



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 7577/1
Permit type: Purpose Permit

1.2. Applicant details

Applicant's name: Forrest and Forrest Pty Ltd

1.3. Property details

Property: LOT 162 ON PLAN 220265, TALANDJI
LOT 152 ON PLAN 220265, TALANDJI
ROAD RESERVE - 11733569, TALANDJI
ROAD RESERVE - 11733568, TALANDJI
ROAD RESERVE - 11733570, TALANDJI
ROAD RESERVE - 11728383, TALANDJI
ROAD RESERVE - 11733573, TALANDJI
ROAD RESERVE - 11733571, TALANDJI
ROAD RESERVE - 11730168, TALANDJI
ROAD RESERVE - 11730169, TALANDJI
ROAD RESERVE - 11733574, TALANDJI
ROAD RESERVE - 11730172, TALANDJI
Colloquial name: MINDEROO STATION
Local Government Authority: ASHBURTON, SHIRE OF
DER Region: North West
Localities: TALANDJI

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
20		Mechanical Removal	Weir construction
70		Mechanical Removal	Access roads

1.5. Decision on application

Decision on Permit: Refuse

Application:

Decision Date: 28 May 2019

Reasons for Decision: The clearing permit application received on 28 April 2017 has been assessed against the clearing principles, planning instruments and other matters in accordance with s51O of the *Environmental Protection Act 1986*. It has been concluded that the proposed clearing is at variance to principle (f) and is not likely to be at variance to any of the remaining clearing principles.

The Delegated Officer determined that the clearing is unlikely to have any significant environmental impacts. The Delegated Officer considers that development approval is a relevant matter to be considered when determining this clearing permit application and given that the applicant has not been granted development approval for this project, and that sufficient time has been provided to the applicant in order to obtain this approval, the Delegated Officer has decided to refuse to grant this clearing permit at this time.

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description	Clearing Description	Vegetation Condition	Comment
The application area has been mapped as the following Beard vegetation associations: 585: Mosaic: Shrublands; CPS 7577/1	The applicant proposes to clear 90 hectares (within a footprint area of 537 hectares) of native vegetation within Lots	Very Good; Vegetation structure altered; obvious signs of disturbance (Keighery, 1994).	The majority of the application area is dominated by <i>Acacia synchronicia</i> (narrow leaf form) and <i>Acacia tetragonophylla</i> shrubland over tussock

snakewood and *Acacia victoriae* scrub / Hummock grasslands, shrub-steppe; kanji over soft spinifex and *Triodia basedowii*.

589: Mosaic: Short bunch grassland - savanna / grass plain (Pilbara) / Hummock grasslands, grass steppe; soft spinifex.

608: Mosaic: Shrublands; *Acacia victoriae* and snakewood scrub patches / Short bunch grassland - savanna / grass plain (Pilbara).

152 and 162 on Deposited Plan 220265 (Minderoo Station) and unnamed road reserves (PINs 11730172, 11733574, 11730169, 11730168, 11733571, 11733573, 11728383, 11733570, 11733568 and 11733569), Talandji, for the purpose of access tracks and weir construction.

grasses including *Cenchrus ciliaris* (buffel) with scattered *Euclayptus coolabah* (Commissioner of Soil and Land Conservation, 2017).

The condition of the vegetation was determined via aerial imagery.

(Shepherd et al., 2001)

3. Assessment of application against clearing principles

(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.

Comments

Proposed clearing is not likely to be at variance to this Principle

The applicant proposes to clear 90 hectares (within a footprint area of 537 hectares) of native vegetation within Lots 152 and 162 on Deposited Plan 220265 (Minderoo Station) and unnamed road reserves (PINs 11730172, 11733574, 11730169, 11730168, 11733571, 11733573, 11728383, 11733570, 11733568 and 11733569), Talandji, for the purpose of access tracks and weir construction. The proposed weirs are part of a managed aquifer recharge project which intends to artificially recharge the alluvial aquifer from pools that will form upstream of the weirs.

