

**ECOLOGICAL STUDIES
WEST BELCONNEN
AUSTRALIAN CAPITAL TERRITORY**



June 2014

THE RIVERVIEW GROUP

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List of Accompanying Reports

1. Kevin Mills & Associates (2009a). Preliminary Assessment, Land at West Molonglo and Ginninderra Creek, New South Wales, Australian Capital Territory. Prepared for CB Richard Ellis Pty Limited, Canberra, January.
2. Kevin Mills & Associates (2009b). Further Flora and Fauna Studies, Land at West Molonglo and Ginninderra Creek, New South Wales, Australian Capital Territory. Report prepared for The Riverview Group, Canberra, July.
3. Nash, K. & Hogg, D. McC. (2013). West Belconnen Woodland Areas. Confirmatory Ecological Assessment. Prepared for The Riverview Group, Canberra, May.
4. Osborne, W. & Wong, D. (2013). The extent of habitat for the vulnerable Pink-tailed Worm Lizard (*Aprasia parapulchella*) in West Belconnen – Ginninderra Creek investigation area – confirmatory distribution surveys and mapping. Prepared for The Riverview Group, Canberra, May.
5. Rowell A. (2013). West Belconnen Golden Sun Moth Surveys, October to December 2012. Prepared for The Riverview Group, Canberra, May.
6. Kevin Mills & Associates (2013). Targeted Bird Surveys and Assessments, West Belconnen Project Area, The Riverview Group. Report prepared for The Riverview Group, September.
7. Osborne, W. (2014). Environmental considerations for the effective management of the Outer Asset Protection Zone within the proposed conservation corridor at West Belconnen - ensuring ecological integrity. Prepared for The Riverview Group, Canberra, May.

List of Accompanying Large Scale Maps

1. Extent of the Box-Gum Woodland, Pink-tailed Worm Lizard records and habitat corridor (Knight Frank drawing KFTP-003 Rev D)
2. Distribution of hollow-bearing trees in the ACT Project Area (Knight Frank drawing KMA-4)
3. Locations of threatened birds and birds of prey in the ACT Project Area (Knight Frank drawing KMA-5.1 and 5.2)

A report prepared by Kevin Mills & Associates Pty Limited on behalf of The Riverview Group. The content of this report is based on studies by several consultants, as listed in the report and has been reviewed by Dr David Shorthouse.

SUMMARY

This report concerns a large parcel of land at West Belconnen. The land, hereafter referred to as the ACT Project Area, covers 889 hectares and abuts the north-western border of the ACT. The Riverview Group, as project managers for and on behalf of the lessee Corkhill Brothers Pty Limited, has been investigating the development potential of the land and in 2008/2009 engaged Kevin Mills & Associates (KMA) to undertake preliminary surveys into the flora and fauna associated with the ACT Project Area. Building on those studies, additional ecological investigations were carried out. Advice was also sought from the ACT's Environment and Sustainable Development Directorate (ESDD).

The following specialist studies were undertaken between 2008 and 2013, and form the basis of this report:

- | | |
|---|-------------------------------------|
| - Dr Kevin Mills, Kevin Mills & Associates | Preliminary surveys, birds, habitat |
| - Ms Alison Rowell, Biologist and Environmental Consultant | Golden Sum Moth |
| - Mrs Kris Nash, David Hogg and Associates | Woodland and grassland |
| - Dr Will Osborne and Dr David Wong, University of Canberra | Pink-tailed Worm-lizard |

The studies have identified several important natural assets that may be a constraint on development within some parts of the ACT Project Area. The two key outcomes are the application of ecological and habitat criteria to identify a conservation corridor along the Murrumbidgee River, and an area of Box-Gum Woodland that meets the accepted criteria for this endangered ecological community.

The proposal includes the designation of the West Belconnen Conservation Corridor covering 359.2 hectares and centred on the Murrumbidgee River. This includes 68.2 hectares of Box-Gum Woodland.

The area of land identified for protection, 359.2 hectares, is 40 percent of the total ACT Project Area. This area is greater in extent than the existing river corridor established some years ago, which covered 290.8 hectares; that area is defined by a series of fence lines that do not reflect the most recent knowledge of the area's environmental assets.

The river corridor and woodland areas are proposed to be incorporated into a conservation area nominally called the West Belconnen Conservation Corridor. The management of that land will be the subject of a detailed natural resource and landscape management plan to be prepared as part of the masterplan work.

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1. INTRODUCING THE ACT PROJECT AREA AND THE STUDIES

The Project Area is a large parcel of land in the far north-western corner of the Australian Capital Territory (ACT), much of which is leased to Corkhill Brothers Pty Limited. The Project Area of 889 hectares is bounded by the suburbs of Holt and West Macgregor, the Murrumbidgee River and Ginninderra Creek and by Stockdill Dive and the ACT - New South Wales (NSW) border; see **Figure 1**.

The Murrumbidgee River Corridor as currently defined in the Territory Plan varies in width between 500 metres and 700 metres and covers the western part of the ACT Project Area. It includes a narrow riparian zone and the adjacent steeper land that falls towards the river from the east. The ACT Project Area can therefore be conveniently divided into the steep, rocky and partially wooded river valley and the almost totally cleared and gently undulating grazing land to the east.

Figure 1 shows the area of land that is being investigated at West Belconnen and subject to a planning process that will produce a Master Plan, and from this a Structure Plan that will underpin the proposal to rezone parts of the land to permit residential development. The findings related to the ecological and biodiversity values of the site summarised in this report will constitute a major input to the planning process.

As noted above, this report relates to land within the ACT. The ecological surveys have been undertaken across the site in accordance with an assessment made by the consultant scientists of the areas where specific investigations were warranted. In this regard, the following should be noted:

- The landfill site has been very substantially disturbed and was not included in the surveys;
- The substation site is not proposed for change in land use and was not included in the surveys;
- Woodland surveys focused on the south and centre of block 1605, previously identified as potentially containing Box-Gum Woodland habitat, no other potential Box-Gum Woodland areas are present on the ACT Project Area;
- Pink-tailed Worm Lizard surveys covered all areas of likely habitat identified by Dr David Wong from air photography and these were ground truthed by the consultant team.
- All of the 'ACT land' and the 'ACT Parkwood land' was included in the Golden Sun Moth, avifauna and habitat surveys;
- Other adjoining land across the border in NSW is the subject of separate reports.

The majority of the ACT Project Area is cleared and highly modified land. The original woodland has largely been removed, with only relatively small stands of trees and individual 'paddock trees' now remaining. The paddocks are mostly sown with pasture species, such as Oats *Avena* sp., Barley Grass *Hordeum* sp. and Rye Grass *Lolium* sp. Scattered patches of *Austrostipa* spp. occur through the area, but native species diversity is very low. On the gentler topography in the far southern parts of the ACT Project Area, there is evidence of the previous woodland vegetation comprising Yellow Box *Eucalyptus melliodora* and Blakely's Red Gum *Eucalyptus blakelyi* trees with an understorey ranging from exotic pasture to quite good quality native grassland.

Woodland of Inland Scribbly Gum *Eucalyptus rossii*, Broad-leaved Peppermint *Eucalyptus dives*, Red Stringybark *Eucalyptus macrorhyncha* and Snow Gum *Eucalyptus pauciflora* occurs on the steeper land, extending in places to more level land above, particularly in the southern parts of the Project Area. Along the river, there are stands of large River Oak *Casuarina cunninghamiana* trees, with an understorey composed of mainly of weeds.

Rock outcrops, primarily of rhyolite type rocks, occur along the western part of the ACT Project Area, including the slopes to the river and the nearby ridges to the east. These outcrops are mostly in or close to the river corridor.

The land in the ACT Project Area has been used for grazing and other farming pursuits for over 150 years; most having been cleared of its original woodland vegetation over that period. The majority of the land is divided into large paddocks most of which have been pasture improved, including fertilizing, seeding and ploughing. The land is still used for grazing and cropping today.

