Prepared for
Jones Lang LaSalle (ACT) Pty Ltd
ABN: 69 008 585 260

Cultana Training Area Miscellaneous Lease for Defence Purposes

Five-yearly Environmental Report - 2016 to 2021

18-Aug-2023
CW11737 - Miscellaneous Environmental Tasks

aecom.com

Delivering a better world

Cultana Training Area Miscellaneous Lease for Defence Purposes

Five-yearly Environmental Report - 2016 to 2021

Client: Jones Lang LaSalle (ACT) Pty Ltd

ABN: 69 008 585 260

Prepared by

AECOM Australia Pty Ltd
Kaurna Country, Level 28, 91 King William Street, Adelaide SA 5000, Australia
T +61 8 7131 0252 www.aecom.com
ABN 20 093 846 925

18-Aug-2023

Job No.: 60571940

AECOM in Australia and New Zealand is certified to ISO9001, ISO14001 and ISO45001.

Quality information

Document	Cultana Training Area Miscellaneous Lease for Defence Purposes
Ref	60571940
Date	18-Aug-2023
Originator	Abe Francis and Liam Seed
Checker/s	Andrew Larwood
Verifier/s	Floora De Wit / Felicia Mellors

Revision History

Rev	Revision Date	Details	Approved	
			Name/Position	Signature
0	18-Aug-2023	For client release	Felicia Mellors Associate Director	

Table of contents

Abbreviations and definitions

Abbreviations	Definitions
BONS	Biosecurity and Overabundant Native Species
CUTA	Cultana Training Area
Defence	Department of Defence
DEQMS	Defence Estate Quality Management System
DFSW	Direct Fire Support Range
EHM	(Defence) Environment and Heritage Manual
EMP	Environmental Management Plan
EMS	Environmental Management System
EPBC Act	Environment Protection and Biodiversity Conservation Act
ERIK	Estate Resources and Information Kiosk
GEMS	Garrison Estate Management System
ha	hectares
ILUA	Indigenous Land Use Agreement
km	kilometres
LMM	(Defence) Landscape Management Manual
MLDP	Miscellaneous Lease for Defence Purposes
NSW	New South Wales
PER	Public Environment Report
SA	South Australia
SAAL	South Australian Arid Lands
SMRP	Sustainability Monitoring and Reporting Plan

Executive summary

AECOM Australia Pty Ltd was engaged by Jones Lang LaSalle (ACT) Pty Ltd on behalf of the Department of Defence (Defence) as an independent consultant to deliver the five-yearly environmental report required by the Miscellaneous Lease for Defence Purposes (MLDP) agreement with the South Australian Government. The MLDP contains clauses related to environmental management. This report has been developed to satisfy Clause 9.5.4

The purpose of this five-yearly environmental report is to provide an independent assessment of Defence's performance against the environmental indicators and thresholds in the Curtana Training Area (CUTA) Environmental Management Plan (EMP) per Clause 9.5.4 of the MLDP. The reporting period is the five years between 2016 and 2021, which coincides with the two, five-yearly monitoring events carried out in 2016 and 2021.

Performance against the indicators for CUTA prescribed in the CUTA EMP are provided and the key outcomes of the performance assessment for each monitoring theme is discussed. Performance information has been derived from the two and four year MLDP environmental reports covering the period between 2016 to 2021, and supplemented by information from the original monitoring reports as required.

The results demonstrate that monitoring prescribed by the EMP has been carried out and that ecosystem health under Defence management has not declined. Further, in some locations, ecosystem health has improved during the reporting period. It is our opinion that Defence has met its environmental monitoring obligations specified in the MLDP.

Upon review, it is clear that several indicators and, in some cases, thresholds are unnecessary and should be discontinued. Recommendations for amendments to the suite of indicators and thresholds, along with justification is also provided.

1.0 Introduction

AECOM Australia Pty Ltd (AECOM) was engaged by Jones Lang LaSalle (ACT) Pty Ltd (JLL) on behalf of the Department of Defence (Defence) as an independent consultant to deliver the five-yearly environmental report required by the Miscellaneous Lease for Defence Purposes (MLDP) agreement with the SA Government.

1.1 Background

Defence acquired pastoral land from the SA Government through the MLDP to expand the Cultana Training Area (CUTA) from ~50,250 ha to ~209,300 ha. The purpose of the expansion was to overcome significant limitations for large-scale manoeuvre training on the original ~50,250 ha portion of land and enable a more sustainable utilisation of CUTA.

Defence referred the action to the Minister for the Environment under the *Environment Protection and Biodiversity Conservation 1999* (EPBC Act). In 2010, the project was deemed a controlled action to be assessed through the preparation of a Public Environment Report (PER). The PER was submitted in 2012, and approval for the action was granted in 2013 with specific conditions.

The Commonwealth acquired the expansion area through a compulsory acquisition process and then transferred ownership to the SA Government with its use by Defence agreed through an MLDP signed in June 2014. The MLDP contains clauses related to environmental management. This report has been developed to satisfy Clause 9.5.4 as follows:

"The Lessee must ensure that an independent consultant or Expert agreed pursuant to Clause 9.5.3 will provide a written report on the Lessee's performance against the Environmental Indicators and Thresholds for the past five (5) years and recommendations in relation to the Environmental Indicators and Thresholds for the following five (5) years having regard to the Lessee's use of the Lease Area for permitted use, such report to be provided to both parties."

1.2 Purpose

The purpose of this five-yearly environmental report is to provide an independent assessment of Defence's performance against the environmental indicators and thresholds in the CUTA Environmental Management Plan per Clause 9.5.4 of the MLDP. The reporting period is the five years between 2016 and 2021, which coincides with the two, five-yearly monitoring events carried out in 2016 and 2021.

1.3 Site description

The CUTA Expansion Area (leasehold area) is located approximately 300 km northwest of Adelaide in SA and is ~159,000 ha. Combined with the previous 'freehold' extent, the total size of the training area is ~209,300 ha. It is bounded by the Eyre Highway to the north, Spencer Gulf to the east, Whyalla approximately 10 km south, and Iron Knob to the west. The nearest cities are Port Augusta and Whyalla. Iron Knob Road and the Lincoln Highway both run north-south through CUTA.

CUTA is situated within the pastoral zone of South Australia where sheep grazing commenced shortly after European settlement in the area, initially from flocks driven overland from NSW (Jeffries, 1979). The original extent of CUTA was derived from the Cultana pastoral lease, with the expansion derived from the Lincoln Park, Tregalana, Roopena, Katunga and portions of Corunna and Tregalana south of the Eyre Highway. Pre-Defence management of these areas was variable, with Cultana suffering from unsustainable overgrazing, while Roopena benefited from over 100 years of innovative and sustainable land management practices under the custodianship of the Nicholson family (Lange, *et al.,* 1984).

The CUTA expansion area was destocked in the early 2000s in anticipation of Defence acquisition, however, Defence did not begin to utilise the area for training until 2015. The expansion area has now been destocked for over 20 years and while impacts of pastoral land uses may remain in some marginal areas that were historically overgrazed, it is unlikely that further changes as a result of stock removal can be expected for the majority of the landscape.

1.4 Defence activities

Defence primarily utilises CUTA for motorised (wheeled armoured vehicle) and mechanised (tracked armoured vehicle) field training. The large size of CUTA enables all common weapon types to be contained within the boundary which allows large multi-service exercises to be conducted. As such, it is highly valuable to Defence as most training areas across the country are restricted due to their size or urban encroachment. However, the majority of the Army's combat brigade elements are located in Darwin (1st Brigade) and Brisbane (3rd Brigade), so major exercises are rare due to the distances and associated costs involved. While important due to its size and unique attributes, CUTA is relatively lightly used compared to large training areas in Queensland and the Northern Territory.

During the reporting period, there has been only one major exercise which was the Road to Hamel, a series of exercises that occurred in 2016 at the commencement of the reporting period. This exercise comprised a series of exercises leading up to Exercise Hamel.

With the removal of stock, Defence's relatively light footprint (in terms of proportion of land area disturbed), and ongoing active management of weeds and goats, the key driver of landscape change is climate change impacting in the following ways:

- more frequent drought and associated water stress on native plants as a direct result of climate change
- lack of perennial shrub recruitment due to drought and/or absence of germination triggers (i.e. soil temperature)
- weed invasion, particularly Buffel Grass, due to range extensions (refer to Figure 1)
- increased fire frequency and severity due to climate change, Buffel Grass invasion and ignition from Defence live firing activities
- erosion through the loss of perennial shrubs caused by drought and potentially exacerbated in some areas by mechanical disturbance.

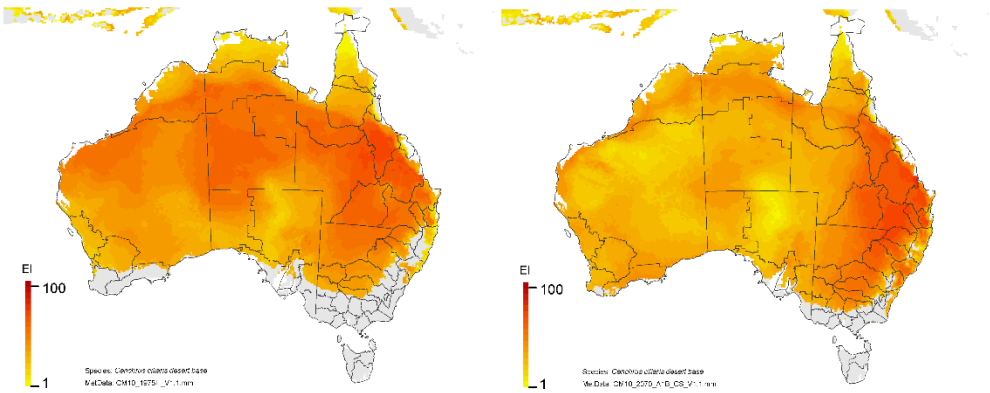

Figure 1 Buffel Grass projected range extension due to climate change (source: CSIRO AdaptNRM)

1.5 Environmental management at CUTA

Defence has developed and continues to improve its environmental management framework under the Defence Environmental Management System (EMS). The EMS is applied to the entire estate and is delivered through the various management systems and business processes utilised by the services, groups, branches and directorates that comprise Defence. This ensures environmental protection and management are embedded into Defence policies, planning frameworks and day-to-day business across the organisation.

