A review of biodiversity offsets implemented in the ACT under the *Environment Protection and Biodiversity Conservation Act 1999*

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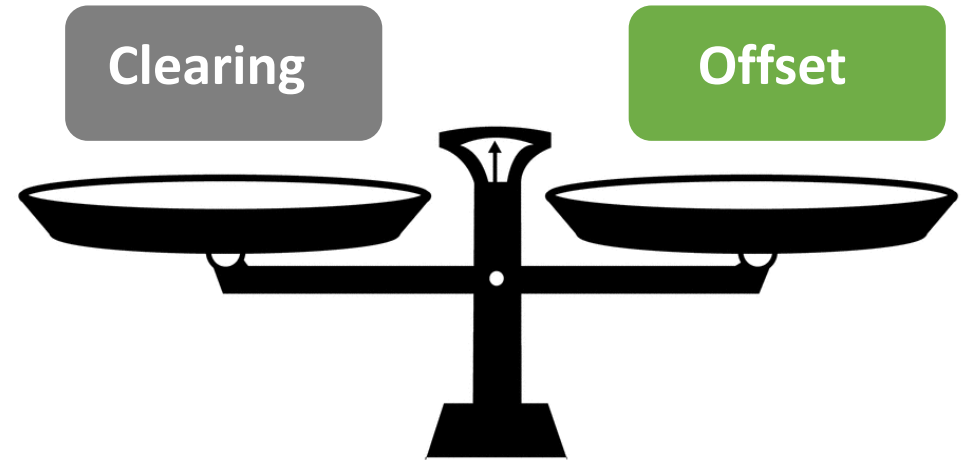
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Research funded by:

Offsetting at a glance

- seek to provide gains commensurate with losses

- theoretically enables on-going development without net loss of biodiversity

- **80 countries** have offset policies in place
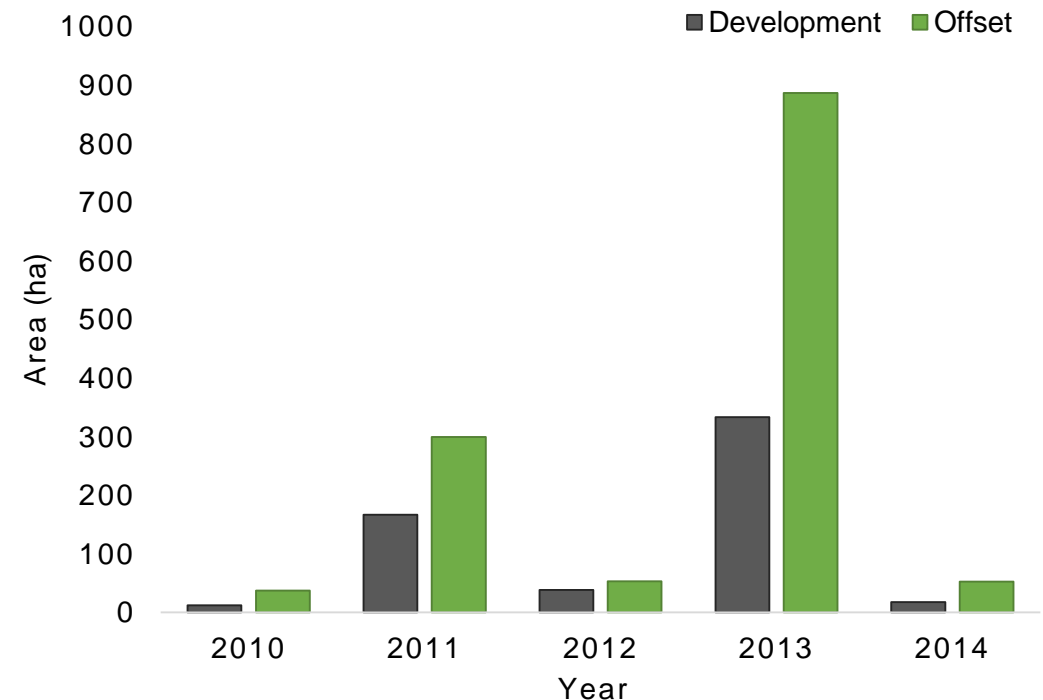
Australia's offset policy

- applies to nationally listed threatened species and ecological communities

- **1,746 actions** referred that required approval under EPBC Act since 2000

- offsets required under this policy from **2001** (using draft offset policy)