Corkhill Brothers Pty Limited also own adjoining land within NSW, in the Shire of Yass Valley, that will be subject of a separate report due to the different jurisdiction. Some of the survey results presented in this report and the appendices include results from investigations in NSW; these results are included, and will be differentiated as required, as they provide a fuller picture of the local biota.

Earlier studies that included the present ACT Project Area include those of EcoLogical Australia (2010) and ACT Planning and Land Authority (2010). Those studies identified part of the current ACT Project Area as West Molonglo, an area that was well north of the main study area covered by the reports. Eco Logical Australia mapped 64 hectares of Box-Gum Woodland that met the Australian Government's minimum criteria for that endangered ecological community. The later study by Nash and Hogg (2013) commissioned by the project managers The Riverview Group to undertake a more detailed investigation than the EcoLogical Australia study, particularly of the understorey and has re-defined the extent of Box-Gum Woodland. The area of woodland and derived grassland delineated in the later study totals 70.7 hectares, of which 11.7 hectares is located inside the existing river corridor and the balance of 59.0 hectares is outside that corridor. Differences in the previous estimates of the extent of woodland reflect different survey methodology and seasonal conditions (Nash & Hogg 2013).

Preliminary ecological surveys and assessments of the ACT Project Area were undertaken during the 2008/2009 spring-summer period (KMA 2009a; 2009b) and enabled early identification of the key flora and fauna issues present on the ACT Project Area, providing a firm foundation for subsequent studies by specialist consultants, as described below. Liaison also occurred between The Riverview Group, its consultants and the ACT Environment and Sustainable Development Directorate, which further refined the issues requiring attention. The expanded study team consisted of ecologists specialising in several fields and together their work has provided a comprehensive description of the biota of the ACT Project Area. The next section of the report sets out the areas of study.

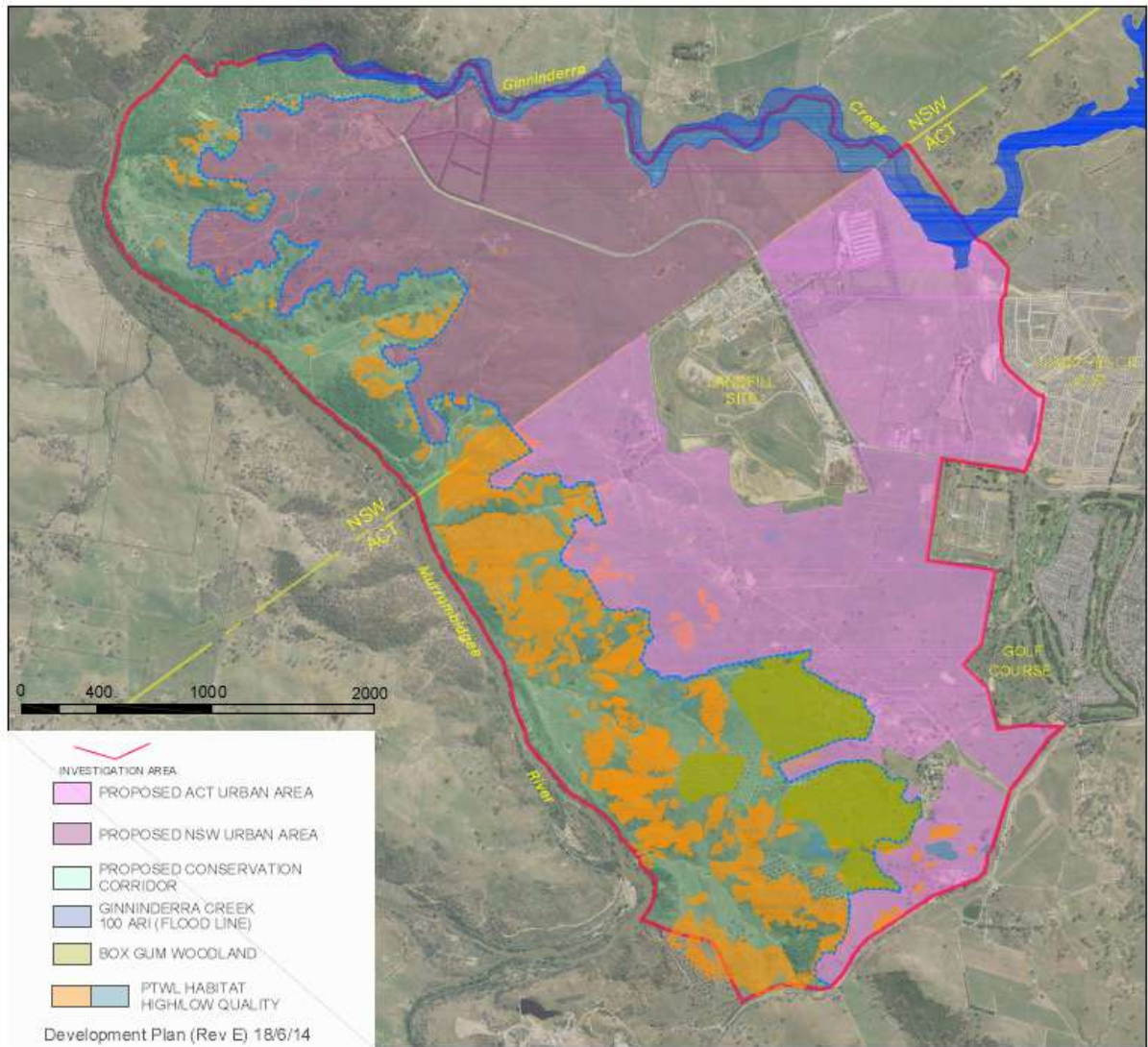


Figure 1. The ACT Project Area at West Belconnen.
Green shading covers the proposed conservation land. Scale bar is 1000 metres.

2. WHAT ARE THE KEY AREAS OF STUDY ?

Those areas requiring more detailed investigation following the 2009 studies were identified as:

- Delineation of the extent of the habitat utilised by the Pink-tailed Worm Lizard;
- Delineation of the extent of White Box-Yellow Box-Blakely's Red Gum Woodland and Derived Grassland, as defined under the Commonwealth and ACT legislation;
- Targeted bird surveys; including particular threatened species and special habitat features;
- Field surveys and assessments of potential habitat for the Golden Sun Moth;
- A mapping exercise to illustrate the results of the above work.

The survey team consists of the following consultants:

Dr Kevin Mills, Kevin Mills & Associates	Preliminary surveys, birds, habitat, final report
Dr Will Osborne, Dr David Wong, University of Canberra	Pink-tailed Work-lizard
Mrs Kris Nash (David Hogg and Associates)	Woodland and grassland
Ms Alison Rowell, Environmental Consultant	Golden Sum Moth
Knight Frank Town Planning, Canberra	Digital mapping
Dr David Shorthouse, consultant	Peer reviewer

This report provides a summary of the results of the above investigations and an assessment of the most appropriate ecological and habitat criteria necessary to identify a boundary to the river corridor and Box-Gum woodland from which development planning can proceed with confidence; all of the consultant's reports are attached. Copies of these reports have been made available to relevant ACT government agencies.

3. WHAT HAVE WE FOUND OUT ?

3.1 General Survey Results

The studies undertaken by the consultants contain much general information on the ACT Project Area, including descriptions of the environment and lists of plants and animals (KMA 2009a; 2009b; Nash & Hogg 2013; Osborne & Wong 2013). The total number of plants and vertebrate animal species recorded in all studies is presented in **Table 1**. The numbers of diurnal birds of prey and threatened species are discussed later in the report.

The remainder of this section summaries the results of the individual consultant's studies; the original reports should be consulted for the detail of the methods used and additional information on the results obtained.

