

Attachment AM

Environmental Offsets Supplementary Report

Briefing Note

To: Alex Moulis, Doma Group
E | alex@domagroup.com.au
Cc: David Murphy, BLOC
E | david.murphy@bloc.com.au
From: Karina Carwardine, Umwelt
Date: 28 September 2021
Subject: **Canberra Brickworks – Environmental Offsets Supplementary Report**

In this document

1.0	Introduction	2
2.0	Impact to Golden Sun Moth	2
3.0	Background and Offset Strategy Rationale	2
4.0	Proposed Offset	3
4.1	Offset Site Management Requirements	6
4.2	Offset Governance	6
4.3	Appropriateness of Site for use as an ACT Offset	6
5.0	Determination of Habitat Quality	7
5.1	Site Condition	8
5.2	Site Context	9
5.3	Species Stocking Rate	11
5.4	Gaps and Assumptions	12
5.5	Offset Calculator Inputs	13
6.0	Assessment Against Offset Policy	17

1.0 Introduction

The following briefing note provides a summary of the environmental offsetting process undertaken for the Canberra Brickworks Precinct Project, including key decision points and rationale. This document has been prepared to provide additional information for the updated bilateral Environmental Impact Statement (EIS) being prepared under the ACT's *Planning and Development Act 2007* (PD Act) and *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act), specifically addressing clarifications requested by entities during the consultation period on the Draft EIS.

Umwelt were engaged in 2018 to commence preparing the EIS for the development of the Canberra Brickworks Precinct. A preliminary phase of that scope of works was ecological survey to confirm the extent of golden sun moth (*Synemon plana*) habitat within the Proposal Area, and the provision of environmental offsetting advice.

2.0 Impact to Golden Sun Moth

The development of the Canberra Brickworks Precinct will directly impact on 1.58 hectares of golden sun moth habitat, within areas of exotic grassland dominated by Chilean needlegrass (*Nassella neesiana*).

As described in the EIS, this habitat is considered marginal habitat, being located in exotic grassland, within a timbered area, and with low connectivity with surrounding habitat. It is also at the extent of the larger area of habitat surrounding Dudley Street and Cotter Road, and its removal would not result in any fragmentation of remaining habitat.

The low quality of habitat, the small size of the patch, the dominance of a weed of national significance (and declared Class 3 pest plant in the ACT), and the fact that there has not been evidence of breeding occurring within this habitat (i.e. only males identified during surveys) the patch was considered to be of low priority for protection within the Proposal Area.

As such, the project requires an offset for the entire area of habitat.

3.0 Background and Offset Strategy Rationale

In 2018, when commencing work on this EIS, Umwelt were concurrently preparing the ecological offsets strategy for the adjacent Canberra Brickworks Access Road, on behalf of the ACT Government. This project required substantial offsets for the removal of golden sun moth habitat and natural temperate grassland of the south eastern highlands endangered ecological community.

Preliminary discussions were held with the Department of Agriculture Water and the Environment (DAWE) (then DoEE) (21/2/2018) regarding the potential to offset both projects within the one offset area, being the North Mitchell Grasslands. The rationale for this investigation was the following:

- Impacts were located at the same area, for closely related projects
- The proposed offset area had adequate habitat to offset both projects
- There were no other offsets for golden sun moth made available by the Offsets Team at the time.

However, due to the fact that one offset would be funded by the ACT Government, and one by a private developer, DAWE were not satisfied the offset could meet the following Offset Policy principal:

‘Transparent governance arrangements including being able to be readily measured, monitored, audited and enforced.’

i.e. The ability to transparently measure and attribute conservation outcomes to two separate projects (with two proponents) within the one offset site had too many uncertainties and was not supported in principal.

In 2018, the process for obtaining an Offset was to first discuss project requirements with the ACT Environmental Offset Team. These discussions confirmed that there were no other available offsets for golden sun moth in the quantum required for this project, as a large number of potential offsets were tied up within the Eastern Broadacre Strategic Assessment Area, and the other potential sites identified in an Analysis of Potential Offset Sites Across the ACT (Umwelt 2017) (prepared for EPSDD) had complexities associated with site custodianship (e.g. NCA land) or site usage (e.g. urban open space) that made them unsuitable as an offset for this project.