- has underpinned offsets in the A.C.T. since 2009

- **first review** of this policy
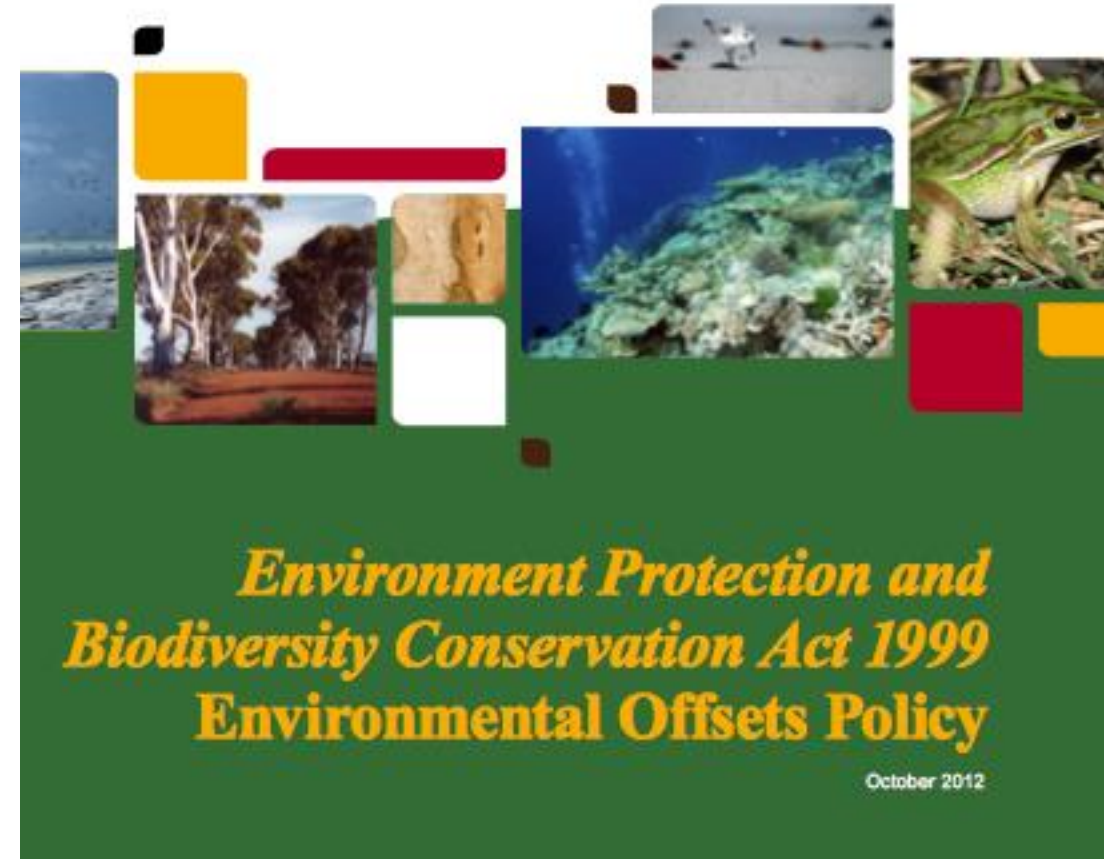
Development in North Canberra 1984-2018

Review of offsets in the A.C.T.

- **Analysis includes 10 developments** and **21 offset sites** approved between 2010 and 2014

- **6 developments** and **7 associated offset sites** were not included in the analysis

- **567 ha** of MNES approved for clearing

- **1,328 ha** of area offset

- Offsets for impacts on Box Gum Woodland and Derived Native Grassland, Natural Temperate Grassland, Golden Sun Moth, Pink-tailed Worm-lizard, Striped Legless-lizard
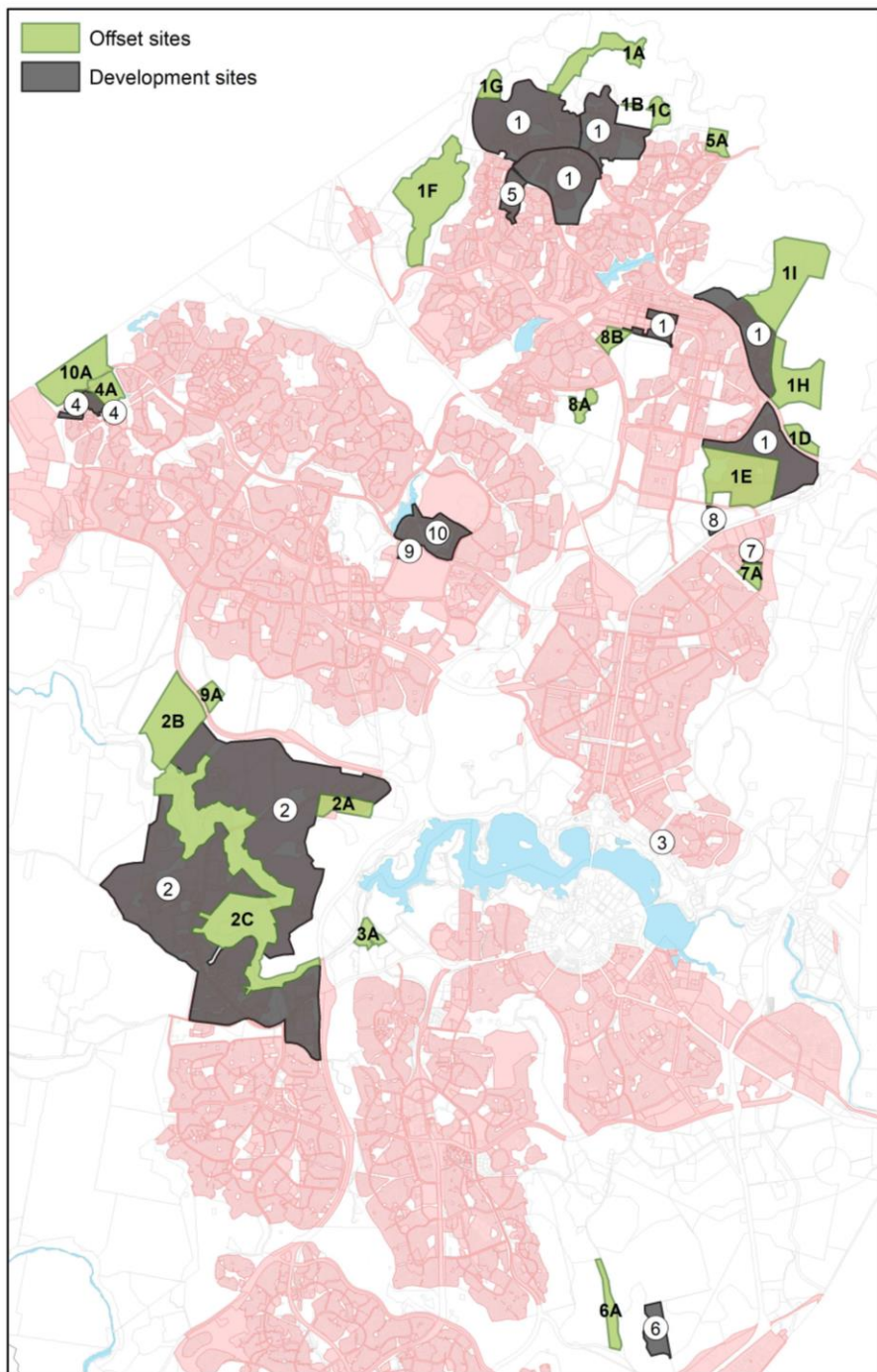
Development	Related offsets
1. Gungahlin District development (strategic assessment)	1A. Horse Park North Conservation Area
	1B. Jacka Conservation Area 1
	1C. Jacka Conservation Area 2
	1D. Kenny Broadacre Conservation Area
	1E. Kenny Conservation Area
	1F. Kinlyside Conservation Area
	1G. Taylor Conservation Area
	1H. Throsby East Conservation Area
	1I. Throsby North Conservation Area
2. Molonglo Valley development (strategic assessment)	2A. Glenloch Woodland (Patch GG & N)
	2B. Kama Nature Reserve
	2C. Molonglo River Corridor
3. Campbell Section 5	3A. Yarralumla Equestrian Park Offset Area
4. Macgregor West 2 Estate	4A. Macgregor West 2 Estate Offset Area
5. Ngunnawal Residential Estate Stage 2C	5A Bonner 4 East Offset Area
6. Mugga Resource Management Centre expansion	6A. Isaacs Ridge
7. Block 9 Section 64 Watson and Negus Cres extension	7A. Watson Woodlands
8. EPIC Block 799 Cabin and Camping development	8A. Gungaderra Grasslands Nature Reserve Extension
	8B. Mulanggari Grasslands Nature Reserve Extension
9. University of Canberra Public Hospital	9A. Pinnacle Nature Reserve Offset Site
10. Lawson south residential development, Belconnen	10A. Jarramlee Offset Site

