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2022/2023 COMPLIANCE REPORT  
TAXIWAY BRAVO  
EXTENSION PROJECT

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EPBC 2008/4170

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August 2023

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## Table of Contents

<b>1.</b>	<b>Description of Activities .....</b>	<b>1</b>
1.1	EPBC Number .....	1
1.2	Project Name.....	1
1.3	Approval holder and ACN.....	1
1.4	The Approval Action .....	1
1.5	Location of the Project .....	1
1.6	Person Accepting Responsibility for the Report.....	1
1.7	Date of Preparation of the Report .....	1
<b>2.</b>	<b>Address of all Approval Conditions - EPBC 2008/4170.....</b>	<b>1</b>
2.1	Compliance Table .....	1
<b>3.</b>	<b>Summary of Outcomes for 2022/2023 .....</b>	<b>2</b>
<b>4.</b>	<b>On-Airport Rehabilitation Measures Taken to Date .....</b>	<b>3</b>
4.1	May 2020 - Re-seeding of the Taxiway Bravo Shoulders and Batters.....	3
4.2	January/February 2021 - Inspection of Re-seeded Area by Alison Rowell, Biologist and Environmental Consultant.....	4
4.3	September 2021 – Inspection of Grassland Areas Around New Taxiway Bravo.....	6
4.4	July 2022 - Resurvey of Grassland Remnants Surrounding New Taxiway Bravo .....	6
4.5	July 2022 - Outcome of Taxiway Bravo Resurvey and Mapping .....	7
4.6	July 2023 - Resurvey of Grassland Remnants Surrounding Taxiway Bravo.....	7
4.7	July 2023 - Outcome of Taxiway Bravo Resurvey and Mapping .....	9
4.8	Other Grassland Areas with Potential for Rehabilitation.....	9
4.9	Canberra Grassland Earless Dragon (CGED) <i>Tympanocryptis lineata</i> Monitoring at Canberra Airport .....	9
4.10	Golden Sun Moth .....	10
4.11	Ongoing Fieldwork and Mapping/Assessment .....	11
<b>5.</b>	<b>Biodiversity Offset Strategy – Year 3 Tasks and Targets .....</b>	<b>12</b>
5.1	Seed Collection.....	12
5.2	Further Develop Grassland Experiments.....	12
5.3	Broad Acre Seeding .....	13
5.4	Replanting Forbs.....	13
5.5	Maintain Revegetation .....	13
<b>6.</b>	<b>Approval by Minister of Revised Biodiversity Offset Strategy – February 2022 .....</b>	<b>14</b>
<b>7.</b>	<b>Approval by Minister to Extend the Timeframe for Rehabilitation.....</b>	<b>14</b>
<b>8.</b>	<b>Declaration of Accuracy.....</b>	<b>15</b>

# 2022/2023 COMPLIANCE REPORT

## INFRASTRUCTURE UPGRADE AND CONSTRUCTION AT CANBERRA AIRPORT, ACT

EPBC 2008/4170

### 1. Description of Activities

#### 1.1 EPBC Number

EPBC 2008/4170

#### 1.2 Project Name

Taxiway Bravo Extension Project, Canberra Airport

#### 1.3 Approval holder and ACN

Managing Director, Canberra Airport Pty Ltd

ACN 080 361 548

#### 1.4 The Approval Action

The approved action undertaken as part of this EPBC Approval is the Taxiway Bravo Extension Project. The project commenced on 4 June 2019 and reached practical completion on 5 August 2020; the construction of the northern extension having taken fourteen months to complete. Taxiway Bravo North was opened for business on Wednesday, 13 August 2020.

#### 1.5 Location of the Project

Canberra Airport, ACT 2609

#### 1.6 Person Accepting Responsibility for the Report

A signed declaration is provided at Section 7 of this Report.

#### 1.7 Date of Preparation of the Report

The report is dated 11 August 2023.

### 2. Address of all Approval Conditions - EPBC 2008/4170

#### 2.1 Compliance Table

A Compliance Table is provided at **Attachment 1**.

### 3. Summary of Outcomes for 2022/2023

Section 4.6	<b><i>July 2023 – Resurvey of Grassland Remnants Surrounding Taxiway Bravo</i></b>
Page 7	<p>In late July 2023, Alison Rowell, Biologist and Environmental Consultant, surveyed and remapped the grasslands surrounding Taxiway Bravo.</p> <p>Inspection showed that the boundaries and composition of the NTG patches identified in 2022 (Rowell 2022) had remained the same. A method is suggested for increasing NTG areas around Taxiway Bravo by expanding and linking existing patches.</p>
Section 4.7	<b><i>July 2023 – Outcome of Taxiway Bravo Resurvey and Mapping</i></b>
Page 8	<p>The NTG patches around Taxiway Bravo identified in 2022 have remained the same following the July 2023 resurvey and mapping.</p>
Section 4.8	<b><i>Other Grassland Areas with Potential for Rehabilitation</i></b>
Page 8	<p>During Canberra Grassland Earless Dragon (CGED) surveys from February 2023 to June 2023, and in July 2023, other grassland areas north of the main runway were noted and mapped where they had potential to be used as trial sites for different methods of grassland rehabilitation to reach native-dominated grassland or NTG status. During the CGED surveys, minor collections were made of seeds of native grasses and forbs for use in such future restoration work.</p> <p>These areas present opportunities for grassland rehabilitation trials in monitored plots using various methods which have been trialled elsewhere in the ACT.</p>
Section 4.10	<b><i>Golden Sun Moth</i></b>
Page 10	<p>Following the cancellation of GSM monitoring in 2020 and 2021 the planned monitoring by an ecological consultant for mid-November to mid-December 2022 (the usual GSM peak flying period) did not proceed as once again weather conditions did not favour the GSM season. Counts are undertaken in suitable weather conditions (warm to hot, sunny and relatively calm), and in the middle of the day, when maximum numbers of male moths are likely to be flying.</p> <p>GSM monitoring is therefore planned for mid-November to mid-December 2023.</p>
Section 4.11	<b><i>Ongoing Fieldwork and Mapping/Assessment</i></b>
Page 11	<p>The Airport will continue to work with Alison Rowell, Biologist and Environmental Consultant, and other consultants over the next three/four years to undertake fieldwork to map and assess the condition of the NTG on Airport. This will include sourcing NTG seed and forbs in order to rehabilitate the NTG in compliance with the conditions applying to EPBC 2008/4170.</p> <p>Site assessments have been scheduled for approximately November 2023 and January, June and November 2024.</p>
Section 5.1	<b><i>Seed Collection</i></b>
	<p>Canberra Airport will continue to work with Alison Rowell, Biologist and Environmental Consultant, and other relevant parties, to source seed and/or forbs to undertake further rehabilitation works.</p>

Section 5.2	<b><i>Further Develop Grassland Experiments</i></b>
Page 12	<p>Canberra Airport will continue to work with Alison Rowell, Biologist and Environmental Consultant, and other relevant parties, to implement a plan to further develop the NTG experiments/trials in the NTG areas identified as opportunities for grassland rehabilitation on Airport.</p> <p>Also refer to Section 4.8 Page 8 of this Compliance Report.</p>
Section 5.3	<b><i>Broad Acre Seeding</i></b>
	Canberra Airport will continue to work with Alison Rowell, Biologist and Environmental Consultant, and other relevant parties, to source seed and/or forbs to undertake further rehabilitation works.
Section 5.4	<b><i>Replanting Forbs</i></b>
	Canberra Airport will continue to work with Alison Rowell, Biologist and Environmental Consultant, and other relevant parties, to source seed and/or forbs to undertake further rehabilitation works.
Section 5.5	<b><i>Maintain Revegetation</i></b>
Page 12	Canberra Airport will continue to work with Alison Rowell, Biologist and Environmental Consultant, and other relevant parties, to implement a plan for increasing the Taxiway Bravo NTG area by spraying and replanting as recommended in the A. Rowell report August 2023 (Attachment 2).

## 4. On-Airport Rehabilitation Measures Taken to Date

Condition 2.a.ii requires the rehabilitation of 17.1 hectares within the Canberra Airport Lease to meet the definition of Natural Temperate Grassland. This is Canberra Airport's preferred option in response to Condition 2 of the Taxiway Bravo approval EPBC 2008/4170).

The following measures have been implemented to date:

### 4.1 May 2020 - Re-seeding of the Taxiway Bravo Shoulders and Batters

In late May 2020, the contractor engaged to construct the Taxiway also undertook works to re-seed a total area of 52,285m<sup>2</sup> along the Taxiway alignment. The following methodology was employed:

Topsoiling Methodology:

- Scraper cart and placement of topsoil;
- Grader followed grader to smooth out any high areas;
- Backhoe and workers with shovels undertook topsoil placement around pits and up against the asphalt as required;
- Work was done on a ten-minute recall as this allowed enough time for the grader to smooth out any non-compliant levels and evacuate the graded strip;
- This work was completed prior to grassing.



#### Grassing Methodology:

- Truck drove into Runway graded strip and a worker on foot walked around spraying out hydromulch with seed;
- Work was done on a ten-minute recall as this allowed enough time for the truck and worker to evacuate the graded strip.

The areas of work included:

#### West Bravo

- Grassed Shoulder – 9746m<sup>2</sup>
- Batters – 13284m<sup>2</sup>

#### East Bravo (North of Foxtrot)

- Grassed Shoulder – 5437m<sup>2</sup>
- Batters – 8914m<sup>2</sup>

#### East Bravo (South of Foxtrot)

- Grassed Shoulder – 5711m<sup>2</sup>
- Batters – 9193m<sup>2</sup>

As no adequate supplies of native grass seeds could be sourced for this re-seeding project, the Airport determined with the agreement of Alison Rowell, Biologist and Environmental Consultant, to procure an 80%/20% mix of Prosper Fescue and Couch respectively. The seed was spread on the surface of the topsoil taken from the Taxiway Bravo construction zone and then stabilised with a bituminous material to detract birds and to protect the seed from wind/jet blast.