The Defence environmental management framework aligns with the Defence Administrative Policy Framework which specifies that Defence administrative policy should comprise 'framework' level policy, that specifies the required performance outcomes, and 'guidance' that provides information on how to meet the required performance outcomes, usually published as 'manuals'. For environmental management, the framework-level policy is the Defence Environmental Policy and Defence Environmental Strategy. The key guidance document for Estate environmental management is the Defence Environment and Heritage Manual (EHM). The EHM provides overarching environmental management guidance as well as linkages to detailed guidance for the 13 environmental factors comprising:

- Environmental Assessment and Approval
- Heritage Management
- Domestic Biosecurity
- Native Species and Ecological Communities
- Soil Management
- Bushfire Management
- Pollution Prevention
- Site Contamination Management
- Estate Water Management
- Estate Energy Management
- Waste and Recycled Materials
- Climate Adaptation and Management
- PFAS Investigation and Management

Specific guidance for the management of the 'native species and ecological communities', 'soils' and 'bushfire' factors is provided in the Defence Landscape Management Manual (LMM)[1]. The LMM provides the following specific guidance for the reporting of landscape sustainability:

- Sustainability indicators must be considered within the following categories.
    - Capability
    - Biosecurity
    - Biodiversity
    - Soil condition
    - Water quality
    - Natural Heritage
- Indicators should be restricted to matters that can be practically monitored and that could materially impact the use of the site or the environment.
- Limits of acceptable change (thresholds) must be identified where the impact or the change in the matter being monitored is the result of Defence activities and/or Defence can undertake remedial actions.
- Sustainability reporting must be published annually on the Defence Estate Quality Management System (DEQMS). [2]

[1] Guidance for management of other factors is contained in other publications, for example, pollution prevention guidance is provided in the Defence Pollution Prevention Management Manual.
[2] DEQMS has recently been replaced by the Estate Resources and Information Kiosk (ERIK)

CUTA is managed in accordance with the Defence environmental management framework, CUTA Environmental Management Plan (EMP), MLDP conditions, EPBC Act approval conditions and Indigenous Land Use Agreement (ILUA). The current Defence environmental management framework guidance has largely been developed since the MLDP. The approach to meeting the MLDP requirements, EPBC Act approval conditions and ILUA clauses should align with the framework so far as reasonably practicable. This assessment will include consideration of the above requirements and recommends changes to better align the suite of indicators and thresholds with extant Defence policy.

Defence Estate environmental management information, including site-specific management requirements, is administered through the Garrison Estate Management System (GEMS). This system is used to store and retrieve site information as well as generate and track work orders related to environmental management as part of broader Estate management information. Indicators and thresholds should align with GEMS requirements to ensure any resultant management is effective and efficient.

2.0 Assessment of performance against monitoring indicators and thresholds

A key component of environmental management at CUTA is the monitoring of a specific suite of environmental indicators to inform management. As noted in the CUTA EMP (Defence , 2015), these indicators identify risks that, if realised, represent a plausible threat to the long-term sustainability of the site and its capacity to support Defence activities. Some indicators have defined thresholds that if exceeded, trigger management processes. Periodic reporting of how and when exceptions occur, and what decisions and actions resulted from the exception, is a key EMP output that informs revision of site management processes and assessment of site use.

2.1 Performance assessment results

Performance against the indicators for CUTA prescribed in the CUTA EMP is provided in Table 1. The indicators are adopted from the Sustainability Monitoring and Reporting Plan (SMRP) reproduced in Table 34 of the CUTA EMP. Applicable vegetation thresholds are considered to be the 'five-yearly reviews, sectors or part' thresholds listed in Table 2 of the EMP. Other indicators and thresholds in Table 2 of the EMP ('routine' and 'reactive' indicators) are discussed briefly in Section 3.3, however, are deemed not applicable and were not assessed. Table 34 and the extract of Table 2 (5-yearly monitoring) is provided in Appendix A.

Performance information has been derived from the two and four-year MLDP environmental reports covering the period between 2016 to 2021 (refer to Appendix B) and supplemented by information from the original monitoring reports as required. A discussion of the key outcomes of the performance assessment for each monitoring theme is provided in Section 2.2.

Finally, it should be noted that the indices measured at established permanent monitoring sites are representative of overall ecosystem health which is primarily driven by climatic conditions and land management activities rather than military activities. Given the area of CUTA compared to the intensity of use, the likelihood of a permanent monitoring site being directly impacted by a Defence vehicle or weapon system is remote.

Table 1 Cultana indicators and management measures from the Sustainability, Monitoring and Reporting Plan

Indicators	Measures	Performance Summary (2016-2021 reporting period[3])	Comments
Biodiversity			
Density (saltbush, bluebush, and perennial shrubs)	Five-yearly number of threshold exceptions based on Jessup transects	In 2016, saltbush density triggered a mixture of upper and lower thresholds 10 times and bluebush density triggered a mixture of upper and lower thresholds 42 times. In 2021, saltbush density triggered a mixture of upper and lower thresholds 10 times and bluebush density triggered the upper threshold 16 times. In 2016, perennial shrub density triggered the upper threshold 59 times. In 2021, perennial shrub density triggered the upper threshold 22 times.	Exceedances related to the upper thresholds which represent exceptional density. Upper thresholds should be removed per the recommendations in Section 3.0.
Vegetation cover	Number of threshold exceptions based on reactive step-point transects	Not applicable – see comments.	No step-point transect data was collected during this reporting period. Per the EMP, step-point transects are 'reactive' conducted following a specific on-ground event. It is understood that there was no identified need to establish specific step-point transects during the reporting period.
Vegetation cover	Number of temporary area closures enforced	Nine temporary area closures during the reporting period.	Temporary closures were created in discrete locations subject to localised disturbance (e.g., following the major exercise conducted in 2016). Defence created and enforced temporary area closures in line with its policy.
Vegetation cover	Number of compulsory rest areas enforced	No rest areas are currently in place.	No compulsory rest areas (as defined in the CUTA EMP) were identified following the major exercise in 2016 as there were no major areas of notable tracking identified in AECOM (2016).

[3] The MLDP was signed in 2014, however, Defence use of the Cultana expansion area commenced in October 2015. As such, the five-year reporting period is used in this report is from 2016 to 2021.

Indicators	Measures	Performance Summary (2016-2021 reporting period[3])	Comments
Juvenile to adult ratio	Five-yearly change in ratio on Jessup transects	In 2016, the results showed a large variation in the ratio of juveniles to adults, varying between 0.004 and 1.8 during the reporting period. In 2021, the results also showed a large variation in the ratio of juveniles to adults, varying between 0 and 0.5. A result of 0 represents a transect where no juveniles were recorded. A result of 0.5 represents active recruitment.	As discussed in Section 3.2, recruitment in chenopod shrublands is likely to reflect local environmental conditions rather than a response to Defence use. Exceeding the lower thresholds, therefore, does not necessarily indicate an unhealthy landscape or one in poor condition.
Low shooting on mature plants (<30 cm above ground)	Five-yearly number of sites where low shooting was recorded, and comparison to the previous survey	In 2021, eight Jessup transect sites were recorded as having low shooting on at least one of the target plant species below. • Western myall (*Acacia papyrocarpa*) • Bullock bush (*Alectryon oleifolius*) • *Eremophila* ssp. • Quandong (*Santalum acuminatum*) • Sandalwood (*Santalum spicatum*) Data was not collected in 2016, so a direct comparison cannot be made to the 2021 data.	As above
Recruitment	Five-yearly number of sites where recruits (i.e., seedlings) recorded, and comparison to the previous survey	In 2016, recruitment (i.e., number of seedlings) recorded was: • Western myall (*Acacia papyrocarpa*) – 3 seedlings • Eremophila ssp. – 2 seedlings In 2021, recruitment (i.e., number of seedlings) recorded was:	As above

Indicators	Measures	Performance Summary (2016-2021 reporting period[3])	Comments
		• Western myall (*Acacia papyrocarpa*) – 5 seedlings • Bullock bush (*Alectryon oleifolius*) – 2 seedlings • *Eremophila* ssp. – 8 seedlings.	
Long-term loss of key sandalwood populations due to lack of recruitment	Changes in sandalwood abundance	Not applicable – see comments.	No permanent transects are currently located within any sandalwood populations. Additional transects would need to be established to monitor sandalwood populations (refer to discussion in Section 3.2).
Protection of biodiversity	Number of incident reports involving damage to flora and fauna	One report of vegetation damage during the reporting period: unauthorised vegetation clearance as part of mine rehabilitation project EST03393.	The incident reporting system appears to be functioning correctly.
Biosecurity and overabundant native species			
Goats - high numbers lead to: • Degradation of native vegetation • Increased erosion • Damage to indigenous heritage	Five-yearly change in distribution	A total of 3,211 goats were removed during the reporting period.	Goat control has been ongoing throughout the reporting period.
	Incursions into Gilmores Well	A total of 1,113 goats were removed from this site and its surroundings during the reporting period.	As above.
	Numbers at water points	A total of 1,021 goats were removed from water points during the reporting period.	As above.
	Density from South Australian Arid Lands Natural Resources Management Board aerial transects	No data was provided for the reporting period.	SAAL aerial monitoring was not available. Refer to the discussion in Section 3.2.
	Numbers exported	No data was provided for the reporting period.	Refer discussion in Section 3.2.