Developments excluded from the analysis

Development	Offset	Reason for exclusion
Deviation of Kings Highway, Kowen (2010/5501)	Kings Highway Offset	No documents on ACT offsets register
Electricity substation and access road, Williamsdale (2009/4805)	Williamsdale site 2 Offset Area	No referral documents available on EPBC website No documents on ACT offsets register
132Kv Sub-transmission line Williamsdale to Theodore (2008/4621)	Williamsdale site 3 Offset Area	No referral documents available on EPBC website No documents available on ACT offsets register
Murrumbidgee to Googong water transfer and associated infrastructure (2009/5124)	Williamsdale site 1 Offset Area Williamsdale site 4 Offset Area	No referral documents available on EPBC website Offset management plan available on ACT offset register website however details of the impact area are not included.
Clarrie Hermes Drive Extension, West Gungahlin (2009/5156)	Kama Nature Reserve Revegetation Area	No referral documents available on EPBC notices website
Urban development at West Belconnen, ACT and NSW (Gininderry)	Lot 2 Offset Area (Wallaroo Rd NSW)	No documents on ACT offsets register Offset in NSW so some data not available

We tested three key principles

like-for-like — *Are the biodiversity values lost equivalent to those gained?*

no net loss — *Does the policy balance losses with gains?*

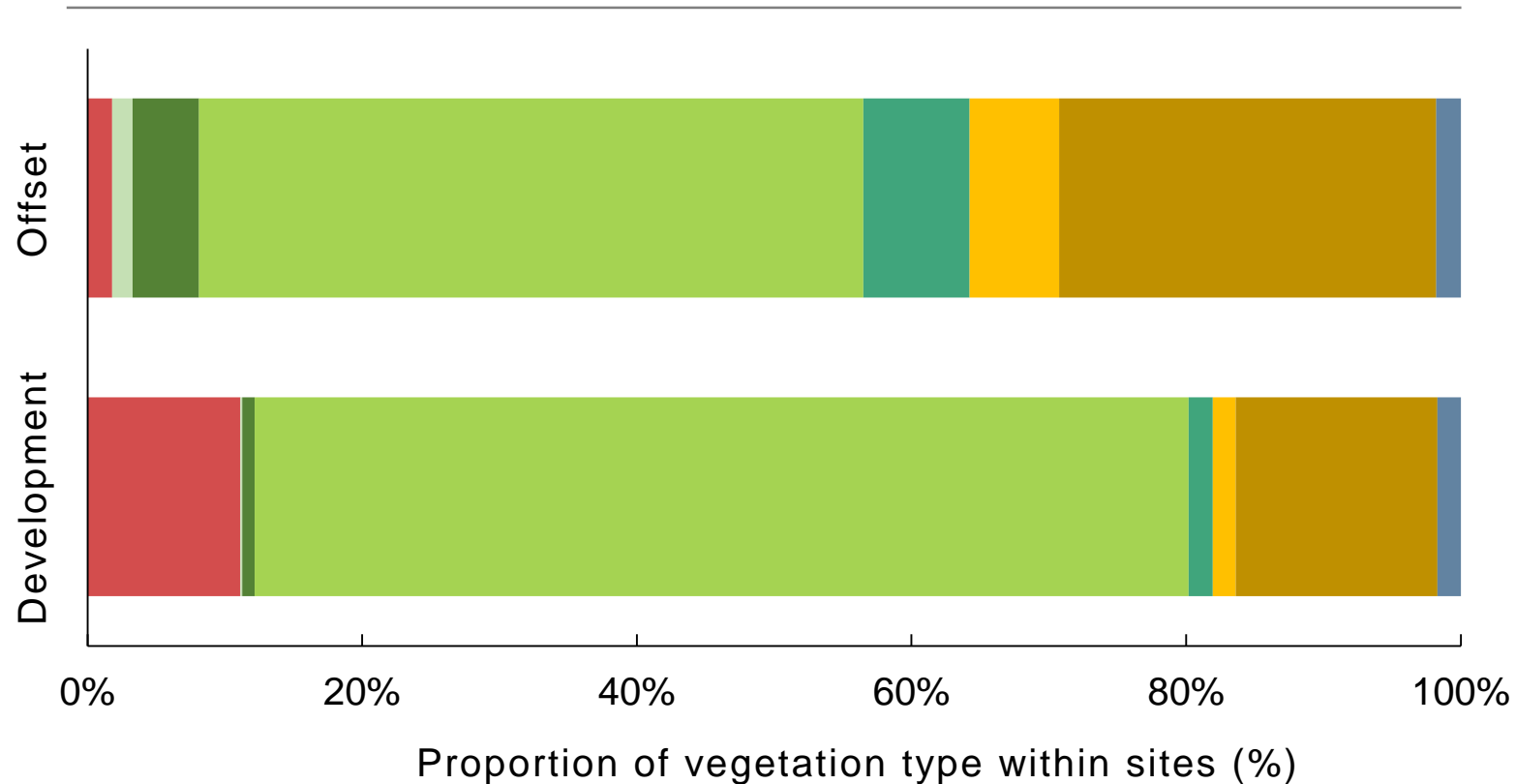**additionality** — *Are the outcomes from offsetting above and beyond what would have occurred if the offset did not occur?*

Findings - like-for-like

Classification	Development sites (ha)	Offset sites (ha)	Ratio
Ecological communities	259.2	732.9	2.8
Box gum woodland	257.4	727.4	2.8
Natural temperate grassland	1.8	5.5	3.1
Habitat for MNES*	312.5	496	1.6
Native vegetation (other)	-	171	-
TOTAL	**567.2**	**1328.4**	**2.3**

*Matters of national environmental significance, or 'threatened species'

- broadly indicates that offsets are in proportion to level of statutory protection

Findings - like-for-like

- % of mapped native grasslands approved for clearing (**68%**) higher than % offset (**45%**)

Proportion of vegetation type within sites (%)

Legend:
- Exotic (all)
- Derived native shrubland
- Mealy Bundy – Red Stringybark forest*
- Native grassland
- Natural temperate grassland
- Yellow Box - Apple Box tall grassy woodland
- Blakely's Red Gum – Yellow Box grassy woodland
- Red Stringybark – Scribbly Gum forest*