The application area consists of ten weirs (two hectares each) and a number of access roads (totalling 70 hectares). The application area is located on, and in close proximity to Ashburton River and spans a distance of approximately 50 kilometres.

The majority of the application area has been mapped as Nanyarra Land System which is described as 'Alluvial plains supporting tall shrublands and low woodlands with prominent tussock grasses'. The remaining area (southern three sites) has been mapped as the Globe Land System which is described as 'Degraded alluvial plains supporting snakewood shrublands and minor tussock grasslands'.

Eight flora species, listed as priority species by the Department of Biodiversity, Conservation and Attractions (DBCA), have been recorded within the local area (40 kilometre radius).

The application area may contain suitable habitat for two of the priority flora species. The first species is known to occur in red sand on flats/plains in tall shrubland and hummock grassland. Whilst there are some similarities between the known habitat of this species and that mapped in the application area, being plains with shrubland and grassland, the application area is located on alluvial plains which this species has not been recorded on previously and so it is considered that there is a low likelihood of this species being present in the application area (Parks and Wildlife, 2017).

The second species is currently under review, and advice from the WA Herbarium is that there are likely to be three forms of this species – Port Hedland, Onslow and Carnarvon. The form closest to the application area would be the Onslow form (Parks and Wildlife, 2017). This species has been recorded on sand plains and dunes in grassland and shrubland, and the Port Hedland form has records adjacent to the Turner River. There is the potential that this species may occur in the application area given the location is within the range of the species, the mapped habitat includes alluvial plains with shrubland and grassland, and this species has been associated with another river. As there are few records of the Onslow form of the species, any occurrence would be significant. However, the species is unlikely to be restricted to that location, and if present in the area, is likely to also occur outside the application area (Parks and Wildlife, 2017).

As discussed in Principle (b) five fauna species, listed specially protected under the *Biodiversity Conservation Act 2016* (BC Act) within the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* have been recorded within the local area, being northern quoll (*Dasyurus hallucatus*), grey falcon (*Falco hypoleucos*), Pilbara olive python (*Liasis olivaceus* subsp. *barroni*), bar-tailed godwit (*Limosa lapponica* subsp. *menzbieri*) and curlew sandpiper (*Calidris ferruginea*) (DBCA, 2007-). The application area may contain suitable habitat for the northern quoll to use for foraging and as a corridor. However no rocky outcrops were observed therefore the application area is not likely to contain significant habitat for this species (Commissioner of Soil and Land Conservation, 2017b).

No priority ecological communities have been recorded within the application area.

Given the above, the proposed clearing is not likely to be at variance to this Principle.

(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

Comments

Proposed clearing is not likely to be at variance to this Principle

Five fauna species, listed as specially protected under the BC Act within the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* have been recorded within the local area, being northern quoll (*Dasyurus hallucatus*), grey falcon (*Falco hypoleucos*), Pilbara olive python (*Liasis olivaceus* subsp. *barroni*), bar-tailed godwit (*Limosa lapponica* subsp. *menzbieri*) and curlew sandpiper (*Calidris ferruginea*) (Parks and Wildlife, 2007-).

The majority of the application area has been mapped as Nanyarra Land System which is described as 'Alluvial plains supporting tall shrublands and low woodlands with prominent tussock grasses'. The remaining area (southern three sites) has been mapped as the Globe Land System which is described as 'Degraded alluvial plains supporting snakewood shrublands and minor tussock grasslands'.

The northern quoll occupies a variety of habitats across its current range including rocky areas, eucalypt forest and woodlands, dry rainforests and vine thickets, sandy lowlands and beaches, shrublands, grasslands and deserts (Commonwealth of Australia, 2011). Habitat usually includes some form of rocky area or structurally diverse woodland or forest used for shelter with surrounding vegetated habitats used for foraging and dispersal. Shelter habitat is important for breeding and refuge from fire and/or predation (Commonwealth of Australia, 2011).

