and the consequence of the impact.

Where risks are rated as moderate or higher this is accompanied by an *Observation* or *Corrective Action Request*.

<sup>1</sup> Australian Government Department of the Environment, 2015, *Independent Audit and Audit Report Guidelines for controlled actions which have been approved under Chapter 4 of the EPBC Act*, accessed 8 November 2017

<sup>2</sup> <https://www.iso.org/standard/50675.html>, accessed 13 November 2017

## Audit

### METHODOLOGY



Last Update: 1 Sept 2017

Likelihood	Frequency				Consequence				
	Almost Certain	Is expected to occur in most circumstances	Once in a quarter or more	>1 in 10	5	Medium	High	High	Extreme
	Likely	Will probably occur	Once a year or more	1 in 10 – 100	4	Medium	Medium	High	Extreme
	Possible	Might occur at some time in the future	Once every 1 – 5 years	1 in 100 – 1,000	3	Low	Medium	Medium	High
	Unlikely	Could occur but doubtful	Once every 5 – 20 years	1 in 1,000 – 10,000	2	Low	Medium	Medium	High *
	Rare	May occur but only in exceptional circumstances	Once every 20 – 100 years	1 in 10,000 – 100,000	1	Low	Low	Medium	High *

Priority for Attention / Action		
Priority	Suggested Timing of Treatment	Authority for continued tolerance of risk
Extreme	Short term – normally within one month * Detailed action plan required	Director- General
High	Medium term – normally within three months Needs senior management attention	Senior Executive
Medium	Normally within 1 year Specify management responsibility	Managers
Low	Ongoing control as part of a management system Manage by routine procedures	All staff

Risk Control Effectiveness	
Control Effectiveness	Guide
Adequate	Nothing more to be done except review and monitor the existing controls. Controls are well designed for the risk, are largely preventative and address the root causes and Management believes that they are effective and reliable at all times. Reactive controls only support preventative controls.
Room for Improvement	Most controls are designed correctly and are in place and effective however there are some controls that are either not correctly designed or are not very effective. There may be an over-reliance on reactive controls. Some more work to be done to improve operating effectiveness or Management has doubts about operational effectiveness and reliability.
Inadequate	Significant control gaps or no credible control. Either controls do not treat root causes or they do not operate at all effectively. Controls, if they exist are just reactive. Management has no confidence that any degree of control is being achieved due to poor control design and/or very limited operational effectiveness.

**Hint:**  
To help make an assessment of consequence and likelihood as yourself the following questions.  
1. What is the consequence that the risk would take in the most normal form should it eventuate?  
2. What is the likelihood of that consequence?

**Note:**  
When identifying, analysing and rating risk consideration should be given, but not necessarily limited to, the attached categories of risk and the suggested examples of frequency and consequences.

**\* Priority for Attention / Action**  
Every care should be taken to act as soon as possible to implement risk control measures wherever possible or to take action to fix the problem. Extreme and High risk especially where the risk relates to people and personal injury require us to act immediately to take steps to fix the problem.  
The suggested timing of treatment does not mean that immediate action ought not be taken or that the timing can not be completed sooner than suggested.