Umwelt identified the potential for seeking an offset within NSW as an alternative. This approach was supported by DAWE, due to the BioBanking scheme (at the time) being an accredited process under the EPBC Act. Umwelt received in principle support to determine offset requirements by using the EPBC Offset Calculator to determine hectares of habitat required, then translate these into BioBanking credits through a credit/hectare conversion. Preliminary comments on our methodology were received.

Due to this approach not having been taken for an ACT project previously, Umwelt sought advice and concurrence from the Impact Assessment Team (14/3/2018). The Impact Assessment Team confirmed that:

‘The ACT Environmental Offsets Policy allows for offsets across the border (within the bio-region), so this option could be considered. Obviously, the management structures around using a site in NSW would need to be carefully considered and long term protection of the site demonstrated.’¹

Umwelt were asked to provide information to be presented at the following ACT Government Environmental Offsets Working Group. This information was circulated to the Working Group, and presented on 10/4/2018. Follow up clarifications were provided to the Impact Assessment Team and the Environmental Offsets Team on 11/4/2018.

Following this consultation process, pursuing BioBanking credits for the project was confirmed as the approach in the Application for Scoping Document under the PD Act, which was circulated for entity comments.

4.0 Proposed Offset

The proposed offset, the ‘Panorama BioBank Site’ is approximately 92.8 hectares in size and is located on Old Cooma Road in Googong, NSW, approximately 4.5 km from the ACT border at Hume. It occurs in the Murrumbidgee Catchment Management Area (CMA) and in the South Eastern Highlands Bioregion and Monaro subregion.

¹ Personal communication: Tegan Liston, Acting Senior Manager - Impact Assessment and Business Improvement, Environment, Planning and Sustainable Development Directorate (email, 14/3/2018)

It was subject to a Biodiversity Assessment Report (BAR) prepared by Umwelt in December 2017². This BAR included extensive literature review, identification of landscape features, detailed biometric field surveys, and the calculation of ecosystem and species credits in accordance with BioBanking Assessment Methodology (BBAM) (OEH 2014).

Specifically, to golden sun moth, habitat surveys were undertaken on 16th November 2017. The following survey effort was employed:

- Six point-intersect transects (50 metre) to systematically assess suitable ground vegetation cover to determine the cover of wallaby grasses (*Rytidosperma* spp.) and Chilean needlegrass (*Nassella neesiana*) for golden sun moth
- Random meanders covering as much area as possible recording any incidental observations of flying golden sun moth

Suitable grass species cover was also reviewed from the floristic plots completed across all other areas of the site. The location of point-intersect transects are shown in **Figure 1** below.



Figure 1 Targeted Golden Sun Moth Survey at Offset Site (Umwelt, 2017)

The targeted habitat surveys found *Rytidosperma* species throughout the site including ringed wallaby grass (*Rytidosperma caespitosum*), short wallaby grass (*Rytidosperma carphoides*) and silvertop wallaby grass (*Rytidosperma pallidum*). These species occur in a patchy but widespread distribution across the Panorama BioBank Site, most prominently in the grassland habitats of the site.

² Umwelt (2017) *Panorama BioBank Site, Biodiversity Assessment Report, Final Following OEH Review*, prepared for Robin Pty Ltd (December 2017)

Based on the review of the data from previous floristic surveys, point-intersect transects and opportunistic meanders across the site, the species polygon for golden sun moth includes the grassland components of vegetation communities MR648 and MR669 – as shown in **Figure 3** below.



Figure 2 Golden Sun Moth habitat at the Panorama BioBank Site (Umwelt, 2017)



Figure 3 Golden Sun Moth Habitat Mapped at the Panorama BioBank Site (Umwelt, 2017)

Based on the assessment undertaken in Umwelt (2017), the proposed offset site contains 34.8 hectares of golden sun moth habitat, which equated to 247 species credits.

4.1 Offset Site Management Requirements

Based on the BAR, the site would be subject to ongoing management requirements to ensure the protection and improvement of ecological values.

The assumptions related to quality, threat and ongoing management of the offset site in **Section 5** are based on these management actions, which are summarised below:

- management of grazing for conservation
- weed management
- management of fire for conservation
- management of human disturbance
- retention of regrowth and remnant native vegetation
- replanting or supplementary planting where natural regeneration will not be sufficient
- retention of dead timber
- erosion control
- retention of rocks.