Little is understood about the characteristics of foraging or dispersal habitat for the northern quoll. However, on current knowledge, foraging or dispersal habitat is recognised to be any land comprising predominately native vegetation in the immediate area (within two kilometres) of denning / shelter habitat, quoll records or land comprising predominately native vegetation that is connected to denning / shelter habitat within the species range. (Commonwealth of Australia, 2011). Habitats critical to survival for the northern quoll are areas that provide shelter for breeding, refuge from fire and/or predation and/or potential poisoning from cane toads (Commonwealth of Australia, 2011).

The application area falls within the range of the northern quoll and there are three recent records (2011-2014) within 40 kilometres of the application area (DBCA, 2017).

Northern quoll are known to inhabit a wide range of habitat types across their distribution, but rocky areas are considered important habitat for the species' long term survival. In the Pilbara, they are often found in rocky areas associated with permanent water. Based on mapping, the application areas are along, near to or closely associated with a watercourse; the Ashburton River (DBCA, 2017). Water courses are known to be fauna corridors for movement between areas of important habitat and dispersal of young, and for foraging (DBCA, 2017).

Although the application may occasionally be used by northern quoll as a corridor, for foraging and to access water, the application area is not likely to contain significant habitat for this species as no rocky outcrops were observed (Commissioner of Soil and Land Conservation, 2017b).

The application areas are also within the distribution of the Pilbara olive python (*Liasis olivaceus barroni*) and there are three recent (2009 and 2012) records for the species within the vicinity (40 kilometre radius). The species is usually found in close proximity to water and rocky outcrops (DBCA, 2017). No rocky outcrops were observed within the application area and therefore it is unlikely to contain significant habitat for this species.

The Grey falcon inhabits woodland, shrubland and grassland in the arid and semi-arid zones, especially wooded watercourses (NSW Scientific Committee, 2009). It also hunts in treeless areas and frequents tussock grassland and open woodland. Based on the mapped vegetation type the application area may contain suitable hunting ground for the grey falcon, however it is unlikely to be significant for breeding.

The curlew sandpiper mainly occurs on intertidal mudflats in sheltered coastal areas and the bar-tailed godwit inhabits coastal areas, therefore the application area does not contain suitable habitat for these species.

Given the above, the proposed clearing is not likely to be at variance to this Principle.

(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.

Comments

Proposed clearing is not likely to be at variance to this Principle

No threatened flora has been recorded within the local area (40 kilometre radius). Therefore the application area is not likely to contain threatened flora.

The proposed clearing is not likely to be at variance to this Principle.

(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

Comments **Proposed clearing is not likely to be at variance to this Principle**
No threatened ecological communities (TEC) have been recorded within the local area (40 kilometre radius). Therefore the application area is not likely to comprise of, or be necessary for the maintenance of a TEC.

The proposed clearing is not likely to be at variance to this Principle.

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

Comments **Proposed clearing is not likely to be at variance to this Principle**
The application area is located within the Carnarvon Interim Biogeographic Regionalisation of Australia (IBRA) bioregion. This IBRA bioregion has approximately 99.7 per cent of its pre-European vegetation extent remaining (Government of Western Australia, 2018).

The vegetation under application is mapped as Beard vegetation associations 585, 589 and 608 of which there is approximately 100, 99.7 and 100 per cent of their pre-European extents remaining within the Carnarvon bioregion, respectively (Government of Western Australia, 2018).

The area under application is located within the Shire of Ashburton, within which there is approximately 99.7 per cent pre-European extent remaining (Government of Western Australia, 2018).

The local area (10 kilometre radius) retains approximately 99 per cent native vegetation.

The national objectives and targets for biodiversity conservation in Australia have a target to prevent clearance of ecological communities with an extent below 30 percent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001).

Given the above, the proposed clearing is not likely to be at variance to this Principle.