#### 4.2 [January/February 2021](#) - Inspection of Re-seeded Area by Alison Rowell, Biologist and Environmental Consultant

Alison Rowell undertook an inspection of the re-seeded area around Taxiway Bravo. Following the inspection, Alison Rowell provided the following report via email dated 15 February 2021:

*"You asked me to inspect the re-grassing around the Taxiway Bravo area to determine whether additional NTG had been created after grassing of the verges of Taxiway B. This may be because you have noticed the growth of native forbs (wildflowers) on some areas where exotic grasses have been sown, including in the swale east of the taxiway.*

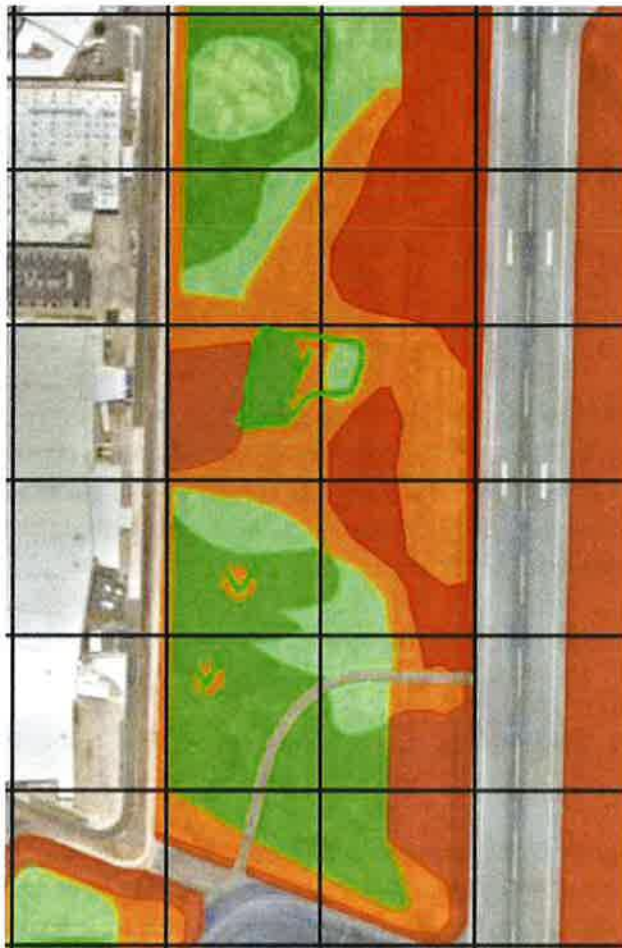
*I attach my vegetation mapping of that area before Taxiway Bravo was constructed (NTG in green), a January 2020 image from actmapi showing the taxiway under construction, and a photo I took on 15 February 2021.*

*If you look at the south-eastern-most verge of the taxiway under construction you can see that an area of NTG has been altered/shaped. This area is shown in my 'Native forbs & exotic grass' photo, where you can see germination of exotic grasses in the sowing furrows and a number of native forbs in the spaces between the grasses.*

*This is similar to the effect we noted when the haul road around the Eastern Grass was left to recover, where the first species to appear on the bare and compacted soil were native forbs, probably resprouting from roots and germinating from seeds in the soil. In the Taxiway Bravo case, although the number of species and frequency of native forbs now present would allow*

*the vegetation to be classed as NTG if the surrounding grasses were native, this altered grassland would not now meet the NTG criteria. This is because the first step in determining NTG is 'The percentage cover of native vascular plants (including annual and perennial species) in the patch is greater than the percentage cover of perennial exotic species'. This is not the case here because of the higher cover of 'perennial exotic species' i.e. the sown grasses.*

**2018/2019 Vegetation Mapping before Taxiway Bravo was constructed – A Rowell**



**ACTMapi Image showing Taxiway Bravo under construction – January 2020**



***Image of Native Forbs and Exotic Grass – Taxiway Bravo SE Verge – 15 February 2021, A Rowell***



#### **4.3 September 2021 – Inspection of Grassland Areas Around New Taxiway Bravo**

In September 2021, Alison Rowell, Biologist and Environmental Consultant, inspected the grassland areas around new Taxiway Bravo, including replanted verges. Due to the season (early spring) and recent mowing, many native forbs were not yet visible. The presence of annual exotic species also partially masked the cover of perennial species, so observations were made but a full survey was not undertaken at that time.

#### **4.4 July 2022 - Resurvey of Grassland Remnants Surrounding New Taxiway Bravo**

In late July 2022, Alison Rowell, Biologist and Environmental Consultant, surveyed and remapped the grasslands surrounding Taxiway Bravo.

Below is an extract from A. Rowell report 2022, 'Section 2: Results':

Ten patches of native-dominated grassland were identified, each including at least one area of about 400 square metres that reached the non-grass and indicator species composition criteria (for grasslands surveyed outside ideal sampling times) for the critically endangered NTG community, embedded in native dominated grassland (Table 1, Photographs 1 and 2).

Some of the NTG patches identified were smaller than the minimum patch size specified for the community (1000 square metres), but have been included as they were mostly separated by less than 75 metres from other NTG patches by grassland which contained native species (see 'additional considerations' above). The total area of NTG mapped was 26,355 square metres (2.6 hectares) (Figure 1). Details of the patches are in Table 1, and a list of the 27 native species observed is in Table 2.



Some NTG patches (East/D and East/F) had not previously been mapped, but represented easterly extensions of known patches within the construction footprint. These new patches met the minimum criteria for the threatened community in 2022, but were of a lower quality than most of the other NTG patches (Table 1).

Some areas originally mapped as NTG were inside the silt fence during construction, and were still affected/degraded by construction activities when inspected in 2021. Some parts of these areas that were not covered by fill or oversown with exotic species after construction had recovered by 2022 and again met the criteria for NTG (e.g. western part of East/E, southern part of East/G).

Table 1. Natural Temperate Grassland patches around Taxiway Bravo

East/west of Twy B	Patch number (from north)	Area (sq.metres)	Number of non-grass/sedge native species in plot	Number of Indicator species in plot	Minimum number of native species recorded in whole patch
West	A	3495	9	5	13
	B	855	7	4	13
East	A	650	8	4	18
	B	725	5	3	12
	C	680	7	4	14
	D	4000	5	2	11
	E	3115	9	5	17
	F	510	4	3	8
	G	12325	10	5	19
		<b>Total: 26355</b>			

A copy of Alison Rowell's report entitled "*Resurvey of grassland remnants surrounding new Taxiway B, 2021-22*" was provided with the 2021/2022 Compliance Report.

#### 4.5 [July 2022 - Outcome of Taxiway Bravo Resurvey and Mapping](#)

Canberra Airport NTG mapping was updated using Alison Rowell's July 2022 Taxiway Bravo survey data. It indicated that since the 2018/2019 whole of airfield NTG mapping, which identified an increase of 6 hectares of new NTG, there had been 2.39 hectares of new NTG along the Taxiway Bravo alignment. This equated to a total of 8.39 hectares of new NTG since 2018, derived from various experiments undertaken over time.

August 2022 mapping of Alison Rowell's survey data was provided with the 2021/2022 Compliance Report.

#### 4.6 [July 2023 – Resurvey of Grassland Remnants Surrounding Taxiway Bravo](#)

In late July 2023, Alison Rowell, Biologist and Environmental Consultant, resurveyed and remapped the grasslands surrounding Taxiway Bravo.

Below is an extract from A. Rowell report 2023, Section 2: Results (p4):

**Inspection showed that the boundaries and composition of the NTG patches identified in 2022 (Rowell 2022) had remained the same.** These are shown in Figure 1, which is reproduced from the previous report.

The main native species observed are shown in Table 1. These included eleven non-grass species and four Indicator species that were also recorded in 2022 (Photographs 1 and 2).

After construction, soil from the site was used to shape the cut and filled areas on the taxiway shoulder areas with the aim of retaining some native plant propagules on site. These areas were then oversown with an exotic mix which apparently contained a Tall Fescue (probably *Festuca arundinacea*), a clover *Trifolium* species and possibly Couch *Cynodon dactylon*. Rapid grass establishment was required to stabilise soil on the verges and protect it from jet blast.

It was noted in 2022 that the Fescue had established but the verge was being invaded in parts by Chilean Needlegrass *Nassella neesiana*. This grassland weed is common on the Airport and commonly replaces planted species in Canberra as it can survive and seed under low mowing. These grasses were still present on the verges in 2023, but there were few plants of Couch or Clover and native species were rare (i.e. they had not re-established from the reused soil).

The part of the verge immediately adjacent to the taxiway is mown more closely and frequently than the rest of the Airport grasslands, presumably for visibility of lights etc (Photograph 4). The tussocks in these areas are mostly small and widely spaced, with bare ground between them. This strip is not seen as now having potential for revegetating with native species due to the low mowing, soil compaction and restrictions on soil disturbance and activity close to the taxiway.

It was noted that there was some increase in scattered occurrences of Serrated Tussock *Nassella trichotoma* within and between the NTG patches (Photograph 3). Control by careful spot spraying is recommended where this species and other perennial grass weeds such as Chilean Needlegrass *Nassella neesiana*, Tall Fescue, African Lovegrass *Eragrostis curvula* and Paspalum *Paspalum dilatatum* occur within NTG patches. African Lovegrass is a more recent serious invader of grasslands in the ACT, and its spread appears to be favoured over Chilean Needlegrass in dry years.