	Consequence				
	Insignificant	Minor	Moderate	Major	Catastrophic
Assets	Loss or destruction of assets up to \$2,000	Loss or destruction of assets \$2,000 to \$10,000	Loss or destruction of assets \$10,000 to \$100,000	Loss or destruction of assets \$100,000 to \$5M	Loss or destruction of assets greater than \$5M
Compliance/ regulation	Non-compliance with work policy and standard operating procedures which are not legislated or regulated	Numerous instances of non-compliance with work policy and standard operating procedures which are not legislated or regulated	Non-compliance with work policy and standard operating procedures which require self reporting to the appropriate regulator and immediate rectification.	Restriction of business operations by regulator due to non-compliance with relevant guidelines and / or significant non-compliance with policy and procedures which threaten business delivery.	Operations shut down by regulator for failing to comply with relevant guidelines and / or significant non-compliance with internal procedures could result in failure to provide business outcomes and service delivery.
People	Injuries or ailments not requiring medical treatment.	Minor injury or First Aid Treatment Case.	Serious injury causing hospitalisation or multiple medical treatment cases.	Life threatening injury or multiple serious injuries causing hospitalisation.	Death or multiple life threatening injuries.
Environment	Limited effect to something of low significance	Transient, minor effects	Moderate, short-term environmental harm	Significant, medium-term environmental harm	Long term environmental harm
Financial	1% of Budget or <\$5K	2.5% of Budget or <\$50K	> 5% of Budget or <\$500K	> 10% of Budget or <\$5M	>25% of Budget or >\$5M
Products and Services	No disruption to services	Minor disruption to services for up to 1 month	Total cessation of service for up to 1 days and subsequent disruption of 1 to 2 months	Total cessation of service for up to 7 days and subsequent disruption of 2 to 3 months	Total cessation of service for more than 1 week and disruption over subsequent months involving a major facility
Technology	Interruption to electronic records and data access less than ½ day.	Interruption to electronic records and data access ½ to 1day	Significant interruption (but not permanent loss) to data and electronic records access, lasting 1 day to 1 week	Complete, permanent loss of some electronic records and/or data, or loss of access for more than one week	Complete, permanent loss of all electronic records and data
Reputation & Image	Internal Review	Scrutiny required by internal committees or internal audit to prevent escalation.	Scrutiny required by external committees or ACT Auditor General's Office, or inquest, etc.	Intense public, political and media scrutiny. E.g.: front page headlines, TV, etc.	Assembly inquiry or Commission of inquiry or adverse national media.
Cultural & Heritage	Low-level repairable damage to commonplace structures	Mostly repairable damage	Permanent damage to items of cultural significance	Significant damage to structures or items of cultural significance	Inseparable damage to highly valued items of cultural significance
Business Process & Systems	Minor errors in systems or processes requiring corrective action, or minor delay without impact on overall schedule.	Policy procedural rule occasionally not met or services do not fully meet needs.	One or more key accountability requirements not met. Inconvenient but not client welfare threatening.	Strategies not consistent with Government's agenda. Trends show service is degraded.	Critical system failure, bad policy advice or ongoing non-compliance. Business severely affected.

## Audit

### METHODOLOGY

#### Definitions of Audit Status

Categories of *Audit Status* used in the audit table below have been taken from the *EPBC Act Independent Audit and Audit Report Guidelines*<sup>3</sup> and have been altered slightly to reflect the requirements of the current audit.

All categories of *Audit Status* have been given a risk rating which reflects the auditors' analysis of the risks associated with achievement of each commitment. This process has resulted in the identification of key risks and allows EPSDD to prioritise ongoing management requirements in respect of implementation of the Molonglo Valley Strategic Assessment.

This strategic assessment has a further 24 years in which to deliver outcomes and it will be audited every 5 years until completion.

#### Compliant

The auditors have deemed a commitment '*Compliant*' where it has been found to comply with the specific requirements of the NES Plan.

#### Compliant with Observation

The auditors have used this assessment where the commitment is compliant at the time of the audit according to the NES Plan, but where issues relevant to that commitment have been noted, to inform and assist with future management. In this assessment, the auditors have observed a deficiency in documentation or actions which has impacted, or has potential to impact, on the ability to meet a commitment.

#### Non-compliant

This audit categorisation relates to the non-fulfilment of a specified requirement of the NES Plan within the required timeframe.

#### Undetermined

When a commitment falls inside the scope of the audit but there is insufficient evidence to make a judgement on compliance or non-compliance at the time the audit was undertaken, the categorisation '*Undetermined*' has been used.

#### Not Applicable

Where a specific requirement of the NES Plan relevant to the site falls outside the scope of the audit, or has not been triggered, this categorisation has been used.

#### Corrective Action Request

Corrective Action Requests have been made by the Commissioner for Sustainability and the Environment where the relevant government agency should undertake action to either:

- eliminate the cause of a non-compliance,
- reduce risks associated with a non-compliance, or
- prevent the non-compliance re-occurring in relation to meeting the intent of the relevant commitment.