Specifically for areas of golden sun moth habitat, are the following additional management requirements:

- no supplementary planting for the overstorey and midstorey
- weed invasion is controlled
- natural regeneration to be monitored for density and slashed where deemed appropriate.

4.2 Offset Governance

The BioBanking Agreement Application for the Panorama BioBanking Site was submitted 12/04/2017.

The BioBanking Scheme was replaced by the Biodiversity Offsets Scheme (BOS) under the *Biodiversity Conservation Act 2016* (BC Act) which commenced in August 2017.

Existing BioBanking agreements remain in place and are managed under the BC Act as Biodiversity Stewardship Agreements. The Biodiversity Conservation Trust (BCT) has taken on the ongoing management of BioBanking agreements, including administration of annual reports, application for variations and annual payments.

4.3 Appropriateness of Site for use as an ACT Offset

The key considerations when determining whether this site was appropriate for use as an offset for the Canberra Brickworks project were 1) whether the offset was located in the same region as the impact, 2)

whether the long term management of the site could be assured, 3) whether the offset habitat was ‘like-for-like’ with the impacted habitat.

The offset identified is as close to the ACT as possible, within 5 kilometres of the border. It is considered appropriate to utilise a cross border offset when the benefits to the biodiversity of the ACT Region are tangible, as with this example.

The long-term management of the site is certain, through the established (and EPBC accredited) NSW BioBanking scheme, including the oversight, compliance monitoring, and funding of the offset through the BCT.

The offset area provides a better quality example of golden sun moth habitat than the impact area. It does not represent habitat comprising Chilean needlegrass, as the impact area does, and has much higher long-term viability and resilience due to its larger patch size and quality.

5.0 Determination of Habitat Quality

To determine offset requirements using the EPBC Offset Calculator, a consistent approach for determining quality of impacted habitat, and offset habitat must be used, to ensure offsets are appropriate and proportionate to the proposed loss.

Umwelt have developed a range of metrics, specific to golden sun moth to allow this assessment of quality, in line with the EPBC Act Offset Guide (**Figure 3**).

