



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 7169/1
Permit Holder:	Department of Water
Duration of Permit:	7 January 2017 – 7 January 2022

The Permit Holder is authorised to clear native vegetation subject to the following conditions of this Permit.

PART I – CLEARING AUTHORISED

1. Purpose for which clearing may be done

Clearing for the purpose of conducting a mechanical bush fire control trial.

2. Land on which clearing is to be done

Lot 9 on Plan 14975, Palmer

3. Area of Clearing

The Permit Holder must not clear more than 185 hectares of native vegetation within the area hatched yellow on attached Plan 7169/1.

4. Application

This Permit allows the Permit Holder to authorise persons, including employees, contractors and agents of the Permit Holder, to clear native vegetation for the purposes of this Permit subject to compliance with the conditions of this Permit and approval from the Permit Holder.

PART II – MANAGEMENT CONDITIONS

5. Vegetation management

- (a) The Permit Holder must retain all *habitat trees* within the area of clearing authorised under this Permit.
- (b) The Permit Holder shall not clear native vegetation within 50 metres of the riparian vegetation of any watercourse or wetland within and/or adjacent to the area hatched yellow on Plan 7169/1.
- (c) A minimum retention rate of 7m²/ha *basal area* is required within the area of clearing authorised under this Permit.
- (d) Within one month of clearing, the Permit Holder must *rehabilitate* any *log landings* established within native vegetation by scarifying the soil surface to reduce compaction and facilitate natural regeneration.

6. Dieback and weed control

When undertaking any clearing or other activity authorised under this Permit, the Permit Holder must take the following steps to minimise the risk of the introduction and spread of *weeds* and *dieback*:

- (a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- (b) ensure that no *dieback* or *weed*-affected soil, *mulch*, *fill* or other material is brought into the area to be cleared; and
- (c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

DEFINITIONS

The following meanings are given to terms used in this Permit:

basal area is the method of expression of tree cover density in an area where the total area of tree trunk, measured at average adult human breast height, is expressed as square metres per hectares of land area;

dieback means the effect of *Phytophthora* species on native vegetation;

fill means material used to increase the ground level, or fill a hollow;

habitat tree(s) means trees that have a diameter, at average adult human chest height, of greater than 70cm, healthy but with dead limbs and broken crowns that are likely to contain hollows and roosts suitable for native fauna, or where these are not present then healthy but with the potential to contain hollows and roosts;

log landing/s means an area established for the purpose of stockpiling commercially harvested trees, to enable loading for collection;

mulch means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation;

rehabilitate/ed/ion means actively managing an area containing native vegetation in order to improve the ecological function of that area;

weed/s means any plant -

- (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or
- (b) published in a Department of Parks and Wildlife Regional Weed Rankings Summary, regardless of ranking; or
- (c) not indigenous to the area concerned.



James Widenbar
MANAGER
CLEARING REGULATION

*Officer delegated under Section 20
of the Environmental Protection Act 1986*

8 December 2016

Plan 7169/1



Legend

- Areas approved to clear
 - Roads
 - LGA
 - Cadastre
- Virtual Mosaic (LGATE-V001)



1:10,000
MGA94
Geocentric Datum of Australia 1994

James Wroenbar Date *8/12/16*
JAMES WROENBAR

Officer with delegated authority under Section 20
of the Environmental Protection Act 1986





1. Application details

1.1. Permit application details

Permit application No.: 7169/1
Permit type: Purpose Permit

1.2. Applicant details

Applicant's name: Department of Water

1.3. Property details

Property: LOT 9 ON PLAN 14975, PALMER
Colloquial name:
Local Government Authority: COLLIE, SHIRE OF
DER Region: Greater Swan
DPaW District: WELLINGTON
Localities: PALMER

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
185		Mechanical Removal	Hazard reduction or fire control

1.5. Decision on application

Decision on Permit Application: Granted

Application:

Decision Date: 8 December 2016

Reasons for Decision: The clearing permit application has been assessed against the clearing principles, planning instruments and other matters in accordance with section 51O of the *Environmental Protection Act 1986* and the Delegated Officer determined that the proposed clearing is unlikely to have an unacceptable risk to the environment. The clearing was found not likely to be at variance to any of the clearing principles.