Gradually spraying back the above weeds where they occur adjacent to NTG patches east of the taxiway and replanting the killed strip with native species appropriate to the soil conditions of the patch has the potential to increase the area occupied by NTG and to create north-south links between NTG patches.

Where the intervening exotic species are growing in deeper or wetter soil, Kangaroo Grass *Themeda triandra* would be suitable. Where the soil is shallower and compacted, Redleg Grass *Bothriochloa macra* and Wallaby Grasses *Rytidosperma* would be more appropriate. The results would need to be monitored, and after native grasses have been established and weeds controlled, native forbs could be introduced as seed supplemented with some tube stock.

A copy of Alison Rowell's report entitled "*Canberra Airport: Resurvey of grassland remnants surrounding Taxiway B extension, 2023 – With notes on other grassland areas with potential for rehabilitation*" August 2023 is provided at **Attachment 2**.

#### 4.7 July 2023 - Outcome of Taxiway Bravo Resurvey and Mapping

The NTG patches around Taxiway Bravo identified in 2022 have remained the same following the July 2023 resurvey and mapping.

A. Rowell report August 2023 states:

***“Inspection showed that the boundaries and composition of the NTG patches identified in 2022 (Rowell 2022) had remained the same. These are shown in Figure 1 (page 6), which is reproduced from the previous report.”***

#### 4.8 Other Grassland Areas with Potential for Rehabilitation

A. Rowell report August 2023 states:

During Canberra Grassland Earless Dragon (CGED) surveys from February to June 2023, and in July 2023, other grassland areas north of the main runway were noted and mapped where they had potential to be used as trial sites for different methods of grassland rehabilitation to reach native-dominated grassland or NTG status. During the CGED surveys, minor collections were made of seeds of native grasses and forbs for use in such future restoration work.

The areas mapped included:

1. an area in the north-east of the Airport which is dominated by weeds such as *Paspalum dilatatum* and Chilean Needlegrass *Nassella neesiana* after three wet years (2020-2023).
2. a small dense patch of African Lovegrass *Eragrostis curvula* which has developed in the north-east corner of the Airport and is invading NTG and CGED habitat.
3. an exotic-dominated area in the north-east corner of the Airport, adjacent to a large area of NTG.
4. a strip bounded by the northern end of the runway and Taxiways Alpha and Foxtrot, part of which was used in a native grassland translocation experiment in 2005-2010.

The areas mapped are shown in Figures 2 and 4 and include patches of grassland which are exotic-dominated due to historic site damage or more recent weed invasion, and others which contain a moderate level of native grasses but do not meet the criteria for NTG.

These areas present opportunities for grassland rehabilitation trials in monitored plots using various methods which have been trialled elsewhere in the ACT (see Table 2).

#### 4.9 Canberra Grassland Earless Dragon (CGED) *Tympanocryptis lineata* Monitoring at Canberra Airport

The NTG on Canberra Airport is habitat for vulnerable and endangered fauna, including the CGED and GSM. In that regard, monitoring for these threatened fauna species is conducted every two years.

Alison Rowell undertook CGED monitoring at the northern end of Canberra Airport in late summer/autumn 2019 and 2021, and no CGED were found during monitoring at the permanent grids in this area. However, one CGED was found during the pre-construction survey for Taxiway Bravo in

May 2019. A copy of the 2019 and 2021 reports were provided with Compliance Report 2 for 2020/2021.

Canberra Airport acknowledges actions in 2023 by the Commonwealth by Amendment (366) Instrument of 23 May 2023, and by the ACT Instrument NI2023-218 14 April 2023, to rename the Canberra Grassland Earless Dragon (CGED) as critically endangered. These actions are in response to long term proposals and the ongoing decline in population trends.

Alison Rowell last undertook CGED monitoring at the northern end of Canberra Airport in late summer/autumn 2023, and no CGED were found during monitoring at the permanent grids in this area. Following the recent upgrading of the CGED to critically endangered status, Alison Rowell has drafted a management plan for this grassland to supplement the Canberra Airport Threatened Species Management Plan (TSMP). As no dragons were found again in this round of monitoring (2023), this means that none have been seen up at the northern end of Canberra Airport since 2017.

#### 4.10 Golden Sun Moth

Following the cancellation of GSM monitoring in 2020 and 2021, the planned monitoring by an ecological consultant for mid-November to mid-December 2022 (the usual GSM peak flying period) did not proceed as once again weather conditions did not favour the GSM season. Counts are undertaken in suitable weather conditions (warm to hot, sunny and relatively calm), and in the middle of the day, when maximum numbers of male moths are likely to be flying.

GSM monitoring is therefore planned for mid-November to mid-December 2023.

Noel McCann, Director of Planning and Government Relations, discussed the 2022/2023 monitoring season in the Region generally with Alison Rowell and the following File Note of that discussion is on the record dated 25 January 2023:

**FILE NOTE:**

***GSM Monitoring at Canberra Airport for 2022/2023 – Discussion with Alison Rowell***

*Reports from the Region regarding Golden Sun Moth (GSM) activity during the Summer of 2022/2023 indicate that there was minimal flying activity, much of which took place between 24 and 28 December. There were many 1 to 3 hour surveys at known GSM sites in reasonable weather conditions between late December and mid-January that detected only single digit numbers of flying adults when tens to hundreds have been recorded in some previous years.*

*The general agreement among consultants is that the 2019 drought year followed by three la Nina years probably increased the mortality between the 2019-2021 egg-laying/larval development and the 2022 emergence of adults. Then weather conditions during the 2022/23 flying season – cold nights, cool maximum temperatures and many rain days – delayed the start of the season and reduced the emergence and flying period for adults.*

*Hopefully the Summer of 2023/2024 will provide a better opportunity for monitoring of GSM on Airport and across the Region.*

On 4 January 2022, the following statement via email was received from Robert Speirs, Director/Principal Ecologist of Capital Ecology:



*"I'm fairly sure that we've now seen the last of the possible Golden Sun Moth (GSM) flying season, and in short, it was most uneventful. On 31/12/2021 and 01/01/2022 we did our last surveys on a couple of our development assessment sites, the hope being that the GSM might put on an extraordinarily late but substantial show right at the tail end. This didn't really happen, there were a few flying at our reference sites, but nothing real convincing.*

*As you can read in the [ACT region GSM survey group spreadsheet](#), the flying season didn't really properly commence at all this season. Frustratingly, we spent a huge amount of time checking reference sites but these checks never really provided a strong indication of commencement. As a result, the GSM survey programs for each of our sites (and I expect for everyone else in the region) have been impacted and the limitations of the surveys will need to be properly acknowledged and considered in any assessment of presence/absence and distribution. Understandably, this will have some significant consequences for our development assessment projects which may require a follow-up survey program next season.*

*In light of the above, and as per your email below and our phone conversation in December, I confirm that we closely monitored the situation across the potential flying season and unfortunately there was no point at which our reference site checks indicated that undertaking the Canberra Airport monitoring would be worthwhile. As such, we did not undertake any monitoring this season."*

In December 2021, following Conservation Advice for *Synemon plana* (Golden Sun Moth) assessed by the Threatened Species Scientific Committee of the Commonwealth Department of Agriculture, Water and the Environment the species was revised to the Vulnerable category (from Critically Endangered).

#### 4.11 Ongoing Fieldwork and Mapping/Assessment

The Airport will continue to work with Alison Rowell, Biologist and Environmental Consultant, and other consultants over the next three/four years to undertake fieldwork to map and assess the condition of the NTG on Airport. This will include sourcing NTG seed and forbs in order to rehabilitate the NTG in compliance with the conditions applying to EPBC 2008/4170.

The projected program of work will include, but not be limited to, the production of mapping of the status of NTG to compare with Taxiway Bravo pre-construction and further site assessments have been scheduled for approximately November 2023 and January, June and November 2024.

## 5. Biodiversity Offset Strategy – Year 3 Tasks and Targets

The Strategy identifies the following Tasks and Targets for Year 3:

Task	Description	Target
Seed Collection	Collect, dry and store seed from Master Plan offset property and on-Airport harvesting.	Year 1-4
Further Develop Grassland Experiment	Conduct additional experiments to determine: <ul style="list-style-type: none"><li>• Weed control application rates</li><li>• Seed application rates</li><li>• Pre- and Post-seeding watering rates</li><li>• Broad acre seeding methods</li><li>• Density and timing of spreading hay bearing seed</li><li>• Translocation methods</li><li>• Propagating forbs</li></ul>	Year 1-2
Broad acre seeding	Using the outcomes of Grassland experiments, broad acre seeding of areas of vegetation within the Airport lease.	Year 2-4
Replanting forbs	Replanting propagated forbs and forbs located within areas affected by the development in areas of vegetation.	Year 2-4
Maintain revegetation	Maintain revegetation areas through watering, weed control and additional planting/seeding if required.	Year 2-5

### 5.1 Seed Collection

Canberra Airport will continue to work with Alison Rowell, Biologist and Environmental Consultant, and other relevant parties to source seed and/or forbs to undertake further rehabilitation works.

### 5.2 Further Develop Grassland Experiments

Canberra Airport will continue to work with Alison Rowell, Biologist and Environmental Consultant, and other relevant parties, to further develop the NTG experiments in the NTG areas identified on Airport. Over the years, these experiments have included:

- A Greening Australia experiment in the Eastern Grass near Scherger Drive;
- A weeding program and spreading of seed by our experiment of broadcasting NTG and mowing thatch between taxiway Alpha, the Runway and near the Instrument Landing System (ILS);
- The establishment of a translocation site north of Taxiway Foxtrot and west of Taxiway Alpha;
- Improving drainage to the north of Runway 17/35.