Findings - like-for-like
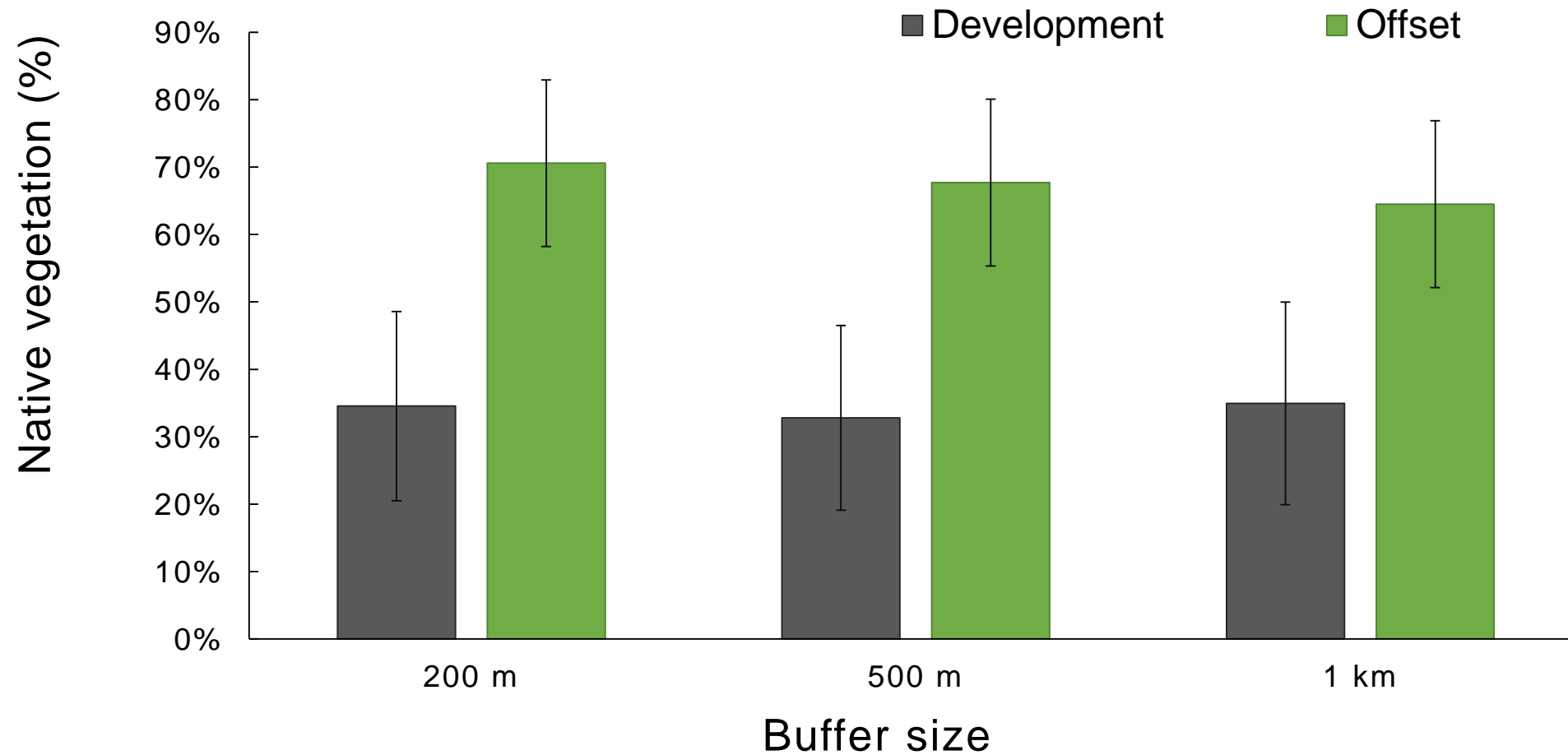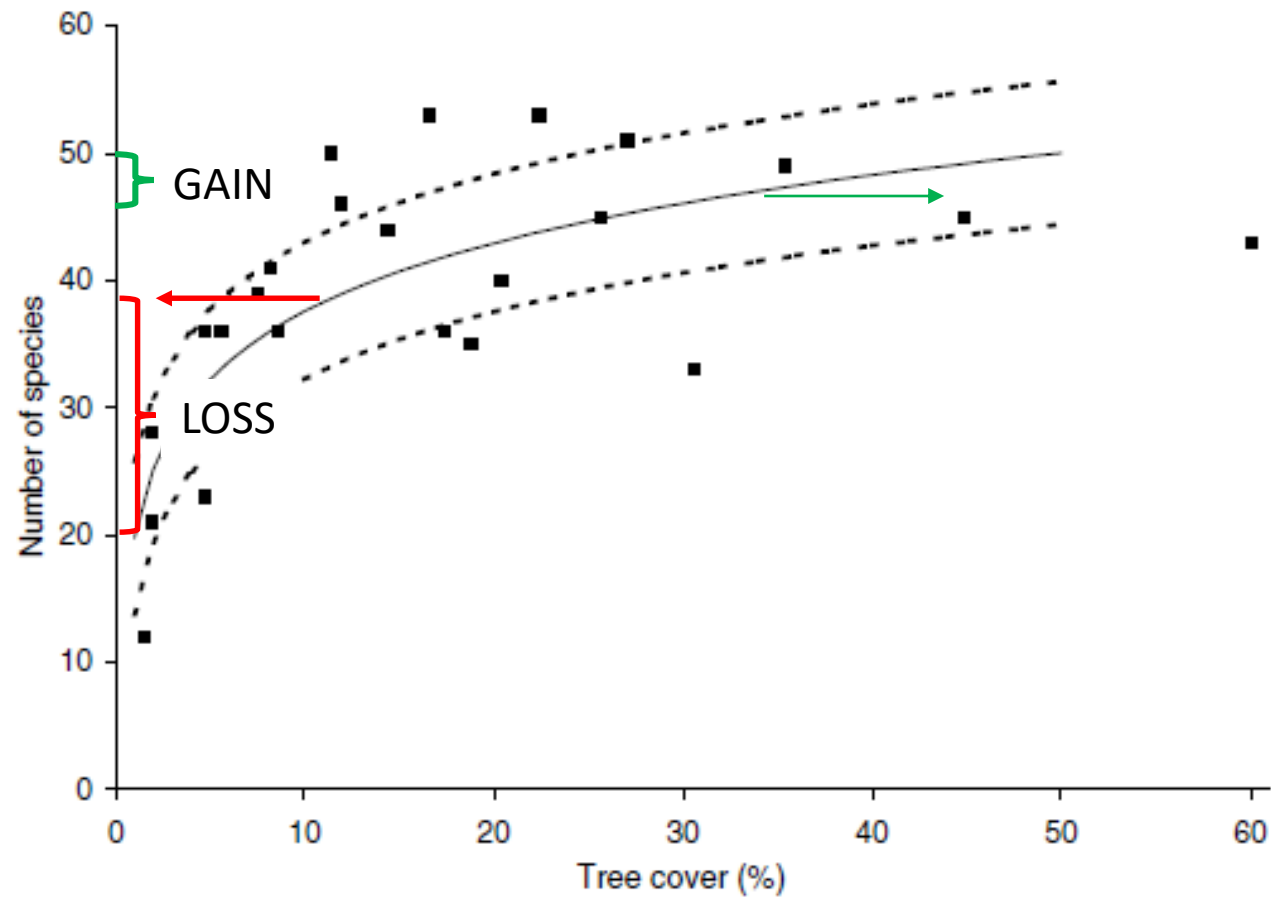
Relationship between bird species richness and % woody cover of 100km2 landscapes in northern Victoria (Radford, Bennett et al. 2005).
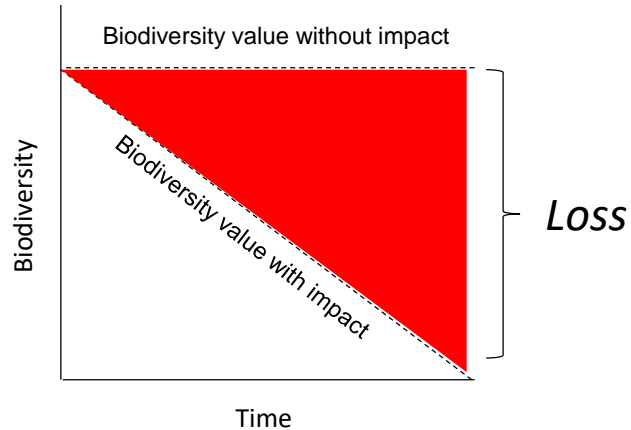
Findings - like-for-like