Through assessment it was found that the proposed clearing may potentially impact on habitat habitats for conservation significant fauna and flora, a threatened ecological community (TEC) and a minor perennial watercourse.

The Delegated Officer noted that the clearing is to selectively remove vegetation and the high percentage of native vegetation remaining within the local area, particularly within the conservation managed estate. The Delegated Officer considers conditioning the retention of all habitat trees and a minimum basal area will assist in minimising potential impacts to significant fauna habitat.

The Delegated Officer considers that a condition to exclude wetland vegetation and a minimum 50 metre buffer from clearing is likely to mitigate any potential impacts to habitat for flora, the TEC and the watercourse. The Delegated Officer considers weed management measures will assist in minimising the spread of weeds or dieback into adjacent vegetation including native vegetation within the adjacent conservation estate.

The Delegated Officer also had regard for the purpose of the clearing being for a national bush fire fuel load reduction trial.

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 vegetation within the application area is mapped as Beard vegetation association 3 which is described as medium forest, jarrah-marri (Shepherd et al., 2001).	The application is to selectively clear native vegetation within a 185 hectares area, in a silvicultural manner, in order to undertake a mechanical bush fire fuel load reduction trial.	Excellent; Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994).	The condition of the vegetation within the application area was determined via a site inspection undertaken by officers of the Department of Environment Regulation (DER)(2016) and a site
The vegetation within the application area is mapped as Mattiske vegetation association's (Mattiske et al., 1998):			

- CF which is described as Open woodland of *Allocasuarina fraseriana*-*Banksia* spp.-*Xylomelum occidentale*-*Nuytsia floribunda* on sandy soils on valley slopes in the subhumid zone;
- CI which is described as Open forest of *Eucalyptus marginata* subsp. *marginata*-*Corymbia calophylla*-*Allocasuarina fraseriana* on gravelly-sandy upland soils in the subhumid zone;
- D1 which is described as Open forest of *Eucalyptus marginata* subsp. *marginata*-*Corymbia calophylla* on lateritic uplands in mainly humid and subhumid zones; and
- Yg1 which is described as Open forest of *Eucalyptus marginata* subsp. *marginata*-*Corymbia calophylla* on slopes with mixtures of *Eucalyptus patens* and *Eucalyptus megacarpa* on the valley floors in humid and subhumid zones.

inspection report completed by the Department of Water (DoW)(2016).

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 application is to selectively clear native vegetation within a 185 hectares area, in a silvicultural manner, in order to reduce the bush fire fuel load as part of a national trial. The applicant has stated that "The actual treatment area for the fuel reduction trial will be ~ 154 ha (4 x 30 ha research plots plus an additional 34 ha of treatment for additional fire mitigation purposes)" (DoW, 2016).

The specific objectives for the forest are stated as (DoW, 2016):

- "Thin from below to remove less vigorous and or suppressed trees (mimicking the natural thinning process)";
- "Reduce fuel loads to reduce bushfire risk to neighbouring workers settlement, electricity and water infrastructure and the ultimately the Collie town site";
- "Thin the area for increased water run-off and recharge to local groundwater aquifers"; and
- "Protect larger and dead habitat trees from wildfire and thinning operations".

