

31 March 2011

Michelle Wicks
Assistant Secretary
Environment Assessment Branch, Approvals and Wildlife Division
Department of Sustainability, Environment, Water, Population and Communities

CC: Caitlin Ellis
Assessment Officer NSW Section

GPO Box 787 Canberra ACT 2601
(02) 6275 9927 caitlin.ellis@environment.gov.au

CC: David Griffen
CC: Chris McGrath

beqa

1/216 carp st
(po box 470)
beqa nsw 2550
t 61 2 6492 8333
f 61 2 6494 7773

sydney

unit 18, level 3
21 mary st
surry hills nsw 2010
t 61 2 8202 8333
f 61 2 6494 7773

wagga wagga

102/63-65 johnston st
(po box 5464)
wagga wagga nsw 2650
t 61 2 6971 9696
f 61 2 6971 9693

canberra

unit 9/65 tennant st
(po box 62)
fyshwick act 2609
t 61 2 6280 5053
f 61 2 6280 9387

perth

po box 8323
perth bc wa 6849
t 61 8 9759 1985
f 61 2 6494 7773

dunstable

suite 6, 234 naturaliste tce
(po box 1037)
dunstable wa 6281
t 61 8 9759 1985
f 61 2 6494 7773

ngh@nghenvironmental.com.au
www.nghenvironmental.com.au

Dear Michelle,

RE – EPBC 2011/5865 - Capital Solar Farm- Request for further information (ngh ref. 1657)

In response to your request for further information, dated 23 March 2011, I provide the attached material. In summary:

- Project background regarding DECCW's role in shaping the current conditions of consent for the proposal. From the correspondence provided we feel that Environment Assessment Branch may not have a clear understanding of the assessment that has been undertaken to date and I have sought to clarify this.
- Natural Temperate Grassland (NTG). Our position has been that it is difficult to determine from which community the existing grassland onsite is derived. As a precautionary approach, in this response we have assessed the impacts on the assumption that it is NTG (Assessment of Significance attached).
- Box Gum Woodland and threatened flora and fauna. Further information is provided on the assessment methods and results and their adequacy.
- The offset plan that will accompany the project will increase the area of NTG managed for conservation in the region and locality, and therefore is likely to ensure a net gain in relation to the distribution of moderate to high quality NTG. This plan and therefore the exact boundaries of the NTG, will be developed in consultation with DECCW prior to construction.

In conclusion, we feel the survey effort has been appropriate to the site, and considering the mitigation and offsets proposed, feel that no significant impact would result. We further contend that the conclusions made by the DECCW Inspection Report, regarding vegetation condition and potential for threatened species, are in the most part in agreement with our findings. We hope that the information provided assists you to make your determination. Please contact me directly, should you require further assistance.

Yours sincerely,



Brooke Marshall CEnvP
Manager Projects, Bega
brooke.m@nghenvironmental.com.au
Tel. +61 (0)2 6492 8303

PROJECT BACKGROUND

The comments received from EPBC Environment Assessment Branch and the Inspection Report supplied by DECCW suggest that not all of the survey work undertaken by **ngh**environmental has been considered in reaching their respective conclusions. For example, the Inspection Report criticises the species diversity obtained in the Flora Addendum quadrant surveys, by comparing it to their own survey, which was not constrained by a 20 metre quadrant, and does not consider the previous survey effort undertaken as part of the Biodiversity Assessment. The Inspection report also suggests areas of suitable Little Whip Snake habitat. The areas identified by DECCW closely align with those in which surveys had been undertaken by **ngh**environmental, and supplied to DECCW within the *Fauna Addendum: Capital Solar Farm*, November 2010. Finally, the Inspection Report largely agrees with **ngh**environmental's conclusion that the site is mixed exotic and native dominated grassland and of low species diversity and biodiversity value. Both DECCW and **ngh**environmental agree that areas of better condition vegetation occur onsite, particularly in the eastern section (refer to map supplied in Attachment A).

Due to the complexity of the assessment process for this project, we have summarised the process below to show that input from DECCW has been considered at several stages.

The biodiversity assessment approach for the Capital Solar Farm site included:

- Winter site assessment followed by preparation of the biodiversity assessment. This approach allowed the project design to be informed by the constraints identified onsite during this initial assessment.
- Targeted follow-up spring assessment (several site visits undertaken) followed by the preparation of a flora biodiversity addendum¹ and a fauna biodiversity addendum. This allowed us to target survey effort effectively on those species with potential for impact in an optimal survey window.

