

Majura Solar Farm

STRIPED LEGLESS LIZARD HABITAT ASSESSMENT



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1 INTRODUCTION

1.1 BACKGROUND

Solar Choice Pty Ltd (Solar Choice) and Solar Fields Pty Ltd (Solar Fields) are collaborating on a project to develop the Majura Solar Farm in the Australian Capital Territory. The proposed solar photovoltaic (PV) facility would have a power generating capacity of up to 4MW. The site for the proposed solar farm is located on unused and cleared land (Registered Rural Blocks 707 and 708) which is currently being leased from the ACT Government by the Mount Majura Winery. The land is classified as Designated Land under the National Capital Plan and therefore a works approval is required from the National Capital Authority (NCA).

1.2 PURPOSE AND SCOPE OF THIS REPORT

An environmental study was conducted by NGH Environmental Pty Ltd (NGH Environmental) in January 2013, which concluded that the proposed Majura Solar Farm site may potentially contain suitable habitat for the Striped Legless Lizard *Delma impar*. Since the environmental study, the NCA has requested that a more detailed habitat assessment be prepared by a suitably qualified professional, in order to assess the potential value of the site for the Striped Legless Lizard. This report outlines the value of the Striped Legless Lizard habitat that exists within Rural Blocks 707 and 708 and provides recommendations relating to the avoidance or mitigation of impacts of the works on the Striped Legless Lizard and its habitat.

1.3 STRIPED LEGLESS LIZARD

Protection Status

The Striped Legless Lizard is listed as vulnerable in the ACT under the *Nature Conservation Act 1980* and is also listed vulnerable at a national level under the *Environment Protection and Biodiversity Conservation Act 1999*.

Distribution

The Striped Legless Lizard is restricted to native grasslands in south-east Australia. In the ACT, four disjunct populations of the Striped Legless Lizard are known, and they are in the localities of Gungahlin, Yarramundi Reach, Jerrabomberra Valley and the Majura Valley (DSEWPac, 2011). The Majura Valley is believed to contain two large Striped Legless Lizard habitat areas separated by the Majura Road. East of the Majura Road is an extensive area of habitat exists within the Department of Defence's Majura Field Firing Range and adjacent Airservices Australia's navigational facility. The other habitat area lies to the west of Majura Road, although the extent of the species in this area has not been fully investigated. Surveys conducted in the Majura Valley indicate that the species is present in moderate densities (ACT Government, 1997). A map showing the location of the proposed Majura Solar Farm in relation to the known Striped Legless Lizard habitat in the Majura Valley is provided at [Appendix A](#). It should be noted that this known habitat is approximately 4km to the south of the proposed Majura Solar Farm, and both habitat areas are separated from the project by an existing or under construction major road (Majura Road or Majura Parkway).

Habitat

In the ACT, the Striped Legless Lizard has been found in relatively undisturbed native grasslands with a dense cover of perennial tussock grasses, particularly Spear Grass (*Austrostipa* spp.), Kangaroo Grass (*Themeda triandra*) Wallaby Grass (*Austrodanthonia* spp) and Poa tussocks (*Poa* spp.) (ACT Government 1997, DSEWPac, 2011). The presence of dense and continuous grassland rather than the floristically variable grassland is considered important in influencing the persistence of the Striped Legless Lizard (Smith & Robertson, 1999).

The highest densities of the Striped Legless Lizard have been reported from sites with a *Themeda* ground cover of greater than 70 per cent. However, the presence of *Austrostipa* has also been shown to be an important indicator of core habitat and the Striped Legless Lizard has rarely been found at sites without *Austrostipa* in the ACT. The Striped Legless Lizard can also be found in areas dominated by exotic grasses (ACT Government, 1997) and will temporarily utilise the introduced tussock forming grass *Phalaris* (DSEWPac, 2011). It is not known if grassland dominated by introduced species can support Striped Legless Lizard populations in the long term, but there is evidence that they reproduce in these habitats (Smith & Robertson, 1999). Some populations of the Striped Legless Lizard in NSW and Victoria inhabit sites with lightly embedded basalt rocks and cracking clay soils, where it shelters underneath the rocks and inside the earth cracks (ACT Government, 1997).