Table 1
Number of plant and animal species recorded

Group	Native sp.	Threatened sp.¹	Exotic sp.
Plants	118	nil	84
Mammals	13 (incl. 9 bats)	nil	5
Birds	95	2	9
Reptiles	14	1	nil
Frogs	4	nil	nil

1. Listed under the *Nature Conservation Act 1980 (ACT)*.

3.2 Box-Gum Woodland and Derived Grassland

Aim: To identify, describe and map the extent of the Box-Gum Woodland and Derived Grasslands within the ACT Project Area, as defined by criteria developed under Commonwealth and ACT legislation.

The presence of Box-Gum Woodland was initially identified within the ACT Project Area by KMA (2009a) and Eco Logical Australia (2010). More detailed work undertaken in spring 2012 is described in the report by Nash and Hogg (2013). That study carried out a robust investigation of the southern one third of the ACT Project Area, but did not include the pasture improved and almost treeless paddocks across the remainder of the ACT Project Area, as these areas were appropriately dealt with by KMA (2009a). The 2012 woodland surveys were carried out in spring and followed the guidelines and criteria set out by the Australian Government (Department of Environment and Heritage (DEH) 2006) and the ACT Government (Conservation Planning and Research 2012) for identifying and assessing Box-Gum Woodland and Derived Grasslands.

Prior to European settlement, the vegetation covering most of the gentle topography of the ACT Project Area is most likely to have comprised grassy woodland dominated by Yellow Box *Eucalyptus melliodora* and Blakely's Red Gum *Eucalyptus blakelyi*. Patches of woodland dominated by Snow Gum *Eucalyptus pauciflora* may have occurred in frost hollows or where cold air flowed into depressions, with shrubby woodland dominated by Broad-leaved Peppermint *Eucalyptus dives* on sloping land. Dry forest containing Red Stringybark *Eucalyptus macrorhyncha* and Inland Scribbly Gum *Eucalyptus rossii* occurred on exposed dry, rocky ridges and in the river valley, although this would have had a limited distribution across the gentler parts of the ACT Project Area. The gullies most likely supported shrubby vegetation including Blackthorn *Bursaria spinosa* and wattles *Acacia* spp.

Action Plan No. 27 - ACT Lowland Woodland Conservation Strategy (ACT Government 2004) categorises woodland communities within the ACT according to the level of modification that has occurred within these communities since European settlement. The categories take into account species diversity, the extent of native cover in the ground layer, the ability of the community to respond to assisted and natural regeneration and the presence of a soil seed bank that would provide a basis for regeneration. When describing the condition of woodlands, tree and ground layers are often considered separately as one layer may retain ecological integrity to some degree without the other, and the community may still be defined as woodland.

Woodland patches that are regarded as the endangered ecological community Yellow Box-Blakely's Red Gum Grassy Woodland are those where *E. melliodora* and/or *E. blakelyi* contribute 40% or more of the crown cover, there is a species-rich understorey of native tussock grasses, herbs and scattered shrubs. There is a species-rich native understorey of native tussock grasses, herbaceous species and scattered shrubs remains but the Yellow Box and/or Red Gum trees have been removed or reduced (ACT Government 2004 page 30). The understorey is not exotic pasture or degraded beyond recovery.

Under the guidelines provided in *Action Plan No. 27*, substantially modified and severely modified woodland are not classified as the endangered ecological community, as it is considered that they no longer contain the elements necessary to perpetuate the community through natural regeneration.

Under the *Environment Protection and Biodiversity Conservation Act 1999 (C'th)* (EPBC Act), Box – Gum Woodland is listed as White Box – Yellow Box – Blakely's Red Gum Woodlands and Derived Native Grasslands. The Policy Statement prepared by DEH (2006) describes the procedure for identifying the community including the criteria to be used and a convenient flow-chart summarising the methods used to confirm the presence or otherwise of the listed community, based on the lowest condition class.

According to the Commonwealth criteria (DEH 2006), stands of native vegetation that are included in the ecological community must have either:

- an intact tree layer and a predominantly native ground layer; or
- an intact native ground layer with a high diversity of native plant species but no remaining tree layer.

Nash and Hogg (2013) quote the more detailed considerations to be made under the Commonwealth guidelines:

In general, woodland patches are regarded as the threatened community only if they are greater than 0.1 ha and meet the following criteria:

- The dominance of, or prior dominance of, white box, yellow box or Blakely's red gum.
- A predominantly native ground layer, i.e. one where at least 50 percent of the perennial vegetation cover consists of native species.
- There are 12 or more non-grass understorey species present.
- If the diversity of non-grass species is less than 12 and the patch is 2 ha or greater in size,
 - the patch has an average of 20 or more trees per hectare; or
 - the density of mature trees is less than 20 trees per hectare and there is natural regeneration occurring.

A patch is described as a continuous area containing the ecological community and is the larger of:

- an area that contains five or more trees in which no tree is greater than 75 metres from another tree (it is assumed a tree is a mature tree); or
- the area over which the understorey is predominantly native.

The above description represents the lowest condition at which patches are included in the EPBC Act listed ecological community.

Based on the above criteria, the Box-Gum woodland listed under ACT legislation can be considered to be a subset of the community listed under the Commonwealth's legislation (Nash & Hogg 2013). In general, areas that have high understorey diversity would be regarded as the endangered community under both the EPBC Act and the *Nature Conservation Act 1980* (ACT) (NC Act), but areas that have low understorey diversity could be considered as the endangered community if they meet the criteria set out by DEH (2006).

The extent of the Box-Gum Woodland as identified in this study is shown on the accompanying map; see Figure 2. The area of this community that meets the minimum criteria under both jurisdictions is 70.7 hectares; this includes the 11.7 hectares of woodland inside and 59 hectares outside the pre-existing definition of the river corridor. The woodland is almost completely contiguous with the river corridor and the habitat of the Pink-tailed Worm Lizard, which it adjoins to the west. The woodland area is, however, divided into two approximately equal halves by a strip of exotic grassland about 100 metres wide that does not meet the required criteria for the endangered ecological community

The condition of the Box- -Gum Woodland varies from low to high (Nash & Hogg 2013), and includes 7.89 hectares of planted Yellow Box and Red Gum trees located within the pre-existing river corridor that retains localised areas dominated by native grasses and forbs; see **Figure 2**.

Other woodland occurs in the ACT Project Area, mainly within the river corridor; this is not Box-Gum Woodland, but communities that occur on drier and or exposed land such as ridges and the slopes of the valleys. Adjacent to the mapped Box-Gum Woodland, there are some stands of Peppermint Woodland, most of which are in a poor condition with dead and dying trees and a mostly exotic understorey. Nash and Hogg (2013, p.23-24) note that "in areas dominated by broad-leaved peppermint, the density is about 9 to 11 trees/ha, although many eucalypts occur as dead standing trees."



Figure 2. Extent of Box-Gum Woodland.

Key Outcomes: The extent of Box-Gum Woodland endangered ecological community in the ACT Project Area has been mapped using the assessment methods and criteria developed under both Commonwealth and ACT legislation.

3.3 Pink-tailed Worm Lizard

Aim: To identify, describe and map the extent of the Pink-tailed Worm Lizard habitat in the ACT Project Area.

The Pink-tailed Worm Lizard *Aprasia parapulchella* is listed as vulnerable to extinction under both the EPBC Act and the NC Act.

The presence of the Pink-tailed Worm Lizard and general extent of suitable habitat in the ACT Project Area was first established in the study by KMA (2009b). More recently, Osborne and Wong (2013) carried out further field investigations using methodology adopted for previous surveys of this species in the ACT. They digitally mapped the extent and quality of habitat, according to two classes based on suitability of habitat for the lizard, (i) potential habitat for the lizard, incorporating known occurrences, and (ii) low

quality potential habitat, where rocky habitat occurs but the lizard was not encountered in the field surveys (Osborne & Wong 2013).