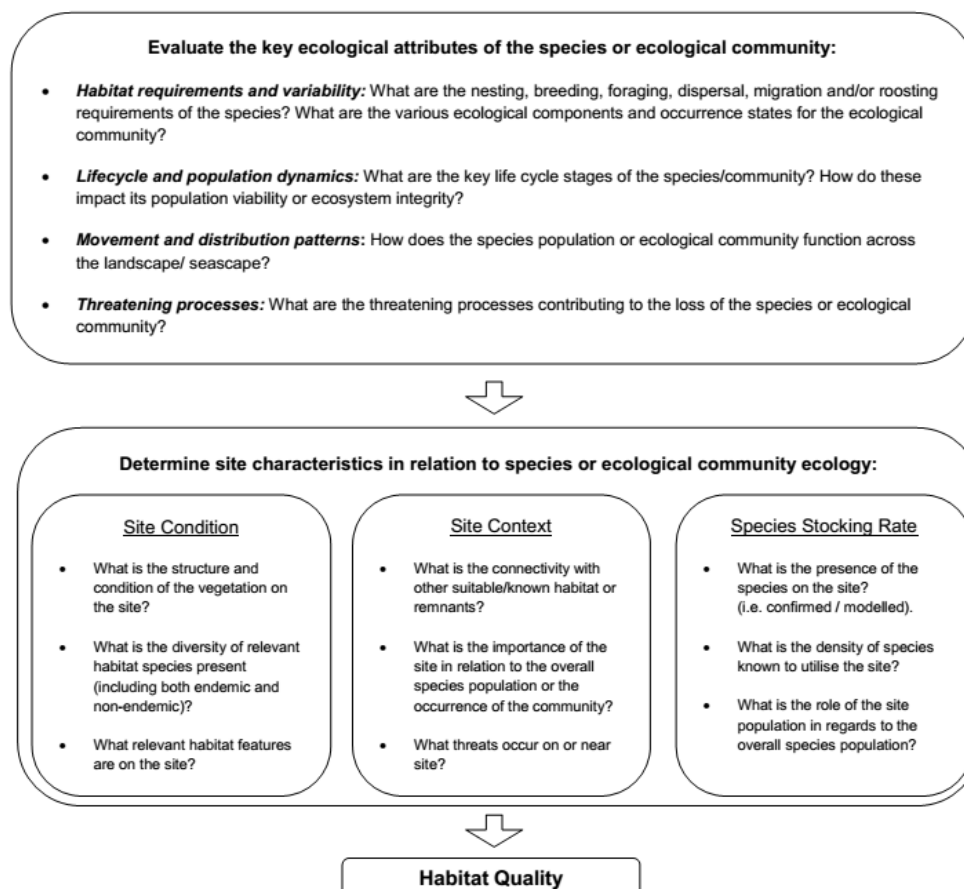


Figure 4 Determining Habitat Quality for an Offset (SEWPaC, 2012)

5.1 Site Condition

Site condition scores for golden sun moth are based on listing criteria for the species, and represent a combination of:

- structure and condition of vegetation on site (native grassland or pasture)
- presence of forage species
- presence and cover of weeds.

The following site condition criteria have been developed specifically for golden sun moth.

Vegetation Structure

Vegetation structure is a reflection of the habitat type (i.e. grassland or open woodland) and the amount of inter-tussock space available (i.e. rank or open grassland). Golden sun moth typically occupies grassland; therefore, grassland structures score higher than woodland.

The species also requires inter-tussock space in which the females bask to attract males during breeding (i.e. flying) season, therefore, open grassland scores higher than rank grassland (DEWHA, 2009a)³. The range of vegetation structure scores is shown in **Table 1**. Any vegetation type that does not fit into one of these categories is not considered to be golden sun moth habitat from a structural perspective and is highly unlikely to support the species.

Table 1 **Vegetation Structure Sub-Scores for Golden Sun Moth**

Score	Rationale
1	Grassy open woodland or shrubland. It is the least suitable of habitats that are occupied by golden sun moth.
2	Rank (i.e. overgrown) grassland.
3	Open grassland. Provides optimal habitat structure.

Vegetation Condition

The vegetation condition sub-score considers the proportion of exotic to native species and the availability of golden sun moth forage species at the site. Scores are determined based on dominance to give an overall impression of the types of grass species that occur. Exotic species dominance is ranked lowest as it is considered to be a sign of poor ecosystem health and a detriment to biodiversity as a whole.

Sites with mixed dominance, or dominance of native non-forage species (e.g. kangaroo grass) are given an equal score. This is considered appropriate as it is believed that the presence (not dominance) of forage species is enough to provide habitat for golden sun moth in some circumstances. Despite this, sites with a dominance of forage species are ranked the highest as they provide the most habitat resources for golden sun moth and are considered to be of a higher quality. The range of habitat vegetation scores that may be assigned is shown in **Table 2**.

³ Department of Environment, Water, Heritage and the Arts (2009a) *Significant Impact Guidelines for the Critically Endangered Golden Sun Moth (Synemon plana)*, Nationally Threatened Species and Ecological Communities EPBC Act Policy Statement 3.12, Department of Environment, Water, Heritage and the Arts, Canberra.

Table 2 Vegetation Condition Sub-Scores for Golden Sun Moth

Score	Rationale
1	Dominated by exotic species.
2	Mixed exotic and native forage species dominance.
3	Dominated by native forage species (e.g. short wallaby grass and spear grasses).

Forage Species Diversity

The forage species diversity sub-score demonstrates the species richness (i.e. the number of species present at a site) and the evenness of the percentage cover for each species. It is important to note the difference between species richness (total number of species present) and species diversity (a function of species richness and abundance). The range of scores presented here is outlined in **Table 3**.

Table 3 Forage Species Diversity Sub-Scores for Golden Sun Moth

Score	Rationale
1	Low species diversity.
2	Medium species diversity.
3	High species diversity.

5.2 Site Context

Site context includes consideration of:

- patch size
- patch shape
- isolation and/or connectivity
- threats.

Specifically for golden sun moth, the following site context values have been developed.