Threats

The destruction or degradation of native grassland is the main threat to the survival of the Striped Legless Lizard. Threats such as the clearance grassland clearance for agricultural activities or infrastructure development, the removal of surface rocks, and weed invasion by Serrated Tussock (*Nasella trichotoma*) or Chilean Needle Grass (*N. Neesiana*) all continue to diminish the quantity and quality of Striped Legless Lizard habitat. Nonetheless, the Striped Legless Lizard is a resilient reptile species and if there is undisturbed refuge habitat nearby, it can often recolonise and recover (DSEWPac, 2013).

2 ASSESSMENT METHODOLOGY

The method adopted to assess the Striped Legless Lizard habitat involved a walk over of the site including a random physical examination of grassy tussocks to ascertain the presence of any Striped Legless Lizard. During the walk over, different habitat types were identified and mapped based on the following habitat value criteria:

- **Very high quality habitat** - areas dominated by a dense cover of Spear Grass and/or Kangaroo Grass.
- **High quality habitat** - areas dominated by a dense cover of Phalaris and/or Poa tussock, which may also include some cover of native grass species.
- **Moderate quality habitat** - areas dominated by Phalaris, Poa or other exotic grasses and weeds, which includes a low to moderate density of tussocks
- **Low quality habitat** - areas with no tussock forming grasses, but with rocks or cracks present in the soil.
- **Very low quality habitat** - areas containing no tussock forming grasses, no rocks and no soil cracks.

3 INSPECTION RESULTS

An inspection of Striped Legless Lizard habitat across the site for the proposed Majura Solar Farm was undertaken on the afternoon of the 20th of May, 2013 by Alana Gordijn, an ecologist from NGH Environmental. The inspection involved a period of 2.5 hours during which both Blocks 707 and 708 were examined. The inspection found that Blocks 707 and 708 are dominated by exotic grasses which appear to have been grazed or mowed to ground level, and have a high cover of dead thistles. Both Blocks 707 and 708 appeared to be under some grazing pressure, and kangaroos were observed grazing in Block 708. The majority of the site was observed to contain very low value habitat for the Striped Legless Lizard given the absence of tussock forming grasses, soil cracks and surface rocks. Limited areas of Block 708 (approximately 5% of the total site area) were identified as having moderate and high value habitat for the Striped Legless Lizard. These areas are discussed in greater detail in **Table 3-1** and supported by the maps and photographs at [Appendix B](#) and [Appendix C](#), respectively. During the site inspection, no Striped Legless Lizards were found.

Table 3-1: Habitat values existing within Blocks 707 and 708

Habitat Value	Habitat Description	Presence within the site	Supporting information
Very High	Habitat dominated by a dense cover of Spear Grass (<i>Auistrostipa spp.</i>) and/ or Kangaroo Grass (<i>Themeda triandra</i>). Wallaby Grass (<i>Austrodanthonia spp.</i>) may also be present.	This habitat was not observed within the site.	
High	Habitat dominated by a dense cover of Phalaris (<i>Phalaris aquatic</i>) and/or Common Poa tussock (<i>Poa labillardierei</i>), which may also include some cover of other native species such as Wallaby Grass (<i>Austrodanthonia spp.</i>)	This habitat was observed within the north-eastern corner of Block 708 and extending south along the eastern boundary of the block. Phalaris and Common Tussock were dominant and formed a relatively dense continuous structure. Red-leg Grass and Wallaby grass were also present in small patches throughout the area.	Refer to Appendix B for an approximate indication of the extent of this habitat within Block 708. See also, Figures C-1 and C-2 in Appendix C .
Moderate	Habitat dominated by other exotic grasses and weeds, which includes a low to moderate density of tussock forming grasses.	This habitat was observed within the southern section of Block 708, extending for some way north along the eastern boundary of the block.	Refer to Appendix B for an approximate indication of the extent of this habitat within Block 708.
Low	Habitat containing no tussock forming grasses, but with rocks or cracks present in the soil.	This habitat was not observed within the site.	
Very Low	Habitat containing no tussock forming grasses, no rocks and no soil cracks.	This habitat forms the majority of Blocks 707 and 708. These areas are dominated by grazed Red-leg Grass, other exotic grasses and thistles. No surface rocks, or soil cracks were observed during the site inspection.	Refer to Figures C-2 and C-4 in Appendix C .