Canberra Airport will continue to work with Alison Rowell, Biologist and Environmental Consultant, and other relevant parties, to implement a plan to further develop the NTG experiments/trials in the NTG areas identified and mapped in the A. Rowell report August 2023 (Attachment 2) as opportunities for grassland rehabilitation on Airport.

### 5.3 Broad Acre Seeding

Canberra Airport will continue to work with Alison Rowell, Biologist and Environmental Consultant, and other relevant parties, to source seed and/or forbs to undertake further rehabilitation works.

### 5.4 Replanting Forbs

Canberra Airport will continue to work with Alison Rowell, Biologist and Environmental Consultant, and other relevant parties, to source seed and/or forbs to undertake further rehabilitation works.

### 5.5 Maintain Revegetation

As noted in Section 2: Results of A. Rowell report August 2023:

It was noted in 2022 that the Fescue had established but the verge was being invaded in parts by Chilean Needlegrass *Nassella neesiana*. This grassland weed is common on the Airport and commonly replaces planted species in Canberra as it can survive and seed under low mowing. These grasses were still present on the verges in 2023, but there were few plants of Couch or Clover and native species were rare (i.e. they had not re-established from the reused soil).

The part of the verge immediately adjacent to the taxiway is mown more closely and frequently than the rest of the Airport grasslands, presumably for visibility of lights etc (Photograph 4). The tussocks in these areas are mostly small and widely spaced, with bare ground between them. This strip is not seen as now having potential for revegetating with native species due to the low mowing, soil compaction and restrictions on soil disturbance and activity close to the taxiway.

It was noted that there was some increase in scattered occurrences of Serrated Tussock *Nassella trichotoma* within and between the NTG patches (Photograph 3). Control by careful spot spraying is recommended where this species and other perennial grass weeds such as Chilean Needlegrass *Nassella neesiana*, Tall Fescue, African Lovegrass *Eragrostis curvula* and Paspalum *Paspalum dilatatum* occur within NTG patches. African Lovegrass is a more recent serious invader of grasslands in the ACT, and its spread appears to be favoured over Chilean Needlegrass in dry years.

Gradually spraying back the above weeds where they occur adjacent to NTG patches east of the taxiway and replanting the killed strip with native species appropriate to the soil conditions of the patch has the potential to increase the area occupied by NTG and to create north-south links between NTG patches.

Where the intervening exotic species are growing in deeper or wetter soil, Kangaroo Grass *Themeda triandra* would be suitable. Where the soil is shallower and compacted, Redleg Grass *Bothriochloa macra* and Wallaby Grasses *Rytidosperma* would be more appropriate. The results would need to be monitored, and after native grasses have been established and weeds controlled, native forbs could be introduced as seed supplemented with some tube stock.

Canberra Airport will continue to work with Alison Rowell, Biologist and Environmental Consultant, as well as other relevant parties, to implement a plan for increasing the Taxiway Bravo NTG area by spraying and replanting as recommended in the A. Rowell report August 2023 (Attachment 2).



Photograph 3. NTG patch East/D, looking north, scattered Serrated Tussock in mid-ground. July 2023.

## **6. Approval by Minister of Revised Biodiversity Offset Strategy – February 2022**

A revised February 2022 Taxiway Bravo Biodiversity Offset Strategy (EPBC 2008/4170) (BOS) was submitted to the Department of the Environment and subsequently approved by a delegate of the Minister responsible for the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), on 11 March 2022, as required in Condition 2 of the EPBC 2008/4170 approval for the construction of Taxiway Bravo and associated works.

Copies of the approved BOS and approval letter were provided with the 2021/2022 Compliance Report.

## **7. Approval by Minister to Extend the Timeframe for Rehabilitation**

Canberra Airport submitted with the 2020/2021 Annual Compliance Report a letter requesting the Minister to consider deferring the date of commencement of the action from 4 June 2019 to commence 4 June 2020. The request was made on the basis that prevailing conditions for rehabilitation had been unfavourable due to drought.




The approval letter dated 11 March 2022 stated:

Regarding your request to extend the timeframe for rehabilitation to 2025:

I have considered the justification and information provided in your letter as well as that available from the Australian Bureau of Meteorology. As the first year of rehabilitation activities (2019) is well documented as a year of drought for ACT, I, as a Delegate for the Minister for the Environment, have decided to deem the prevailing conditions throughout 2019 to have been unfavourable for rehabilitation activities. In accordance with conditions 2A the outcome required for rehabilitation by condition 2.a.ii may now be achieved within 6 years of commencement of implementation (by 2025).

## 8. Declaration of Accuracy

In making this declaration, I am aware that sections 490 and 491 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) make it an offence in certain circumstances to knowingly provide false or misleading information or documents. The offence is punishable on conviction by imprisonment or a fine, or both. I declare that all the information and documentation supporting this compliance report is true and correct in every particular. I am authorised to bind the approval holder to this declaration and that I have no knowledge of that authorisation being revoked at the time of making this declaration.

Signed	
Full name (please print)	Michael Thomson
Position (please print)	Head of Aviation
Organisation (please print including ABN/ACN if applicable)	Canberra Airport Pty Ltd ACN 080 361 548
Date	11 August 2023

### Summary of Attachments:

Attachment 1 Compliance Table EPBC 4170

Attachment 2 Canberra Airport: Resurvey of grassland remnants surrounding Taxiway B extension, 2023 – With notes on other grassland areas with potential for rehabilitation – Alison Rowell

## COMPLIANCE TABLE

## EPBC 2008/4170 (as varied 3 June 2019) – Taxiway Bravo Extension Project, Canberra Airport

Condition Number	Condition	Is the project compliant with this Condition?	Evidence / Comments
1	<p>The person taking the action must not clear more than 5.7 ha of <b>Natural Temperate Grassland</b> and may only construct the Taxiway Bravo and associated works consistent with Attachment A.</p> <p>A report verifying compliance with this condition must be submitted to the <b>Department</b> within 3 months of completion of <b>construction</b>.</p>	Compliant	<p>Not more than 5.7 hectares of Natural Temperate Grassland (NTG) has been cleared within the construction zone.</p> <p>The Taxiway was constructed consistent with Attachment A.</p> <p>Compliance Report 1 submitted to then Department of Agriculture, Water and the Environment (DAWE) on 16 October 2020, advised at Section 9, page 13 “Not more than 5.7ha of Natural Temperate Grassland (NTG) was cleared within the construction zone”.</p>
2	<p>The person taking the action must submit a Biodiversity Offset Strategy for the Golden Sun Moth, Grassland Earless Dragon and <b>Natural Temperate Grassland</b> to the <b>Minister</b> for approval. The strategy must include:</p> <p>a. A long-term conservation offset for the removal of habitat for the Golden Sun Moth, Grassland Earless Dragon and <b>Natural Temperate Grassland</b> including:</p> <p>i. The acquisition of land containing at least 17.1 hectares of <b>Natural Temperate Grassland</b> and Golden Sun Moth habitat to be conserved in perpetuity; or</p>	Compliant	<p>A revised Taxiway Bravo Biodiversity Offset Strategy was submitted with the 2020/2021 Taxiway Bravo Annual Compliance Report for the Minister’s approval on 31 August 2021.</p> <p>Following consultation with the Post-Approvals section of the then DAWE, the revised BOS was subsequently approved by a delegate of the Minister on 11 March 2022. Refer Section 5, Attachment 5 of 2021/2022 Annual Compliance Report.</p>

Condition Number	Condition	Is the project compliant with this Condition?	Evidence / Comments
	<p>ii. Measures to rehabilitate at least 17.1 hectares of <b>Vegetation quality 4 and 5</b> within the Canberra Airport Lease to meet the definition of <b>Natural Temperate Grassland</b>.</p> <p>b. Details of the funding, of at least \$141,301, and in kind support valued at least \$33,000 and outcomes of research for the Grassland Earless Dragon over a period of 3 years.</p> <p>c. Timeframes for the completion of all actions outlined in the Strategy, including the acquisition of land or rehabilitation of land to be used as the offset.</p> <p>The person taking the action must not commence <b>construction</b> unless the <b>Minister</b> has approved the Biodiversity Offset Strategy in writing. The approved Biodiversity Offset Strategy must be implemented.</p> <p>Note: The management of rehabilitation and any offset must be conducted in conjunction with any other approvals affecting <b>Natural Temperate Grassland</b> in the Canberra Airport site.</p>		<p>In line with Condition 2.a.ii, and as stated in the Strategy, Option 2 was chosen in the first instance being:</p> <p><i>“OPTION 2 is for the rehabilitation of Vegetation quality 4 and 5 within the Canberra Airport lease to meet the definition of Natural Temperate Grassland.”</i></p> <p>Compliance Report 1 submitted to then DAWE on 16 October 2020, advised that “Works to re-establish NTG within the construction zone has commenced”.</p> <p>Section 4 (page 4) of the 2022/2023 Compliance Report provides further information in terms of On-Airport Rehabilitation Measures Taken to Date.</p>
2A	<p>If the person taking the action commences implementation of option 2.a.ii. above but is not able to achieve the required outcome within 5 years of commencing implementation (or a longer period if the <b>Minister</b> deems the prevailing conditions for rehabilitation to have been unfavourable) then option 2.a.i. must be implemented.</p>	Compliant	<p>On 31 August 2021, the Airport wrote to the Minister requesting that the Minister consider deferring the date of commencement of the action from 4 June 2019 for a year to commence 4 June 2020 on the basis that the prevailing conditions for rehabilitation have been unfavourable due to the drought that occurred throughout 2019 and into 2020.</p>