View of the Molonglo River from Holdens Boardwalk.  
Source Kirilly Dickson

<sup>3</sup> Department of the Environment, 2015, EPBC Act Independent Audit and Audit Report Guidelines, accessed 31 October 2017

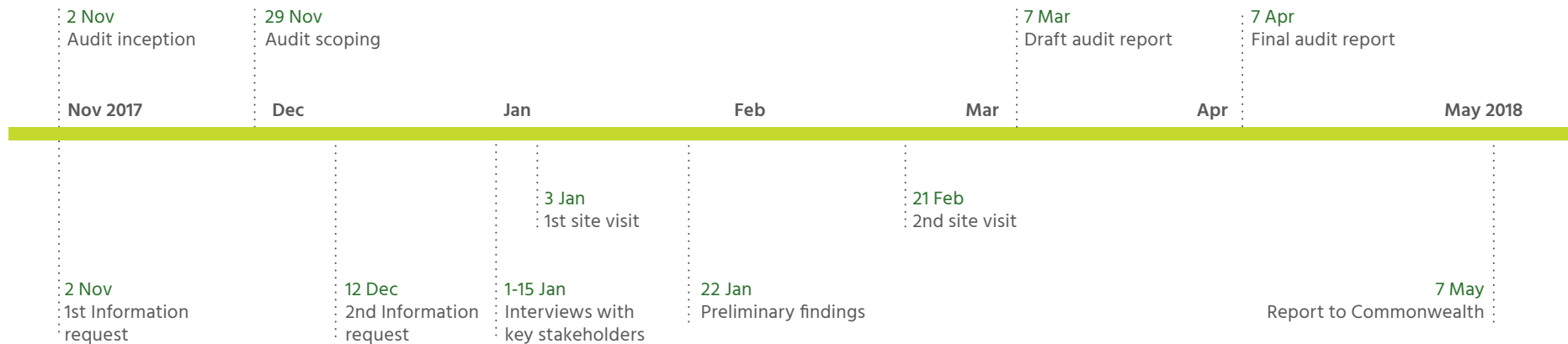


## Audit

### METHODOLOGY

## Project Timeline 2017-18

The key steps in undertaking this audit are shown in the following timeline.



## Audit

### METHODOLOGY

#### Sources of Information Reviewed

Evidence was sourced in a number of ways including:

- site visits (3 January 2018 with eight participants and 21 February 2018 with six participants),
- research of publically available information,
- direct emails to key stakeholders to seek information,
- discussions and meetings with key stakeholders such as the Impact Assessment Team in EPSDD, staff from the SLA and staff from Parks and Conservation Services, and
- correspondence, reports, minutes and other documentation.

The EPSDD Impact Assessment Team coordinated two formal information requests, as well as responding to follow-up requests by providing further information on specific commitments.

The Impact Assessment Team also coordinated the response from ACT Government on the Preliminary Findings of the audit and the draft report of the Independent Audit of the Molonglo Valley Strategic Assessment.



*Hoary Sunray at Barrer Hill. Source Kate Auty*

## Audit

### RISKS/CORRECTIVE ACTIONS

# Audit of Implementation of the Molonglo Valley Strategic Assessment



Button Wrinklewort closeup. Source Kate Auty

## Summary of Audit Table Results

- Commitments rated as *Compliant with Observation* are mostly due to the long-term nature of the Molonglo Valley Strategic Assessment and the necessity to track the achievement of project objectives. At this early stage of the project, ecological baselines are still being established and therefore it is too early to determine whether habitat condition has been maintained and enhanced.
- The majority of commitments rated as *Non-compliant* are due to the required timeframe not being met.
- The audit concludes that four commitments rated as *Non-compliant* carry high risks and as such, Corrective Action Requests have been issued.
- Separate commitments in the NES Plan were designated to each of the MNES (Box-Gum Woodland, Natural Temperate Grassland and Pink-tailed Worm-lizard). As such, commitments are overlapping, e.g. Commitments 5, 25 and 32 are all in relation to the development of a management plan for the Kama Nature Reserve, however, each commitment covers one of the MNES.

A summary of the audit results is in **Table 1** below.

Table 1: Summary of Audit Results

AUDIT STATUS	NUMBER OF COMMITMENTS
Compliant	16
Compliant with Observation	28
Non-compliant	11 (10 of these are due to the timeline not being met)
Undetermined	4
Not applicable	1
<b>Total number of commitments</b>	<b>60</b>



## Audit

### RISKS/CORRECTIVE ACTIONS

#### Key Risks Identified in the Audit

This section precedes the compliance table to illustrate the key risks which require action and which are particularly important given the long-term nature of strategic assessments. It outlines the key risks identified during the independent audit period.