4 DISCUSSION

The proposed site for the Majura Solar Farm is dominated by very low quality habitat and no Striped Legless Lizards were observed. The site contains:

- A vast majority of very low quality habitat (95% of the site area)
- No very high quality habitat
- A small area of high quality habitat (approximately 3% of the site area)
- A small area of moderate quality habitat (approximately 2% of the site area)

Specifically, Block 707 contains very low quality habitat consisting of bare ground, ground-level grazed exotic grasses, thistles and little to no tussock forming grasses. Furthermore, there are no areas containing loose or lightly embedded surface rocks or soil cracks. Block 708 however contains a combination of very low quality habitat together with high and moderate quality habitat for the Striped Legless Lizard. The project site is approximately 4km to the north of the nearest habitat areas and populations of the Striped Legless Lizard and separated from the project in both cases by an existing or under construction major road Majura Road or Majura Parkway).

It is noted that the main construction for the proposed Majura Solar Farm consists of solar photovoltaic panels supported by posts driven into the ground (refer to **Figure 4-1**). This means that the proposed Majura Solar Farm does not require extensive earthworks or ground disturbance due to the above ground mounting structure and pile-driven support structures. Furthermore, the ground coverage ratio of the solar panels over the whole site is below 25%, with variable sun position providing less than 5% permanent shade.

DETAIL B [1:30@A3]
INDICATIVE SOLAR FRAME ELEVATION

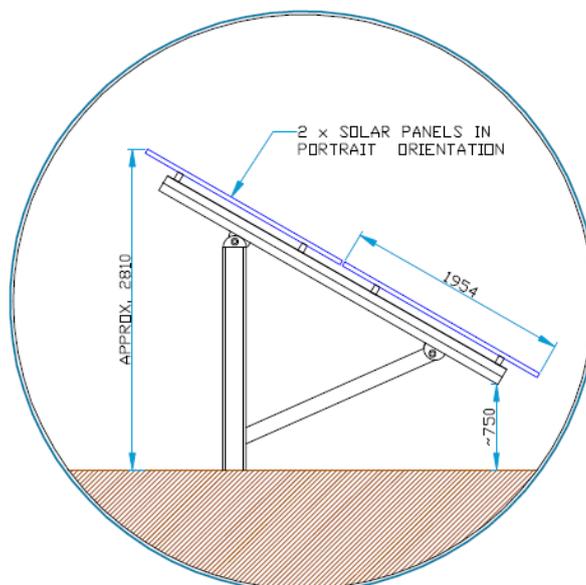


Figure 4-1: Indicative solar photovoltaic panel design for the proposed Majura Solar Farm

4.1 RECOMMENDATIONS

Generally, the project site contains mostly very low quality habitat, and therefore no mitigation or management measures are justified for much of the site. However, given the presence within the site of some Striped Legless Lizard habitat with high to moderate value, we recommend the following environmental management measures be considered in relation to the proposed development of the Majura Solar Farm:

Construction Phase

- Limit the extent of ground disturbance in the area with high habitat value for the Striped Legless Lizard through careful site layout and installation.
- If impacted during construction, rehabilitate any disturbed patches of high and moderate value habitat with native grasses, preferably *Austrostipa* spp. and/or *Themeda triandra*, within one month after installation.