Most of the larger rock outcrop habitats in the western section of the ACT Project Area, and within the pre-existing river corridor, contain the Pink-tailed Worm Lizard, while small isolated areas of rock outcrop habitat located in pasture improved paddocks do not support the lizard. The grassland in the latter sites is also largely exotic and suitable rocks are not as extensive (KMA 2009b; Osborne & Wong 2013).

Two reports address the conservation requirements for *Aprasia parapulchella* and the threats to its survival in the region. The ACT Aquatic Species and Riparian Zone Conservation Strategy (ACT Government 2006) and the national recovery plan (Osborne & Jones 1995). The conservation objectives in these reports are adopted as the guiding principles for identifying the lizard habitat that must be protected and included in the proposed river corridor reserve (see process for this later in this report). A map of the distribution of the species in the ACT shows the known populations as being concentrated along the Molonglo and Murrumbidgee river valleys, (KMA 2009b; Osborne & Wong 2013). The species' distribution downstream along the Murrumbidgee River valley extends across the ACT/NSW border and has been documented as far as Ginninderra Creek, but its extent beyond there is not well surveyed. Thus the population of Pink-tailed Worm Lizard in the ACT Project Area is effectively part of the larger Murrumbidgee River population described by Osborne and Wong (2013) as one of three areas of national conservation significance for the species. As well, the rocky corridor through the ACT Project Area in both the ACT and NSW provides an important link between the biologically very diverse Ginninderra Falls in NSW and the important Molonglo River corridor in the ACT (ibid. 2013).

The comprehensive mapping by Osborne and Wong (2013) of the known and potential habitat of the lizard is the ecological basis for defining the eastern boundary of the lizard habitat that is proposed to be included the river corridor reserve. That habitat edge has subsequently been checked and refined on the ground by field inspection by the consultant team in consultation with officers from the ESDD and TAMS in September 2013. The area of high quality (core) lizard habitat within the proposed river corridor reserve in the ACT and NSW is 144.7 hectares, of which 128.6 is in the ACT. The mapping of the Pink-tailed Worm Lizard habitat is shown on **Figure 3**.

The boundary was surveyed on the ground by the ecologists following initial mapping from aerial photographs; GPS points were taken along the length of the boundary at that time and subsequently used to survey and peg the boundary. The boundary was then inspected by relevant government officers in the company of the ecologists and modified slightly. The final boundary was surveyed and a plan prepared, which is the basis of the subsequent planning work.

The process of field checking and refining the boundary involved some 'smoothing' of the line to rationalise its direction and to ensure capture of the core rocky habitats and locations where records of the lizard's presence or absence were made. The exclusion of a few small rocky outcrops, almost none of which contained the lizard, will not threaten the survival of the lizard in the locality; the implications of this process are discussed in more detail later in the report.

Key Outcomes: Field survey has identified the known and potential habitat of the Pink-tailed Worn Lizard, resulting in a detailed distribution map illustrating the core area of habitat; the boundary has been surveyed.

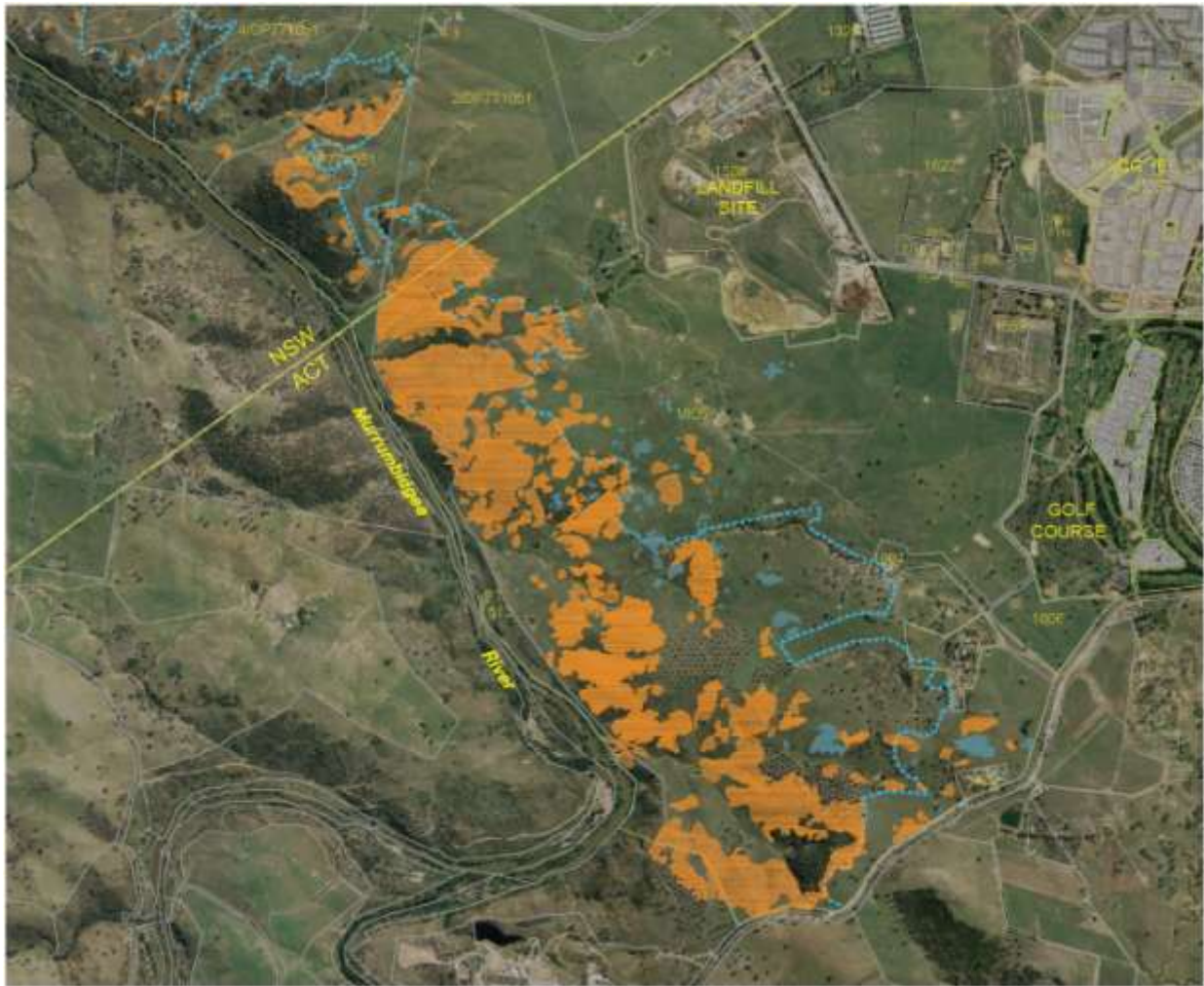


Figure 3. Extent of Pink-tailed Worm Lizard habitat and conservation area.

Blue line: river and woodland conservation area boundary;
 orange shading – high quality Pink-tailed Worm Lizard habitat;
 blue shading – low quality Pink-tailed Worm Lizard habitat.
 (Note that mapping extends into NSW.)

3.4 Birds and Bird Habitat

Superb Parrot

Aim: To determine if the Superb Parrot occurs in the ACT Project Area and particularly if it is breeding in that area.

The Superb Parrot *Polytelis swainsonii* is listed as vulnerable under both the EPBC Act and the NC Act.

The Superb Parrot is a summer breeding visitor to the ACT, primarily in the northern third of the Territory, where increasing numbers of birds have been observed in recent years.



Photograph 1. View across the central part of the identified Box-Gum Woodland.



Photograph 2. The gully within the identified Box-Gum Woodland; much of the plant and animal diversity in the southern part of the ACT Project Area is centred on this gully.



Photograph 3. Rocky ground typical of the upper slopes of the Murrumbidgee River valley in the Project Area. This terrain is the core habitat of the threatened lizard Pink-tailed Worm Lizard.



Photograph 4. The threatened Pink-tailed Worm Lizard *Aprasia parapulchella*. Photographed in the ACT Project Area in June 2009.