Patch size is based on the Significant Impact Guidelines for the species:

- Patch is less than 1 hectare. There is not considered to be a minimum patch size for golden sun moth habitat, however areas less than 1 hectare are considered very small, and at high risk from external influences and catastrophic events.
- Patch is between 1 and 10 hectares. The Significant Impact Guidelines refer to small or fragmented habitat area as <10 hectares.
- Patch is greater than 10 hectares. The Significant Impact Guidelines refer large or contiguous habitat as >10 hectares.

The approach for connectivity has been developed on the understanding of golden sun moth's limited ability to disperse. Females are not able to traverse over any non-habitat substrate due to their poor flying

ability (ACT Government 2005)⁴, and as such any break in habitat connectivity is considered an absolute barrier that females cannot cross. The distance that males will traverse depends upon the substrate they are travelling over. A substrate that consists of non-habitat grassland will be permeable for male golden sun moths up to a distance of 200 metres (ACT Government 2005); whilst a substrate of concrete, water, bare ground or the like is taken on the basis of observation to be permeable up to a distance of 15 metres. Beyond this distance they are considered absolute barriers and male moths will not cross. In addition, features such as trees, shrubs, or buildings are an absolute barrier for male golden sun moth (DEWHA 2009b)⁵.

Based on this, any separation in habitat greater than 200 metres is considered likely to represent separate populations. The matrix surrounding each patch has also been considered, with native pasture or grassland matrix being considered of higher value than exotic grassland or development.

- 20 metres or less separation would indicate a high level of connectivity between patches
- Less than 200 metres but more than 20 metres between patches would indicate some potential for movement between habitat
- More than 200 metres to the closest patch of habitat. This distance is considered a barrier to movement.

Consideration of threats has been based on the presence and intensity of key threats, as identified in Significant Impact Guidelines for golden sun moth and the species' Conservation Advice. The extensive list of threats provided by the guidance material covers a wide range of land use activities and processes that are the consequence of four main categories of threat as follows:

- Land use and management change:
 - Grazing, pasture improvement, cropping, ploughing
 - Overstocking
 - Urban development and infrastructure
- Conflicting management practices:
 - Fire regimes
- Degrading processes:
 - Exotic species (including pasture species)
 - Loss of inter-tussock spaces
 - Soil compaction

⁴ ACT Government (2005) Action Plan No. 28 A Vision Splendid of the Grassy Plains Extended, ACT Lowland Grassland Conservation Strategy, Environment ACT, Canberra

⁵ Department of Environment, Water, Heritage and the Arts (2009b) *Background Paper to EPBC Act Policy Statement 3.12 – Nationally Threatened Species and Ecological Communities Significant Impact Guidelines for the Critically Endangered golden Sun Moth (*Synemon plana*)*, Department of the Environment, Water, Heritage and the Arts, Canberra.

- Drought and climate change.

Table 4 Site Context Scores for Golden Sun Moth

Score	Rationale
Patch Size	
1	Patch is less than 1 ha
2	Patch is less than 10 ha
3	Patch is greater than 10 ha
Patch Shape	
1	Highly irregular shape
2	A moderately irregular shape
3	A simple shape approaching a square or circle in configuration
Isolation / Connectivity	
1	More than 200 m to the nearest golden sun moth population would indicate the population is isolated and has no capacity for natural recolonisation. It should be noted however that given females are very poor fliers, recolonisation even between very closely associated sites is potentially unlikely. Regardless, this factor is considered important as the ability for males to move between occupied patches is an indication of connectivity and the potential for genetic interchange.
2	Less than 200 m but more than 20 m between patches would indicate some potential for movement between sites however this may also be limited by other factors that golden sun moth find insurmountable.
3	20 m or less separation across suitable ground would indicate ready potential for movement of males between patches.
Surrounding Threats	
0	Threat absent
1	Low intensity threat (2 or less threats)
2	High intensity threat (3 or more threats)

5.3 Species Stocking Rate

Stocking rates are based on observations of flying moths during targeted surveys. Although there is presently insufficient information to fully explain the relationship between flying moth numbers and population size, it is considered the most appropriate method for representing stocking rates.

When targeted surveys have not recently been completed during the appropriate flying season at the site, conservative assumptions based on historical results have been made.