Condition Number	Condition	Is the project complaint with this Condition?	Evidence / Comments
			<p>This request was subsequently approved by a delegate of the Minister on 11 March 2022. The approval letter states:</p> <p><i>“In accordance with conditions 2A the outcome required for rehabilitation by condition 2.a.ii may not be achieved within 6 years of commencement of implementation (by 2025)”.</i></p> <p>NTG rehabilitation work on the Airport site has commenced and is progressing.</p>
3	<p>The person taking the action must develop and submit a Construction Environment Management Plan (CEMP) to the <b>Minister</b> for approval prior to construction. The plan must include but is not be limited to:</p> <ul style="list-style-type: none"> <li>○ measures to reduce indirect <b>construction impacts on Natural Temperate Grassland</b>;</li> <li>○ measure to reduce impacts on listed threatened species; and</li> <li>○ management of <b>Natural Temperate Grassland</b> adjacent to Taxiway Bravo to improve the quality of the grassland.</li> </ul> <p>The approved plan must be implemented.</p>	Compliant	
3A	<p>Within 6 months following completion of <b>construction</b>, the person taking the action must revise the Biodiversity Offsets Strategy to identify the impacted <b>natural temperate grassland</b> area that is available for rehabilitation, and specify a program to rehabilitate the land to <b>natural temperate grassland</b>. The revised Biodiversity Offset Strategy must be</p>	Compliant	<p>The revised Biodiversity Offset Strategy was submitted on 31 August 2021 and approved by a delegate of the Minister on 11 March 2022.</p> <p>Refer Attachment 5 of 2021/2022 Annual Compliance Report.</p>



Condition Number	Condition	Is the project complaint with this Condition?	Evidence / Comments
	submitted to the <b>Minister</b> for approval. The approved plan must be implemented.		
4	If the <b>Minister</b> believes that it is necessary or desirable for the better protection of the environment, the <b>Minister</b> may request that the person taking the action make specified revisions to a <b>plan</b> or measure for the <b>Minister's</b> approval. The person taking the action must comply with any such request. If the <b>Minister</b> approves a revised <b>plan</b> or measure pursuant to this condition, the person taking the action must implement the <b>plan</b> or measure instead of the <b>plan</b> or measure as originally approved.	Compliant	
5	<b><i>Revision of action management plans</i></b>  The person taking the action may, at any time, apply to the <b>Minister</b> for a variation to an action management <b>plan</b> or measure approved by the <b>Minister</b> under conditions 2 and 3, or as subsequently revised in accordance with these conditions, by submitting an application in accordance with the requirements of section 143A of the <b>EPBC Act</b> . If the <b>Minister</b> approves a revised action management <b>plan</b> or measure (RAMP) the, from the date specified, the approval holder must implement the RAMP in place of the previous action management plan or measure.	Not activated at this time	
5A	The person taking the action may choose to revise an action management <b>plan</b> or measure approved by the <b>Minister</b> under condition 3, or as subsequently revised in accordance with these conditions, without submitting it for approval under section 143A of the	Not activated at this time	

Condition Number	Condition	Is the project complaint with this Condition?	Evidence / Comments
	<b>EPBC Act</b> , if the taking of the action in accordance with the RAMP would not be likely to have a <b>new or increased impact</b> .		
5B	<p>If the person taking the action makes the choice under condition 5A to revise an action management <b>plan</b> or measure without submitting it for approval, the person taking the action must:</p> <ol style="list-style-type: none"> <li>notify the <b>Department</b> in writing that the approved action management <b>plan</b> or measure has been revised and provide the <b>Department</b> with:               <ol style="list-style-type: none"> <li>an electronic copy of the RAMP.</li> <li>an electronic copy of the RAMP marked up with track changes to show the differences between the approved action management <b>plan</b> or measure and the RAMP.</li> <li>an explanation of the differences between the approved action management <b>plan</b> or measure and the RAMP.</li> <li>the reasons the person taking the action considers that taking the action in accordance with the RAMP would not be likely to have a <b>new or increased impact</b>, and</li> <li>written notice of the date on which the person taking the action will implement the RAMP (RAMP implementation date), being at least <b>20 business days</b> after the date of providing notice of the revision of the action management plan, or a date agreed to in writing with the <b>Department</b>.</li> </ol> </li> </ol>	Not activated at this time	

Condition Number	Condition	Is the project complaint with this Condition?	Evidence / Comments
	b. subject to condition 5D, implement the RAMP from the RAMP implementation date.		
5C	The person taking the action may revoke the choice to implement the RAMP under condition 5A at any time by giving written notice to the <b>Department</b> . If the person taking the action revokes the choice under condition 5A, the person taking the action must implement the action management <b>plan</b> or measure in effect immediately previous to that being revoked.	Not activated at this time	
5D	<p>If the <b>Minister</b> gives a notice to the person taking the action that the <b>Minister</b> is satisfied that the taking of the action in accordance with the RAMP would be likely to have a <b>new or increased impact</b>, then:</p> <p>a. condition 5A does not apply, or ceases to apply, in relation to the RAMP; and</p> <p>b. the person taking the action must implement the action management <b>plan</b> or measure specified by the <b>Minister</b> in the notice.</p>	Not activated at this time	
5E	<p>At the time of giving the notice under condition 5D, the <b>Minister</b> may also notify that for a specified period of time, condition 5A does not apply for one or more specified action management <b>plans</b> or measures.</p> <p>Note: Conditions 5A, 5B, 5C and 5D are not intended to limit the operation of section 143A of the <b>EPBC Act</b> which allows the person taking the action to submit a revised action management <b>plan</b> or measure, at any time, to the <b>Minister</b> for approval.</p>	Not activated at this time	

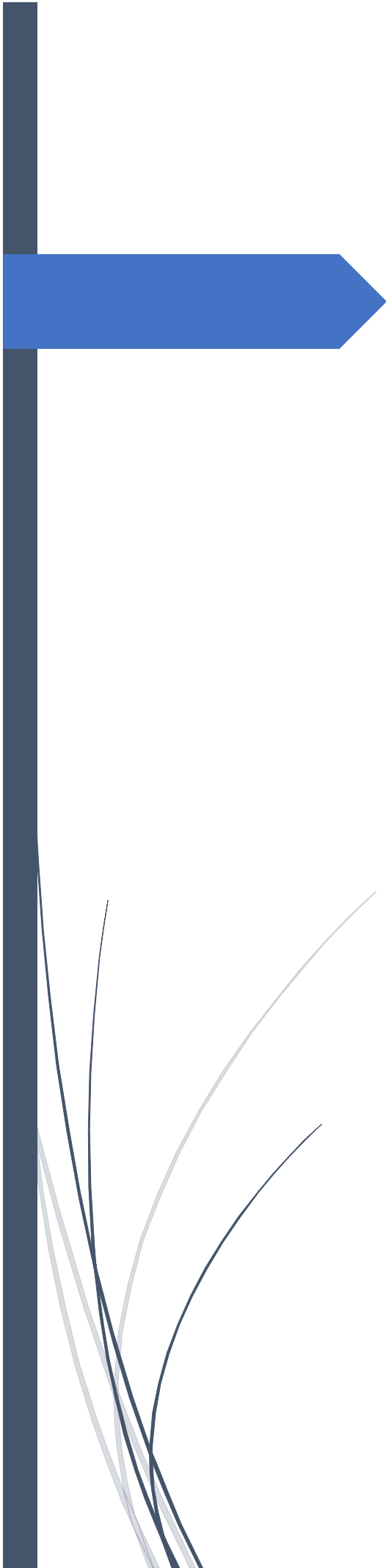
Condition Number	Condition	Is the project compliant with this Condition?	Evidence / Comments
6	If the <b>commencement of the action</b> does not occur within 15 years from the date of this approval, then the person taking the action must not <b>commence the action</b> without the prior written agreement of the <b>Minister</b> .	Compliant	The Taxiway Bravo Extension Project commenced on 4/6/2019 with practical completion on 5/8/2020.
7	<b><i>Compliance records</i></b> The person taking the action must maintain accurate and complete <b>compliance records</b> .	Compliant	
8	If the Department makes a request in writing, the person taking the action must provide electronic copies of <b>compliance records</b> to the Department within the timeframe specified in the request.  Note: <b>Compliance records</b> may be subject to audit by the Department or an independent auditor in accordance with section 458 of the EPBC Act, and or used to verify compliance with the conditions. Summaries of the result of an audit may be published on the <b>Department's</b> website or through the general media.	Noted	Noted
9	<b><i>Preparation and publication of plans</i></b> The person taking the action must: a. submit <b>plans</b> electronically to the <b>Department</b> for approval by the <b>Minister</b> ; b. publish each <b>plan</b> on the <b>website</b> within 20 <b>business days</b> of the date the <b>plan</b> is approved by the <b>Minister</b> or of the date a revised action management plan is submitted to the <b>Minister</b> , unless otherwise agreed to in writing by the <b>Minister</b> .	Compliant	