These risks relate to future management of the Molonglo Valley Strategic Assessment (approved and endorsed on 7 October 2011) and the ability to meet the commitments in the NES Plan within the 30 year timeframe.

To date, the results of the on-ground implementation have been positive. Relevant authorities can build on this. The range of projects being undertaken (research, habitat restoration and threatened species translocation) is very diverse and will add to the knowledge of these MNES. This will be valuable for the Territory and, given these species are threatened across Australia, on a national scale as well.

A range of broad systemic risks (R) were identified (**Table 2**), as well as commitment-specific risks with associated Corrective Action Requests (CARs) (**Table 3**).

Table 2: Broad Systemic Risks

IDENTIFIED RISK	
R1	Resourcing and Funding: from establishment to implementation
R2	Implementation monitoring and condition enhancement
R3	Resilience to climate change
R4	Clear documented evidence trail
R5	Finalisation of key documents
R6	Finalisation of the Kama Nature Reserve buffer zone (Commitments 7, 27 and 34)

Table 3: Corrective Action Requests for Commitment-Specific Risks

CORRECTIVE ACTION REQUESTS		COMMITMENT	DUE DATE
CAR 1	Provide the final draft Molonglo River Reserve Management Plan to the Minister.	9 & 36	31 July 2018
CAR 2	Finalise the operational plan for Patch P to ensure appropriate management is occurring.	16	31 December 2018
CAR 3	Incorporate actions and monitoring requirements into relevant Land Management Agreements for the protection of the ecological condition of MNES within Patches I, L & M.	16	31 December 2018
CAR 4	Finalise the operational plan for the Pink-tailed Worm-lizard Conservation Area in the Molonglo River Reserve.	41	30 April 2018

## Audit

### RISKS/CORRECTIVE ACTIONS

## Broad Systemic Risks

### R1 – KEY RISK: RESOURCING AND FUNDING: FROM ESTABLISHMENT TO IMPLEMENTATION

Many of the commitments require establishment, maintenance and enhancement of ecological environments for the protection of the MNES. This includes commitments associated with corridors and connectivity as well as buffer zones for mitigation of ecological impacts and the management of fire and urban edge impacts.

Establishment funding has been in place for the audit period (first five years). This has enabled the deployment of:

- monitoring and evaluation,
- restoration and research projects, and
- sites to establish the ecological settings for the river corridor, Box–Gum Woodland, Natural Temperate Grassland and the Pink-tailed Worm-lizard.

Establishment has been cognisant of the fire protection zones, buffer zones and connectivity zones.

Sufficient resourcing and funding is required to be committed over the next 25 years to realise the maintenance and enhancement requirements of the MNES commitments. Resourcing and funding is needed at reasonable and ongoing levels to meet the intent of the commitments, particularly as staged release of development continues from planning through to deployment and on-ground activities.

Implementation of management and operational plans is required by many commitments after the development of the plans. Implementation requires sufficient resourcing and funding to ensure compliance.

#### Recommendation

Ensure ongoing resourcing and funding for the maintenance and enhancement of the ecological condition of MNES within the Molonglo Valley Strategic Assessment area.

### R2 – KEY RISK: IMPLEMENTATION MONITORING AND CONDITION ENHANCEMENT

Implementing plans for the protection of MNES is required by numerous commitments. Evidence is required to demonstrate effectiveness of on-ground activities to provide for the maintenance and enhancement of ecological condition. Baseline and ongoing monitoring and statistical and other evaluation methods are required to provide evidence as to effects of on-ground actions.

The *Molonglo River Reserve Procedures Manual for Monitoring Vegetation and Habitat Condition (2014)* documents the approaches and protocols defining monitoring and evaluation techniques to determine ecological condition.

A vegetation condition monitoring program has been running in the Molonglo Valley Strategic Assessment area for the past five years and early results seem to demonstrate that the ecological condition of the strategic assessment area has been maintained. Given the complexity of the data and the various sites within the strategic assessment area, it is critical to have clear documentation of analysis of the data to determine if ecological condition of MNES has been maintained. Secondly, documented evidence and analysis for enhancement requires demonstration post establishment of the baseline.