Table 5 Species Stocking Rates for Golden Sun Moth

Quality	Rationale
0	No records in potential habitat
1	Very low numbers of golden sun moth observed during surveys (1 or less per minute)
2	Low number of moths observed (5 or less per minute)
3	Low to Moderate number of moths observed (5 - 10 per minute)
4	Moderate to high number of moths observed (10 - 20 per minute)

Quality	Rationale
5	High numbers of moths observed (20 or more per minute)

5.4 Gaps and Assumptions

As the ecological surveys completed for the impact site, and the offset site differ in methodology, based on their respective survey guidelines (i.e. EPBC Act Survey Guidelines for the impact site, and the BBAM for the offset site), there are some metrics where data is not available for the offset site.

In this case, we are able to set the lowest available score for the offset site, to result in a conservative outcome, and ensure the offset site is not overvalued. These 'assumed' scores are highlighted in the following sections.

5.5 Offset Calculator Inputs



The following table uses the above metrics to demonstrate the performance of the proposed golden sun moth offset against the Commonwealth's offset calculator. Cells highlighted in orange indicate where data assumptions have been made for the offset site.

Table 5.6 Performance of the Proposed Golden Sun Moth Offset

Variable	Value	Rationale							
Summary of Quality									
Impact Area	1.58 ha	Direct impact to 1.58 hectares of golden sun moth habitat.							
		ID	Area (ha)	Site Condition	Site Context				Stocking Rate
					Isolation	Shape	Threats	Size	
Canberra Brickworks	1.58	3/5 Open grassland, exotic dominated, low diversity.	2/3 Within 200 m of other patches, not well connected.	1/3 Very irregular.	2/2 High threats.	2/3 <10 hectares.	2/5 Low.		
Quality of Impact Area	5	A weighted quality score of 5 has been determined by considering the site condition, context, and stocking rates of the impact area, weighted by the size of the patch. This data has been transparently shown in the above section.							
Available Offset	34.8 ha	Offset contains 34.8 hectares of golden sun moth habitat. This has been allocated 247 species credits. i.e. the site has generated 7.1 credits per hectare of golden sun moth habitat.							
Offset Area	TBD	Proposed direct offset at Panorama BioBanking Site in Googong, NSW. Contains up to 34.8 hectares of golden sun moth habitat.							
		ID	Total Area (ha)	Site Condition	Site Context				Stocking Rate
					Isolation	Shape	Threats	Size	
Panorama BioBanking Site	34.8	4/5 Open grassland, mixed native and exotic species, moderate diversity.	1/3 Well connected within site, but limited understanding of regional context.	1/3 Very irregular.	1/2 Low intensity threats.	3/3 >10 hectares.	1/5 Very low. Conservative as recurring golden sun moth counts have not		