Indicators	Measures	Performance Summary (2016-2021 reporting period[3])	Comments
Rabbits	Five-yearly change in distribution	No change has been detected in the distribution of rabbits during the reporting period. Annual monitoring has determined that rabbit numbers have been low, so no management actions have been undertaken.	Rabbit monitoring has been carried out as specified in the EMP.
Kangaroos - overgrazing of native vegetation and adjoining pastoral lands	Density from South Australian Arid Lands Natural Resources Management Board aerial transects	No data was provided during the reporting period.	SAAL aerial monitoring was unavailable. Refer to the discussion in Section 3.2.
	Number culled	A total of 3,155 were culled during the reporting period.	It is understood that lethal control of Kangaroos did not exceed limits recommended via Department for Environment and Water aerial transect density during the reporting period.
Increase and spread of carrion flower population	• Number of new infestations • Number of infestations treated	• Two new carrion flower infestations were identified during the reporting period. • Sixteen infestations were treated (382.82 ha) during the reporting period.	Defence has been actively monitoring and managing Carrion Flower throughout the reporting period.
Increase in distribution and abundance of African boxthorn	• Number of new infestations • Number of infestations treated	No new African boxthorn infestations were identified or treated during the reporting period.	Nil.
Increase in distribution and abundance of opuntioid cacti	• Number of new infestations • Number of infestations treated	Three new opuntioid cacti infestations (0.3 ha) were identified and treated over the reporting period.	Nil.

Indicators	Measures	Performance Summary (2016-2021 reporting period[3])	Comments
Increase in distribution and abundance of prickly acacia	• Number of new infestations • Number of infestations treated	No new prickly acacia infestations were identified or treated during the reporting period.	Nil.
Increase in distribution and abundance of athel pine	• Number of new infestations • Number of infestations treated	No new athel pine infestations were identified or treated during the reporting period.	Nil.
Establishment of buffel grass leading to: • Increased fire danger and reduced training opportunities • Heightened management expectation for environmental weed control	• Number of new infestations. • Number of infestations treated • Detailed map of distribution on establishment of any sizable population	No Buffel Grass infestations were identified during the reporting period.	As discussed in Section 1.3, Buffel Grass represents a key threat both to the environment and capability and should be a focus for incursion prevention, detection and response.
Bushfire			
Modification of vegetation through repeated burning	• Area of site burnt more than once in the past five years	• One site (Direct Fire Support Weapons Range (DFSW), Sector B) was burnt five times during the reporting period. • The fire extents were 1 ha, 200 ha, 200 ha, 600 ha, and 200 ha.	The monitoring outcomes are considered satisfactory in that fire was reported and measured. It should be noted that the DFSW is located in the 'freehold' portion of CUTA and is therefore not the subject of this assessment. It is reported in line with Defence's management of both the 'freehold' and 'leasehold' portions as a single managed area.

Indicators	Measures	Performance Summary (2016-2021 reporting period[3])	Comments
	• Area of the site burnt at least once		
Fire frequency and size	• Number of fires reported • Number of fires greater than 100 ha	• Nine fires were reported during the reporting period. • Five of the fires were greater than 100 ha during the reporting period.	As above.
Bushfire prevention and response	Number of breaches of a boundary break or high explosive target area fire break by an uncontrolled fire	No data was provided during the reporting period.	As above.
Pollution			
Nuisance noise pollution from Defence activities	• All complaints • Threshold exceptions and actions	• No reports of complaints were received during the reporting period. • No threshold exceptions or actions during the reporting period.	Nil.
Structural damage and other impacts resulting from noise and vibration from Defence activities	Number of cases of actual damage to buildings	No known cases during the reporting period.	Refer to the discussion of the recommendations in Section 3.2.
Light pollution from Defence activities	• All complaints • Threshold exceptions and actions	• No reports of complaints were received during the reporting period. • No threshold exceptions or actions during the reporting period.	Nil.

Indicators	Measures	Performance Summary (2016-2021 reporting period[3])	Comments
Health impacts to civilian populations caused by dust	• All complaints • Threshold exceptions and actions	• No reports of complaints were received during the reporting period. • No reports of threshold exceptions or actions during the reporting period.	Nil.
Dust obscures Highways	• All complaints • Threshold exceptions and actions	• No reports of complaints were received during the reporting period. • No threshold exceptions or actions during the reporting period.	Procedural measures are in place in Range Standing Orders to prevent this occurrence.
Pollution prevention	Number of incident reports involving discharge to the environment	One minor diesel spill to the surrounding soil was reported. The spill was caused by pierced diesel tank on a skid steer and was cleaned up.	Nil.
Water			
Change in state of sensitive receptors and monitoring sites	• Noted sedimentation or changes • Ground-truthing results for suspect changes	No water quality monitoring data was collected during the reporting period.	Defence has undertaken a contamination assessment at CUTA and found that there were no contaminants of potential concern at elevated levels where Defence is utilising the CUTA. Watercourses within the CUTA are typically dry, flowing only intermittently. Refer to the discussion of the recommendations in Section 3.2.
Pollution prevention	Number of incident reports involving discharge to aquatic or marine systems	No notified occurrences of discharge to water during the reporting period.	Watercourses within the CUTA are typically dry, flowing only intermittently. Refer to the discussion of the recommendations in Section 3.2.
Heritage			
Aboriginal sites	Number of sites damaged	No notified occurrences of Aboriginal site damage during the reporting period.	Nil.

Indicators	Measures	Performance Summary (2016-2021 reporting period[3])	Comments
Soils			
Rehabilitation sites	Five-yearly number of rehabilitation projects undertaken	Eighteen priority dams (32 ha) were closed and were undergoing rehabilitation during the reporting period. Seventy-three dams are pending further rehabilitation.	Nil.
Erosion	Number of new erosion environmental factor records resulting from Defence practice	Soil erosion status was recorded at 97 sites during the reporting period: • 39 sites were rated as excellent • 52 were rated as good • 4 were rated as fair • 2 were rated poor. Erosion at 97 photopoints was documented during the reporting period: • 32 sites with no erosion • 51 sites showed slight erosion (predominantly wind) • 10 sites showed minor erosion • 4 sites showed moderate erosion. A satellite imagery assessment determined that approximately 290 ha have been disturbed by Defence. Of this, 140 ha represents vehicle transport routes, enabling access to new training areas, ambulance exchange points, and functions as part of the fire trail network. Planning and implementation to improve roads are underway to reduce erosion and ensure vehicles keep to roads/formed tracks.	It is difficult to determine whether the erosion observed at CUTA is a result of Defence land use (AECOM, 2017). Erosion monitoring through photopoints represents an improvement over time. Overall, the monitoring outcomes and management responses are considered satisfactory.

Indicators	Measures	Performance Summary (2016-2021 reporting period[3])	Comments
		Additional erosion areas identified included 32 ha of former farm dams that have recently been rehabilitated.	

2.2 Performance assessment discussion

2.2.1 Biodiversity

Biodiversity monitoring for the five-yearly assessment is carried out per the Pastoral Lease Assessment Program methods comprising Jessup vegetation transects monitored in conjunction with photopoints to assess landscape-level vegetation condition. For the biodiversity assessments, Defence has separated the monitoring sites into 'plains' and 'plateau' landforms. Note that all 'plateau' landscapes exist within the 'freehold' portion of CUTA outside of the Expansion Area and are not the focus of this assessment. However, they have been included for completeness.

Juvenile to adult ratio

Data from the 2015/2016 and the 2021 Jessup transects showed a large variation between the ratio of juveniles to adults, varying between 0 and 0.5. A result of 0 represents sites where no juveniles were recorded, which occurred at 10 of the 30 sites.

When compared with thresholds set by the EMP, the ratio of juveniles to adults across both plain and plateau landscapes is less than the target threshold indicating recruitment is generally lower than what is expected (Table 2). Only two sites have met or exceeded the thresholds from Sector S and Sector T.

Refer to Section 3.2 for a discussion of the applicability and recommendations on this threshold.

Table 2 Juvenile to adult ratio thresholds and 2021 results from AECOM (2021)

Indicator	Thresholds	
	Sectors C,D,F,G,H,I,O,P,Q,R,S,T (plain),Y,X	Sectors A,B,E,J,K,L,M (plateau)
Juvenile to adult ratio threshold	< 0.1	< 0.5
2016 data by sector not available	Data not available by sector in 2016	
Juvenile to adult ratio 2021 result	0.03	0.1

Saltbush and bluebush density

The mean density of Bluebush and Saltbush is an indicator used to identify erosion risk and impacts of Defence activities.

In 2016, Saltbush density triggered a mixture of upper and lower thresholds 10 times and Bluebush density triggered a mixture of upper and lower thresholds 42 times.

In 2021, Saltbush density triggered a mixture of upper and lower thresholds 10 times and Bluebush density triggered the upper threshold 16 times.

Table 3 provides a summary of the 2016 and 2021 results for Saltbush and Bluebush mean density. Upper and lower thresholds are also included per transects and per hectare.

Table 3 Bluebush and saltbush mean densities from AECOM (2016 and 2021)

Landform	Bluebush (mean density)		Saltbush (mean density)	
	Per transect	Per hectare	Per transect	Per hectare
Plains				
Threshold	<15 - >75	<375 - >1,875	<120 - >250	<3,000 - >6,250
Transects that trigger the density thresholds in 2016	35 exceeded upper thresholds		5 exceeded upper thresholds 4 were below the lower thresholds	

Landform	Bluebush (mean density)		Saltbush (mean density)	
	Per transect	Per hectare	Per transect	Per hectare
	7 were below the lower thresholds			
Transects that trigger the density thresholds in 2021	14 exceeded upper thresholds		7 exceeded upper thresholds	
Plateau				
Thresholds	<30 - >100	<750 - >2,500	<140 - >320	<3,500 - >8,000
Transects that trigger the density thresholds in 2016	0 threshold exceptions		2 exceeded upper thresholds	
Transects that trigger the density thresholds in 2021	2 were below the lower thresholds		3 exceeded upper thresholds	

Perennial shrub density

The perennial shrub density is an indicator used to identify erosion risk and impacts of Defence activities.