The Superb Parrot was seen several times in the ACT Project Area between 2008 and 2013, two of which were incidental observations outside the formal bird surveys; see **Table 2**. Out of a total of 28 bird surveys up to mid-2013, this species was observed four times (14%); three records were in late 2012 when the species was regularly being observed beyond the West Belconnen area (KMA 2013). There were also two incidental observations of the parrot; see **Table 2**. The bird surveys were carried out in the most appropriate season for the Superb Parrot (spring-summer), and at a time when the species was known to be present in the northern part of the ACT (KMA pers. obs.). No evidence of breeding in the ACT Project Area was found during the bird surveys or the tree hollow surveys. Birds were observed flying south, towards the 2011/2012 breeding area in central Molonglo to the south of Holt (Davey 2012). The mature trees in the south of the ACT Project Area near Stockdill Drive and those within the well treed golf course seem to be favoured by some Superb Parrots when moving across this part of West Belconnen.

Table 2
Superb Parrot observations in the ACT Project Area

Date	Observation	GPS Location
02 Dec. 2008	1 bird	Overhead at golf course
15 Dec. 2008	1 bird	0681077 6099553
24 Oct. 2012 (1)	1m + 2f – heading south	0680733 6099739
24 Oct. 2012 (2)	1f – heading south	0681553 6099560
28 Nov. 2012	3 birds - heading north	0680850 6100021
02 Sep. 2013	3 birds - heading south	0680913 6098202

Key Outcomes: The Superb Parrot was found not to be breeding in the ACT Project Area; the woodland in the south of the Project Area appears to be used by the parrots as they move southward to their breeding area.

Swift Parrot

Aim: To assess the likelihood of the Swift Parrot occurring in the ACT Project Area.

The Swift Parrot *Lathamus discolor* is listed as an endangered species under the EPBC Act and as a vulnerable species under the NC Act. The Swift Parrot is a non-breeding winter visitor to the ACT region. Birds only breed in Tasmania in the warmer months and are unpredictable in their occurrence from year to year on the mainland. On the tablelands occurrences are dependent upon flowering eucalypts in the cooler months.

In the early 1990s in the ACT it was reported that a few birds turn up every two or three years between April and September (Taylor 1992). Records up to 1992 came from the central Canberra area (COG 1990; Taylor 1992). The sporadic records from the ACT are typical of the species on the mainland, where their presence in any particular area is unpredictable.

The Swift Parrot could turn up anywhere in the ACT where there are flowering trees, particularly *Eucalyptus melliodora* and *E. blakelyi*. The trees in the ACT Project Area could attract the Swift Parrot in some years, but this is not regular and birds are just as likely to turn up in the nearby suburbs.

Key Outcomes: The Swift Parrot is not resident in the ACT and does not breed in the region; at most, it is an occasional and itinerant migrant.

Diurnal Birds of Prey

Aim: To identify the birds of prey occurring in the ACT Project Area and to determine if breeding is occurring there.

Surveys for birds specifically included diurnal birds of prey; the observations for 2008 to 2013 are summarised in **Table 3**. The only breeding species found is the Australian Kestrel, which is by far the most common bird of prey in the area. The kestrel is also probably the only resident species within the upper, eastern part of the ACT Project Area, although some species may be resident within the river valley. For example there is a Peregrine Falcon nesting site on cliffs in the river gorge, just outside the main ACT Project Area. In total, 10 species of diurnal birds of prey were recorded in the ACT Project Area; however, only the Nankeen Kestrel appears to be a common and breeding species.

Table 3
Summary of records of diurnal birds of prey

Species	Year/No. of observations				Total
	2008	2009	2012	2013	
Australian Hobby		1	1		2
Black Kite	1				1
Black-shouldered Kite			1	1	2
Brown Falcon				2	2
Variable Goshawk				4	4
Collared Sparrowhawk	1				1
Nankeen Kestrel	8	3	9	7	27
Peregrine Falcon	1		1		2
Spotted Harrier				3	3
Wedge-tailed Eagle	2		1	2	5
White-bellied Sea-Eagle				1	1

Records of birds of prey shown in **Table 3** indicate the relative status of the species in the ACT Project Area and, as illustrated by the mapping, the areas where such species tend to concentrate their activities. Not surprisingly, the Nankeen Kestrel is by far the most common species and the records of this and all species are concentrated in the woodland area in the south. The kestrel was the only species confirmed as breeding in the area; it was observed at tree hollows.

Key Outcomes: Eleven species of birds of prey occur in the ACT Project Area; only the Nankeen Kestrel appears to be a common resident and the only species recorded as breeding there.

Little Eagle

Aim: To undertake field studies on the Little Eagle to determine the extent of its habitat and to inform future development in the vicinity of the foraging range.

The Little Eagle (*Hieraaetus morphnoides*) was not recorded in the targeted surveys for birds of prey, despite many hours spent in the project area, mainly in 2008 and late 2012. Eleven species of diurnal birds of prey were recorded (see **Table 2**), but the Little Eagle was no among them. Nesting is reported for the 2012/2013 season, in the pine trees on the southern edge of the *Strathnairn* property. The later date was well after the targeted bird surveys were completed in 2008 and in 2012. Targeted surveys were undertaken in spring 2012, when the birds could have been present in the area, but they were not seen. Observations of Little Eagles, probably the same pair, were made in October-November 2012 near the *Pegasus* property, adjacent to Holt, well to the east of the ACT Project Area.

The Little Eagle nest site at *Strathnairn* is in the row of pine trees on the southern boundary of the property. This is just eastwards of the boundary of the Box-Gum Woodland as identified in **Figure 2**.

The Little Eagle is listed as vulnerable in both the ACT and NSW, but not under the EPBC Act. An *Action Plan* (No. 35) for this species has recently been prepared in the ACT (ACT Government 2013). It describes the status, habitat and threats to the species in the ACT, and relevant conservation issues and objectives and actions to address these issues. The breeding population in the ACT has apparently been reduced to two breeding pairs, both of which raised one young in 2013/2014.

The approach to the presence of the Little Eagle nest tree is to:

- Maintain a setback between the nest tree and any new developments until additional information is obtained.
- Over the next two breeding seasons, undertake an investigation of the pair at *Strathnairn* to determine their feeding, breeding and foraging requirements.
- At the end of two years, assess the studies and the foraging and nesting activities of the pair.

The objectives of the above studies are to:

- determine the home or foraging range of the Little Eagle pair breeding in the Lower Molonglo.
- determine the diet of the Lower Molonglo Little Eagle breeding pair, and relate this to likely foraging habitat within the proposed West Belconnen development area. Dietary findings should also be used to provide advice on the implications for foraging by the Little Eagle in the Lower Molonglo area.

The proposed amendment to the Territory Plan is to include a map showing a setback zone that covers the Little Eagle foraging territory and a zone of 200 metres radius around the nest tree itself. A rule applicable to these zones will nominally state “Urban development not permitted until such time as the nest located within the zone is not utilised by any pair of eagles for breeding or to attempt to breed for a continuous period of two (2) years after 1 January 2014.”

Key Outcomes: A satisfactory approach to the presence of a nest of the Little Eagle is identified and agreed to by all parties.

Woodland Birds

Aim: To identify significant bird species in the ACT Project Area, particularly those listed under the NC Act and the EPBC Act.

Several bird species of conservation interest were located in the ACT Project Area during surveys undertaken from 2008 to 2013; see **Table 4**. Note that the Superb Parrot is discussed separately above.