Variable	Value	Rationale																																																				
		been conducted.																																																				
Quality of Offset Area	5	<p>A weighted quality score of 5 has also been determined for the offset area by considering the site condition, context, and stocking rates of the overall offset area, weighted by the size of the habitat.</p> <p>A conservative species stocking rate of ‘low’ has been applied as no ongoing annual counts of golden sun moth have been undertaken, following confirmation of species presence (the requirement under the BBAM).</p> <p>A conservative site context score for isolation has also been applied, as we do not have detailed wider habitat mapping although there are numerous species records within a 5 kilometre radius, including in Jerrabomberra and Hume/Environa.</p>																																																				
		<table border="1"> <thead> <tr> <th rowspan="2"></th> <th colspan="2">Raw (weighted scores by area)</th> <th rowspan="2"></th> <th colspan="2">Transformed (scores out of 10)</th> </tr> <tr> <th>Impact</th> <th>Offset</th> <th>Impact</th> <th>Offset</th> </tr> </thead> <tbody> <tr> <td>Site Condition</td> <td>3</td> <td>4</td> <td>Site Condition</td> <td>6</td> <td>8</td> </tr> <tr> <td>Stocking Rate</td> <td>2</td> <td>1</td> <td>Stocking Rate</td> <td>4</td> <td>2</td> </tr> <tr> <td>Site Context (totals)</td> <td>6</td> <td>7</td> <td>Site Context</td> <td>5</td> <td>6</td> </tr> <tr> <td>Isolation</td> <td>2</td> <td>1</td> <td>Quality</td> <td>5</td> <td>5</td> </tr> <tr> <td>Shape</td> <td>1</td> <td>1</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Threats</td> <td>2</td> <td>1</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Size</td> <td>2</td> <td>3</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Raw (weighted scores by area)			Transformed (scores out of 10)		Impact	Offset	Impact	Offset	Site Condition	3	4	Site Condition	6	8	Stocking Rate	2	1	Stocking Rate	4	2	Site Context (totals)	6	7	Site Context	5	6	Isolation	2	1	Quality	5	5	Shape	1	1				Threats	2	1				Size	2	3			
	Raw (weighted scores by area)				Transformed (scores out of 10)																																																	
	Impact	Offset	Impact		Offset																																																	
Site Condition	3	4	Site Condition	6	8																																																	
Stocking Rate	2	1	Stocking Rate	4	2																																																	
Site Context (totals)	6	7	Site Context	5	6																																																	
Isolation	2	1	Quality	5	5																																																	
Shape	1	1																																																				
Threats	2	1																																																				
Size	2	3																																																				
Offset Calculator																																																						
Time over which loss is averted	20	This is the maximum time period over which the guide is designed to function, it is appropriate for permanent impacts.																																																				
Risk of loss without offset	5%	<p>There are a number of factors that could influence the risk of loss of a site, including:</p> <ul style="list-style-type: none"> • presence and strength of formal protection mechanisms currently in place on the proposed site (e.g. zoning, restrictive covenants or state vegetation clearing laws) • presence of pending development applications, mining leases or other activities on the proposed offset site that indicate development intent and likelihood • average risk of loss for similar sites. <p>The risk of loss (distinct to the future quality without offset) is considered to be low for this site, as the process to protect the site as a conservation area has already been progressed, therefore risk of development is low, however it is still subject to factors that contribute to the risk of loss of the species, including weeds, grazing and pasture improvement etc.</p>																																																				
Risk of loss with offset	1%	Management actions implemented as a result of the purchase of BioBanking credits would include a management framework designed to strategically address golden sun moth. Only unforeseeable factors would result in the loss from the habitat offset site.																																																				

Variable	Value	Rationale
Time until ecological benefit	5	This assessment is considerate of the time that it would take to see a measurable improvement in quality of the existing golden sun moth habitat patches with active management, required under the BioBanking agreement (refer Section 6).
Future quality without offset	4	<p><i>Future quality without offset</i> is the estimate of the habitat quality based on a business as usual scenario – that is, considering current management practices, use of the site and historic trends for the quality of golden sun moth habitat in the region.</p> <p>The drop in quality from 5 to 4 is conservative, and based on other sites of known golden sun moth habitat in the ACT Region and reflects the following assumptions:</p> <ul style="list-style-type: none"> • Increase in exotic species, decrease in diversity, and decrease in quality of grassland structure • Increase in threats.
Future quality with offset	6	<p>A very conservative estimate of the future quality of the BioBanking site has been assumed. This is because under the scheme, the Proponent cannot influence future habitat quality improvement. The Proponent has no ongoing input into the management of the land or monitoring/reporting under the scheme. Rather, that is a requirement of the property owner/site steward, who must then manage the site under a Biodiversity Stewardship Agreement, which places a covenant over the land.</p> <p>The increase in quality from 5 to 6 is conservative, and reflects the following assumptions based on the management measures specified in the BAR:</p> <ul style="list-style-type: none"> • Increase in native species diversity, and maintenance of open grassland structure • Improvement in shape complexity through offset site management requirements (Section 4.1) • Decrease in threats, primarily weeds, grazing, and regeneration. <p>This score makes no assumptions on the increase of habitat area, or increased species stocking rates.</p>

 Quality increase
 Quality decrease

	Raw (weighted scores by area)	
	Offset (without)	Offset (with)
Site Condition	3	5
Stocking Rate	1	1
Site Context (totals)	6	9
Isolation	1	1
Shape	1	1
Threats	2	0
Size	3	3

	Transformed (scores out of 10)	
	Offset (without)	Offset (with)
Site Condition	6	8
Stocking Rate	2	2
Site Context	5	9
Quality	4	6

Variable	Value	Rationale
Confidence in result	60 - 75%	Confidence in the low risk of loss is high (75%) due to the proven effectiveness, compliance and reporting requirements under the BioBanking agreement. Confidence in the quality predictions is moderate (60%) as the Proponent cannot influence future habitat quality improvement. To mitigate this uncertainty, very conservative estimates have been used.
Overall Performance	104.47%	This offset provides 100% of the direct offset required for the project.
Area of Offset Required	9.5 ha	This amount of offset habitat, with the criteria assessed within provides 100% of the offset required.
Credits Required	68 credits	-

6.0 Assessment Against Offset Policy

An environmental offset proposed for a project being assessed under the ACT / Commonwealth Bilateral process must demonstrate compliance with the relevant offset policies.