There is a level of uncertainty about the number of years of monitoring required to establish a baseline, as this will depend on multiple uncertain factors such as weather conditions and seasonal variations. The timeframe is anticipated to be between three and seven years. The data from the first five years of monitoring will be used to determine baselines to measure changes against and inform future management. Evaluation of implementation actions will also allow adaptive management to be utilised, a critical component of a thirty year project.

#### Recommendation

Clearly document analysis of the monitoring data to determine if the ecological condition of MNES has been maintained, and secondarily enhanced.

## Audit

### RISKS/CORRECTIVE ACTIONS

‘Plants are projected to be particularly badly hit, which in turn may have a knock-on effect on other species that depend on them.’<sup>1</sup>

#### R3 – KEY RISK: RESILIENCE TO CLIMATE CHANGE

Climate change will impact the Molonglo Valley, the ACT and surrounding NSW area.

Responding to climate change is absolutely necessary during the 30 year term of the Molonglo Valley Strategic Assessment.

On-ground activities conducted now, that consider and take account of climate change impacts into the future, are more likely to achieve future compliance with the commitments.

There is some evidence of considering climate change resilience through implementation approaches such as consideration of seed stock location and diversity. Further action is critical, in order to ensure these environments are given assistance to adapt appropriately to respond to the difficult changes expected to occur in an evolving climate. To provide appropriate incorporation of these approaches into the future, the plans would benefit from identifying likely climate change impacts and planning for climate change resilience for on-ground activities.

#### Recommendation

Document the consideration of climate change resilience in the Molonglo River Reserve Management Plan and the operational plans for each area, including research to evaluate potential impacts on MNES.

#### R4 – KEY RISK: CLEAR DOCUMENTED EVIDENCE TRAIL

Many commitments require the development and implementation of plans and associated relevant documents within identified timeframes. There are also requirements regarding Annual Reports. Timeliness of achieving commitments is a critical element of responsible management and supports the protection of MNES values.

To ensure compliance the following is needed;

- documents need to be prepared within the required timeframes,
- documents need to be finalised, approved and contain document and version control, and
- documents need to map and provide evidence of implementation against each component of required plans.

Compliance would be improved and assured with a strong commitment to timely delivery, including finalisation and implementation, coupled with strong document control and management based on ISO 9001<sup>2</sup> or similar. International standard compliance would be supported by documents that provide clear evidence against each required plan and each element of implementation.

#### Recommendations

Finalise and approve all documents with appropriate document control systems.

Implement and adopt ISO 9001 or similar to control and manage documents that relate to the strategic assessment area, particularly those that are specified and are in support of compliance with the commitments.

<sup>1</sup> WWF 2018, Wildlife in a Warming World: The effects of climate change on biodiversity in WWF's Priority Places, accessed 15 March 2018

<sup>2</sup> <https://www.saiglobal.com/assurance/quality-business-management/iso9001.htm>, accessed 6 March 2018



## Audit

### RISKS/CORRECTIVE ACTIONS

#### R5 – KEY RISK: FINALISATION OF KEY DOCUMENTS

Many commitments require the development and implementation of key documents, namely:

- the draft Molonglo River Reserve Management Plan (refer to CAR 1),
- Stage 3 Planning and Design Framework, and
- Stage 3 Estate Development Plan.

These documents set the key policies, guidelines, principles and operating approaches for the protection of MNES and hence enable and empower meeting of commitments. Through these documents, all on-ground management and restorative activities occur including design and delivery of infrastructure, planting and ecological restoration and ongoing research.

The AMS outlines a requirement to establish an expert panel of scientists and land managers with established expertise in the MNES relevant to the Molonglo Valley Strategic Assessment. The AMS states that the expert panel will convene every five years and provide a report containing advice and recommendations for any amendments necessary to ensure the operational plans are achieving the conservation outcomes and performance targets for the MNES.

This report is due by August 2018. This report is an important component of the adaptive management approach integral to ongoing implementation of the Molonglo Valley Strategic Assessment.