Condition Number	Condition	Is the project compliant with this Condition?	Evidence / Comments
	c. keep <b>plans</b> published on the <b>website</b> until the end date of this approval, unless otherwise agreed to in writing by the <b>Minister</b> .		
10	The person taking the action must ensure that any monitoring data (including <b>sensitive ecological data</b> ), surveys, maps, and other spatial and metadata required under conditions of the approval, is prepared in accordance with the Department's Guidelines for biological survey and mapped data (2018) and submitted electronically to the Department.	Compliant	Noted
11	<p><b>Annual compliance reporting</b></p> <p>The person taking the action must prepare a <b>compliance report</b> for each 12 month period following the date of <b>commencement of the action</b>, or as otherwise agreed to in writing by the <b>Minister</b>. The person taking the action must:</p> <ul style="list-style-type: none"> <li>a. publish each <b>compliance report</b> on the <b>website</b> within 60 <b>business days</b> following the relevant 12 month period;</li> <li>b. notify the <b>Department</b> by email that a <b>compliance report</b> has been published on the <b>website</b> within five <b>business days</b> of the date of publication;</li> <li>c. keep all <b>compliance reports</b> publicly available on the <b>website</b> until this approval expires, unless otherwise agreed to in writing by the <b>Minister</b>.</li> <li>d. exclude or redact <b>sensitive ecological data</b> from <b>compliance reports</b> published on the website; and</li> </ul>	Compliant	<p>The 2022/2023 Compliance Report was submitted ahead of time on DCCEEW on 11 August 2023.</p> <p>The Airport will comply with 11a, b, c, d and e.</p>

Condition Number	Condition	Is the project complaint with this Condition?	Evidence / Comments
	<p>e. where any <b>sensitive ecological data</b> has been excluded from the version published, submit the full <b>compliance report</b> to the <b>Department</b> within 5 <b>business days</b> of publication.</p> <p><b>Note: Compliance reports</b> may be published on the <b>Department's</b> website. The first <b>compliance report</b> may report a period less than 12 months so that it and subsequent compliance reports align with the similar requirement under state approval.</p>		
12	<p><b>Reporting non-compliance</b></p> <p>The person taking the action must notify the <b>Department</b> in writing of any: <b>incident</b>; non-compliance with the conditions; or non-compliance with the commitments made in <b>plans</b>. The notification must be given as soon as practicable, and no later than two <b>business days</b> after becoming aware of the <b>incident</b> or non-compliance. The notification must specify:</p> <p>a. the condition which is or may be in breach; and</p> <p>b. a short description of the <b>incident</b> and/or non-compliance.</p>	Compliant	<p>The Department was notified of a non-compliance of Condition 3A on 6 July 2021.</p> <p>Refer to Section 4 of the 2020/2021 Compliance Report.</p>
13	<p>The person taking the action must provide to the <b>Department</b> the details of any <b>incident</b> or non-compliance with the conditions or commitments made in plans as soon as practicable and no later than 10 <b>business days</b>, unless otherwise agreed to in writing by the Minister, after becoming aware of the <b>incident</b> or non-compliance, specifying:</p>	Compliant	

Condition Number	Condition	Is the project compliant with this Condition?	Evidence / Comments
	<ul style="list-style-type: none"> <li>a. any corrective action or investigation which the person taking the action has already taken or intends to take in the immediate future;</li> <li>b. the potential impacts or the <b>incident</b> or non-compliance; and</li> <li>c. the method and timing of any remedial action that will be undertaken by the person taking the action.</li> </ul>		
14	<p><b>Management Plans</b></p> <p>All management <b>plans</b> required under this approval should be prepared in line with the <b>Department's Environmental Management Plan Guidelines</b>.</p>	Compliant	



## Canberra Airport: Resurvey of grassland remnants surrounding Taxiway B extension, 2023

With notes on other grassland areas  
with potential for rehabilitation

**Alison Rowell**

BIOLOGIST AND ENVIRONMENTAL CONSULTANT  
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AUGUST 2023

## Contents

1. Methods .....	2
1.1 Grassland surrounding Taxiway B extension .....	2
1.2 Other grassland areas with potential for rehabilitation .....	3
2. Results .....	4
2.1 Grassland surrounding Taxiway B extension .....	4
Table 1. Native species observed in Natural Temperate Grassland patches, July 2023.....	5
Figure 1. Patches of Natural Temperate Grassland surrounding Taxiway B.....	6
Photograph 1. NTG patch East/D looking north, with native grasses and forbs. July 2023. ....	7
Photograph 2. NTG patch East/D detail, various native grasses and forbs. July 2023. ....	7
Photograph 3. NTG patch East/D, looking north, scattered Serrated Tussock in mid-ground. July 2023. ....	8
Photograph 4. Tall Fescue on eastern taxiway verge, tussocks sparse where mown short. July 2023. ....	8
2.2 Other grassland areas with potential for rehabilitation .....	9
Table 2. Areas for rehabilitation trials. ....	9
Figure 2. Areas within northern NTG which are currently exotic-dominated. ....	10
Figure 3. Strip used in soil translocation trial, 2005-2010. ....	11
Figure 4. Strip containing mainly exotic species with some native grasses.....	12
Photograph 5. Site 1, Paspalum patch that has developed after wet years.....	13
Photograph 6. Site 2 (greener patch in background). Mixed exotics on previously disturbed area. ....	13
Photograph 7. Site 4, near north end, looking north. Mixed native/exotic, bare ground.....	14
Photograph 8. Mixed native and exotic plants after Serrated Tussock control. ....	14
3. References .....	15



# Canberra Airport

## Resurvey of grassland remnants surrounding Taxiway B extension, 2023

### and

### Other grassland areas with potential for rehabilitation

## 1. Methods

### 1.1 Grassland surrounding Taxiway B extension

Grassland areas each side of the Taxiway B extension, including replanted verges, were inspected on 27 July 2023. They were assessed against the Conservation Advice criteria for the critically endangered Natural Temperate Grasslands of the South-eastern Highlands community (NTG) (TSSC 2016), using criteria for grasslands surveyed outside ideal sampling times (which is spring-early summer). No mowing had taken place for several weeks, annual exotics had died back and many native grass and non-grass species were identifiable.

The grasslands were surveyed and NTG patches were mapped in late July 2022 (Rowell 2022), and the boundaries and quality of these patches were checked again in July 2023.

The requirements in the Conservation Advice include:

***For EPBC Act referral, assessment and compliance purposes, the national ecological community is limited to patches that meet the following key diagnostic characteristics and condition thresholds:***

- Assessments of a patch should initially be centred on the area of highest native floristic diversity (also see 1.5.3, Additional Considerations)
- The minimum patch size for consideration as part of the listed ecological community is 0.1 ha (e.g. 50 m x 20 m).

The assessment criteria include:

Percentage cover of native vascular plants (including annual and perennial species) in the patch is greater than the percentage cover of perennial exotic species

AND

In sampling plot of 0.04 ha (e.g. 20m x 20m):

At least 4 non-grass native species are present

OR

At least 1 **indicator species** is present

The criteria further note that 'Non-grass species include forbs/herbs, lilies, orchids, rushes and shrubs. It does not include....sedges' and '**Indicator species** are native plant species that are useful surrogates for conservation value of a patch, and are typically disturbance sensitive species.' (Indicator list at DECCEEW SPRAT).

Other relevant considerations in the Conservation Advice are:

### 1.5.3 Additional Considerations

The following information should also be taken into consideration when applying the key diagnostic characteristics and condition thresholds (to assess a site that may include the ecological community and determine the potential impacts on a patch):

- A patch is defined as a discrete and continuous or semi-continuous area of the ecological community. Patches can be spatially variable and are often characterised by one or more areas within a patch that meet the condition threshold criteria that are surrounded by areas of lower quality. Therefore a patch may include small-scale disturbances, such as tracks or breaks (including exposed soil, leaf and other plant litter, cryptogams) or small-scale variations in vegetation that do not significantly alter its overall functionality (i.e. processes such as the movement of wildlife and pollinators, the dispersal of plant propagules, activities of seed and plant predators etc.). In this case, areas of a patch that are exotic dominated, or otherwise do not meet the minimum condition thresholds, are included within the patch as a whole, but should not be included in sampling plots (e.g. this may apply to drainage lines that often contain more weeds than surrounding areas of a patch).

## 1.2 Other grassland areas with potential for rehabilitation

During Canberra Grassland Earless Dragon (CGED) surveys from February to June 2023, and in July 2023, other grassland areas north of the main runway were noted and mapped where they had potential to be used as trial sites for different methods of grassland rehabilitation to reach native-dominated grassland or NTG status. During the CGED surveys, minor collections were made of seeds of native grasses and forbs for use in such future restoration work.

The areas mapped included:

1. an area in the north-east of the Airport which is dominated by weeds such as *Paspalum dilatatum* and Chilean Needlegrass *Nassella neesiana* after three wet years (2020-2023).
2. a small dense patch of African Lovegrass *Eragrostis curvula* which has developed in the north-east corner of the Airport and is invading NTG and CGED habitat.
3. an exotic-dominated area in the north-east corner of the Airport, adjacent to a large area of NTG.
4. a strip bounded by the northern end of the runway and Taxiways Alpha and Foxtrot, part of which was used in a native grassland translocation experiment in 2005-2010.

## 2. Results

### 2.1 Grassland surrounding Taxiway B extension

Inspection showed that the boundaries and composition of the NTG patches identified in 2022 (Rowell 2022) had remained the same. These are shown in Figure 1, which is reproduced from the previous report.

The main native species observed are shown in Table 1. These included eleven non-grass species and four Indicator species that were also recorded in 2022 (Photographs 1 and 2).

After construction, soil from the site was used to shape the cut and filled areas on the taxiway shoulder areas with the aim of retaining some native plant propagules on site. These areas were then oversown with an exotic mix which apparently contained a Tall Fescue (probably *Festuca arundinacea*), a clover *Trifolium* species and possibly Couch *Cynodon dactylon*. Rapid grass establishment was required to stabilise soil on the verges and protect it from jet blast.

It was noted in 2022 that the Fescue had established but the verge was being invaded in parts by Chilean Needlegrass *Nassella neesiana*. This grassland weed is common on the Airport and commonly replaces planted species in Canberra as it can survive and seed under low mowing. These grasses were still present on the verges in 2023, but there were few plants of Couch or Clover and native species were rare (i.e. they had not re-established from the reused soil).