These records were associated with treed areas, including the exotic trees around the Belconnen homestead west of the waste disposal area. Only one species, the White-winged triller, is listed as threatened in the ACT, while five other species are listed in NSW, and two species are of conservation concern, namely Dusky Woodswallow and Peregrine Falcon. The former is one of a suite of woodland birds under pressure due to habitat loss and is regarded as a declining species in the sheep-wheat belt of NSW (Reid 1999). The Peregrine Falcon is generally under pressure worldwide, partly due to pesticide use. The falcon has been regarded as “uncommon and sensitive” in the ACT for some time (COG 1990) and “growing recreational use of the river corridors places additional pressure on the limited number of available [nest] sites” (Taylor 1992). Neither of these species is listed under NSW or ACT legislation.

Table 4
Significant bird species recorded in the ACT Project Area

Species/Date	Status/Notes	GPS Location
Dusky Woodswallow	species of concern	
30.10.12	1 bird	0680632 6100091
31.10.12	2 birds	0680959 6099089
20.02.13	8 birds	0681064 6099833
02.09.13	1 bird	0680930 6099848
Flame Robin	vulnerable in NSW	
25.06.09	several birds	in southwest of area
03.07.13	1 male	0679950 6102778 (NSW)
08.08.13	3 birds	0680853 6100149
Gang-gang Cockatoo	vulnerable in NSW	
06.05.13	1 bird	0678629 6101833 (NSW)
Peregrine Falcon	species of concern	
11.12.08	1 bird	not recorded
25.10.12	1 bird	0681047 6098989
Scarlet Robin	vulnerable in NSW	
17.10.12	1 male	0679885 6101211
29.04.13	1 male	0680859 6098158
03.07.13	1 male	0679100 6101346
09.09.13	1 male	0677720 6102572 (NSW)
Specked Warbler	vulnerable in NSW	
28.11.08	1 bird	0680592 6098557
Spotted Harrier	vulnerable in NSW	
12.02.13	1 bird	0680591 6100315
20.02.13	1 bird	0678976 6102483 (NSW)
29.04.13	1 bird	0679740 6101063
White-winged triller	vulnerable in ACT	
31.10.12	pair	0679836 6101174

Key Outcomes: Several threatened species and species of conservation concern were recorded in the ACT Project Area. In the eastern half of the ACT Project Area, these species are largely restricted to treed areas.

Tree Hollows

Aim: To identify, describe and assess the tree hollow resource within the ACT Project Area.

A high proportion of native vertebrate animals are dependent upon tree hollows, which they require for sheltering and/or breeding. Over 300 vertebrate species utilise tree hollows in Australia, this includes 17 percent of all birds (Gibbons & Lindenmayer 2002). The cockatoos and parrots are a particularly important group in this regard, while mammals, reptiles and frogs all use tree hollows to some degree. The importance of this habitat resource is highlighted by the listing in NSW of 'loss of hollow-bearing trees as a key threatening process' by the NSW Scientific Committee (The Committee 2007). Animal activity in rural environments is often centred on standing mature trees, including both dead trees, partly because they usually contain hollows.

To obtain an understanding of the tree hollow resource and its usage in the ACT Project Area, a survey was undertaken encompassing the mature trees across the more gentle topography across the eastern half of the ACT Project Area; the river valley was not surveyed as that area is proposed to be protected. The survey was carried out in the breeding season of spring 2012 and involved recording tree hollows

and the animals that were utilising them (KMA 2013). This tree survey did not assess tree health, safety or other landscape or urban use criteria.

The survey involved visiting each tree, dead or alive and inspecting it for hollows. If hollows were present, the following information was recorded for the tree.

- a unique tree number;
- tree species or dead tree;
- trunk diameter at chest height (dch), a measure of tree size;
- location as given by GPS instrument;
- the number of obvious hollows present;
- observed use by animals, native and exotic.

The number of each tree was written against the tree on a colour aerial photograph on which individual trees were readily identified. The presence of large stick nests was recorded, if present.

The surveys, carried out in October-November 2012, involved visiting most of the trees on the gentler topography in the ACT Project Area; a total of 246 trees were surveyed. Each tree, dead or alive, was inspected for hollows. If hollows were present, the following information was recorded.

- a unique number;
- tree species or dead tree;
- trunk diameter at chest height (dch), a measure of tree size;
- location as given by GPS instrument;
- the number of obvious hollows present;
- observed use by animals, native and exotic.

A summary of hollow-bearing trees recorded in the ACT Project Area is provided below, in **Table 5**. In all, 246 trees were surveyed (KMA 2013).

Table 5
Summary of results from tree hollow survey

Species	No. Trees	No. Hollows	Hollows/tree	dch ¹ range	dch average
<i>Eucalyptus blakelyi</i>	154	619	4.0	70-196 cm	110 cm
<i>Eucalyptus bridgesiana</i>	2	8	4.0	142-160 cm	151 cm
<i>Eucalyptus melliodora</i>	24	90	3.8	84-198 cm	127 cm
<i>Eucalyptus dives</i>	9	32	3.6	41-90 cm	69 cm
<i>Eucalyptus pauciflora</i>	1	2	2.0	62 cm	62 cm
<i>Eucalyptus macrorhyncha</i>	19	60	3.2	59-127 cm	91 cm
<i>Eucalyptus rossii</i>	8	28	3.5	71-153 cm	112 cm
Dead tree	29	135	4.7	45-129 cm	76 cm
Totals	246	974	4.0	41-198 cm	100 cm

1. dch – trunk diameter at chest height.



Photograph 5 (left). A mature Yellow Box *Eucalyptus melliodora*, this tree is number 156 in the survey and contains seven hollows.

Photographs 6/7 (below). Hollow use during the 2012 spring survey was common.



Sixty-nine observations of both native (10 species) and introduced (three species) animals were recorded utilising tree hollows in the ACT Project Area; Native animals were observed using hollows in 15 percent of trees surveyed, while 13 percent of trees were being used by at least one introduced animal. European Honey Bee colonies were found in nine percent of all trees; the Common Starling and Little Corella were also observed using hollows (KMA 2013). This is clearly an under-estimate of hollow use during the breeding season because each tree was not watched systematically for an appropriate period of time, but provides an indication of the high level of utilisation of this habitat resource by native and introduced animals. All observed native animal use was by common species; no threatened or rare species were observed using hollows in the trees surveyed.

Key Outcomes: The tree hollow resource and information on its use by animals is documented for that part of the ACT Project Area not included in the proposed river corridor and woodland conservation area.

3.5 Golden Sun Moth

Aim. To identify any potential habitat and populations of the Golden Sun Moth on the ACT Project Area.

The Golden Sun Moth *Synemon plana* is listed as critically endangered under the EPBC Act and endangered under the NC Act. Surveys for the locations and extent of potential Golden Sun Moth (GSM) habitat in the ACT Project Area were undertaken from October to December 2012 (Rowell (2013). The survey areas are identified in **Figure 4**.



Figure 4. Areas surveyed for Golden Sun Moth.

There are paddocks in Area 1 that did not meet the usual definition of GSM habitat, having native Tall Speargrass and exotic Phalaris as co-dominants in the upper layer, with Ryegrass, Subterranean Clover, Wallaby Grasses and annual weeds in the lower layer. These paddocks have been categorised as very low quality potential habitat. This is based upon their resemblance to a group of horse paddocks in central Canberra that had low to moderate numbers of GSM in a dry year when the Phalaris biomass was low, and very low numbers in a subsequent wet year when the pasture was tall and dense (A. Rowell, pers. obs.). The exotic pasture species in Area 1 are likely to have been more prominent than usual in spring 2012 after three years of good rains.

The Pony Club paddock in Area 8 is dominated by native Speargrasses and Wallaby Grasses, with a moderate amount of bare ground and low to moderate weed cover. The low biomass, very low native species diversity and dominance of grazing-tolerant species suggests a long history of grazing and probably some overgrazing, so the habitat in this paddock was given a low rather than moderate habitat quality rating.

A two hectare area of moderate quality potential habitat was found in Area 4. This patch was dominated by Speargrasses, with some Wallaby Grasses and other native forbs and grasses. This patch may have been primary native grassland; i.e. not cleared from woodland. It was surrounded by improved pasture and cropped areas, and may previously have been part of a fenced-off strip along the creek. A similar higher quality patch was found in Area 6 on the eastern bank above Ginninderra Creek in Block 1621.