It is critical for compliance that these documents are finalised in a timely manner.

#### Recommendation

Finalise key documents as identified in R5.

#### R6 – KEY RISK: FINALISATION OF THE KAMA NATURE RESERVE BUFFER ZONE (COMMITMENTS 7, 27 AND 34)

The buffer for Kama Nature Reserve is a key component in providing protection for the fauna and flora in the reserve against urban edge effects.

The timing requirement for finalisation of this as outlined in the NES Plan forms part of the final Planning and Design Framework for Molonglo Stage 3. EPSDD noted that the Stage 3 Planning and Design Framework is currently in progress and is due to be completed in 2018.

A specific width for the Kama Nature Reserve buffer was not outlined in the NES Plan.

Studies have been undertaken to determine the most appropriate buffer size to meet the requirements of this commitment:

*‘The buffer will be developed to ensure that fire management is undertaken outside of the Kama Nature Reserve and will provide protection against urban edge effects.’<sup>3</sup>*

EPSDD stated that the established buffer will be consistent with the recommendations provided in the *Kama Interface Management Strategy* report prepared by Capital Ecology. However, the legal determination of the buffer will not be undertaken until preparation of the Estate Development Plan for Molonglo Stage 3. Until this document is finalised, the width of the buffer will not be final.

The ongoing management and monitoring requirements of the buffer zone have not yet been clearly outlined.

#### Recommendation

The final buffer for Kama Nature Reserve should be determined based on the recommendations provided in the Kama Interface Management Strategy report prepared by Capital Ecology in order to ensure protection against urban edge effects. Ongoing management and monitoring requirements of the buffer should also be outlined.

<sup>3</sup> Commitment 7 and 27 in the NES Plan, accessed 6 March 2018

## Audit

### RISKS/CORRECTIVE ACTIONS

## Commitment-Specific Risks and Corrective Action Requests

### CAR 1: DEVELOP AND FINALISE THE MOLONGLO RIVER PARK RESERVE MANAGEMENT PLAN

#### Commitments 9 and 36

Commitments 9 and 36 includes the requirement to *‘develop a management plan for the Molonglo River Park for the maintenance and enhancement of the ecological condition of Box–Gum Woodland (Commitment 9) and Pink-tailed Worm-lizard (Commitment 36) within the Park’*.

At the time of this audit the Molonglo River Reserve Management Plan is in draft.

It was required to be in effect by 7 April 2014. It is the core document in defining matters that reflect elements to protect, maintain and enhance MNES in the Molonglo River Park and Kama Nature Reserve.

It is noted that the draft Molonglo River Reserve Management Plan is currently open for public consultation, having been released on 8 February 2018. The draft plan outlines and identifies the key policies, objectives, principles and approaches for the Molonglo River Corridor for the protection of MNES. It is supported by several operational plans, which have been guiding on-ground activities until the management plan is in effect.

#### Corrective Action Request

**CAR 1 – Provide the final draft Molonglo River Reserve Management Plan to the Minister by 31 July 2018.**

Any relevant items raised within this audit should be suitably addressed and included in the updated document.

### CAR 2 AND 3: DEVELOP A MANAGEMENT PLAN FOR PATCHES I, L, M AND P

#### Commitment 16

Commitment 16 requires the *‘development of a management plan for the protection of Box–Gum Woodland in Patches I, L, M and P’*.

The management plan for Patches, I, L, M and P was required by 7 April 2014.

Patches I, L and M are managed as a rural lease with a Land Management Agreement, however, evidence suggests that these Land Management Agreements have not been updated since the commencement of the Molonglo Valley Strategic Assessment and therefore it is uncertain that the protection of Box–Gum Woodland is considered under these agreements.

Rural leases must have a Land Management Agreement in place. These agreements are approved by the Minister and signed by the Conservator of Flora and Fauna and the person leasing the property. The AMS notes that ‘Land Management Agreements are the regulatory mechanism by which the NES Plan commitments and the AMS can ensure the conservation objectives for Box–Gum Woodland on rural leases are met.’<sup>4</sup>

Land Management Agreements were not available to be reviewed by the Auditors.