The Harvest Forest Management Plan for the proposed clearing states that (DoW, 2016):

- "The native vegetation is jarrah-marri dominate mix on gravelly soils. It is in good condition, however there is only a small proportion of habitat trees and stumps";
- "As habitat trees are rare at the site, they will all be retained. Mature individuals of second storey species such as large Grasstrees, and *Banksia* Spp., will be retained to ensure diversity is maintained";
- "the bushfire mitigation research team will be measuring the impacts on species, environments and ecosystems, contrasted between fuel treatment methods. To do this, comprehensive base line assessments will be required";
- "the harvest will vary across the site, where available timber exists, down to an average basal area of between 7 and 12 m² (crop trees) consistent with existing retention in native forest management"; and
- "All Coarse Woody Debris (CWD) within 20 metres of boundaries will be either removed for chipping or pulled into the interior".

A site inspection undertaken by DER officers recorded the vegetation as open jarrah and marri forest transitioning to melaleuca sp. thicket over heavy soils (DER, 2016).

A site inspection undertaken by DoW officers recorded the vegetation as an open forest in an excellent (Keighery, 1994) condition.

The local area (defined as a 10 kilometre radius surrounding the application area) retains approximately 80 per cent vegetation. Given this, and as the proposed clearing will be undertaken in a selective way, it is not likely to impact on the movement of fauna through the landscape or values of any mapped ecological linkages.

Six threatened and seven priority fauna species have been recorded within the local area and may utilise the application area (Parks and Wildlife, 2007-). Noting that all large habitat trees as well as fallen habitat logs will be retained (DoW, 2016), given the selective nature of the clearing and that foraging habitat in similar or better condition remains in the local area, the proposed clearing is not likely to have a significant impact on threatened fauna.

Thirteen priority and one threatened flora species have been recorded within the local area (10 kilometre radius). An assessment of the mapped and observed vegetation type (DER, 2016) against habitat requirements for these species (Western Australian Herbarium, 1998-) determined that the application area may contain suitable habitat for eight priority and one threatened flora species. The Department of Parks and Wildlife (Parks and Wildlife) has advised that an additional threatened and priority flora species may be present within the application area (Parks and Wildlife, 2016). As the clearing is to selectively remove vegetation following flora surveys, given the amount of vegetation within the adjoining area and as disturbed understorey species will have the ability to regenerate, the proposed clearing is not likely to have a significant impact on conservation significant flora. Further, a condition to exclude wetland vegetation and a 50 metre buffer from clearing is likely to mitigate any potential impacts to a majority of these species including the rare flora species.

No threatened or priority ecological communities have been recorded within the local area (10 kilometre radius). Parks and Wildlife has advised "The wetland vegetation of this area is likely to be very poorly known floristically, several wetlands in the Collie area support heavy clay soils that have not been impacted by salinity, these are of conservation value and may support populations of threatened species such as ... and may themselves represent an occurrence of the Federally listed 'Claypans of the Swan Coastal Plain' TEC" Parks and Wildlife (2016).

Given this and as inundated clay soils were identified within the application area (DER, 2016), Lot 9 on plan 14975 may contain vegetation representative of the Claypans of the Swan Coastal Plain TEC. The applicant has stated that "The riparian area to the south of the block will be retained for biodiversity retention and fauna refuge and will not be thinned or burnt", (DoW, 2016).

A condition to exclude wetland vegetation and an appropriate buffer from clearing is likely to mitigate any potential impacts to TEC vegetation if present.

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

Methodology References:
DER (2016)
DoW (2016)
Parks and Wildlife (2016)
Keighery (1994)
Western Australian Herbarium (1998-)

GIS Datasets:
SAC Bio Datasets - accessed May 2016

(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**
The local area (defined as a 10 kilometre radius surrounding the application area) retains approximately 80 per cent vegetation. As the proposed clearing will be undertaken in a selective way, it is not likely to impact on the movement of fauna through the landscape or values of any mapped ecological linkages.

A site inspection undertaken by DER officers recorded the vegetation as open jarrah and marri forest transitioning to melaleuca sp. thicket over heavy soils (DER, 2016).

