



2 December 2018

Kirsten Muir-Thompson
Principal Consultant
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Dear Kirsten,

This letter outlines the results of a survey of vegetation condition undertaken by myself on the 30th November 2018 over part of Lot 3 Buller Rd, Waroona (herein referred to as the subject area). The purpose of the survey was to assess whether the vegetation condition within the subject area had returned, or was returning, to that which existed prior to the fire of January 2016 that also burnt large parts of the surrounding region.

In September 2015, Woodman Environmental (2015) undertook a detailed survey over the entirety of Lot 3 Buller Rd (approximately 216 ha), which included the subject area. The condition of the subject area ranged from 'Degraded' in the northern half of the subject area to 'Very Good' in approximately the southern half, with some smaller areas rated as being in 'Good' condition. The criteria for condition ratings are shown in Table 1.

Table 4: Vegetation Condition Scale (Keighery 1994)

Vegetation Condition	Definition
Pristine (1)	Pristine or nearly so, no obvious signs of disturbance.
Excellent (2)	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.
Very Good	Vegetation structure altered, obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.
Completely Degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.



The subject area was traversed on foot and the condition of the vegetation assessed at eight points. Observations were made of the dominant species present, the cover and presence of weed species, the influence of disturbance factors and the cover and type of the three main strata.

As in the area surveyed proposed for sand extraction, evidence of the bushfire is still obvious and the vegetation is still regenerating with many early colonising species dominant in the understorey and epicormic growth present on many trees.

The condition of the vegetation in the southern half of the subject area was rated as 'Very Good', which is the same category as previously assigned by Woodman Environmental (2015) (Figures 1 and 2). The vegetation in this area is recovering its structure and diversity following the fire with a minor infestation of mainly non-aggressive weeds. Many native plants were observed to be resprouting and seedlings of *Banksia attenuata* were common. This area is a *Eucalyptus marginata* – *Banksia attenuata* woodland, and the vegetation condition meets the criterion for inclusion as part of the Commonwealth-listed Threatened Ecological Community (TEC) 'Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region' (Banksia Woodlands TEC).

The vegetation of the northern half of the site was mostly in a 'Completely Degraded' to 'Degraded' condition. The original vegetation structure has been largely lost and the understorey is dominated by weed species (Figure 3). This area had been rated as 'Degraded' by Woodman Environmental (2015) and the fire may have adversely affected the vegetation even further. As such, the northern part of the subject area does not meet the criteria to be considered part of the Banksia Woodlands TEC. There were some small parts of the northern section that could be rated as 'Good', as the basic vertical structure is still intact but weeds dominated the understorey (Figure 4). The 'Good' areas mostly coincided with those mapped in the same category by Woodman Environmental (2015). While there is a degree of subjectivity in the rating of vegetation condition and may vary between observers, it is clear the vegetation condition in most of the northern part of the subject area has not improved since the fire and may have declined further.

In summary, the vegetation condition of the subject area is largely returning to that which existed prior to the 2016 fire. This indicates the resilience the vegetation has to periodic disturbance from fire, but also that areas of diminished ecological values won't recover without direct intervention.

Should you require any further information or have any other queries, please feel free to contact me.

Sincerely yours,



Plantecology Consulting



Plates



Plate 1: 'Very Good' vegetation showing native understorey with mid- and upper strata regenerating following fire (32.8634 S, 115.8229 E).



Plate 2: 'Very Good' vegetation, showing more open understorey but few weeds and intact vertical structure (32.8954 S, 115.8299 E).

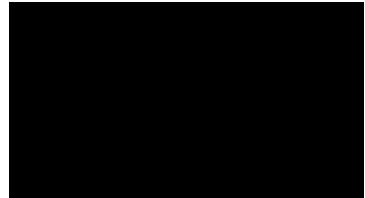
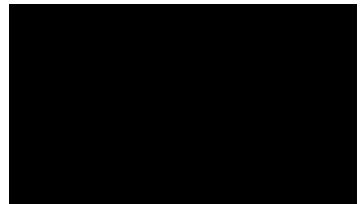


Plate 3: 'Completely Degraded' vegetation with almost no ground layer and very open upper canopy (32.8553 S, 115.8233 E).



Plate 4: 'Good' vegetation with a weedy understorey and some native species, but vertical structure is still present (32.8589 S, 115.8227 E).



References

Keighery, BJ (1994), *Bushland plant survey: A Guide to Plant Community Survey for the Community*, Wildflower Society of WA (inc), Nedlands, Western Australia.

Woodman Environmental (2015) *Lot 3 Buller Rd Level 2 Flora and Vegetation Assessment*, Unpublished report for KD.1 Pty Ltd