During the broader project assessment process, DECCW provided input:

- Into the draft biodiversity assessment, prior to lodgement
- Into the pre-exhibition biodiversity assessment, prior to public exhibition
- On the final biodiversity assessment, after public exhibition
- On the revised Statements of Commitment and Conditions of Consent, prior to project approval

In this way, DECCW have shaped the final commitments that now accompany the proposal. Conditions are included in the NSW Government Project Approval. These include conditions C1 and E4 that require preparation of an Offset Strategy, which will ensure a 'like for like' offset to 'maintain or improve' biodiversity values. These conditions are included for your information below.

Biodiversity Offset Strategy

- C1 The Proponent shall prepare a biodiversity offset strategy, in consultation with DECCW and the landholder to the satisfaction of the Director-General, to guide the development of the offset package required in condition E4. The offset strategy is to be prepared by a suitably qualified ecologist and submitted for approval prior to the commencement of construction and include:
- (a) an assessment of all native vegetation communities and threatened species habitat that will either be directly or indirectly impacted by the proposal;
 - (b) demonstration of how the offset is consistent with the principles of 'improve or maintain' for biodiversity values;
 - (c) the proposed offset ratios and connectivity improvements;
 - (d) an assessment of the offset site that demonstrates that offset ratios for "like for like" communities and habitat will be met;
 - (e) proposed management actions; and
 - (f) measures to ensure in-perpetuity the conservation commitment.

¹ The new DECCW consultation refers only to this addendum and does not acknowledge the previous assessment or previous role of DECCW in shaping the assessment process and biodiversity recommendations.

Condition E4 referred to above in condition C1 includes;

Biodiversity Offset

Biodiversity Offset Strategy

- E4. Details of the offset package shall be submitted for the approval of the Director-General prior to the commencement of operation or as agreed by the Director-General. The package shall:
- (a) describe how the offset shall be guaranteed, managed and monitored in perpetuity;
 - (b) ensure all impacted vegetation communities and threatened species habitat has been offset as per the ratios/amounts calculated through the outcomes of the assessment carried out under Condition C1;
 - (c) demonstrate how the offset ratio is consistent with the principles of “improve or maintain” for biodiversity values; and
 - (d) include requirements for a post construction review to confirm the extent of clearing was commensurate with and not greater than that predicted. If clearing is greater, then the package shall demonstrate how the offset was modified and increased to the value of the actual biodiversity loss.

The offset plan that will accompany the project will increase the area of NTG managed for conservation in the region and locality, and therefore is likely to ensure a net gain in relation to the distribution of moderate to high quality NTG. This plan and therefore the exact boundaries of the NTG, will be developed in consultation with DECCW prior to construction.

NATURAL TEMPERATE GRASSLAND EEC

For the purpose of providing additional information and in line with the DECCW Inspection Report (16 December 2010), we have adopted a precautionary approach and assumed that the grassland in the western paddock at the site, and much of the eastern paddock is derived from Natural Temperate Grassland (NTG). A revised vegetation community map is attached (**Attachment A**). Because some uncertainty is unavoidable regarding precise boundaries in disturbed and cleared vegetation (Environment ACT 2003), assumptions relating to the distribution of NTG at the site have been based largely on topography, cold air drainage patterns and remnant trees at the site. It is noted that grassy groundcover in Frost Hollow Woodland and NTG can be floristically almost identical.

An assessment of significance for this community is provided at **Attachment B**. The assessment of significance concludes that the proposal would reduce the extent of the Natural Temperate Grassland community by clearing or modifying up to 32.25 hectares of this community. However, most of the area of the community affected (the western paddock) has low diversity and relatively low conservation value (this was reflected in the DECCW Inspection Report, which stated that the site was mostly low quality, lacking indicators of quality). The eastern paddock contains better condition grassland.

The vegetation to be cleared or modified would be offset under the Offset Plan developed for the project. The Offset Plan would meet ‘maintain or improve’ principles for biodiversity outcomes. It would be consistent with the Draft Principles for the Use of Biodiversity Offsets in NSW, and would be developed in consultation with the landowner and DECCW. The mapping of the vegetation community boundaries would also be confirmed with DECCW prior to the works and the preparation of the Offset Plan to ensure the ‘maintain or improve’ principle is met. Currently the NTG at the site is subject to threats associated with agricultural activities. The offset plan will increase the area of NTG managed for conservation in the region and locality.