Anecdotal evidence indicates that the Land Management Agreements and rural leases may not reflect the inclusion of these lands into offset areas for the Molonglo Valley Strategic Assessment area. Specifically, these Land Management

Agreements are unlikely to include land management activities that consider the MNES and do not operate in a manner connected to the areas operated and managed by EPSDD. Key activities such as weed, sediment and feral animal control as well as restorative and enhancement activities need to occur on these areas.

Patch P is now being managed by Parks and Conservation Services. The Patch P Operational Plan is anticipated to be developed in 2018.

Management plans are required to ensure that ecological condition is protected and that management and on-ground activities are effectively implemented.

#### Corrective Action Requests

**CAR 2 – Finalise the operational plan for Patch P to ensure appropriate management is occurring by 31 December 2018.**

**CAR 3 – Incorporate actions and monitoring requirements into relevant Land Management Agreements for the protection of the ecological condition of MNES within Patches I, L & M by 31 December 2018.**

<sup>4</sup> ACT Territory and Municipal Services, 2013, Molonglo Adaptive Management Strategy, p. 32, accessed 28 February 2018

## Audit

### RISKS/CORRECTIVE ACTIONS

#### CAR 4: DEVELOP A MANAGEMENT PLAN FOR OTHER AREAS OF PINK-TAILED WORM-LIZARD HIGH AND MODERATE QUALITY HABITAT

##### Commitment 41

Commitment 41 requires the *‘development of a management plan for other areas of high and moderate quality Pink-tailed Worm-lizard habitat that occurs within the Strategic Assessment area and outside the development area.’*

This management plan was required by 7 April 2014. The release of the management plan has been delayed whilst research was undertaken to assess the suitability of various restorative techniques. A draft has been produced and has been submitted to key stakeholders for revision.

This management plan is required to ensure that ecological condition is protected and that management and on-ground activities are effectively implemented.

##### Corrective Action Request

CAR 4 – Finalise the operational plan for the Pink-tailed Worm-lizard Conservation Area in the Molonglo River Reserve by 30 April 2018.

*Approaching Holdens Creek Boardwalk. Source Kirilly Dickson*





## Audit

### AUDIT TABLE

## Audit Table

The results of the audit are available online [here](#).

The *Commitment* and *Timing* were taken directly from the NES Plan and as such, have not been edited.

The *Status update from the 2016–17 Annual Report* column also includes more recent updates provided by EPSDD.

The *Auditor Comments* provide commentary on the reasoning behind the decisions made in the audit analysis, and include any *Observations* or *Corrective Action Requests*.

The *Audit Status* represents the status of the commitment as determined by the auditors, according to the categories listed above. A *Risk Rating* has been assigned to each commitment, based on the *Audit Status* and the *Auditor Comments*.

Finally, the *Commitment Status* identifies whether the commitment has been completed or is ongoing. This will assist in determining the commitments to be audited in the next independent audit.



*Box–Gum Woodland in Kama Nature Reserve. Source Kirilly Dickson*

## Audit

### RECOMMENDATIONS

## Conclusions and Recommendations

The ACT Government is at the six year interval of a 30 year strategic assessment.

The recommendations below have been derived from the results of this independent audit and they are offered on the basis that the ACT Government has the opportunity to show leadership in the ongoing management of this strategic assessment.

The successful implementation of the Molonglo Valley Strategic Assessment is critical to MNES being protected in accordance with the EPBC Act.