Buffer (m)	Predicted % loss of species richness with every 1% of landscape developed	Predicted % gain of species richness with every 1% of landscape offset	Net loss in species richness (%)
200	-0.56	0.32	-0.24
500	-0.58	0.33	-0.25
1000	-0.56	0.35	-0.21

- there was a greater impact per ha on species richness from development than gained through offsetting

- offsets must double the area of habitat in the landscape to achieve no net loss
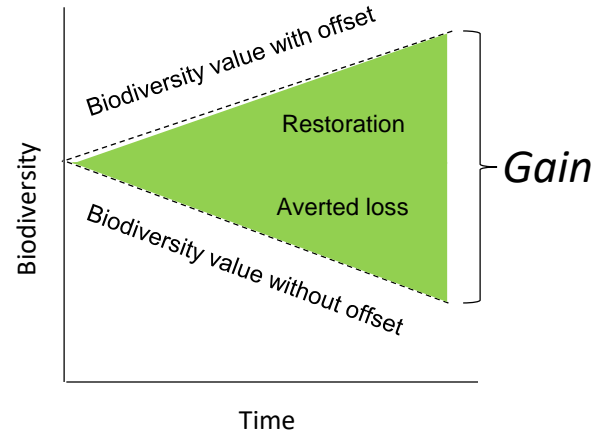
Findings - no net loss