In 2016, perennial shrub density triggered the upper threshold 59 times. In 2021, perennial shrub density triggered the upper threshold 22 times (Table 4). None of the transects had a perennial shrub density that exceeded the lower threshold. This indicates a very high level of perennial shrub density across the area, however, this has declined since 2016.

Refer to Section 3.2 for a discussion of the applicability and recommendations on this threshold.

Table 4 Perennial shrub densities from AECOM (2016 and 2021)

Indicator	Thresholds	
	Sectors C,D,F,G,H,I,O,P,Q,R,S,T (plain),Y,X	Sectors A,B,E,J,K,L,M, T (plateau)
Perennial shrub density threshold	< 150 (3,750 / ha) > 250 (6,250 / ha)	< 200 (5,000 / ha) > 300 (7,500 / ha)
Transects that trigger the density thresholds in 2016	54	5
Transects that trigger the density thresholds in 2021	19	3

Low shooting on mature plants

The low shooting on mature plants (<30 cm above ground) indicator is used to assess impacts from grazing and herbivory. The indicator refers to the presence of low shooting for the following species:

- Western myall
- Bullock bush
- *Eremophila* spp.
- Quandong
- Sandalwood

In 2021, eight sites recorded low shooting on at least one individual of the species listed above while an additional 10 did not record any low shooting. Data was not collected in 2016, so a direct comparison cannot be made to the 2021 data.

Refer to Section 3.2 for a discussion of the applicability and recommendations on this threshold.

Recruitment of key species

The recruitment indicator is used to assess the impacts of grazing and herbivory. The indicator refers to the presence of independent seedlings/small plants of the following species:

- Western myall
- Bullock bush
- *Eremophila* ssp.
- Quandong
- Sandalwood

Recruitment (i.e., seedlings) data from 2016 and 2021 are summarised in Table 5. The recruitment of key species has shown an increasing trend since 2016.

Table 5 Recruitment of key species from AECOM (2016 and 2021)

Species	Seedlings recorded – 2016	Seedlings recorded - 2021
Western myall	3	5
Bullock bush	2	0
Eremophila ssp.	2	8
Quandong	No data available from 2016 or 2021	
Sandalwood		

Table 6 Records of recruitment of key species from AECOM (2021)

Key Species	Transects recorded	# sites consistent with 2015/16
Acacia papyrocarpa	5	3
Alectryon oleifolius subsp. *canescens*	2	0
Eremophila alternifolia	1	0
Eremophila scoparia	5	1
Eremophila oppositifolia	1	0
Eremophila sp.	1	0

2.2.2 Biosecurity and overabundant native species

The Biosecurity and Overabundant Native Species (BONS) program includes management measures for pests and overabundant native species and weeds. Defence actively manages and monitors pest animal species such as goats, kangaroos, and rabbits at CUTA. Control includes removal and culling programs. Annual monitoring has determined that rabbit numbers have been low, so no management actions have been undertaken.

2.2.2.1 Herbivores

The herbivores indicator is used to identify the presence of goats and rabbits.

The presence of herbivores, or indicators of herbivores (e.g., tracks), were recorded at 24 of 30 sites (AECOM, 2021). The most common herbivore observed was kangaroo (recorded at 23 sites). Other indications of herbivory were isolated to 1 to 2 records. The presence of five species was recorded in total (Table 7). Heavy goat presence was noted at transect 3608 with evidence derived primarily from large numbers of scats and evidence of grazing rather than direct observations.

Table 7 Herbivore records from AECOM (2021)

Pest Species	2021 Records
Western grey kangaroo *Macropus fuliginosus*	23
European Feral Rabbit *Oryctolagus cuniculus*	1
European red fox *Vulpes*	1
Cat *Felis cattus*	1
Feral goat *Capra hircus*	2

Data relating to the density of goats and kangaroos from South Australian Arid Lands Natural Resources Management Board aerial transects or the number of goats exported, as listed in the SMRP, was not available. Defence also compiles annual feral animal controls reports to document the management of pest species.

Of the six weed species identified in the SMRP, only two (carrion flower and opuntioid cacti) had new infestations identified and treated during the reporting period. Carrion flower monitoring and management should be continued.

2.2.3 Bushfire

Bushfires at CUTA are managed through the Bushfire Management Plan included in the CUTA EMP.

Nine fires were recorded during the reporting period, with five being larger than 100 ha. As noted in Table 1, the majority of fires occurred at the DFSW which is located in the 'freehold' portion of the training area.

Fire is not a feature of Chenopod shrublands (Graetz and Wilson, 1984) and historically, the perennial shrubs are not commonly regarded as particularly fire-prone. However, many of the fires are relatively large. There may be several possible reasons for this including:

- relatively high vegetation biomass due to lack of grazing and lack of prolonged drought;
- higher average and/or maximum temperatures resulting in more rapid drying out of vegetation biomass
- higher intensity ignition from the use of high explosives.

While most of the fire events occurred in the freehold portion (i.e. not the focus of this assessment), the number of fire events and their size should be further investigated and the outcomes used to inform the next update to the Bushfire Management Plan.

2.2.4 Pollution

Pollution prevention is managed at CUTA through the EMP that covers noise and vibration (including structural damage), light pollution from Defence activities, dust impacts, and environmental incidents.

There were no reports of pollution or complaints provided for the reporting period. There was one environmental incident reported, which was a minor diesel spill to the surrounding soil. The spill was caused by pierced diesel tank on a skid steer and was cleaned up.

2.2.5 Water

Water resources are managed at CUTA through the EMP with a focus on seven surface water runoff monitoring points. At these monitoring points, sediment, vegetation change, weeds, mangrove distribution, and infiltration of sediment fans were proposed to be monitored at least every five years. No monitoring has been undertaken to date at these locations.

The ephemeral nature of watercourses at the CUTA expansion area and the lack of nearby receptors mean that these indicators are very difficult to measure and of limited value.

There has been no contaminants of potential concern at elevated levels in areas where Defence is utilising the CUTA (AECOM, 2020). Watercourses within the CUTA are typically dry, flowing only intermittently. As such, water quality analysis was not considered necessary during the reporting period.

2.2.6 Heritage

Heritage values are managed under the Heritage Management Plan in the CUTA EMP.

A total of 130 management buffers, restricted areas or management precincts have been put in place to protect indigenous and historic sites from accidental damage at CUTA. During the reporting period, there have been no reports of damage to Aboriginal or historic heritage sites.

2.2.7 Soils

Soil and erosion are managed at CUTA through the EMP at the site-wide level through the vegetation monitoring program (Section 2.2.1) and the water management program (Section 2.2.5). Specific erosion sites are also identified and managed in the CUTA EMP.

During the reporting period, 18 priority dams (32 ha) were closed and were under rehabilitation during the reporting period. Seventy-three additional dams are pending closure.

The soil erosion status of 97 sites are:

- 39 sites were rated as excellent
- 52 were rated as good
- 4 were rated as fair
- 2 were rated as poor.

Satellite imagery assessment to monitor land response to training identified erosion around infrastructure built as part of the Cultana redevelopment project. Approximately 290 ha of areas have been disturbed by Defence. Approximately 140 ha of the 290 ha are required vehicle transport routes, enabling access to new training areas, ambulance exchange points, and function as part of the fire trail network.

Planning and implementation to improve roads are underway to reduce erosion and ensure vehicles keep to roads/formed tracks.

3.0 Recommendations

3.1 Recommended amendments to indicators and thresholds

Table 8 summarises the recommendations for amendments to the suite of indicators and thresholds, along with justification. A total of 38 indicators are included in the CUTA EMP. Of these, seven indicators are recommended to be removed; one indicator is recommended to be added; and seven thresholds are recommended to be removed, added, or modified. Existing indicators that are recommended to be retained without amendment are not included in this table.

A discussion of the justification is provided below in Section 3.2.

Table 8 Indicator and thresholds recommendations

Indicator	Recommendation	Justification
Biodiversity		
Vegetation Cover (step-point transects)	Remove indicator	• Vegetation cover is highly variable due to the preponderance of short-lived annuals following rainfall events and the senescence of perennial shrubs during drought.

Indicator	Recommendation	Justification
		• Impact or change in the matter being monitored is not the result of Defence activities and remedial actions are not required.
Juvenile to Adult Ratio (Jessup transects)	Remove threshold	• Recruitment is a result of a complex interplay of factors influenced by local climatic conditions. • Per LMM, impact or change is not the result of Defence activities and Defence cannot take remedial actions.
Saltbush density (Jessup transects)	Remove upper threshold	• No identifiable capability or ecological impact resulting from high numbers of perennial shrubs.
Bluebush density (Jessup transects)	Remove upper threshold	• No identifiable capability or ecological impact resulting from high numbers of perennial shrubs.
Perennial shrub density (Jessup transects)	Remove upper threshold	• No identifiable capability or ecological impact resulting from high numbers of perennial shrubs.
Perennial shrub density (Jessup transects)	Add trend threshold (i.e. perennial shrub density reduced for three consecutive monitoring events)	• An ongoing reduction in perennial shrub density will correspondingly reduce landscape resilience to mechanical disturbance and increase the likelihood of erosion. • Meeting this threshold should trigger further investigation into the underlying cause(s) to identify any practical management options.
Low shooting on mature plants (<30 cm above ground) (Jessup transects)	Remove threshold	• Impact or change in the matter being monitored is not the result of Defence activities and remedial actions are not required.
Recruitment (Jessup transects)	Remove threshold	• Impact or change in the matter being monitored is not the result of Defence activities and remedial actions are not required.
Long-term loss of key Sandalwood populations due to lack of recruitment. (Jessup transects)	Remove indicator	• Sandalwood is not present at any of the monitoring sites. • Impact or change in the matter being monitored is not the result of Defence activities and remedial actions are not required.
Biosecurity and overabundant native species		
Goat numbers exported	Remove indicator	• Numbers exported are not relevant to environmental outcomes • Goat numbers culled already monitored.
Weeds at washdown points and administration areas.	Add indicator	• Washdown points and administration areas (both temporary and permanent) are at higher risk of weed incursion due to the high numbers of vehicles and the availability of water.
Pollution		

Indicator	Recommendation	Justification
Structural damage and other impacts resulting from noise and vibration from Defence activities	Remove indicator	• No evidence of structural damage during the reporting period. • The indicator is related to infrastructure and has little bearing on environmental management.
Water		
Change in the state of sensitive receptors and monitoring sites	Remove indicator	• Watercourses are ephemeral and associated surface water monitoring is impractical.