Operations Phase

- If slashing or grazing is undertaken within the site, this is to be done so as to maintain habitat characteristics required by the Striped Legless Lizard. That is, the slashing or grazing is to always be conducted to maintain a minimum grass height of 15cm, allowing tussock-structure to persist and Striped Legless Lizards sheltering within the tussocks to remain unharmed.
- Any Serrated Tussock or Chilean Needle Grass found on the site must be contained, as required under the ACT Government's Pest Plants and Animals (Pest Plants) Declaration 2009. This would assist in holding off a known threat to Striped Legless Lizard habitat.

5 CONCLUSION

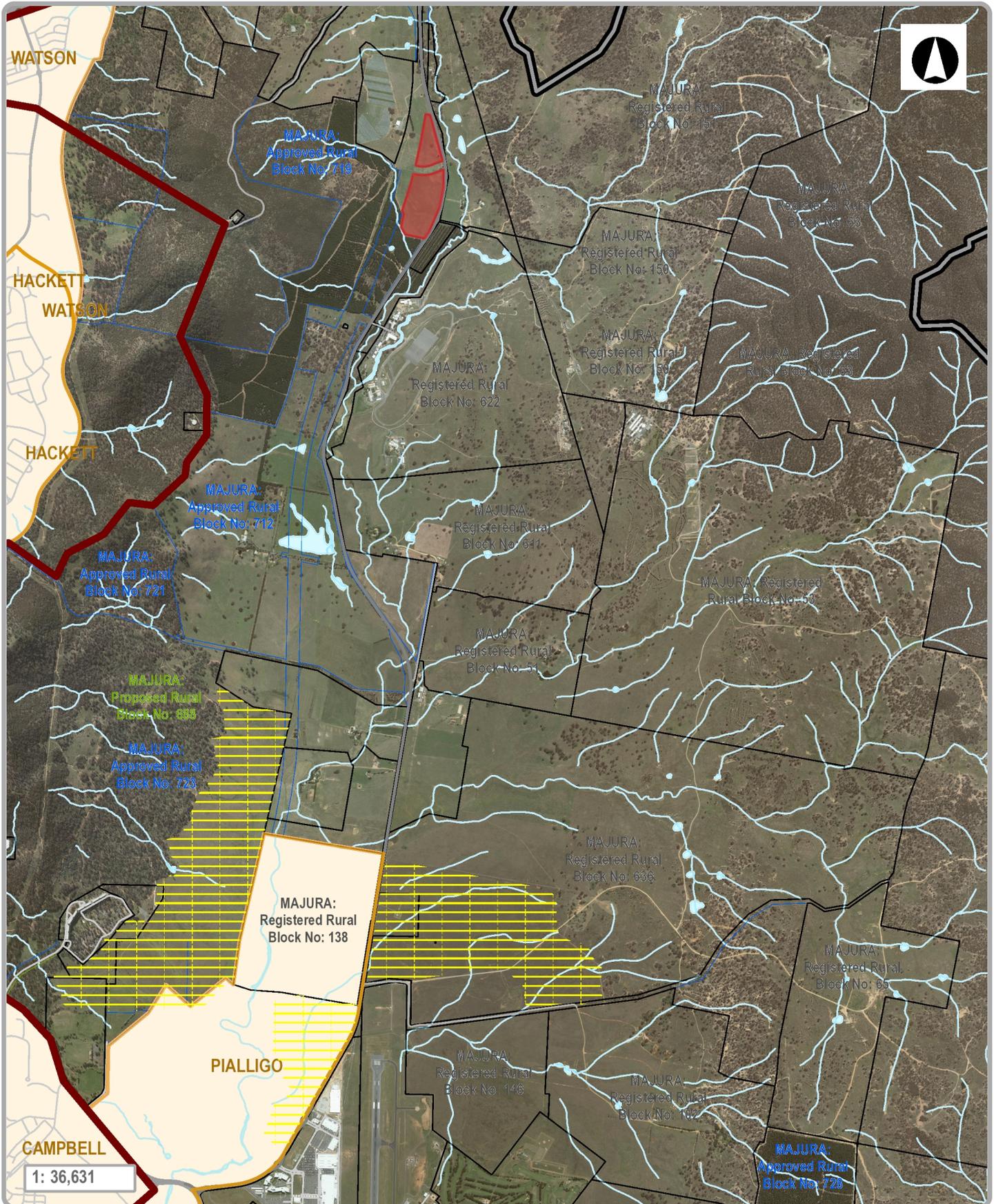
In summary, the site for the proposed Majura Solar Farm (Registered Rural Blocks 707 and 708) is dominated by very low quality Striped Legless Lizard habitat and this is supported by the fact that no Striped Legless Lizards were observed during the site inspection. Block 707 contains very low quality habitat consisting of bare ground, ground-level grazed exotic grasses, thistles and little to no tussock forming grasses. Furthermore, there are no areas containing loose or lightly embedded surface rocks or soil cracks. Block 708 however contains a small area of high and moderate quality Striped Legless Lizard habitat (<5%), for which appropriate environmental management measures have been recommended.