A site inspection undertaken by DoW officers recorded the vegetation as an open forest in an excellent (Keighery, 1994) condition. The applicant has stated that "As habitat trees are rare at the site, they will all be retained. Mature individuals of second storey species such as large Grasstrees, and Banksia Spp., will be retained to ensure diversity is maintained", (DoW, 2016).

Six threatened and seven priority fauna species have been recorded within the local area and may utilise the application area (Parks and Wildlife, 2007-). Noting that all large habitat trees as well as fallen habitat logs will be retained (DoW, 2016), and given the selective nature of the clearing and that foraging habitat in similar or better condition remains in the local area, the proposed clearing is not likely to have a significant impact on threatened fauna.

A condition to retain fauna habitat trees as well as a minimum basal area is likely to ensure that impacts to significant habitat for fauna indigenous to Western Australia are minimised.

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

Methodology References:
DER (2016)
DoW (2016)
Keighery (1994)
Parks and Wildlife (2007-)

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

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

A site inspection undertaken by DER officers recorded the vegetation as open jarrah and marri forest transitioning to melaleuca sp. thicket over heavy soils (DER, 2016). A site inspection undertaken by DoW officers recorded the vegetation as an open forest in an excellent (Keighery, 1994) condition.

One rare flora species has been recorded within the local area (10 kilometre radius). The preferred habitat for this species is defined as creeklines (Western Australian Herbarium, 1998-).

Parks and Wildlife has advised that an additional rare flora species may be present within the application area, "The wetland vegetation of this area is likely to be very poorly known floristically, several wetlands in the Collie area support heavy clay soils that have not been impacted by salinity, these are of conservation value and may support populations of threatened species", Parks and Wildlife (2016).

The habitat for this flora species is described as "Brown loamy clay. Winter-wet swamps, in shallow water", Western Australian Herbarium (1998-).

The applicant has stated that "The riparian area to the south of the block will be retained for biodiversity retention and fauna refuge and will not be thinned or burnt", (DoW, 2016). A condition to exclude wetland vegetation and an appropriate buffer from clearing is likely to mitigate any potential impacts to these species if present.

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

Methodology

References:

DER (2016)
DoW (2016)
Parks and Wildlife (2016)
Keighery (1994)
Western Australian Herbarium (1998-)

GIS Datasets:

SAC Bio Datasets - accessed September 2016

(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

A site inspection undertaken by officers of the Department of Environment Regulation (DER) recorded the vegetation as open jarrah and marri forest transitioning to melaleuca sp. thicket over heavy soils (DER, 2016).

A site inspection undertaken by DoW officers recorded the vegetation as an open forest in an excellent (Keighery, 1994) condition.

No threatened or priority ecological communities have been recorded within the local area (10 kilometre radius).

Parks and Wildlife has advised "The wetland vegetation of this area is likely to be very poorly known floristically, several wetlands in the Collie area support heavy clay soils that have not been impacted by salinity, these are of conservation value and may support populations of threatened species such as ... and may themselves represent an occurrence of the Federally listed 'Claypans of the Swan Coastal Plain' TEC", Parks and Wildlife (2016).

Given this and as inundated clay soils were identified within the application area (DER, 2016), the proposed clearing may contain vegetation representative of the Claypans of the Swan Coastal Plain TEC. The applicant has stated that "The riparian area to the south of the block will be retained for biodiversity retention and fauna refuge and will not be thinned or burnt", (DoW, 2016). However, the boundary of clearing as well as wetland dependant vegetation within the application area has not been defined.

A condition to exclude wetland vegetation and an appropriate buffer from clearing is likely to mitigate any potential impacts to this TEC. In determining the location of wetland buffers, Environmental Protection Authority (EPA) Guidance Statement No. 33 'Environmental Guidance for Planning and Development' states, "wetlands that are to be protected require a minimum 50 metre buffer distance" (EPA, 2008).