The offset principles for the EPBC Act and ACT Offset Policies are consistent. Compliance of this proposed offset against each of these principles is provided below.

Table 7 Assessment Against Offset Principles

Offset Principles	Response
Suitable offsets must:	
Deliver an overall conservation outcome that improves or maintains the viability of the aspect of the environment that is protected by national environment law and affected by the proposed action	The proposed offset delivers an overall conservation outcome by ensuring the long term protection of 9.5 hectares of golden sun moth habitat within an area being managed for conservation, to compensate for the loss of 1.58 hectares of habitat within exotic grassland in an urban setting, with low long term viability.
Be built around direct offsets but may include other compensatory measures	This offset comprises 100% direct offsets. No other compensatory measures are proposed.
Be in proportion to the level of statutory protection that applies to the protected matter	The performance of the offset has been considered against the Offset Assessment Guide (the Offset Calculator), which determines the appropriateness of an offset or avoidance action against the species' annual probability of extinction (based on IUCN category definitions). Golden sun moth was assessed using a 6.8% annual probability of extinction. Use of the guide confirms that the offset measures proposed are proportionate to the level of statutory protection that applies to the species.
Be of a size and scale proportionate to the residual impacts on the protected matter	The performance of the proposed offset has been considered against the Offsets Assessment Guide which determines the appropriateness of an offset against an impacted MNES. The proposed offset provides 104.5% direct offset which is considered to be of a size and scale proportionate to the impacts to golden sun moth.
Effectively account for and manage the risks of the offset not succeeding	The proposed offset involves the purchase of credits generated under the BioBanking scheme, which are now managed under a Biodiversity Stewardship Agreement (refer Section 4.2). Annual reporting and compliance are the responsibility of the site steward, and are overseen by the BCT, a statutory body, to ensure the ongoing success of the offset. The Offsets Assessment Guide takes into consideration the risk of the offset not succeeding through the 'confidence in result' metrics. As the Proponent has no ability to influence the long term management of the offset following the purchase of credits, a moderate confidence level has been applied, however it is important to note that the BioBanking scheme and its successor, the BOS, have both been accredited as offset methodologies by the Commonwealth, and as such their governance, auditing and compliance processes are considered adequate to effectively account for and manage the risks of the offset not succeeding.

Offset Principles	Response
Be additional to what is already required, determined by law or planning regulations or agreed to under other schemes or programs	The proposed offset is considered to be additional to what is required by the statutory duty of care of the Proponent, which would be a 100% direct offset, or a 90% direct offset and other compensatory measures.
Be efficient, effective, timely, transparent, scientifically robust and reasonable	<p>The proposed offset would be delivered in a timely manner. In the interests of demonstrating a commitment to this offset, the Proponent has already secured 35 credits, with an option agreement for an additional 65 credits in place.</p> <p>This will ensure that all required credits will be purchased prior to any impact occurring.</p> <p>The BioBanking scheme was accredited under the EPBC Act, providing assurance that it is a robust and transparent process.</p> <p>The calculation of offset requirements is transparently presented in this document, highlighting where assumptions have been made where information gaps or differences in methodologies occur. In each of these instances, a conservative assumption has been made to ensure that the offset is not overvalued, and is scientifically robust.</p>
Have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced.	<p>As above, and in Section 4.2, the BioBanking scheme and its successor, the BOS, have both been accredited as offset methodologies by the Commonwealth, and as such their governance are considered transparent and readily measured, monitored, audited and enforced.</p> <p>This monitoring, auditing and enforcement will occur between the BioBanking Site's owner, and the BCT. The Proponent will have no ongoing management responsibilities over this offset following the purchase of credits.</p>

Based on this assessment, the proposed offset is consistent with the EPBC Act and ACT Offset Policies.