The Wallaby Grasses in the lowest quality habitat areas (Areas 1, 4, 5 and 8) are mostly those that persist in grazed native pastures, such as *Austrodanthonia caespitosa* and *A. racemosa*. The more diverse ground layer found in parts of the Area 12 woodland, the moderate quality patch in Area 4 and the slope above Ginninderra Creek in Area 6 contained a larger variety of Wallaby Grasses, including smaller species often lost when sites are disturbed or pasture improved, included *A. carphoides*, *A. laevis*, *A. auriculata* and *A. eriantha*.

No GSM were recorded in the ACT Project Area, despite repeated surveys of potential habitat under suitable weather conditions during the period when there were many records of GSM activity in the north of the ACT and adjacent parts of NSW. No pupal cases were found in ground searches of the better quality potential habitat in December and January.

Due to poor habitat condition and the negative survey results, Rowell (2013) considered it unlikely that GSM occur in the ACT Project Area. GSM do occur on sites at West Macgregor, and may extend down the Ginninderra Creek valley, at least in some seasons, but these areas are not within the current ACT Project Area.

The proposed development also includes the completion of Ginninderra Drive from its current end point at Dunlop through to the development area. Alternative alignments for this would all pass across land known from previous surveys to be habitat for the Golden Sun Moth. These areas have been nominated as Sun Moth environmental offset areas. The road proposal is the subject of strategic assessment under part 10 of the EPBC Act and is not further discussed here.

Key Outcomes: Field surveys and habitat assessment found that it is unlikely that the Golden Sun Moth occurs in the ACT Project Area.

3.6 Other Significant Species

Other than the birds dealt with above, only one other threatened animal was recorded in the ACT Project Area, namely the Large Bent-wing Bat, which was recorded several times in the southern-most part of the ACT Project Area. This species is listed as vulnerable in NSW, but not in the ACT. The bat roosts mainly in caves, and could utilise the cliffs in the river valley.

Large Bent-wing Bat

Date	Method	GPS location
10.12.08	ANABAT	0686628 6100103
10.12.08	ANABAT	0681067 6099765
14.12.08	ANABAT	0680961 6099434

4 WHAT ARE THE CRITICAL CONSTRAINTS ?

Aim: To identify the critical ecological constraints to development within the ACT Project Area.

The studies undertaken for this project have identified, assessed and refined several key components of the biological environment that require special consideration in planning for land use change in the ACT Project Area. Integration of these matters has resulted in the identification of a conservation area, comprising a river corridor and woodland habitat where protection is warranted and urban development is not appropriate. The key considerations in defining what is here termed the 'conservation corridor' are briefly reviewed below prior to the presentation of the proposed conservation corridor in the next section of the report. The extent of the areas discussed below is shown on the accompanying set of maps.

Box-Gum Woodland

The area of woodland identified by Nash (**Figure 2**), totalled 70.7 hectares. This was marginally modified by a process of on-site boundary definition discussed above and exclusion of a small area located within the *Straithnan* property. This resulted in a total area of classified woodland of 68.2 hectares.

Almost all the western edge of the woodland area adjoins the Pink-tailed Worm Lizard habitat associated with the river corridor. A small area that is neither lizard habitat nor Box-Gum woodland is still proposed to be included within the corridor conservation area, as it occurs between these two habitats.

Pink-tailed Worm Lizard

Following the mapping of the Pink-tailed Worm Lizard habitat by Osborne and Wong (2013), relevant members of the consultant team and The Riverview Group walked the eastern edge of this habitat and recorded its location in detail using GPS equipment. That boundary was subsequently checked and refined in the field by officers from ESDD and TAMS. Refinement of the boundary was primarily based on ensuring core habitat included and practical management considerations. The conservation corridor and woodland contains 371 hectares, of which 124.3 hectares (34 percent) are high quality lizard habitat and an additional 4.3 hectares is low quality habitat.

Other important species and habitats

Records of the other important species and their habitats are almost entirely located within the river corridor and woodland conservation area as defined below. The majority of trees and tree hollows, as well as the woodland and native grassland, are within the woodland conservation area. Some areas of highly modified Peppermint Woodland and Scribbly Gum Woodland occur in the far south of the ACT Project Area outside the conservation area. Those large trees with hollows in these areas will be given consideration in designing the surrounding development with a view to retaining them.

Summary of Areas

The areas of habitat and river corridor within the ACT Project Area are summarised in **Table 6**. The figures for the adjoining New South Wales land are provided for completeness. The NSW land has been reported on by KMA (2013a).

Key Outcomes: The critical ecological constraints to enable definition of the boundary of the river corridor and woodland conservation areas have been identified.

Table 6
Calculated areas for West Belconnen and New South Wales Project Areas

Current conditions		Habitat Areas					Total Conservation Corridor Total hectares Conservation Corridor - "River Corridor" in ACT and "Environment 7 (e)" in NSW	
		Hectares			Percentage areas			
		PTWL Habitat High Quality	Low Quality	Box Gum woodland	PTWL Habitat High Quality	Low Quality		Box Gum woodland
ACT	Currently in River Corridor	114.4	3.2	11.7	86%	41%	17%	290.8
	Currently outside River Corridor	19.3	4.7	59.0	14%	59%	83%	
	Total hectares	133.7	7.9	70.7	100%	100%	100%	
NSW	Currently inside 7(e) Environment zone	13.3	1.8	5.4	80%	64%	100%	323.0
	Currently outside 7(e) environment zone	3.4	1.0	0.0	20%	36%	0%	
	Total hectares	16.7	2.8	5.4	100%	100%	100%	
ACT plus NSW	"Protected"	127.7	5.0	17.1	85%	47%	22%	613.8
	"Unprotected"	22.7	5.7	59.0	15%	53%	78%	
	Total	150.4	10.7	76.1	100%	100%	100%	

Table 6 cont...

Calculated areas for West Belconnen and New South Wales Project Areas

Future proposed		Hectares			Percentage areas			Total hectares Conservation Corridor - "River Corridor" in ACT and "Environment 7 (e)" in NSW
		PTWL Habitat High Quality	PTWL Habitat Low Quality	Box Gum woodland	PTWL Habitat High Quality	PTWL Habitat Low Quality	Box Gum woodland	
ACT	In Corridor reserve	124.3	4.3	68.2	93%	54%	96%	359.2
	Outside corridor reserve	9.4	3.6	2.5	7%	46%	4%	
	Total hectares	133.7	7.9	70.7	100%	100%	100%	
NSW	In Corridor reserve	15.9	0.2	5.4	95%	7%	100%	220.7
	Outside corridor reserve	0.8	2.6	0.0	5%	93%	0%	
	Total hectares	16.7	2.8	5.4	100%	100%	100%	
ACT plus NSW	"Protected"	140.2	4.5	73.6	93%	42%	97%	579.9
	"Unprotected"	10.2	6.2	2.5	7%	58%	3%	
	Total	150.4	10.7	76.1	100%	100%	100%	



Photograph 8. Looking north from near Stockdill Drive down the Murrumbidgee River valley, the ACT Project Area is to the east (right).



Photograph 9. View looking north from Stockdill Drive showing the potential development area to the east and the river valley to the west.

5. DELINEATION OF THE CONSERVATION AREA

Aim: To identify a conservation area based on sound field investigations of the key ecological values.

The ACT Territory Plan identifies a Public Land boundary for the Murrumbidgee River corridor that includes two zones: an inner zone along the river bank (Nature Reserve) and an outer zone covering the steep land falling towards the Murrumbidgee River (Special Purpose Reserve). The boundary between the Special Purpose Reserve and adjacent grazing land to the east is generally a series of straight, fenced lines along the eastern Public Land boundary. A major objective of the current investigation is to identify a more realistic boundary to the river corridor and woodland conservation area that is based on ecological, habitat and management criteria.