3.2 Recommendations discussion

3.2.1 Vegetation cover

It is recommended that the 'Vegetation Cover' indicator be removed from the monitoring program. Vegetation cover is a measure of the total cover of vegetation and, in this system, may include a large proportion of short-lived annual species. Biomass production and species composition of annuals are determined largely by rainfall and season (Graetz and Wilson, 1984). It is therefore likely to be highly variable between monitoring events as annual cover will depend on climatic conditions. Perennial shrubs are also known to become senescent during drought, particularly in the absence of grazing (Graetz and Wilson, 1984). In contrast, perennial shrub density is already measured and is a much more robust measure of underlying ecological condition as it is unlikely to be influenced by short-term, local climatic conditions.

3.2.2 Juvenile to adult ratio

It is recommended that 'Juvenile to adult ratio' thresholds be removed from the monitoring program. Recruitment and competition in chenopod shrublands is highly complex, driven primarily by climatic conditions influencing soil moisture and temperature (Eldridge, 1990; Sinclair, 2005; Facelli *et al.* 2005). Defence activities, except for those that increase the risk of bushfires (refer below), are unlikely to influence recruitment. Bluebush recruitment in particular is thought to require a confluence of several events to occur and happens only sporadically throughout its long lifespan (Eldridge, 1990).

It is however useful to continue to monitor juvenile to adult ratio as recruitment information can inform long-term management of the area. For example, several years without recruitment may indicate an underlying problem. Germination for several species is at least partly triggered by soil temperature rather than just moisture. This likely prevents emergence following summer rainfall events when survival prospects are low (Facelli *et al.* 2005). Under a warming climate, it is conceivable that germination of certain perennial species may no longer occur under natural conditions which, in turn, will make sustainable landscape management more challenging.

3.2.3 Saltbush, bluebush, and perennial shrub density

It is recommended that the upper threshold for the Saltbush and Bluebush density be removed. There is no apparent reason for an upper threshold for individual or collective perennial shrubs as high densities will not result in either a capability impact or an ecological impact. While dominance of a species may lead to a reduction in biodiversity in some systems, spatial competition in chenopod shrublands, where it occurs, appears to be primarily intraspecific rather than interspecific (Harris and Facelli, 2003). The life history of individual species promotes diversity in this environment through (Facelli *et al.* 2005):

1. Different responses to different environmental conditions at different times
2. Species that have high germination rates due to environmental factors are subject to higher [intraspecific] competition (and vice versa)
3. A life history attribute that buffers a population from catastrophic decline when growth conditions are unfavourable (e.g. seed bank persistence).

Additionally, it is recommended that a 'trend' threshold of a consistent reduction in perennial shrub density over three consecutive monitoring events be added. As noted by Lange *et al.* (1984) and Graetz

and Wilson (1984), perennial shrubs play an important role in minimising or preventing wind erosion in this ecosystem. Given the lack of any intensive grazing and the relatively small footprint of Defence activities, a continued decline in density is likely to be a result of an underlying problem that may or may not have a management solution. For example, if climatic forces are at play (e.g. prolonged drought), intensive activities in erosion-susceptible areas should be avoided. If the reduction is a result of weeds, fire or feral animals (rabbits), management of the relevant process should be reviewed.

3.2.4 Reproduction and recruitment

It is recommended that the indicators associated with reproduction and recruitment (i.e. 'low shooting on mature plants' and 'recruitment') are removed. This indicator measures the spread or emergence of certain plants that are economically or culturally important, or where recruitment has been largely suppressed under pastoral land use (e.g. Western Myall per Lange and Purdie, 1976) or over-extraction.

The justification for the removal of this threshold is as follows:

- Stock has been removed from the landscape for over 20 years and commercial harvesting for sandalwood has ceased. Any effect of this on reproduction and recruitment is likely to have already occurred. Current Defence land use and management are very unlikely to influence reproduction and recruitment.
- The current thresholds (presence of species) trigger a requirement to record the information. This is not a management response and, as noted above, there are no practical management responses that have not already been undertaken (removal of stock and cessation of commercial harvesting).

3.2.5 Long-term loss of sandalwood due to lack of recruitment

It is recommended that the 'long-term loss of Sandalwood' indicator be removed. The species is long-lived and recruitment is sporadic due to sporadic fruit set, limited seed dispersal and rapid loss of seed viability. As such it is vulnerable to the effects of climate change (McLellan, *et al.,* 2021). Sandalwood was not present at any of the monitoring sites and is unlikely to emerge given its rarity and patchy distribution. Assessment of sandalwood would therefore require more intensive surveys throughout the area however, given the lack of threatening processes at the site (harvesting and grazing), active management of this species is unlikely to be required.

3.2.6 Goat numbers exported

Goat numbers exported have not previously been reported and would not appear to be relevant to environmental outcomes given that the numbers culled are already monitored and reported.

3.2.7 Weeds at washdown points and administration areas

It is recommended that weed surveys be carried out at permanent washdown points and administration areas, as well as the site of any previous temporary administration areas that may have been established. Permanent administration areas include the Range Control complex and Scale A. Examples of temporary administration areas include Brigade Maintenance Areas, Forward Operating Bases and Forward Arming and Refuelling Points. No more than two monitoring events are required following the redeployment of a temporary admin site. Monitoring events should be carried out no less than 6 months following redeployment to allow time for emergence and establishment.

3.2.8 Structural damage and other impacts resulting from noise and vibration from Defence activities

It is recommended to remove the indicator relating to structural and other impacts from noise and vibration. Monitoring of this indicator found no evidence of structural damage as a result of noise and vibration. Given the distance of most buildings from active ranges and the limited yield of non-demolition high explosives used, this result is unsurprising. This indicator is also related to infrastructure and has little bearing on environmental management.

3.2.9 **Water indicator**s

It is recommended to remove the ‘water’ indicators (i.e. ‘Change in state of sensitive receptors and monitoring sites’ and ‘pollution prevention’). It is impractical to achieve consistently due to the ephemeral nature of watercourses, which fill rarely and only after considerable rainfall. Surface water also persists for only a short time after significant rainfall making monitoring an impractical proposition, particularly given the lack of significant pollution sources at the training area.

3.3 Recommendations on routine and reactive indicators and thresholds

While not the focus of this assessment, the CUTA EMP also includes ‘routine’ indicators related to vegetation cover through analysis of MODIS/Auscover data, as well as ‘reactive’ indicators through step-point transects.

The value of these indicators is considered to be limited. Much of the biodiversity and, at times, vegetation cover is provided by short-lived annuals that emerge following significant rainfall. Conversely, prolonged periods of drought may result in senescence of perennial shrub species. Change detection of vegetation cover through satellite imagery analysis can also be problematic due to the influence of soil moisture, clouds and shadow on the assessment. Step-point transects are useful in grazed ecosystems, where some emergent species may be rapidly consumed, however since the removal of stock, the key influence on vegetation cover and composition is almost solely climatic.

Recently, Defence has updated its Land Activities Environmental Management Plan to include methods for pre and post-exercise land condition assessments utilising ground assessment and remote sensing methods, including change detection using Sentinel satellite imagery and analysis tools provided by Geosciences Australia. These methods are consistently applicable across the Defence training area estate and should be adopted in place of the methods for ‘routine’ and ‘reactive’ monitoring in the CUTA EMP.

4.0 Conclusion

The purpose of this five-yearly environmental report is to provide an independent assessment of Defence’s performance against the environmental indicators and thresholds in the CUTA EMP per Clause 9.5.4 of the MLDP. Prescribed monitoring has been carried out and the results have demonstrated that ecosystem health under Defence management has not declined and in some locations, has improved during the reporting period. It is our opinion that Defence has met its environmental monitoring obligations specified in the MLDP.

Upon review, it is clear that several indicators and, in some cases, thresholds are unnecessary and should be discontinued. This will help to ensure that important information is not obscured by ‘noise’ so as to better support timely management decisions.

5.0 References

AECOM (2016) Photopoint Monitoring, Cultana Training Area Expansion, April 2016. Report prepared for Ventia Australia Pty Ltd.

AECOM (2019) Satellite Imagery Analysis of Land Condition, Cultana Training Area. Report prepared for Jones Lang LaSalle Pty Ltd.

AECOM (2021) Photopoint Monitoring and Jessup Transects, Cultana Training Area 2021. Report prepared for Ventia Australia Pty Ltd.

DOD (Department of Defence) (2015) Cultana Environmental Management System: (2) Environmental Management Plan.

Eldridge, D. (1990) The Population Dynamics of Perennial Chenopod Shrubs in Semi-arid Western New South Wales. *Australian Rangelands* v.12(1) pp 29.

Facelli, JM, Chesson, P, Barnes, N (2005) Differences in Seed Biology of Annual Plants in Arid Lands: A Key Ingredient of the Storage Effect. *Ecology* v.86(11) pp 2998-3006.