THREATENED SPECIES SURVEYS: FLORA

Consistent with DECCW advice and relevant NSW guidelines (DEC/DPI 2005), targeted surveys for threatened flora species were undertaken on 8 and 11 November 2010. These surveys targeted all threatened species relevant to Natural Temperate Grassland, Box-Gum Woodland and Frost Hollow Woodland habitats (refer *Flora Addendum: Capital Solar Farm*, November 2010). A DECCW representative (Matthew Makeham) was consulted regarding the timing of the targeted survey, local flowering times, known populations and survey techniques. Quadrats in each community were also undertaken to supplement the main survey undertaken in winter using the random meander technique; species lists for these additional 0.04 ha quadrats are attached to the *Flora Addendum* report.

The targeted survey methods and locations are detailed in the *Flora Addendum*. The search transects totalled 3.4 kilometres and covered 3.4 hectares. Surveys were conducted in representative areas of Natural Temperate Grassland (in both the eastern and western sections of the site) as well as grassland derived from Frost Hollow Woodland. In view of the coverage of the November survey and the site potential for threatened species, the level of targeted survey effort is considered to be appropriate.

BOX-GUM WOODLAND CEEC

In relation to Box-Gum Woodland, the main survey involved a random meander over approximately 1 hectare in native pasture derived from this community (survey site 22) in the Biodiversity Assessment main report). This site was dominated by the native Weeping Grass and exotic Serrated Tussock, with very low forb diversity, and would not qualify as part of the Critically Endangered Ecological Community (CEEC) listed under the EPBC Act. Other paddocks in this area were inspected and found to be in similar condition. A patch of Box-Gum Woodland with tree cover is present at the northern end of the proposed transmission line, near the existing substation. This area would be included in the CEEC but will not be impacted by the proposal. A quadrat (0.04ha) and targeted search (0.2ha) was conducted in this patch simply to confirm the origin of the surrounding pasture and provide context for the wider survey. On this basis, we believe we have met the requirements of the Box-Gum Woodland CEEC listing and conservation advice regarding assessment scale.

THREATENED SPECIES SURVEYS: FAUNA

Little Whip Snake and Pink Tailed Legless Lizard

Little Whip Snakes have been recorded within 30 km to the east, south and west of the subject site and, of the four threatened reptiles considered, were deemed the most likely to occur on site based on existing records.

Pink-tailed Worm-lizards have been recorded 25km to the south west of the subject site in the ACT and Queanbeyan areas. Extensive searches have not located this species in the north-west of the ACT (the closest section of the ACT to the subject site) (Osborne et al, 1991). The scarcity of small, shallowly embedded surface rocks and of Kangaroo Grass *Themeda triandra*, habitat features associated with the nearest records of this species in the ACT (Osborne et al, 1991), suggests the site would not support this species.

Regarding survey effort for these two species, reptile habitat assessments (20 assessments) and systematic hand searches (5 person-hours) of all areas of surface rock and rock outcrops were conducted across the site, in full accordance with the Director General's Requirements for this project. These areas are mapped on Figure 3.6 of the *Fauna Addendum: Capital Solar Farm*, November 2010, and closely correspond with the areas identified as potential Little Whip snake habitat in the DECCW Inspection Report (map provided as Attachment C).

These searches confirmed earlier assessments that rock outcrops, with the exception of the two larger outcrops in the north west of the site, were generally small and isolated, consisting of massive buried bedrock with relatively few surface fragments. Habitat assessments noted the high degree of cattle trampling across much of the site. Very few common reptiles were found during the surveys suggesting poor foraging resources for Little Whip Snakes.

Hand searches in the adjacent Sweenys Travelling Stock Reserve (recognised as an area of significant conservation value and high biodiversity; P&A Walsh, 2008) failed to detect threatened reptile species.

The survey was considered adequate for these species.

Grassland Earless Dragons and Striped Legless Lizard

Grassland Earless Dragons have been recorded in the Queanbeyan area and north east ACT. The extent of the site that would have been native temperate grassland prior to modification for agricultural purposes is unknown. It is likely, based on the surrounding vegetation, that the less modified pasture in the east of the site would have been wooded. Considering the degree of modification by stock grazing it is unlikely that Grassland Earless Dragons would persist within the development

envelope even if native temperate grassland was once found in areas of the site. Few invertebrate holes were observed during the habitat assessments and while surface rocks are present in some areas these are largely well embedded and offer little surface shelter (refer above).