Development site

Biodiversity value without impact

Biodiversity value with impact

Loss

Biodiversity

Time

Offset site

Biodiversity value with offset

Restoration

Averted loss

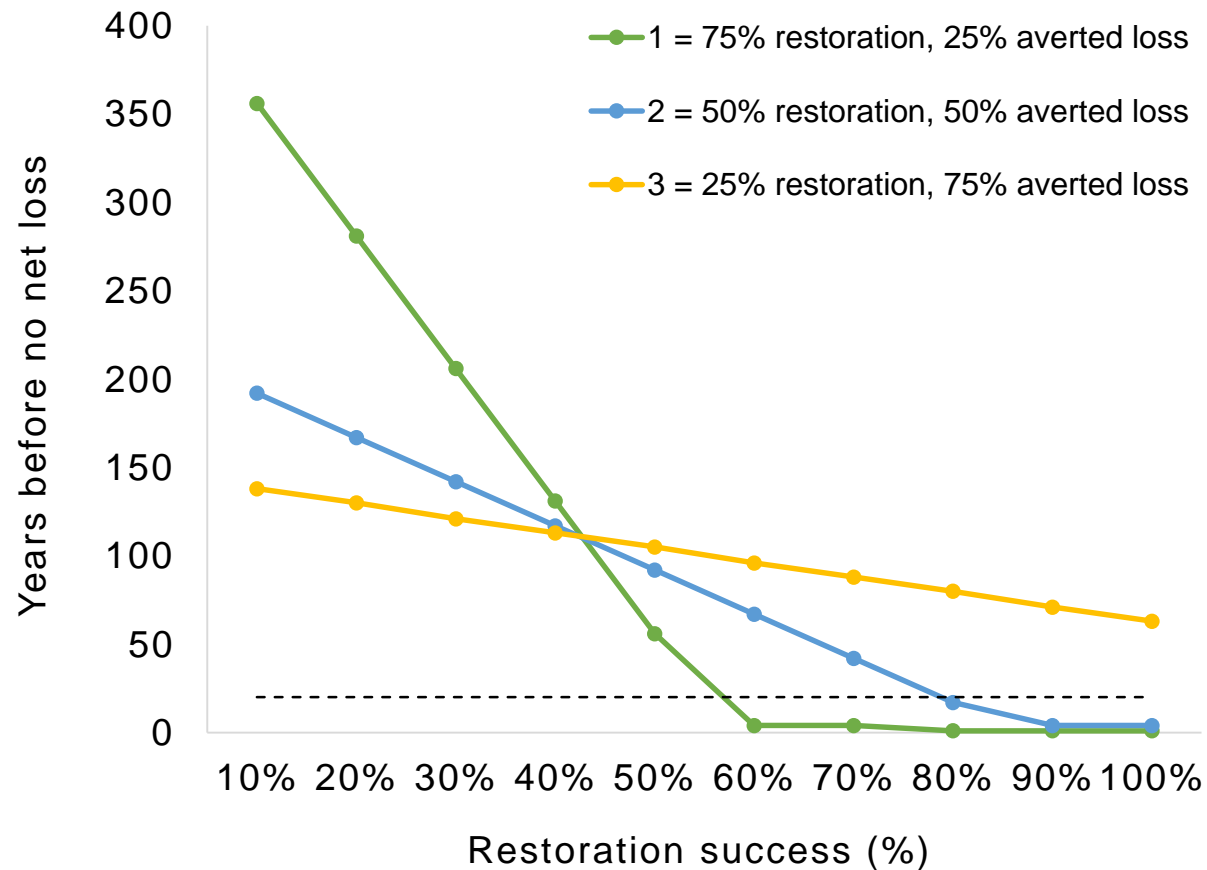Biodiversity value without offset

Gain

Biodiversity

Time

Loss ≤ Gain

- modelled different percentages of restoration & averted loss

- modelled different success rates of restoration

- estimated loss under the counterfactual based on historic loss of box gum woodland in the ACT
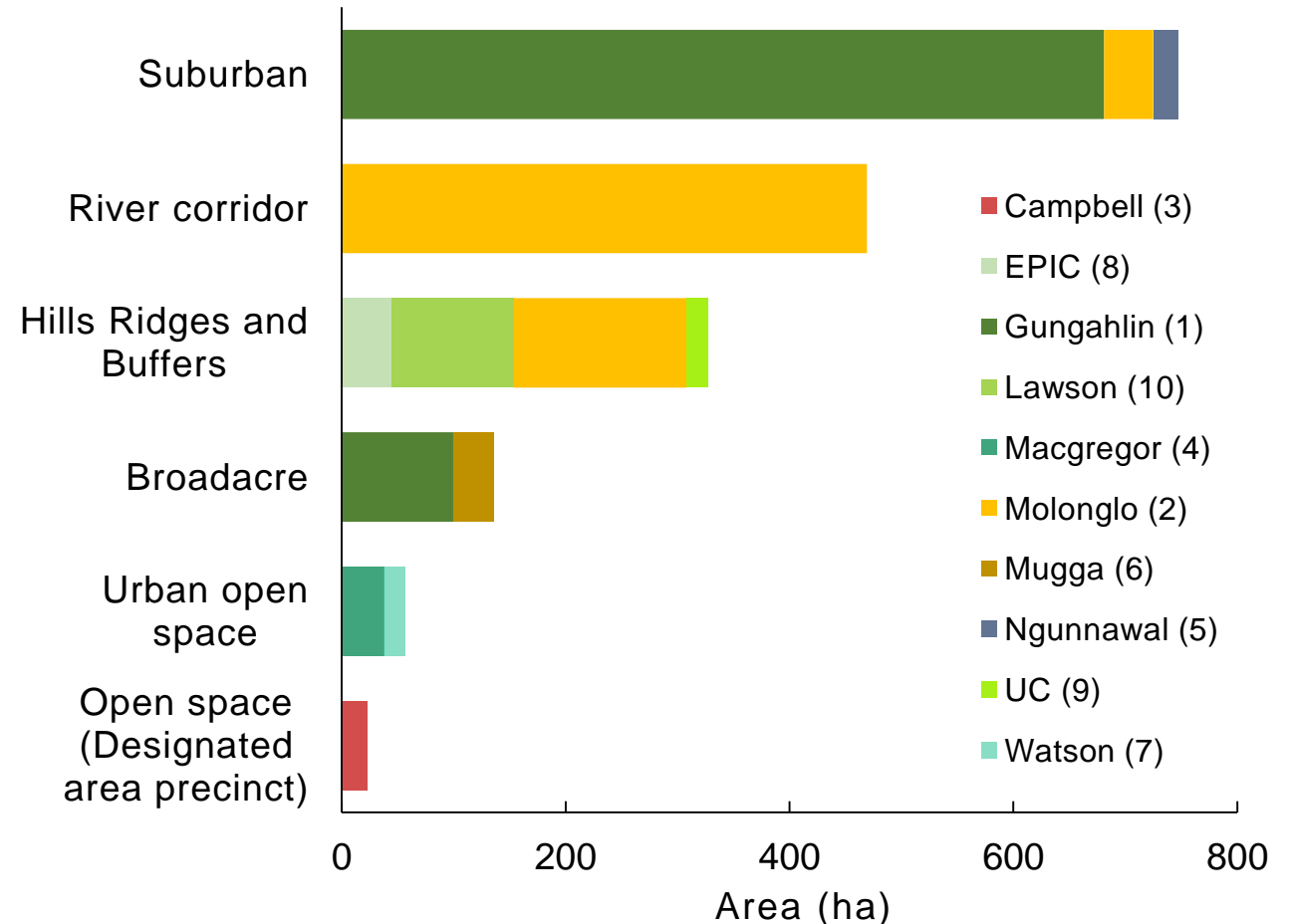
Findings - no net loss

Legend:
- 1 = 75% restoration, 25% averted loss
- 2 = 50% restoration, 50% averted loss
- 3 = 25% restoration, 75% averted loss