Graetz, RD, Wilson, AD (1984) Chapter 14: Saltbush and Bluebush in Harrison, GN, Wilson, AD, Young, MD (Eds) *Management of Australia's Rangelands.* pp 209-222.

Harris, MR, Facelli, JM (2003) Competition and Resource Availability in an Annual Plant Community Dominated by an Invasive Species, Carrichtera annua (L. Aschers.), in South Australia. *Plant Ecology*. V.167(1), pp 19-29.

Jeffries, BC (1979) *Livestock from South Australia, sheep, dairy and beef breeds*. Department of Agriculture and Fisheries, South Australia.

Lange, RT; Nicholson, AD; Nicholson, DA (1984) Vegetation Management of Chenopod Rangelands in South Australia. *Australian Rangeland Journal* v.6(1) pp 46-54.

Lange, RT, Purdie, R. (1976) Western Myall (Acacia Sowdenii), its Survival Prospects and Management Needs. *Australian Rangeland Journal*. v.1 64-69

McLellan, RC; Dixon, K; Watson, DM (2021) Prolific or Precarious: a review of the status of Australian sandalwood *(Santalum spicatum* [R.Br.] A.DC., Santalaceae) *The Rangeland Journal* v.43 pp 211-222.

SAALLB (2021) *South Australian Arid Lands Landscape Board 2020-21 Annual Report*. Government of South Australia.

Sinclair, R. (2005) Long-term Changes in Vegetation, Gradual and Episodic, on the TGB Osborn Vegetation Reserve, Koonamore, South Australia (1926-2002). *Australian Journal of Botany* v.53 pp 283-296.

Appendix A

Cultana Training Area Sustainability, Monitoring and Reporting Plan Indicators

Appendix A Cultana Training Area Sustainability, Monitoring and Reporting Plan Indicators

Table 34 from the CUTA EMP: all SMRP Risks, and Monitoring and Additional Synthetic Measures.

EFR	Matter or Risk	SMRP
Biodiversity, Soils	Saltbush density, bluebush density, perennial shrub density	-(Five-yearly) N# threshold exceptions based on Jessup transects
	Vegetation cover	-Number of threshold exceptions based on reactive step-point transects
	Vegetation cover	-Number of temporary area closures enforced
	Vegetation cover	-Number of compulsory rest areas enforced
Biodiversity	Juvenile : Adult Ratio	-(Five-yearly) Change in ratio on Jessup transects and why- loss of juveniles/senescence of mature plants/recruitment and why
	Low shooting on mature plants (<30 cm above ground)	-(Five-yearly) Number of sites where low shooting recorded and comparison to previous survey
	Recruitment	-(Five-yearly) Number of sites where recruits recorded and comparison to previous survey
	Long-term loss of key sandalwood populations due to lack of recruitment	-Changes in population
	Protection of biodiversity	-Number of incident reports involving damage to flora and fauna
BONS	Goats	-(Five yearly) Change in distribution
	Rabbits	-(Five yearly) Change in distribution
	Increase and spread of carrion flower population	-Number of new infestations. -Number of infestations treated
	Increase in distribution and abundance Weeds of National Significance -African Boxthorn -Opuntioid cacti -Prickly Acacia -Athel pine	-Number of new infestations. -Number of infestations treated
	Establishment of buffel grass leading to: -increased fire danger and reduced training opportunities -heightened management expectation for environmental weed control	-Number of new infestations. -Number of infestations treated -Detailed map of distribution on establishment of any sizable population
	High numbers of goats lead to: -degradation of native vegetation, -increased erosion -damage to indigenous heritage	-Incursions into Gilmores Well. -Numbers at water points. -Density from SAAL NRMB aerial transects -Numbers exported.
	Overgrazing of native vegetation and adjoining pastoral lands by Kangaroos	-Density from SAAL NRMB aerial transects -Number culled

EFR	Matter or Risk	SMRP
Bushfire	Modification of vegetation through repeated burning	-(Five-yearly) Area of site burnt more than once in past five years -(Five-yearly) Area of site burnt at least once in the current and previous reporting period in this reporting period
	Fire frequency and size	-Number of fires reported -Number of fires greater than 100ha
	Bushfire prevention and response	-Number of breaches of a boundary break or HETA fire break by an uncontrolled fire
Pollution	Nuisance noise pollution from Defence activities	-All complaints -Threshold exceptions and actions
	Structural damage and other impacts resulting from noise and vibration from Defence activities	-Number of cases of actual damage to buildings
	Light pollution from Defence activities	-All complaints -Threshold exceptions and actions
	Health impacts to civilian populations caused by dust	-All complaints -Threshold exceptions and actions
	Dust obscures Highways	-All complaints -Threshold exceptions and actions
	Pollution prevention	-Number of incident reports involving discharge to the environment
Water	Change in state of sensitive receptors and monitoring sites	-Noted sedimentation or changes -Ground-truthing results for suspect changes
	Pollution prevention	-Number of incident reports involving discharge to aquatic or marine systems
Heritage	Aboriginal sites	-Number of sites damaged
Soils	Rehabilitation sites	-(Five-yearly) Number of rehabilitation projects undertaken
Soils	Erosion	-Number of new erosion EFRs resulting from Defence practice

Extract of Table 2 from CUTA EMP (not including routine and reactive indicators).

Indicator	Method	Threshold Sectors C,D,F,G,H,I,O,P, Q,R,S,T (plain),Y,X	Threshold Sectors A,B,E,J,K,L,M, T (plateau)	Management response
5 yearly reviews, sectors or part				
Juvenile : Adult Ratio	Jessup transects	< 0.1	< 0.5	Record
Saltbush density	Jessup transects	< 120 (3,000 / ha) > 250 (6,250 / ha)	< 140 (3,500 / ha) > 320 (8,000 / ha)	Vegetation management process triggered
Bluebush density	Jessup transects	< 15 (375 / ha) > 75 (1,875 / ha)	< 30 (750 / ha) > 100 (2,500 / ha)	Vegetation management process triggered

Indicator	Method	Threshold Sectors C,D,F,G,H,I,O,P,Q,R,S,T (plain),Y,X	Threshold Sectors A,B,E,J,K,L,M,T (plateau)	Management response
Perennial shrub density	Jessup transects	< 150 (3,750 / ha) > 250 (6,250 / ha)	< 200 (5,000 / ha) > 300 (7,500 / ha)	Vegetation management process triggered
Low shooting on mature plants (<30 cm above ground)	Jessup transects and surrounds	Presence for western myall, bullock bush, *Eremophilla* ssp., quandong and sandalwood	Presence for western myall, bullock bush, *Eremophilla* ssp., quandong and sandalwood	Record for each species present
Recruitment	Jessup transects and surrounds	Presence of independent seedling/small plants of western myall, bullock bush, *Eremophilla* ssp., quandong and sandalwood	Presence of independent seedling/small plants of western myall, bullock bush, *Eremophilla* ssp., quandong and sandalwood	Record for each species present
Herbivores				
Goats	Jessup transect and surrounds	Presence of goat tracks or scats	Presence of goat tracks or scats	Record
Rabbits	Jessup transect and surrounds	Presence of warrens	Presence of warrens	Record
Rabbits	Jessup transect and surrounds	Presence of tracks, scats or other evidence	Presence of tracks, scats or other evidence	Record

Appendix B

Cultana Expansion Area
MLDP Reporting

Defence Cultana Expansion Area (CEA) Environmental reporting: MLDP Reporting year 2

Report type	**year 4 (1st 4th year period)**
Reporting year	**2016 (July) to 2018 (to June) (2 year period)**
Report collation	**Dept of Defence, SA Environment & Sustainability Team**
Report date	**15/10/2018**

This report has been prepared to fulfill environmental reporting requirements by the Department of Defence (Lessee) as specified in the Miscellaneous Lease for Defence Purposes (MLDP) No. 53500 (20th June 2014).
The MLDP requires a report be provided in writing to the Minister in relation to its performance against the Environmental Management Framework every second and fourth year within every five (5) year period. Department of Defence has developed an Environmental Management Framework and this report represents the second year report within the second five (5) year period against the Cultana Environmental Management System: (2) Environmental Management Plan (EMP) (2015). The EMP includes a Sustainability, Monitoring and Reporting Plan (SMRP) (Section 10) and indicates that SMRP reporting combines monitoring and reporting of all such key sustainability measures into a single snapshot of how Cultana is performing against standards and thresholds established in the EMP. The table below captures this required information.