	Pre-European (ha)	Current Extent (ha)	Remaining (%)	Extent in DBCA Managed Lands (%)
IBRA Bioregion*				
Carnarvon	8,382,890	8,360,801	99.7	12
Shire*				
Shire of Ashburton	10,087,789	10,061,094	99.7	17
Beard Vegetation Association in Bioregion*				
589	78,101	77,835	99.7	0
608	312,836	321,836	100	0.65
585	758.7	758.7	100	40.4

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Comments **Proposed clearing is at variance to this Principle**
The ten proposed weirs are located on Ashburton River. This river rises approximately 100 kilometres south of Newman and flows in a west-north-westerly direction until discharging into the Indian Ocean approximately 20 kilometres south west of Onslow.

A number of minor tributaries are also mapped as intersecting the proposed weir sites as well as the access roads.

Given the above, the proposed clearing is at variance to this Principle.

The weirs are high flow weirs and are designed to be 'leaky' to allow for continued water flow. Therefore the

flow of Ashburton River is unlikely to be significantly impacted by this project.

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

Comments

Proposed clearing is not likely to be at variance to this Principle

The majority of the application area has been mapped as Nanyarra Land System which is described as 'Alluvial plains supporting tall shrublands and low woodlands with prominent tussock grasses'. The remaining area (southern three sites) has been mapped as the Globe Land System which is described as 'Degraded alluvial plains supporting snakewood shrublands and minor tussock grasslands' (Commissioner of Soil and Land Conservation, 2017a).

The soils of Nanyarra Land System are described as being reddish brown loams or clay, typically more than a one metre in depth. The *Acacia synchronicia*, *Acacia tetragonophylla* and *Cenchrus ciliaris* (buffel) that dominate the application area are typically associated with loamy soils (Commissioner of Soil and Land Conservation, 2017a).

The Globe Land System supports *Eucalyptus camaldulensis*, *Eucalyptus coolabah*, *Acacia xiphophylla* and *Acacia synchronicia* scrub on red brown dispersive clays and buffel grass on the loamy soil (Commissioner of Soil and Land Conservation, 2017a).

Increased soil erosion is the main land degradation risk associated with the proposed clearing for weir construction. The weir construction will require some temporary disturbance to the bed and banks of the river. The low weirs are designed to permit the main flows to pass down the river with little flow impedance, having heavy rock rip rap upstream and downstream of the concrete weir walls to protect the structure and wing walls constructed into the levee soil on the steep river banks to minimise erosion. The disturbance footprint on the river banks are expected to quickly recover (Commissioner of Soil and Land Conservation, 2017a).

Therefore, assuming that the proposed weirs are constructed in a similar manner to that already in place, then the risk of accelerated soil erosion is likely to be very low (Commissioner of Soil and Land Conservation, 2017a).

The application areas for the proposed tracks are located on river levee, alluvial plain and possibly some dune land units of Nanyarra and Globe Land Systems. The landscape ranges from level to undulating plain. One of the proposed tracks in the Globe land system in the south crosses a flow line. The grades on these linear application areas range from level to several percent. Being generally aligned across the direction of flow, appreciable soil erosion is unlikely to occur (Commissioner of Soil and Land Conservation, 2017a).

Given the above, the proposed clearing is not likely to be at variance to this Principle.

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

Comments

Proposed clearing is not likely to be at variance to this Principle

Cane River Nature Reserve and two areas of unallocated Crown land (former Nanutarra and Mt Minnie Pastoral Stations) which are proposed to be included into conservation estate are located approximately 7.5 kilometres, eight kilometres and 7.5 kilometres east of the application area, respectively.

Given the highly vegetated local area and distance to these conservation areas the proposed clearing is not likely to impact on the environmental values of these areas.

The proposed clearing is not likely to be at variance to this Principle.