The part of the verge immediately adjacent to the taxiway is mown more closely and frequently than the rest of the Airport grasslands, presumably for visibility of lights etc (Photograph 4). The tussocks in these areas are mostly small and widely spaced, with bare ground between them. This strip is not seen as now having potential for revegetating with native species due to the low mowing, soil compaction and restrictions on soil disturbance and activity close to the taxiway.

It was noted that there was some increase in scattered occurrences of Serrated Tussock *Nassella trichotoma* within and between the NTG patches (Photograph 3). Control by careful spot spraying is recommended where this species and other perennial grass weeds such as Chilean Needlegrass *Nassella neesiana*, Tall Fescue, African Lovegrass *Eragrostis curvula* and Paspalum *Paspalum dilatatum* occur within NTG patches. African Lovegrass is a more recent serious invader of grasslands in the ACT, and its spread appears to be favoured over Chilean Needlegrass in dry years.

Gradually spraying back the above weeds where they occur adjacent to NTG patches east of the taxiway and replanting the killed strip with native species appropriate to the soil conditions of the patch has the potential to increase the area occupied by NTG and to create north-south links between NTG patches.

Where the intervening exotic species are growing in deeper or wetter soil, Kangaroo Grass *Themeda triandra* would be suitable. Where the soil is shallower and compacted, Redleg Grass *Bothriochloa macra* and Wallaby Grasses *Rytidosperma* would be more appropriate. The results would need to be monitored, and after native grasses have been established and weeds controlled, native forbs could be introduced as seed supplemented with some tube stock.

Table 1. Native species observed in Natural Temperate Grassland patches, July 2023.  
(Species in bold type are indicator species)

NATIVE GRASSES	COMMON NAME	FREQUENCY IN NTG PATCHES
<i>Austrostipa bigeniculata</i>	Tall Speargrass	Common
<i>Austrostipa scabra</i>	Rough Speargrass	Common
<i>Rytidosperma</i> species	Wallaby Grasses	Common
<i>Bothriochloa macra</i>	Redleg Grass	Very common
<i>Chloris truncata</i>	Windmill Grass	Common
<i>Eragrostis trachycarpa</i>	A Lovegrass	Occasional
<i>Panicum effusum</i>	Hairy Panic Grass	Common
<i>Themeda triandra</i>	Kangaroo Grass	Occasional, patchy
NON-GRASS SPECIES		
<i>Asperula conferta</i>	Common Woodruff	Common
<i>Carex inversa</i>	A sedge	Common
<b><i>Chrysocephalum apiculatum</i></b>	<b>Yellow Buttons</b>	<b>Very common</b>
<i>Dichondra repens</i>	Kidneyweed	Occasional on bare ground
<i>Geranium solanderi</i>	A native Geranium	Occasional
<b><i>Goodenia pinnatifida</i></b>	<b>Scrambled Eggs</b>	<b>Common</b>
<b><i>Leptorhynchos squamatus</i></b>	<b>Scaly Buttons</b>	<b>Common</b>
<b><i>Plantago varia</i></b>	<b>Variable Plantain</b>	<b>Very common</b>
<i>Schoenus apogon</i>	Common Bog-rush	Common
<i>Vittadinia muelleri</i>	New Holland Daisy	Common
<i>Wahlenbergia communis</i>	Tufted Bluebell	Occasional

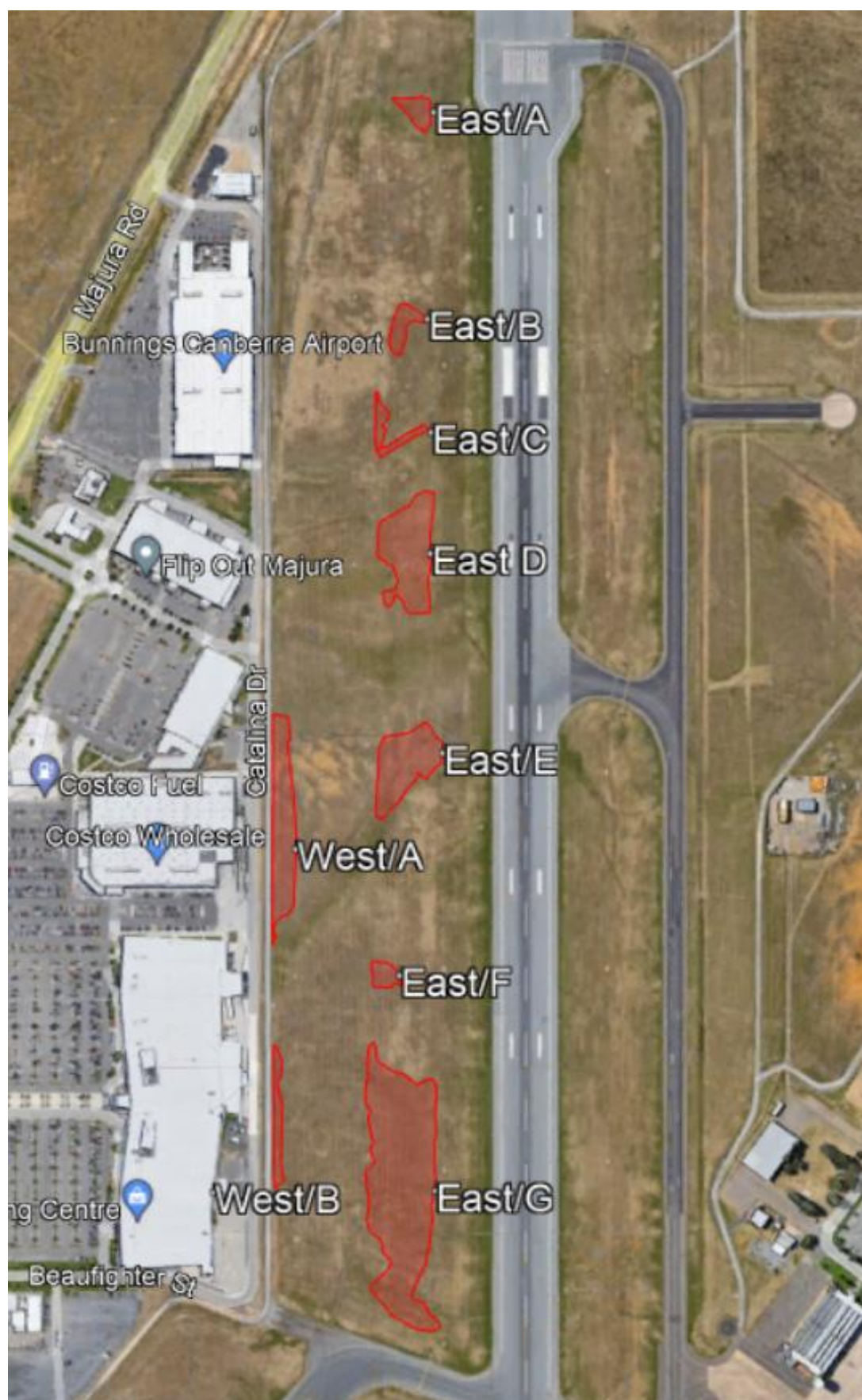


Figure 1. Patches of Natural Temperate Grassland surrounding Taxiway B.

*Resurvey of grassland remnants surrounding new Taxiway B, 2023. A Rowell 2023.*





Photograph 1. NTG patch East/D looking north, with native grasses and forbs. July 2023.



Photograph 2. NTG patch East/D detail, various native grasses and forbs. July 2023.





Photograph 3. NTG patch East/D, looking north, scattered Serrated Tussock in mid-ground. July 2023.



Photograph 4. Tall Fescue on eastern taxiway verge, tussocks sparse where mown short. July 2023.



## 2.2 Other grassland areas with potential for rehabilitation

The areas mapped are shown in Figures 2 and 4 and include patches of grassland which are exotic-dominated due to historic site damage or more recent weed invasion, and others which contain a moderate level of native grasses but do not meet the criteria for NTG.

These areas present opportunities for grassland rehabilitation trials in monitored plots using various methods which have been trialled elsewhere in the ACT (see Table 2).

In the native-dominated grasslands north of the runway, areas where patches of Serrated Tussock had been sprayed with herbicide in the past were found to have revegetated with a mixture of exotic and some native species, and some Serrated Tussock (Photograph 8). The native species included grasses but also the New Holland Daisy *Vittadinia muelleri*, a small species that can quickly form dense patches on bare ground and persists under mowing.

It is suggested that after Serrated Tussock and African Lovegrass patches in particular have died off after spraying, native species such as New Holland Daisy and some grasses should be planted to compete for space and nutrients with exotic species that may have seeds in the soil. Seed of this abundant daisy and other colonising species has been collected for this purpose.

Controlling the patch of African Lovegrass (Site 3 in Table 2 and Figure 2) is a priority, as it has grown in the last two years and is now encroaching on the best habitat on the Airport for the critically endangered Canberra Grassland Earless Dragon.

Table 2. Areas for rehabilitation trials.