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

Methodology

References:

DER (2016)
DoW (2016)
EPA (2008)
Keighery (1994)

(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 Jarrah Forest Interim Biogeographic Regionalisation of Australia (IBRA) bioregion. This IBRA bioregion retains approximately 54 per cent pre-European vegetation extent (Government of Western Australia, 2015).

The application area is mapped as Beard vegetation association 3 of which there is approximately 67 per cent pre-European extent remaining within the Jarrah Forest bioregion (Government of Western Australia, 2015).

The application area is located within the Shire of Collie, within which there is approximately 83 per cent of pre-European extent remaining (Government of Western Australia, 2015).

Mapped Mattiske vegetation association's CF, CI, D1 and Yg1 retain approximately 60, 69, 87 and 81 per cent native vegetation respectively (Parks and Wildlife, 2015). The local area (10 kilometre radius) retains approximately 80 per cent, pre-European native vegetation cover. A significant amount of this vegetation is contained within Parks and Wildlife managed estate.

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

Given the amount of vegetation within the local area and as all mapped vegetation associations retain above the recommended 30 per cent native vegetation, the application area is not likely to be a significant remnant within a highly cleared landscape.

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

Table 1: Vegetation statistics

	Pre-European (ha)	Current Extent (ha)	Remaining (%)	Extent in Parks and Wildlife Managed Lands (%)
IBRA Bioregion* Jarrah Forest	4,506,660	2,422,783	54	69
Shire* Shire of Collie	170,198	141,297	83	89
Beard Vegetation Association in Bioregion* 3	2,390,591	1,611,061	67	81
Mattiske Vegetation Association**				
CF	6,237	3,751	60	47
CI	11,005	7,648	69	61
D1	208,515	181,201	87	82
Yg1	80,203	65,249	81	74

Methodology References:
Commonwealth of Australia (2001)
*Government of Western Australia (2015)
**Parks and Wildlife (2015)

(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 not likely to be at variance to this Principle

A minor perennial watercourse crosses through the southern section of the application area. A site inspection undertaken by DER officers recorded areas inundated by water and un-mapped surface water flows across the application area (DER, 2016).

The applicant has stated that "The riparian area to the south of the block will be retained for biodiversity retention and fauna refuge and will not be thinned or burnt", (DoW, 2016). However, the boundary of clearing as well as wetland dependant vegetation within the application area has not been defined.

A condition to exclude wetland vegetation and a 50 metre buffer from clearing is likely to mitigate any potential impacts to wetland vegetation. In determining the location of wetland buffers, Environmental Protection Authority (EPA) Guidance Statement No. 33 'Environmental Guidance for Planning and Development' states, "wetlands that are to be protected require a minimum 50 metre buffer distance" (EPA, 2008).

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

Methodology **References:**

DER (2016)
DoW (2016)
EPA (2008)

GIS Datasets:

Hydrography linear

(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**

Soils within the amended application area have been mapped within the following land units (Schoknecht et al., 2004):

- Dwellingup ironstone gravel divides Phase which is described as "The soil parent material is laterite, soils are gravels with some sands";
- Hester ironstone gravel ridges Phase which is described as "Soil parent material is laterite. Soils are gravels with some sands and loams"; and
- Yarragil downstream valleys Phase which is described as "Shallow, narrow valleys. Relief 20-40 metres, slopes 3-10 per cent. Valley floor is narrower than upstream phase. Soil parent materials are laterite, granite and gneiss. Soils are loamy gravels, loamy earths and deep sandy gravels".

As large deep rooted native vegetation will not be removed and given the amount of vegetation in the local area (80 per cent native vegetation within 10 kilometres), the proposed clearing is not likely to cause or exacerbate salinity. As the area will be selectively cleared with significant over storey and mid storey retained, sufficient vegetation is likely to remain to mitigate any potential wind erosion.

A minor perennial watercourse crosses through the southern section of the application area. A site inspection undertaken by DER officers recorded areas inundated by water and un-mapped surface water flows across the application area (DER, 2016). The applicant has stated that "The riparian area to the south of the block will be retained for biodiversity retention and fauna refuge and will not be thinned or burnt", (DoW, 2016). However, the boundary of clearing as well as wetland dependant vegetation within the application area has not been defined.

