

# Great Western Woodland Supersite

## Affiliated projects summary

**Date: 12 June 2013**

**Project title: Tracking change and trend in vegetation condition at selected sites on Credo station, Great Western Woodlands**

**Abstract:**

Use of vegetated landscapes changes them. Changes, at both the site and landscape scale, can include degradation, modification, conversion, fragmentation, restoration, regeneration and increased connectivity. Until recently there has been no standardised national system to account for human-induced changes of plant communities at the site level over time. VAST-2 system provides land managers and planners a nationally consistent approach for assessing and reporting vegetation condition at sites over time.

The final report applies the VAST-2 system for collecting, collating and analysing historical records of land management for their effects on rangeland condition found at Credo Station. The transformation of two plant communities; Eucalyptus woodland (VEG\_ASSOC 468) and Eucalyptus open woodland / Maireana open chenopod shrubland (VEG\_ASSOC 506) found at four sites on Credo Station between the early 1800s to 2012 are assessed and described.

Condition is scored using 22 indicators that cover three components: site regenerative capacity, vegetation structure and species composition. Critical to the approach are the responses of each plant community relative to a reference state and the interactions between long-term rainfall and land management. Results are presented graphically.

Three of the four sites (sites A-C) are somewhat representative of the history of use and management of Credo Station's broader patterns of vegetation. All of Credo Station has been subject to around 100 years of grazing flocks of sheep and herds of cattle. The fourth site, site D, a small area around 20 ha was used for cropping between 1906 and 1965.

While this report has examined only four sites of limited spatial extent it is reasonable to conclude that the majority of Credo Station has retained its native vegetation in a modified state (VAST class II i.e. 60-80% relative to a fully natural reference state) e.g. sites B (Chadwin Paddock) and C (Carnage Paddock).

Areas which have been subject to less intensive timber harvesting and grazing pressure e.g. Gallah paddock and the TERN Supersite, the condition of the vegetation is classified as unmodified (VAST class I i.e. 80-100% relative to a fully natural reference state). It seems reasonable to conclude that greenstone areas which have not been subject to mining or intensive mineral exploration would also be classified as VAST I because these areas have shallow and skeletal soils which have not been intensively used by grazing animals, except in some cases as sheep camps.

Areas that have historically been subject to intensive use and management e.g. cropping and have subsequently been allowed to naturally regenerate, e.g. site D; such areas are classified as transformed (VAST III i.e. 40-60% relative to a fully natural reference state). Such areas on Credo Station are very restricted in area.

Small areas of Credo Station have been and are subject to total removal of native vegetation e.g. farm infrastructure (buildings, dams and roads) and mining. If these sites were assessed using the VAST-2 system they would probably have been classified as Removed replaced (VAST VI i.e. <1% relative to a fully natural reference state).

Evidence from an evaluation of WARMS site data, from the perspective of pasture management and production, indicates that the pastoral condition of these sites is improving over time. It seems reasonable to conclude that the majority of Credo Station, like much of the rangelands in the Great Western Woodlands, is improving at the site level in terms of vegetation condition relative to the condition experienced in the 1930s and 1960s. Such a trend is shown in four Credo Station vegetation transformation sites.

Contrasted against this site level assessment of vegetation condition is the increasing concern over progressive fragmentation of the native vegetation at the landscape and regional levels associated with mining sector.

Expected project timeframe: Completed.

Duration: 1 June 2012 – 1 May 2013

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#### **Research Project (if part of a larger umbrella research project)**

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#### **Funding sources:**

1. Western Australian Department of Environment and Conservation and
2. Australian Supersite Network, part of the Australian Government's Terrestrial Ecosystems Research Network ([www.tern.gov.au](http://www.tern.gov.au)), a research infrastructure facility established under the National Collaborative Research Infrastructure Strategy and Education Infrastructure Fund - Super Science Initiative - through the Department of Industry, Innovation, Science, Research and Tertiary Education.

#### **Datasets being used or collected:**

Historical record of land use and land management practices

Monthly modelled rainfall data from <http://www.longpaddock.qld.gov.au/silo/>

WA statewide vegetation map and database

#### **Geographic coverage of study:**

Credo Station

#### **Publications:**

Thackway, R., (2013). *Tracking change and trend in vegetation condition at selected sites on Credo Station, Great Western Woodlands*. Report prepared for the Western Australian Department of Environment and Conservation, Kalgoorlie and the CSIRO Division of Ecosystem Sciences, Perth. VAST Transformations, Canberra: Westerlund Eco Services.

<http://issuu.com/vasttransformations/docs/credostation>

**Other notes:**

A metadata file will be prepared for the four on Credo Station sites for publication on the TERN websites including <http://aceas.org.au/portal/> and the data portal <http://portal.tern.org.au/>. A total of 16 vegetation transformation files (four files for each site) will be submitted to ACEAS with each metadata record:

Site name	Historical record	Analysis score and weighting	Geo-location of the site using Google earth	Graph of vegetation transformation
gallah-supersite_credo	.docx	.xlsx	.kmz	.jpg
chadwin_credo	.docx	.xlsx	.kmz	.jpg
carnage_credo	.docx	.xlsx	.kmz	.jpg
cultivation_carnage_credo	.docx	.xlsx	.kmz	.jpg