Reporting theme	Reporing sub-theme	Reporting criteria	Defence Respose	Information Source
1. Soils				
a. Erosion		**Number of new erosion sites from Defence activities**	Photopoint monitoring by AECOM (2016) of 97 photopoint sites documented 'Soil erosion status' as part of a Site Condition Estimate. 39 sites were rated Excellent, 52 were rated Good, four (4) were Fair and two (2) were Poor. In addition, 'Erosion' at the 97 photopoints was documented as 32 sites with 'No erosion', 51 sites showed 'Slight erosion' (predominantly natural from wind), 10 showed 'Minor erosion' and four (4) showed 'Moderate erosion'. At this time is was considered difficult to determine from this data whether Defence land use is causing trends in data (AECOM, 2016). However, trends showed a clear improvement in the condition of all photopoint sites, likely indicative of destocking the area.	Defence incident management system and EMOS LM reporting. Photopoint Monitoring Cultana Training Area Expansion, April 2016 (AECOM, 2017)
b. Rehabilitation		**Number of rehabilitation site works undertaken**	Nil priority dams (0 ha) were closed or were under rehabilitation during the reporting period. 91 dams are pending rehabilitation. Planning is underway to rehabilitate/decommission farm dams across Cultana in a staged approach, to be delivered in three prioritised stages. 91 dams have been assessed by AECOM in 2017, with Priority 1 dams to be decommissioned according to specifications prepared by AECOM (2018). The Project to deliver these works was released in August 2017.	Dam closure report and EMOS rehabilitation reporting.
2. Biodiversity				
a. Vegetation	**Density (Saltbush, Bluebush and perennial shrubs)**	**Number of threshold exceptions based on Jessup transects**	42 transects triggered Bluebush density thresholds. 10 transects triggered Saltbush density thresholds. 59 transects triggered perennial shrubs thresholds. In majority of all cases thresholds were triggered as transects had an increase in shrubs. It has been recommended that the thresholds set in the EMP are reviewed.	Jessup survey Photopoint Monitoring Cultana Training Area Expansion, April 2016 (AECOM, 2017)
	Cover	**Number of threshold exceptions based on reactive step-point transects**	No step-point transect data collected during this reporting period.	Nil
		Number of temporary area closures (TACs)	Seven (7) TACs currently in place within the CEA, based on regeneration, conservation or weed management requirements. This does not include TACs that are permanent environmental offset areas or heritage areas.	TASO RA map
		Number of rest areas	Nil rest areas currently in place within the CEA. Rather these have been captured as TACs, and included above.	TASO RA map
	Condition	**Change in juvenile : adult ratio (from Jessup transects)**	Juvenile to Adult ratio was assessed in 2016 (AECOM, 2017), indicating large variation in the ratio across transects, from sites where few juveniles were recorded to sites where young recruits outnumbered adults. It was determined that few conclusions could be drawn (AECOM, 2017).	Jessup survey Photopoint Monitoring Cultana Training Area Expansion, April 2016 (AECOM, 2017)
	Condition	**Number of sites recorded with low shooting on mature plans (greater than 30cm above ground)**	No low shooting on mature plants data collected during this reporting period (AECOM, 2017).	Photopoint Monitoring Cultana Training Area Expansion, April 2016 (AECOM, 2017)
	Condition	**Number of sites recorded with recruitment of key species**	No recruitment data collected during this reporting period (AECOM, 2017).	Photopoint Monitoring Cultana Training Area Expansion, April 2016 (AECOM, 2017)
	Sandalwood	**Change in key sandalwood population**	No recruitment data collected during this reporting period (AECOM, 2017).	Photopoint Monitoring Cultana Training Area Expansion, April 2016 (AECOM, 2017)
b. Protection of biodiversity		**Number of incidents involving damage in flora and fauna**	Nil incidents related to flora and fauna damage notified during the reporting period.	Defence incident management system

3. Biosecurity and Over Abundant native Species (BONS)				
a. Pest animals				
	Goats	**Number of goats removed**	1609 goats removed during the reporting period.	Feral Animal Control Reports FY16/17 to FY17/18
		population distribution change over 2 year reporting period	No change in site goat population distribution as no new locations identified (total 5 locations) and regular control taking place.	Feral Animal Control Reports FY16/17 to FY17/18
		Number of goat incursion events at Gilmore well	691 goats were removed during the reporting period, spread across the reporting period with removals occurring on 10 different occasions.	Feral Animal Survey Reports FY16/17 to FY17/18
		Number of goat incursion events at water points	861 goats were removed during the reporting period, spread across the reporting period with removals occurring on 11 different occasions. Of this total: 691 were removed from Gilmore Well 170 were removed from Darling Dam	Feral Animal Survey Reports FY16/17 to FY17/18
	Rabbits	**population distribution change over 3 reporting period**	No change in site rabbit population distribution as no new locations identified.	Feral Animal Survey Reports FY16/17 to FY17/18
b. Weeds				
	Carrion flower	**Number / size of new infestations and infestation treated**	Two (2) new carrion flower infestations (extent yet to be calculated) identified and nil infestations treated (0 ha) over this reporting period. A total of 10 known populations recorded and total extent of infestations at least 47.95 ha in 2016. Extent has been shown to fluctuate over time and currently unable to be conclusively explained. (AECOM, 2017)	Weed Distribution Surveys and Specific Control Reports Carrion Flower Survey Cultana Training Area - East (AECOM, 2017).
	African Boxthorn	**Number / size of new infestations and infestation treated**	Nil new African boxthorn infestations (0 ha) identified and nil infestations (0 ha) treated over the reporting period.	Weed Distribution Surveys and Specific Control Reports
	Opuntioid cacti	**Number / size of new infestations and infestation treated**	Nil new opuntiod cacti infestations (0 ha) identified and nil infestations (0 ha) treated over the reporting period.	Weed Distribution Surveys and Specific Control Reports
	Prickly Acacia	**Number / size of new infestations and infestation treated**	Nil new prickly acacia infestations (0 ha) identified and nil infestations (0 ha) treated over the reporting period.	Weed Distribution Surveys and Specific Control Reports
	Athel pine	**Number / size of new infestations and infestation treated**	Nil new athel pine infestations (0 ha) identified and nil infestations (0 ha) treated over the reporting period.	Weed Distribution Surveys and Specific Control Reports
	Buffel grass	**Number / size of new infestations and infestation treated**	Nil new buffel grass (0 ha) identified and nil infestations (0 ha) treated over the reporting period.	Weed Distribution Surveys and Specific Control Reports
c. Over abundant native animals	**Native animals**			
	Kangaroo	**Number of kangaroos lethally controlled**	Lethal control actions did not exceed DEW aerial transect density during the reporting period. Data on total numbers of kangaroos controlled to be obtained from the Kangaroo Management Officer (DEW).	DEW kangaroo aerial density reports FY16/17 to FY17/18. Kangaroo control reports FY16/17 to FY17/18.

4. Bushfire				
	Modification of vegetation through repeated burning	**Area of site burnt more than once in past five years (Jul 2013 to Jun 2018)**	One (1) site (DFSW Range, Sector B) was burnt more than once in the 5-year reporting period. This site was burnt five (5) times. Fire size ranged from 1ha, 200ha, 200ha, 600ha, 200h over the period .	`
		Area of site burnt at least once in this 5 year period and the previous 5 years period	One (1) site was burnt (200 ha) during both reporting periods in Sector F.	TASMIS
	Fire frequency and size	**Number of fires reported**	Six (6) fires were notified during the reporting period.	TASMIS
		Number of fires greater than 100ha	Five (5) fires greater than 100ha were notified during the reporting period.	TASMIS

5. Pollution				
a. Noise and vibration		**Number of Defence activity noise / vibration complaints received**	Nil complaints received during the reporting period.	DOTAM and Defence incident management system
		Threshold exceptions and actions	Nil.	DOTAM and Defence incident management system
		Number of cases of verified structural damage / other impacts from Defence activity noise / vibration	Nil verified cases known during the reporting period.	DOTAM and Defence incident management system
b. Light		**Number of Defence activity light pollution complaints received**	Nil complaints received during the reporting period.	DOTAM and Defence incident management system
		Threshold exceptions and actions	Nil.	DOTAM and Defence incident management system
c. Dust		**Number of Defence activity dust complaints received that had civilian health impacts**	Nil complaints received during the reporting period.	DOTAM and Defence incident management system
		Number of Defence activity dust complaints received where dust obscured Highway	Nil complaints received during the reporting period.	DOTAM and Defence incident management system
		Threshold exceptions and actions	Nil.	DOTAM and Defence incident management system
d. Pollution prevention		**Number of incident reports involving discharge to the environment**	Nil.	DOTAM and Defence incident management system

6. water				
a. Water quality		**Change in water quality at monitoring**	Nil water quality monitoring data collected during the reporting period.	water quality monitoring report

		Change in water quality at sensitive receptor	Nil water quality monitoring data collected during this reporting period.	water quality monitoring report
b. Discharge		**Number of notified occurrence of discharge to aquatic or marine system**	Nil notified occurrences of discharge during the reporting period.	Defence incident management system

7. Heritage				
a. Damage		**Number of known aboriginal sites damaged during the reporting period**	Nil notified occurrences of site damage during the reporting period.	Defence incident management system

Defence Cultana Expansion Area (CEA) Environmental reporting: MLDP Reporting year 2

Report type	Year 2 (2nd 5th year period)
Reporting year	2018 (July) to 2021 (June) (3 year period)
Report collation	Dept of Defence, SA Environment & Sustainability Team
Report date	28/10/2021

This report has been prepared to fulfill environmental reporting requirements by the Department of Defence (Lessee) as specified in the Miscellaneous Lease for Defence Purposes (MLDP) No. 53500 (20th June 2014).
The MLDP requires a report be provided in writing to the Minister in relation to its performance against the Environmental Management Framework every second and fourth year within every five (5) year period. Department of Defence has developed an Environmental Management Framework and this report represents the second year report within the second five (5) year period against the Cultana Environmental Management System: (2) Environmental Management Plan (EMP) (2015). The EMP includes a Sustainability, Monitoring and Reporting Plan (SMRP) (Section 10) and indicates that SMRP reporting combines monitoring and reporting of all such key sustainability measures into a single snapshot of how Cultana is performing against standards and thresholds established in the EMP. The table below captures this required information.