Striped Legless Lizards have been recorded in the north of the ACT, 30km to the south west of the subject site. Surveys for this species in optimal grassland habitat within the Bungendore area have failed to detect any individuals (Gunninah Environmental Consultants 1997 in ACT Government 1997) and the lack of tussock grass structure (other than serrated tussock which has been found to support this species on occasion; DEHWA, 2010), cracking clay and limited surface rocks on the subject site further reduces the probability of this species occurring.

Based on initial habitat assessments, which determined poor habitat quality for these species, a survey design was employed for follow up spring surveys for Grassland Earless Dragons and Striped Legless lizards based on more detailed habitat assessments and inspection of existing spider holes. The habitat assessments assessed 20 10x10m plots, recorded cover, level of stock disturbance and vegetation characteristics. Inspections included the use of a fibroscope to inspect any invertebrate holes large enough to provide shelter sites for Grassland Earless Dragons. A total of 2 holes, large enough to provide cover for Grassland Earless Dragons, were found and inspected within the 20 10x10m plots subject site and only 11 holes were found across the site while hand searching, highlighting the lack of this habitat resource onsite. No evidence of either species was detected onsite and habitat assessments support the assessments contained in the BA that concluded the probability of either species occurring on site is low and that the survey effort was adequate.

Impact of solar panels on EPBC listed entities

It should be noted that the Photo Voltaic (PV) array is to be installed above the ground. Ground disturbance would be limited to cable trenching and driving of the posts for the panel support frames. Disturbance would not occur over the entire area of the array. Vegetation under the PV array may be affected however, by altered microclimate beneath the array, including through changes in infiltration of rainfall, reduced insolation and temperature, increased humidity and wind speeds on a micro level.

The proposal would not permanently affect the physical factors which underpin the distribution of Natural Temperate Grassland at the site (landform, topography, soils, hydrological and cold air drainage patterns). These factors would continue to operate following the decommissioning of the solar farm. Further, the project includes the development of a Vegetation Management Plan specifically aimed at managing the vegetation beneath the array.

REFERENCES

- ACT Government (1997). Striped Legless Lizard (*Delma impar*): A vulnerable species. Action Plan No. 2. [Online]. Canberra: Environment ACT. Available from:
http://www.tams.act.gov.au/__data/assets/pdf_file/0003/154623/actionplans2.pdf.
- Department of Environment and Conservation and Department of Primary Industries (DEC/DPI) (2005) Draft Guidelines for Threatened Species Assessment for Part 3A applications.
- Department of the Environment, Water, Heritage and the Arts (2010). *Delma impar* in Species Profile and Threats Database, Department of the Environment, Water, Heritage and the Arts, Canberra. Available from:
<http://www.environment.gov.au/sprat>. Accessed Tue, 7 Sep 2010 23:48:59 +1000.
- Environment ACT (2003) National Recovery Plan for Natural Temperate Grassland of the Southern Tablelands (NSW and ACT): an endangered ecological community Environment ACT August 2003
- Osbourne, W.S., Lintermans, M. and Williams, K.D. (1991) Distribution and conservation status of the endangered Pink-tailed Legless Lizard *Aprasia parapulchella*. Research Report 5. ACT Parks and Conservation

P & A Walsh Consulting (2008) Bungendore Land use Strategy and Structural Plan(Public exhibition draft). Prepared for the Palerang Council.

Robertson, P. and Evans, M. (2009). National Recovery Plan for the Grassland Earless Dragon *Tympanocryptis pinguicolla*. ACT Department of Territory and Municipal Services, Canberra.

ATTACHMENTS

ATTACHMENT A:

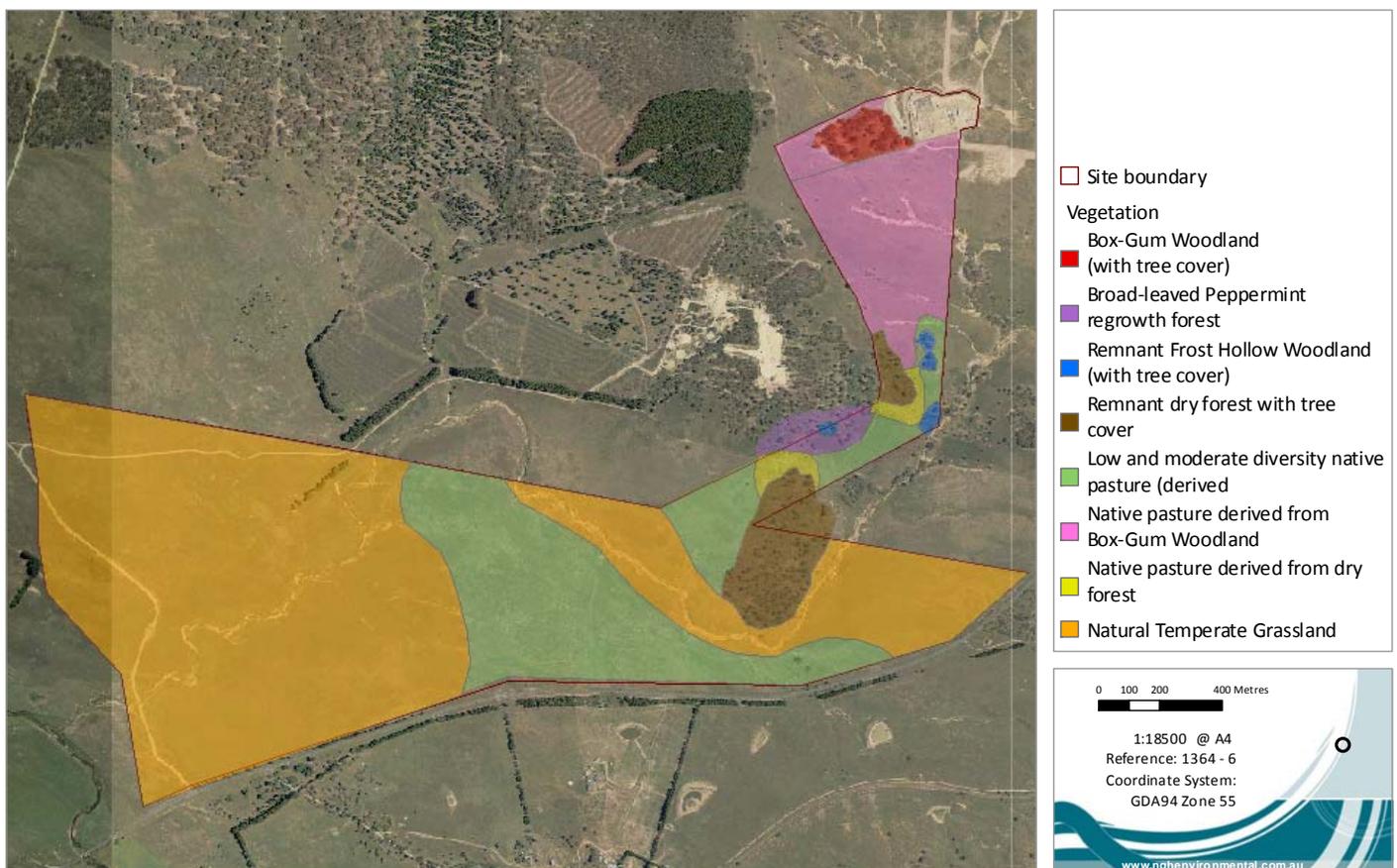
REVISED VEGETATION MAP

Assuming that the grassland onsite is derived from the Natural Temperate Grassland (NTG), the vegetation mapping has been revised to show:

- 121.67 hectares of NTG occurs within the development envelope
- 35.25 hectares of NTG would be directly affected by the installation of infrastructure

It should be noted that:

- Assumptions relating to the distribution of NTG at the site have been based largely on topography, cold air drainage patterns and remnant trees at the site. It is noted that grassy groundcover in Frost Hollow Woodland and NTG can be floristically almost identical.
- Most of the area of the community affected (the western paddock) has low diversity and relatively low conservation value (this was reflected in the DECCW Inspection Report, which stated that the site was mostly low quality, lacking indicators of quality). The eastern paddock contains better condition grassland.



ATTACHMENT B:

ASSESSMENT OF SIGNIFICANCE (EPBC ACT)

The following assessment of significance is undertaken according to the Significant Impact Guidelines for Matters of National Environmental Significance listed under the *Environment Protection and Biodiversity Conservation Act 1999*.

Criteria for critically endangered and endangered ecological communities

An action has, will have, or is likely to have a significant impact on a critically endangered or endangered ecological community if it does, will, or is likely to:

- Lead to a long-term adverse affect on an ecological community, or
- Reduce the extent of a community, or
- Fragment an occurrence of the community, or
- Adversely affect habitat critical to the survival of an ecological community, or
- Modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for the community's survival, or
- Result in invasive species that are harmful to the critically endangered or endangered community becoming established in an occurrence of the community, or
- Interfere with the recovery of an ecological community.