- 1. It is recommended that the ACT Government** completes all the Corrective Action Requests identified in this report within the indicated timeframes.
- 2. It is recommended that the ACT Government** ensures ongoing resourcing and funding for the maintenance and enhancement of the ecological condition of MNES within the strategic assessment area.
- 3. It is recommended that the ACT Government** adheres to timing requirements for all of the commitments.
- 4. It is recommended that the next Audit be carried out by May 2022** and that the ACT Government seeks agreement from the Commonwealth for this due date by 30 June 2018.
- 5. It is recommended that the ACT Government** develops and implements an ISO9001 or similar framework for document control. This will also assist in retaining all the evidence and information required to demonstrate compliance with each and every commitment.
- 6. It is recommended that the ACT Government** incorporates climate change resilience considerations in the management of MNES in the strategic assessment area.
- 7. It is recommended that the ACT Government** gives urgent consideration to the urban edge effect that is apparent around the Molonglo River Corridor, which is likely to be exacerbated as each of the new suburbs in the later stages of the Molonglo Valley Strategic Assessment area are developed.
- 8. It is recommended that the ACT Government** notes the Key Risks section and Observations detailed in the Audit Table and incorporates all the recommendations in this section into future management.
- 9. It is recommended that the ACT Government** further investigates the commitments that have been termed Undetermined.
- 10. It is recommended that the ACT Government** ensures adaptive management principles are carefully scrutinised and considered for incorporation into implementation of the commitments for the NES Plan.
- 11. It is recommended that the ACT Government** considers Indigenous approaches to land management for MNES protection in the Molonglo Valley Strategic Assessment area.
- 12. It is recommended that the ACT Government** ensures that all the research undertaken as a function of the Molonglo Valley Strategic Assessment and the NES Plan is made publicly available on the web, is accessible and easy to find, and includes historical research as well as the most recent scholarship and reports.

## Audit

### APPENDIX

## Audit Team Qualifications

### LEAD AUDITOR



**Dr Therese Flapper** is Arup's Environment & Resources Leader in Canberra and Australasia Water Skills Leader. Therese is an accredited Lead Auditor in accordance with ISO19011, ISO9001, ISO14001, ISO22001 as well as in Drinking Water and Recycled Water Quality. Therese has substantial and practical experience with regulatory compliance of schemes, urban policy, validation and quality monitoring ensuring successful scheme delivery, integration between planning and operations.

<https://au.linkedin.com/pub/dr-therese-flapper/26/6b7/910>

### PEER REVIEWER



**Tim Cook** is Arup's NSW/ACT Environment Leader and is an internationally qualified Lead Environmental Auditor (Exemplar Global 113135) with experience in public and private organisations. Over the last 19 years, Tim has worked primarily in the fields of site environmental management (planning, construction and operations) and environmental legislative compliance. He has a diverse understanding of environmental responsibilities, sustainability objectives, community consultation and a demonstrated ability to deliver environmental solutions.

### AUDIT MANAGER



**Serena Farrelly** holds a Bachelor of Arts/Science with majors in Sociology and Human Ecology at ANU, which included a broad range of environmental management subjects. Serena has worked in Nature Conservation Policy in the ACT Government for 4 years, focussing on the development of the ACT Environmental Offsets Policy and the management of threatened species and ecological communities in the ACT through her work with the ACT Scientific Committee. During her time at OCSE, she has worked on the Independent Audit of the Gungahlin Strategic Assessment.

### AUDIT SUPPORT



**Kirilly Dickson** holds a Bachelor of (Environmental) Engineering degree with Honours from the University of Wollongong and a Certificate in General Management from Harvard Business School. Kirilly worked in the utility sector for more than 14 years managing the environmental, safety and quality requirements for the water business including audit and risk functions. Kirilly recently audited the implementation of the ACT Government's climate change policy on behalf of the Commissioner, and is evaluating the restoration of the Lower Cotter Catchment.



## Acronyms

ACT	Australian Capital Territory
AMS	Adaptive Management Strategy
ANU	Australian National University
APZ	Asset Protection Zone
CEMPs	Construction Environmental Management Plans
EPSDD	Environment, Planning and Sustainable Development Directorate
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)
MNES	Matters of National Environmental Significance
NC Act	Nature Conservation Act 2014 (Australian Capital Territory)
OCSE	Office of the Commissioner for Sustainability and the Environment
SLA	Suburban Land Agency

The NES Plan Molonglo Valley Plan for the Protection of Matters of National Environmental Significance

## Contact us

Commissioner for Sustainability  
and the Environment

**P** GPO Box 158 Canberra, ACT 2601  
**T** (02) 6207 2626  
**E** envcomm@act.gov.au  
environmentcommissioner.act.gov.au

## Audit Team

**Dr Therese Flapper**, Arup  
**Tim Cook**, Arup

**Serena Farrelly**, Office of the Commissioner  
for Sustainability and the Environment (OCSE)

**Kirilly Dickson**, OCSE  
**Professor Kate Auty**, OCSE

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**Caitlin Roy**, OCSE

**Megan Reichstein**, OCSE

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