Reporting theme	Reporing sub-theme	Reporting criteria	Defence Respose	Information Source
1. Soils				
a. Erosion		Number of new erosion sites from Defence activities	Defence has commissioned Erosion and Sediment Survey Report (AECOM, May 2019) and also Satellite Imagery Assessment to Monitor Land Response to Training (GHD, July 2020). The former report identifies erosion around infrastructure built as part of the Cultana Redevelopment project. Since this time rehabilitation with native vegetation has been undertaken and shown to be very successful. The remaining erosion problem areas are currently in planning for rectification works. The latter report identified 290 ha of Human-made (by Defence) bare earth. Approximately 140 ha of 290 ha are required vehicle transport routes, enabling access to new training areas, Ambulance exchange points and also function as part of the fire trail network. Planning and implementation to improve these roads is underway to reduce erosion and ensure vehicles keep to roads/formed tracks such that impacts to the environment are minimised. Additional areas identified as bare earth included 32 ha of former farm dams that have recently been rehabilitated. The latter report will be used by Defence to inform land management requirements for areas that have deteriorated through Defence activity, causing erosion.	Defence incident management system and EMOS LM reporting Erosion and Sediment Survey Report (AECOM, May 2019) Satellite Imagery Assessment to Monitor Land Response to Training (GHD, July 2020)
b. Rehabilitation		Number of rehabilitation site works undertaken	18 priority dams (32 ha) were closed and were under rehabilitation during the reporting period. 73 additional dams are pending further rehabilitation.	Dam closure report and EMOS rehabilitation reporting.
2. Biodiversity				
a. Vegetation	Density (Saltbush, Bluebush and perennial shrubs)	Number of threshold exceptions based on Jessup transects	16 Jessup transects exceeded upper Bluebush threshold (mean density) in 2021. 10 Jessup transects exceeded upper Saltbush threshold (mean density) in 2021. 22 Jessup transects exceeded upper Perennial shrub threshold (mean density) in 2021. These breaches of thresholds do no require any vegetation management, rather the thresholds within the Cultana EMP should be reviewed.	Photopoint Monitoring and Jessup Transects - Cultana Training Area 2021 (AECOM, May 2021)
	Cover	Number of threshold exceptions based on reactive step-point transects	No step-point transect data collected during this reporting period. There was no identified need to establish specific step-point transects in addition to current monitoring (including Jessup survey and aerial imagery analysis). This reflects the relatively low use of the training area during this reporting period.	Nil
		Number of temporary area closures (TACs)	Two (2) TACs currently in place within the CEA. These are for weed management outcomes (Carrion Flower). Other TACs have been recently released following a review by Defence (L. Rosser, 2021). Other TACs in place are permanent (Environmental Offset in Sector R) or relate to numerous heritage sites (cultural and historic).	TASO RA map
		Number of rest areas	Nil rest areas currently in place within the CEA.	TASO RA map
	Condition	Change in juvenile : adult ratio on Jessup transects	Results of Juvenile to Adult ratio data in 2021 were similar to that in 2015/16, with results showing large variation between the ratio of juveniles to adults. In 2021 all but 2 sites were below the lower threshold ratio, indicating fewer juveniles were present compared with adults.	Photopoint Monitoring and Jessup Transects - Cultana Training Area 2021 (AECOM, May 2021)
	Condition	Number of sites recorded with low shooting on mature plans (greater than 30cm above ground)	In 2021 eight (8) Jessup transect sites were recorded as having low shooting on at least one of the target plant species.	Photopoint Monitoring and Jessup Transects - Cultana Training Area 2021 (AECOM, May 2021)

	Condition	Number of sites recorded with recruitment	In 2021 20 out of 30 Jessup transects were recorded with plant recruitment, with plant recruitment ranging from 0 to 151 juveniles from varying species. Most common juveniles were Atriplex vesicaria and Ptilotus obovatus. In 2021 numerous perennial plant species were recorded as fruiting at multiple sites.	Photopoint Monitoring and Jessup Transects - Cultana Training Area 2021 (AECOM, May 2021)
	Sandalwood	Change in key sandalwood population	No recruitment data collected during this reporting period. None of the Jessup transects monitored are located within the main Sandalwood population. Additional transects would need to be established to monitor this in the future.	Nil
b. Protection of biodiversity		Number of incidents involving damage to flora and fauna	Nil incidents related to flora and fauna damage notified during the reporting period.	Defence incident management system
3. Biosecurity and Over Abundant native Species (BONS)				
a. Pest animals				
	Goats	Number of goats removed	1602 goats removed during the reporting period. Of this total: 451 were removed July to December 2018 476 were removed in 2019 371 were removed in 2020 304 were removed Jan to Jun 2021	Feral Animal Control Reports FY18/19 to FY20/21
		Population distribution change over 3 year reporting period	Goat removal data indicate that goats were removed from 15 different locations. These current data do not allow for an understanding of change in population distribution, rather they demonstrate effort to remove goats from the site.	Feral Animal Control Reports FY18/19 to FY20/21
		Number of goat incursion events at Gilmore well	422 goats removed at/near this site during the reporting period. Of this total: 120 goats were removed at/near this site July to December 2018 45 goats were removed at/near this site in 2019 113 goats were removed at/near this site in 2020 144 goats were removed at/near this site Jan to Jun 2021	Feral Animal Survey Reports FY18/19 to FY20/21
		Number of goat incursion events at water points	160 goats removed from waterpoints. Of this total: 125 goats have been removed from Centenary Dam in Feb 2021 35 goats have been removed from Yanaby Dam in Feb 2021	Feral Animal Survey Reports FY18/19 to FY20/21
	Rabbits	Population distribution change over 3 reporting period	No change detected in the dispribution of rabbits. Annual monitoring has determined that rabbit numbers have been low through the reporting period and hence no	Feral Animal Survey Reports FY18/19 to FY20/21
b. Weeds				
	Carrion flower	Number / size of new infestations and infestation treated	Nil new carrion flower infestations (0 ha) identified and 16 infestations treated (382.82 ha) over this reporting period.	Weed Distribution Surveys and Specific Control Reports CUTA Carrion Control May 2021 (Creation Care)
	African Boxthorn	Number / size of new infestations and infestation treated	Nil new african boxthorn infestations (0 ha) identified and 0 infestations (0 ha) treated over the reporting period.	Weed Distribution Surveys and Specific Control Reports
	Opuntioid Cacti	Number / size of new infestations and infestation treated	Three (3) new opuntioid cacti infestations (0.3 ha) identified and three (3) infestations (0.3 ha) treated over the reporting period.	Weed Distribution Surveys and Specific Control Reports
	Prickly Acacia	Number / size of new infestations and infestation treated	Nil new prickly acacia infestations (0 ha) identified and 0 infestations (0 ha) treated over the reporting period.	Weed Distribution Surveys and Specific Control Reports
	Athel pine	Number / size of new infestations and infestation treated	Nil new athel pine infestations (0 ha) identified and nil infestations (0 ha) treated over the reporting period.	Weed Distribution Surveys and Specific Control Reports
	Buffel grass	Number / size of new infestations and infestation treated	Nil new buffel grass (0 ha) identified and nil infestations (0 ha) treated over the reporting period.	Weed Distribution Surveys and Specific Control Reports
c. Over abundant native animals	Native animals			
	Kangaroos	Number of kangaroo's lethally controlled	July 2018 - June 2019: 641 kangaroos July 2019 - June 2020: 1183 kangaroos July 2020 - June 2021: 1331 kangaroos Lethal control of Kangaroos did not exceed limits recommended via DEW aerial transect density during the reporting period.	DEW kangaroo aerial density reports FY18/19 to FY20/21. kangaroo control reports FY18/19 to FY20/21.
4. Bushfire				
	Modification of vegetation through repeated burning	Area of site burnt more than once in past five years (July 2016 to June 2021)	Nil sites were burnt more than once in the 5 year reporting period (0 ha).	TAMIS
		Area of site burnt at least once in this 5 year period and the previous 5 years period	Three (3) sites were burnt (50ha in total in Sector O) during both reporting periods.	TASMIS
	Fire frequency and size	Number of fires	Three (3) fires were notified during the reporting period.	TASMIS
		Number of fires greater than 100ha	Nil fires greater than 100ha were notified during the reporting period.	TASMIS
5. Pollution				
a. Noise and vibration		Number of Defence activity noise / vibration complaints received	Nil complaints received during the reporting period.	DOTAM and Defence incident management system
		Threshold exceptions and actions	Nil.	DOTAM and Defence incident management system
		Number of cases of verified structural damage / other impacts from Defence activity noise / vibration	Nil verified cases known during the reporting period.	DOTAM and Defence incident management system
b. Light		Number of Defence activity light pollution complaints received	Nil complaints received during the reporting period.	DOTAM and Defence incident management system

		Threshold exceptions and actions	Nil.	DOTAM and Defence incident management system
c. Dust		Number of Defence activity dust complaints received that had civilian health impacts	Nil complaints received during the reporting period.	DOTAM and Defence incident management system
		Number of Defence activity dust complaints received where dust obscured Highway	Nil complaints received during the reporting period.	DOTAM and Defence incident management system
		Threshold exceptions and actions	Nil.	DOTAM and Defence incident management system
d. Pollution prevention		Number of incident reports involving discharge to the environment	1. Diesel Spill (Minor) to surrounding soil - Caused by pierced diesel tank on skid steer. Spill cleaned up. April 2021.	DOTAM and Defence incident management system
6. Water				
a. water quality		Change in water quality at monitoring sites	Nil water quality monitoring data collected during the reporting period. Defence has undertaken a contamination assessment at Cultana (AECOM, 2020) and found that there were no contaminants of potential concern at elevated levels where Defence is utilising the CEA. Watercourses within the CEA are typically dry, flowing only intermittently. Given the location of potential pollutants and that of main creek lines throughout the site, it has been assessed that the risk of pollution to water quality does not warrant current water quality monitoring (AECOM, 2021).	Stage 2 Detailed Site Investigation, Cultana training Areas, Aug - Sept 2019. (AECOM, 2020). Addendum to Routine Water Quality Monitoring Plan, SA Defence Estate. Annual Review 2021. (AECOM, 2021).
		Change in water quality at sensitive receptor	Nil water quality monitoring data collected during this reporting period.	
b. Discharge		Number of notified occurrence of discharge to aquatic or marine system	Nil notified occurrences of discharge during the reporting period.	Defence incident management system
7. Heritage				
a. Damage		Number of known aboriginal sites damaged during the reporting period	Nil notified occurrences of site damage during the reporting period.	Defence incident management system