Will the action ...

a) *lead to a long-term adverse affect on an ecological community*

The proposal would adversely affect up to 32.25 ha of Natural Temperate Grassland² for the life of the project, through altering species composition due to microclimate impacts and clearing to provide access tracks. The expected nature and scale of these impacts is detailed in the Biodiversity Assessment. Native grassland would be retained under the solar array, but species composition would shift toward more shade-tolerant species.

b) *reduce the extent of a community*

The proposal would reduce the extent of Natural Temperate Grassland at the site through clearing and microclimate impacts. Up to approximately 1.6 ha (5% of the solar array area) would be removed during the construction of solar array bases. The solar array panels would cover approximately 30 hectares of the NTG (vertical projection). This and surrounding areas would be subject to modified microclimate including shading and altered hydrology from the panels. Additionally, associated impacts result from the construction of tracks, laydown areas etc; totalling up to 32.25 ha of Natural Temperate Grassland. Most of the area affected (including the western paddock) has low diversity and relatively low conservation value, although patches of better condition grassland are present in the eastern paddock.

The distribution and area of Natural Temperate Grassland in the wider locality is not known with precision. It is likely that other properties in the locality with similar landform and use history also carry this vegetation.

In the ACT, 1500 ha of NTG has been identified (1000ha in moderate to good condition). 7000 ha of NTG in moderate to good condition has been identified in the NSW Southern Tablelands, with a similar amount as yet unsurveyed on private land (Environment ACT 2003). Probably less than 3% of the original distribution of the community retains a level of

² This area includes all areas under the array and other associated infrastructure: temporary laydown areas, roads, cables etc.

ecological integrity justifying recognition as having high conservation value and warranting protection. Native pasture sites have varying conservation value related to their species composition and position in the landscape as potential buffers to higher quality sites (Environment ACT 2003).

c) fragment an occurrence of the community

The proposal would fragment the Natural Temperate Grassland community on the involved property. In the local context, small areas of Natural Temperate Grassland occur on the property to the north of the solar array site. The Sweeneys Travelling Stock Reserve to the immediate east of the property carries Candle Bark woodland (Frost Hollow Woodland). Similar landforms and vegetation are expected to be present on farmland between the site Lake George to the west and Bungendore to the south-west. The proposal is not expected to significantly fragment the community in the context of the locality. Native vegetation would be retained at the site (although may be affected by shading, refer to e) below).

d) adversely affect habitat critical to the survival of an ecological community

The recovery plan for the community states that, given the small amount of Natural Temperate Grassland remaining, all sites that meet the definition of the community should be considered to be critical habitat. However, the plan notes that there will be a need to rank sites according to their conservation value as a basis for setting priorities for protection (Environment ACT 2003). The proposal site meets the definition of the community in the listing (which has no condition criteria) but most of the NTG at the site (particularly the western paddock) has low diversity and relative conservation value and would not meet the community recognition criteria in the Recovery Plan (Environment ACT 2003).

e) modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for the community's survival

Vegetation under the PV array may be affected by altered microclimate beneath the array. Including through changes in infiltration of rainfall, reduced insolation and temperature, increased humidity and wind speeds on a micro level. The array would slow the rate of radiated heat loss overnight and the transformers and inverters would produce heat, which may reduce the frost hollow effect which currently operates at the site.

The proposal would not permanently affect the physical factors which underpin the distribution of Natural Temperate Grassland at the site (landform, topography, soils, hydrological and cold air drainage patterns). These factors would continue to operate following the decommissioning of the solar farm.

f) result in invasive species that are harmful to the critically endangered or endangered community becoming established in an occurrence of the community

Best practice weed hygiene and control would reduce the risk of the project resulting in the introduction or spread of invasive weeds. The site already has significant infestations of noxious weeds; these would be controlled as part of the proposed works.

g) interfere with the recovery of an ecological community

The proposal site is a commercial grazing property where several threats to the community operate, including invasive weeds, and grazing and other agricultural activities. Recovery of the community at the subject site under the present management regime is unlikely. On a regional scale, the loss of an area of the community would interfere with recovery, however, most of this area has low diversity and is of relatively low conservation value. In this area, the proposal is not expected to have a significant impact on regional conservation or recovery objectives. The offset plan that will accompany the project will increase the area of NTG managed for conservation in the region and locality, and therefore is likely to ensure the development results in a net gain in relation to the distribution of moderate to high quality NTG.

ATTACHMENT C:

FAUNA SURVEY EFFORT

Source: *Fauna Addendum: Capital Solar Farm*, November 2010. Report prepared by **ngh**environmental for Infigen Energy.

Figure 3-6.