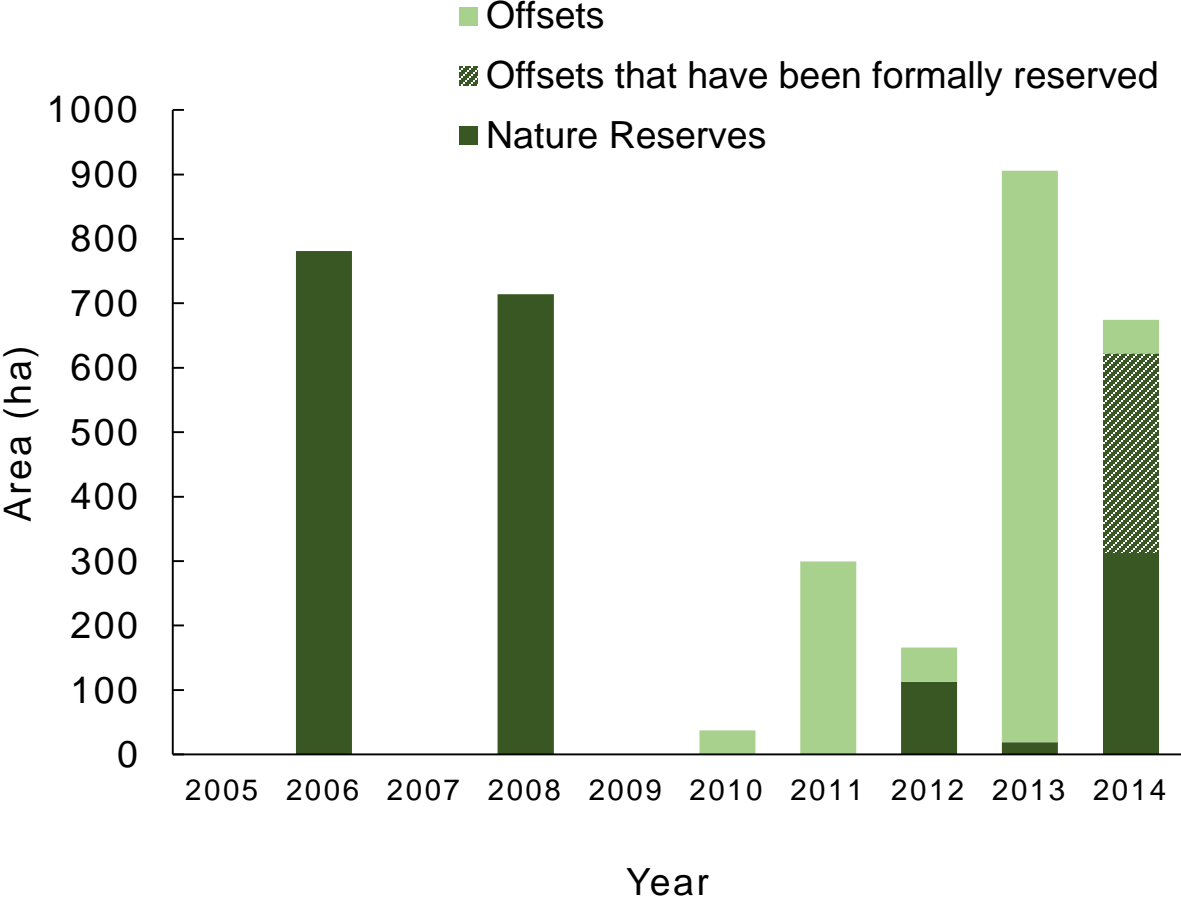X-axis: Restoration success (%)
Y-axis: Years before no net loss

- 93% of offset area listed as MNES suggesting offsetting predominantly based on averted loss (similar in NSW)

- assuming historic rate of decline, an offset strategy based predominantly on averted loss will not achieve no net loss within 20 year timeframe

- only offsets with a high % of restoration and high restoration success likely to achieve no net loss within 20 years

- **BUT** gains from averted loss are sensitive to the assumed decline under the counterfactual which is NOT made explicit

Findings - additionality

- 42% of offsets zoned as suburban before approval so **can we assume a high likelihood of loss under the counterfactual?**

- 46% of offset in river corridors and hills, ridges and buffers - given these "conserve significant ecological values" **can we assume loss under the counterfactual and what offset actions are additional?**

Legend:
- Campbell (3)
- EPIC (8)
- Gungahlin (1)
- Lawson (10)
- Macgregor (4)
- Molonglo (2)
- Mugga (6)
- Ngunnawal (5)
- UC (9)
- Watson (7)

Categories: Suburban, River corridor, Hills Ridges and Buffers, Broadacre, Urban open space, Open space (Designated area precinct)

X-axis: Area (ha) — 0, 200, 400, 600, 800

Findings - additionality

Period	Formal reserves	Offsets	Total reserves and offsets
2005-2009	1495 ha	-	1495 ha
2010-2014	446 ha	1328 ha	1774 ha
Change	-1049 ha	+1328 ha	+279 ha

Main findings

like-for-like

- at level of vegetation type this principle is being met, except greater per cent of native grassland/derived grassland lost at development sites than gained through offsetting

- predicted loss in species richness because development sites occur in more fragmented landscapes than offsets

- with available data can't assess whether losses of some habitat attributes being replaced with different habitat attributes (as in NSW)

no net loss

- unlikely that no net loss is being achieved within a generation

- no net loss only possible when based predominantly on restoration rather than averted losses

additionality

- inadequate transparency regarding assumed rate of decline under the counterfactual and what actions are additional in each zone within Territory Plan

- inconclusive evidence that offsetting is replacing reserve acquisition program

Key points for discussion

- Incomplete public register of approvals
- Inputs to offset calculator not publicly available
- Can't determine how much biodiversity gain on offset sites is averted loss and restoration (critical for evaluation)
- Assumed rate of loss under counterfactual is not made explicit (yet extremely important bearing on outcome)
- Predicted success rates for restoration need to be explicit (also important bearing on outcome)
- What actions are additional in each zone within the Territory Plan?
- Can we claim averted loss on sites zoned "suburban" if they can only be developed if the outcome is "improve or maintain"?