We understand that Solar Choice and Solar Fields are committed to implementing these particular environmental management measures in order to achieve the necessary environmental outcome which is the conservation of Striped Legless Lizard habitat. It is envisaged that these construction and operational measures would be incorporated into the respective environmental management plans for the proposed Majura Solar Farm.

6 REFERENCES

- ACT Government (1997) Striped Legless Lizard (*Delma impar*): A vulnerable species. Action Plan No. 2. Environment ACT, Canberra.
- Australian Capital Territory Pest Plants and Animals (Pest Plants) Declaration 2009 (No 1).
- DSEWPaC (2011) *Environment Protection and Biodiversity Conservation Act 1999* referral guidelines for the vulnerable striped legless lizard, *Delma impar*.
- DSEWPaC (2013) *Delma impar* - Striped Legless Lizard. SPRAT Profile. Accessed 22 May 2013.
- Smith, W.J.S & Robertson, P (1999) National Recovery Plan for the Striped Legless Lizard (*Delma impar*) 1999-2003, NSW National Parks and Wildlife Service

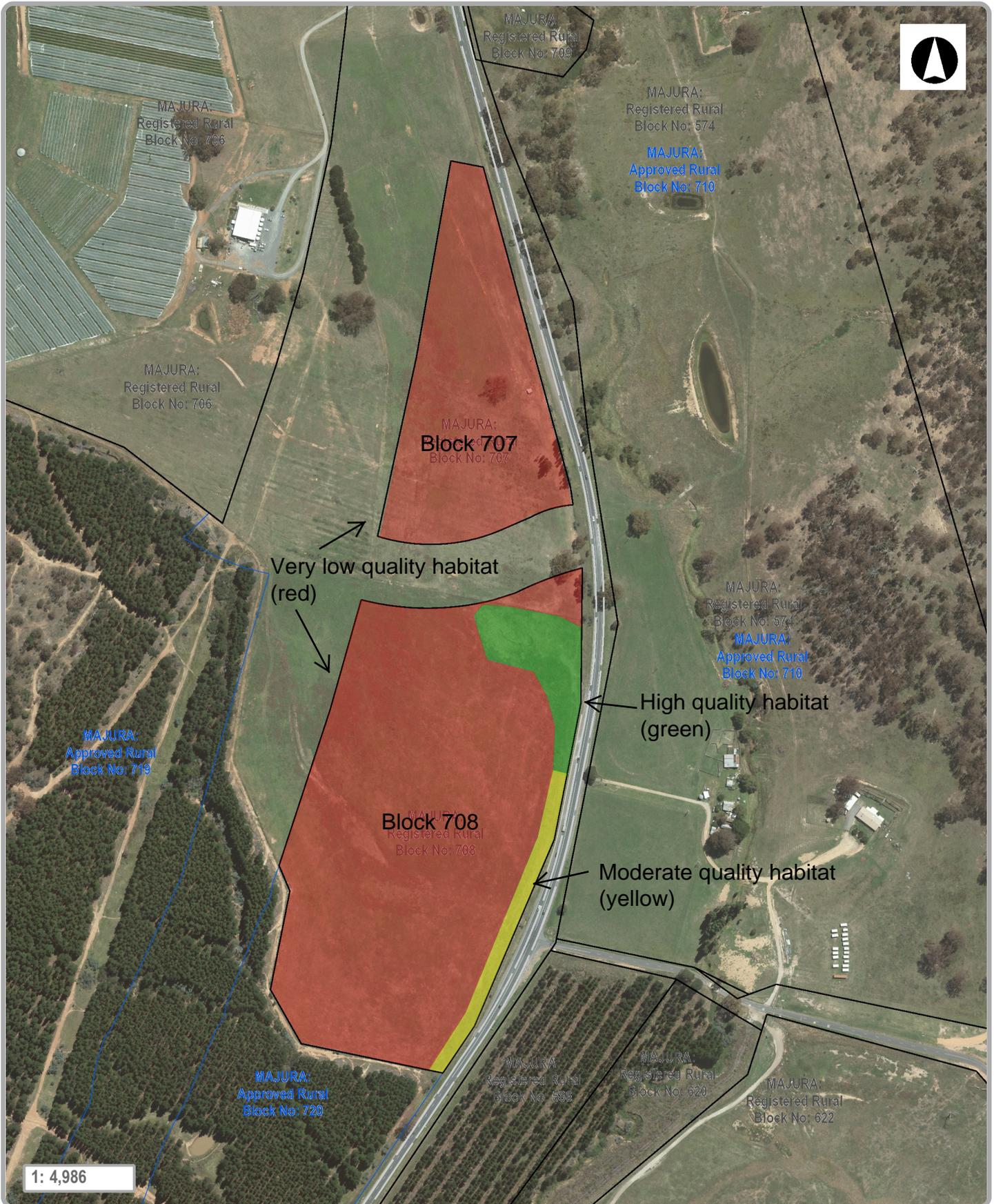
APPENDIX A HABITAT WITHIN THE MAJURA VALLEY



LEGEND

-  Striped Legless Lizard (*Delma impar*)
-  ACT Border