Site	Area (m <sup>2</sup> )	Current condition/management	Rehabilitation trials
1	7500	Low-lying area dominated by weeds after three wet years – mainly <i>Paspalum</i> and Chilean Needlegrass (Photograph 5).	Potential for replacement with Kangaroo Grass using commercial seed. Trial plots could be established near the boundary with NTG.
2	1500	Exotic-dominated area, possibly damaged during runway construction (ca 1960). Adjacent to large area of NTG and CGED habitat (Photograph 6).	Potential for full replacement with native grasses and forbs. Trials could include scrape/remove topsoil or use of herbicide, then resowing with commercial native seed and seed from Airport.
3	280	Small dense patch of African Lovegrass invading NTG and CGED habitat	Spray out centre of patch, spot spray plants beyond edge. Resow densely with commercial native seed and seed from Airport, follow up with spot spraying/hand-weeding until African Lovegrass is eliminated.
4	8000	Strip bounded by runway and Taxiways A and F, part used in a native grassland translocation experiment in 2005-2010. Native grasses (especially Redleg Grass <i>Bothriochloa macra</i> ) among exotic species, some bare ground (Photograph 7).	Western edge contains compacted bare ground which is eroding into centre drain, eastern part has denser vegetation. Potential for trials with methods according to condition of patch. Where native grasses and bare ground are more common, spot-spray weeds then sow native seed.

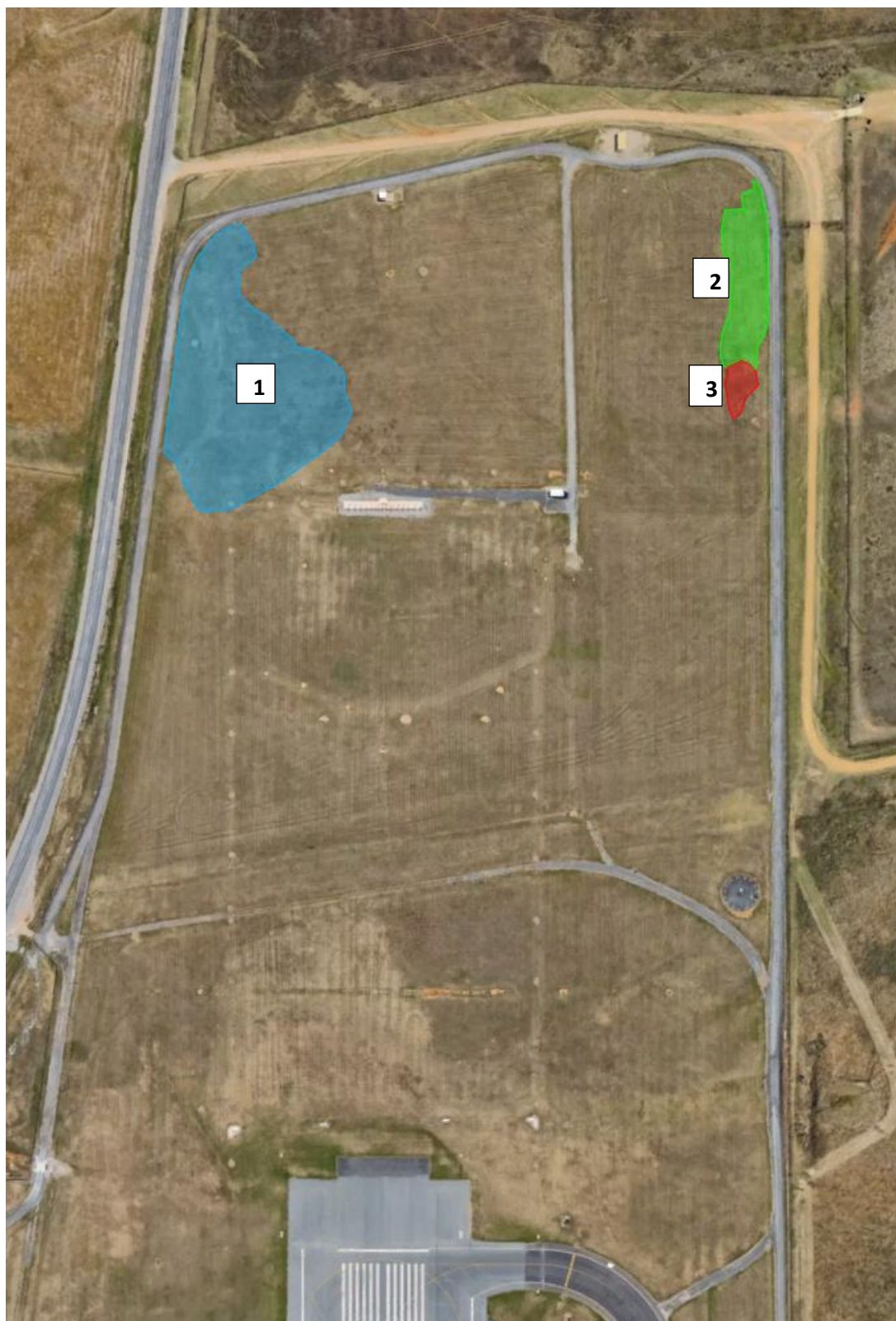


Figure 2. Areas within northern NTG which are currently exotic-dominated.

Site 1 - Paspalum

Site 2 - mixed exotics

Site 3 - African Lovegrass.



Figure 3. Strip used in soil translocation trial, 2005-2010.



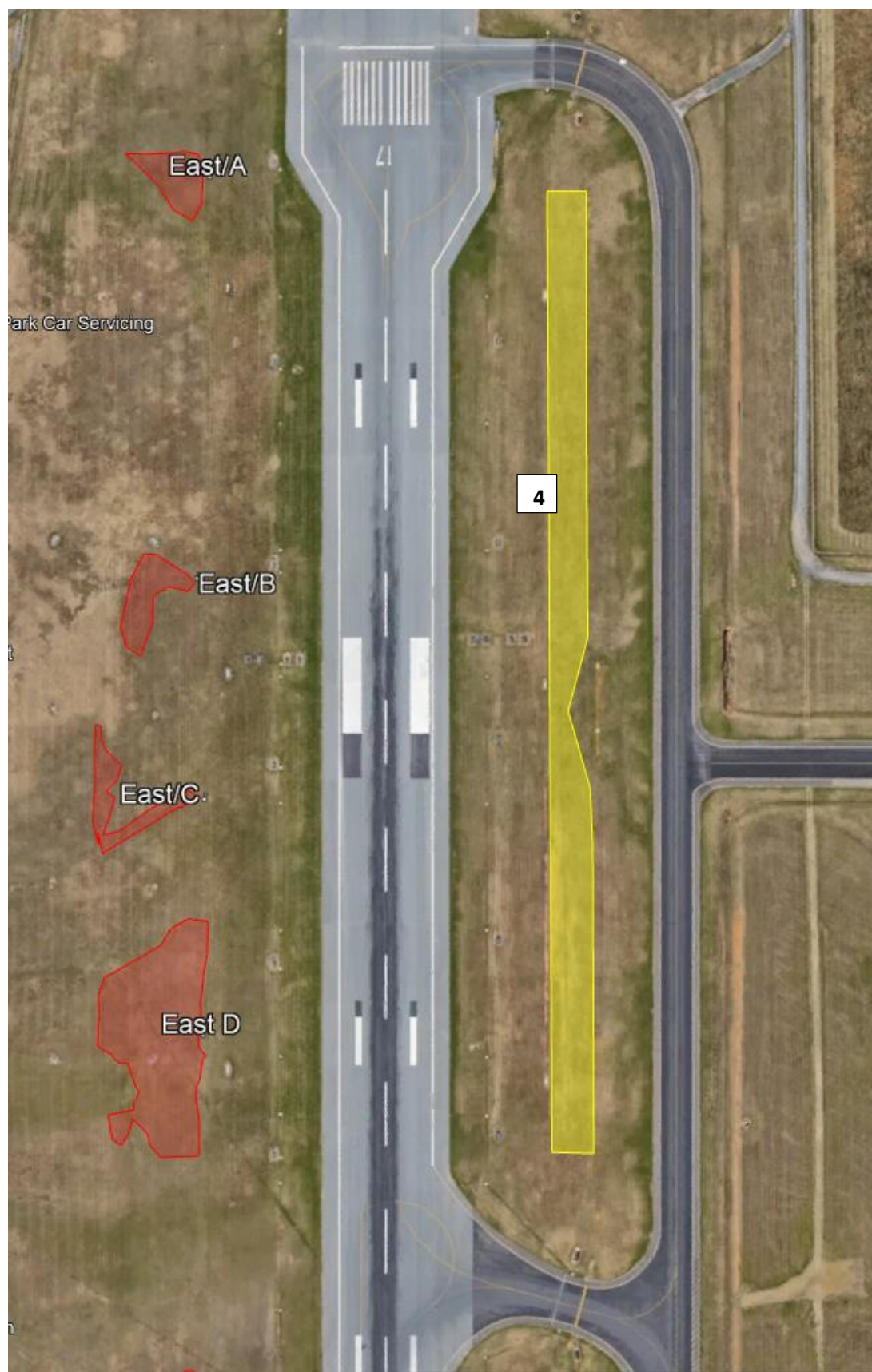


Figure 4. Strip containing mainly exotic species with some native grasses. Northern part of Site 4 was used in previous soil translocation trial.





Photograph 5. Site 1, Paspalum patch that has developed after wet years.



Photograph 6. Site 2 (greener patch in background). Mixed exotics on previously disturbed area.





Photograph 7. Site 4, near north end, looking north. Mixed native/exotic, bare ground.



Photograph 8. Mixed native and exotic plants after Serrated Tussock control.

### 3. References

- DECCEEW SPRAT. List of indicator species on the ecological community profile, Species Profiles and Threats Database, Department of Climate Change, Energy, Environment and Water website. [Natural Temperate Grassland of the South Eastern Highlands \(environment.gov.au\)](https://environment.gov.au) .
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- TSSC 2016. Approved Conservation Advice for the Natural Temperate Grassland of the South Eastern Highlands by the Threatened Species Scientific Committee under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). Department of the Environment.