Definition of the new eastern boundary of the proposed river corridor and woodland conservation areas is driven by the location and extent of (i) the Pink-tailed Worm Lizard habitat and (ii) the Box-Gum Woodland; less important criteria are (iii) topography and (iv) management practicality. Application of these criteria to define a new corridor boundary was undertaken in two steps based on ground-truthing of habitat features guided by expert ecological and management advice.

Initially, confirmed Pink-tailed Worm Lizard habitat (Osborne and Wong 2013) was marked out using aerial photography backed up by field inspections. This was followed by careful testing of the entire boundary by on-ground inspections, first by the consultant team and later with ACT government officers from ESDD and TAMS. The proposed boundary and the ecological, habitat, and management criteria used to derive it were agreed to by all parties.

The proposed Murrumbidgee River Corridor and Woodland Reserve covers 371 hectares; composed of 68.2 hectares of Box-Gum Woodland and 302.8 hectares of river valley. Note that the southern part of the existing river corridor land includes another 10.1 hectares of Box-Gum woodland. The eastern edge of the proposed river and woodland reserve was determined on site through agreement of the study team and ACT government officers (from ESDD and TAMS) and recorded using GPS equipment.

The proposed new boundary for the West Belconnen Conservation Corridor is shown on the attached map. The river corridor has the following important features:

- high quality habitat for the Pink-tailed Worm Lizard, covering 128.6 hectares;
- woodland and derived grassland, covering 68.2 hectares;
- is contiguous with the river valley to the south;
- is contiguous with the river corridor extending into NSW to the north;
- contains all of the important bird and native animal habitat in the ACT Project Area.

Treatment of Isolates

While many areas of isolated rocky habitat are within the conservation corridor, as can be seen on the maps that accompany this report, some small areas of rocky habitat are located in grazing land at various distances from the proposed conservation corridor boundary. Isolates range in size from a few square metres to about 1.3 hectares of potentially high quality habitat and are up to 434 metres from the proposed corridor boundary. In many cases, Pink-tailed Worm Lizard was not found in these isolates, although a few records were made.

The total area of the high quality habitat isolates outside the proposed corridor is 9.4 hectares and for low quality habitat isolates is 3.6 hectares. This compares with 124.3 hectares of high quality habitat and 4.3

hectares of low quality habitat included within the corridor. The area of potential high and low quality habitat outside the corridor is therefore 13 hectares or 9.3 percent of total habitat of 141.6.

When assessing whether to exclude any one isolate from the corridor consideration was given to the conservation of the population of Pink-tailed Worm Lizard in the locality. The omission of a small area of habitat or low number of lizards in these isolated rocky areas was assessed as not significant to the long-term conservation of the species locally or more widely. In their report, Osborne and Wong (2013) acknowledge the presence of these “...very small and isolated populations.... that are not obviously within...a potential movement corridor” and that “it is hard to argue a strong case for their protection. It is very unlikely that there will be movement between these relict populations across agricultural landscapes with exotic pastures to more substantial areas of habitat....(Osborne & Wong 2013 page 23). That report therefore accepts that the small, isolated areas of habitat are not significant to the survival of the species in this locality. Of far more importance is the way in which the conservation area and habitat connections are protected is managed in the future.

Habitat links

The proposed Murrumbidgee River Corridor and Woodland Reserve is an important link in the region’s system of connectivity between natural habitat areas. it is part of a larger riparian corridor system stretching across the north-western part of the ACT, including several significant natural and semi-natural areas along the Murrumbidgee and (lower) Molonglo Rivers and also Ginninderra Creek. This riparian system also links to Lake Burley Griffin, Namadgi National Park and the Mulligans Flat and Goorooyarroo Nature Reserves on the north-eastern edge of Gungahlin; see Figure 5.

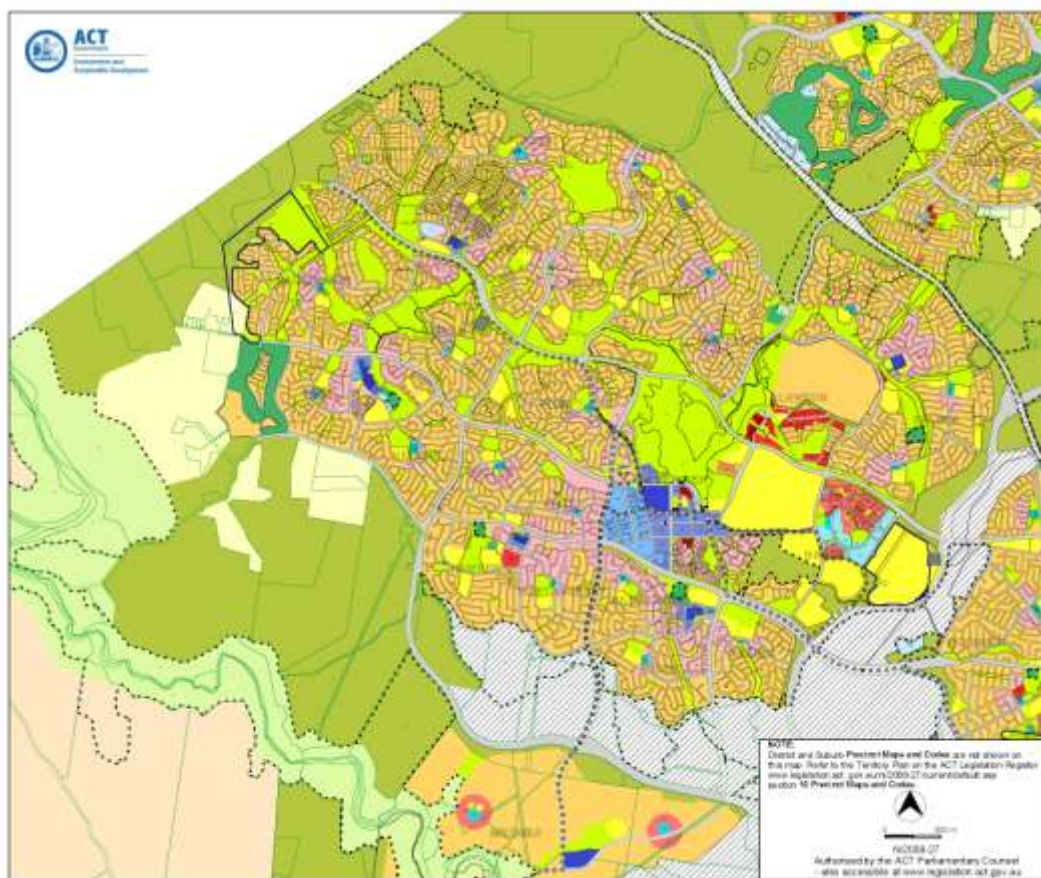


Figure 5. Habitat Corridors in the northwest of the ACT.

Green indicates open space areas; hills, ridges and Buffers, river corridor and urban open space.
Extract from the ACT Territory Plan.

The importance of connecting these river and woodland habitat areas will increase as climate changes predicted for the ACT region are realised. The significance of habitat links along the Murrumbidgee River is highlighted by the presence here of a large population of the threatened Pink-tailed Worm Lizard. While lizard habitat is mostly intact within the corridor, significant improvement to the diversity and structure of the woodland within the conservation area is possible, particularly for threatened passerine birds and other woodland fauna. The ecosystems present are modified, some greatly so, but they can be improved through appropriate management actions.

Key Outcomes: The boundary of the proposed Murrumbidgee River Corridor and Woodland Reserve has been defined in consultation with the relevant ACT government authorities. The total area of land proposed to be protected is 371 hectares and includes 68.2 hectares of Box-Gum Woodland and 302.8 hectares of river corridor.

It is proposed to adopt this boundary and to manage the enclosed area consistent with its conservation values and significance for regional ecological connectivity.

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