-  Districts
-  Divisions
-  Rural Registered Blocks
-  Rural Approved Blocks
-  Rural Proposed Blocks
-  Rural Occupied Blocks
- 2012 Aerial Photography
 -  Red: *Band_1*
 -  Green: *Band_2*
 -  Blue: *Band_3*

APPENDIX B HABITAT WITHIN THE PROPOSED SITE



LEGEND

-  ACT Border
-  Districts
-  Divisions
-  Registered Sections
-  Approved Sections
-  Proposed Sections
-  Urban Registered Blocks
-  Rural Registered Blocks
-  Stratum Registered Blocks
-  Urban Approved Blocks
-  Rural Approved Blocks
-  Stratum Approved Blocks
-  Urban Proposed Blocks
-  Rural Proposed Blocks
-  Rural Occupied Blocks
-  Class B Units
- 2012 Aerial Photography
 -  Red: Band_1
 -  Green: Band_2
 -  Blue: Band_3

APPENDIX C SITE PHOTOGRAPHS



Figure C-1: Block 708, facing south-east along the eastern boundary of the property



Figure C-2: Block 708, facing east towards Majura Road with phalaris in background



Figure C-3: Block 708, facing south along the western boundary of the block



Figure C-4: Block 707, facing west across the block towards the Majura Valley Winery



Figure C-5: Block 707, facing south towards the southern end of the block



Figure C-6: Block 707, facing north towards the northern end of the block