(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

Comments

Proposed clearing is not likely to be at variance to this Principle

The ten proposed weirs are located on Ashburton River. The weir construction will require some temporary disturbance to the bed and banks of the river. The low weirs are designed to permit the main flows to pass down the river with little flow impedance, having heavy rock rip rap upstream and downstream of the concrete weir walls to protect the structure and wing walls constructed into the levee soil on the steep river banks to minimise erosion. The disturbance footprint on the river banks are expected to quickly recover (Commissioner of Soil and Land Conservation, 2017a).

Given the above the proposed clearing may increase sedimentation to Ashburton River, however this impact will be short term as the river bank is likely to recover quickly.

Groundwater salinity within the majority of the application area is mapped as 3,000-7,000 total dissolved solids,

milligrams per litre. This level of groundwater salinity is considered to be moderately saline to saline. The local area surrounding the application areas retains approximately 99 per cent native vegetation and therefore the proposed clearing is not likely to increase groundwater salinity.

The intent of the proposed weirs is to artificially recharge the alluvial aquifer from pools that will form upstream of the weirs. The project will increase the quantity of groundwater, however is not expected to deteriorate the quality of groundwater. The former Department of Water (DoW) has advised that any potential impacts from the weirs to the river or from groundwater abstraction will be managed through monitoring commitments, environmental triggers and contingency actions conditional to the groundwater licence and bed and banks permit (DoW, 2017).

The proposed clearing is not likely to be at variance to this Principle.

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

Comments Proposed clearing is not likely to be at variance to this Principle

The proposed clearing of ten weir sites and associated access roads over a distance of 50 kilometres (within a footprint area of 537 hectares) is not likely to increase the incidence or intensity of flooding.

The proposed clearing is not likely to be at variance to this Principle.

Planning instruments and other relevant matters.

Comments This application is one of four applications from Forrest and Forrest Pty Ltd for Minderoo Pastoral Station. A summary of the other three applications is provided below:

CPS 7598/1 – 640 hectares of native vegetation for the purpose of extracting granite to use in the construction of the weirs proposed under this application.

CPS 7611/1 – 126.8 hectares of native vegetation for the purpose of horticulture.

CPS 7626/1 – 0.8822 hectares of native vegetation for extracting granite to repair an existing weir.

The application area occurs within the Pilbara groundwater and surface water area, which are proclaimed areas under the *Rights in Water and Irrigation Act 1914*. The former Department of Water (DoW) advised that it had issued a groundwater licence and bed and banks permit in association with this project (DoW, 2017). The bed and banks permit was for the purpose of constructing the ten additional weirs and the groundwater licence is to abstract up to 13.2 GL per annum from the alluvial aquifer along the Ashburton River (DoW, 2017).

DoW further advised that any potential impacts from the weirs to the river or from the groundwater abstraction will be managed through monitoring commitments, environmental triggers and contingency actions conditional to the groundwater licence and the bed and banks permit (DoW, 2017).

The Shire of Ashburton advised that it has received a development application for the proposed construction of 10 weirs and associated infrastructure (Shire of Ashburton, 2017). The Shire refused this application and the decision was contested through the State Administrative Tribunal (SAT).

The application was advertised online on 9 June 2017 for a 21 day submission period. A publication summary was advertised in *The West Australian* on Monday 12 June 2017. No submissions were received in relation to this application.

On 6 June 2017, a former Department of Environment Regulation Delegated Officer wrote to the Thalanyji Native Title Claimant and Buurabalayji Thanlanyji Aboriginal Corporation, providing notice as required by section 24GB s9 of the *Native Title Act 1993*, and providing an opportunity to comment on the applications. On 3 July 2017 a response was received from the Buurabalayji Thanlanyji Aboriginal Corporation (BTAC) advising that they object to the proposed clearing because the applicant has not engaged the BTAC or the Thalanyji People to negotiate an agreement or discuss the issue of compensation (BTAC, 2017). It was also advised that the application area needs to be the subject of a heritage survey. In regards to environmental matters it was advised that the increase in vegetation clearing will change the flora and fauna attributes of the area and that the Thalanyji People would require an independent study to be undertaken to review the environmental impact (BTAC, 2017).

Ashburton River and surrounding area is mapped as an Aboriginal Sites of Significance. The applicant will be notified of its responsibilities in accordance with the *Aboriginal Heritage Act 1972*.

On 3 November 2017 the Department wrote to the applicant providing 3 months for a copy of the SAT decision on their development approval to be provided to the Department.

On 16 February 2018 the applicant advised that the development application was again being considered by SAT on 13 March 2018.

On 15 March 2018 the Department wrote to the applicant requesting an update on the SAT hearing and was advised it had been delayed.

On 10 May 2018 the Department wrote to the applicant requesting an update on the SAT hearing and was advised it had been delayed.

On 21 August 2018 the Department wrote to the applicant requesting an update on the SAT hearing and was advised it had been delayed.

On 1 October the Department wrote to the applicant requesting an update on the SAT hearing and was advised it had been delayed and was under consideration by the Minister the Hon Ben Wyatt.

On 4 December 2018 the Department wrote to the applicant requesting an update on the SAT hearing and was advised it had been delayed and was under consideration by the Minister the Hon Ben Wyatt.

On 18 January 2019 the Department wrote to the applicant requesting an update on the SAT hearing and was advised it had been delayed and was under consideration by the Minister the Hon Ben Wyatt.

On 25 February 2019 the Department contacted the applicant advising that a decision will be made on this application. On 8 March 2019 the Department wrote to the applicant advising that in 30 days the Delegated Officer intended to refuse the clearing permit application.

On 26 March 2019 and 9 April 2019 the Department contacted the applicant to confirm if a response to the intent to refuse letter would be provided. No response has been received by the Department and the Delegated Officer has therefore decided to refuse this application.

4. References

- Buurabalayji Thanlanyji Aboriginal Corporation (BTAC) Native Title submission response. Received on 3 July 2017 (DER Ref: A1473233).
- Commissioner of Soil and Land Conservation (2017a) Land Degradation Advice for Clearing Permit Application CPS 7577/1. Department of Primary Industries and Regional Development (DWER Ref: A1485022).
- Commissioner of Soil and Land Conservation (2017b) Habitat Advice for Clearing Permit Application CPS 7577/1. Department of Primary Industries and Regional Development (DWER Ref: A1485583).
- Commonwealth of Australia (2001) National Objectives and Targets for Biodiversity Conservation 2001-2005, Canberra.
- Commonwealth of Australia (2011) *Environment Protection and Biodiversity Conservation Act 1999* referral guidelines for the endangered northern quoll, *Dasyurus hallucatus*, EPBC Act Policy Statement 3.25, Commonwealth of Australia, Canberra.
- Department of Parks and Wildlife (Parks and Wildlife) (2007-) NatureMap: Mapping Western Australia's Biodiversity. Department of Parks and Wildlife. URL: <http://naturemap.dpaw.wa.gov.au/>. Accessed June 2017.
- Department of Parks and Wildlife (Parks and Wildlife) (2017) Species and Communities Branch flora advice for Clearing Permit Application CPS 7577/1 (DER Ref: A1463776).
- Department of Biodiversity, Conservation and Attractions (DBCA) (2017b) Species and Communities Branch fauna advice for Clearing Permit Application CPS 7577/1 (DER Ref: A1466683).
- Department of Water (DoW) (2017) *Rights in Water and Irrigation Act 1914* advice for Clearing Permit Application CPS 7577/1 (DER Ref: A1444473).
- Government of Western Australia (2018) 2017 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of December 2017. WA Department of Biodiversity, Conservation and Attractions. <https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics>
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- NSW Scientific Committee (2009) Grey Falcon *Falco hypoleucos*. Review of current information in NSW. July 2009. Unpublished report arising from the Review of the Schedules of the Threatened Species Conservation Act 1995. NSW Scientific Committee, Hurstville.
- Shire of Ashburton (2017) Planning advice for Clearing Permit Application CPS 7577/1 (DWER Ref: A1492628).
- Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.