As the proposed clearing has the potential to remove vegetation along a watercourse it may lead to land degradation through water erosion and increased sedimentation of the watercourse. A condition to exclude wetland vegetation and a 50 metre buffer from clearing is likely to mitigate the potential for water erosion and increased sedimentation.

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

Methodology **References:**

DER (2016)
DoW (2016)
Schoknecht et al. (2004)

GIS Datasets:

Land degradation risk categories
Hydrography linear
Soil subsystem

(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**

Harris River State Forest adjoins the application area to the north. As the proposed clearing is for selective clearing and given the amount of vegetation remaining in the local area (80 per cent native vegetation within 10 kilometres), much of which falls within conservation estate, the proposed clearing is not likely to impact on the environmental values of any adjacent or nearby conservation area.

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

The spread of weeds or dieback through the reserve as a result of the clearing has the potential to impact on the conservation area. Weed and dieback management measures will assist in minimising the potential for weeds and dieback to spread into adjoining vegetation.

Methodology GIS Datasets:
Parks and Wildlife Tenure

(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

A minor perennial watercourse crosses through the southern section of the application area. A site inspection undertaken by DER officers recorded areas inundated by water and un-mapped surface water flows across the application area (DER, 2016).

As large deep rooted native vegetation will not be removed and given the amount of vegetation in the local area (80 per cent native vegetation within 10 kilometres), the proposed clearing is not likely to deteriorate the quality of surface or ground water through salinity.

As the proposed clearing area includes vegetation along a watercourse it may lead to land degradation through water erosion, increased sedimentation and a corresponding deterioration in the quality of surface water. The applicant has stated that "The riparian area to the south of the block will be retained for biodiversity retention and fauna refuge and will not be thinned or burnt", (DoW, 2016). Retaining a vegetated buffer from any watercourse or wetland within the application area would mitigate the risk of deterioration in the quality of surface water.

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

Methodology References:
DER (2016)
DoW (2016)

GIS Datasets:
Land degradation risk categories
Hydrography linear
Soil subsystems

(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 mapped soil units within the application area have been mapped with a low risk of waterlogging and flooding (Schoknecht et al., 2004).

As the clearing will be undertaken in a selective manner with all large trees and mid storey retained, it is not likely to cause, or exacerbate, the incidence or intensity of flooding.

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

Methodology References:
Schoknecht et al. (2004)

GIS Datasets:
Hydrography linear

Planning instrument, Native Title, Previous EPA decision or other matter.

Comments The applicant has stated, "The Department plans on carrying out a thinning of the 185.4 hectare Rees Block for the purposes of bushfire hazard reduction and improving forest health. The thinning will form part of a nationwide research trial looking at mechanical fuel reduction methods for bush mitigation purposes", DoW (2016).

The contract to undertake the trial was awarded to the University of Sunshine Coast. The DoW is providing the research site as one of the partners in the West Australian aspect of the trials.

In support of the clearing application, DoW (2016) states, "The land was burnt ~20 years ago, and since then, the undergrowth has become quite thick and fuel loads reached in excess of 150 T/ha. The area contains critical state electricity and water infrastructure, including the Great Southern Towns Water Supply Scheme pipeline. It also neighbours a workers settlement and is only 3kms from the town of Collie. In a bushfire situation, the prevailing winds would carry a fire from Lot 9 towards the town".

The specific objectives for the forest are stated as (DoW, 2016):

- "Thin from below to remove less vigorous and or suppressed trees (mimicking the natural thinning process)";
- "Reduce fuel loads to reduce bushfire risk to neighbouring workers settlement, electricity and water infrastructure and the ultimately the Collie town site";
- "Thin the area for increased water run-off and recharge to local groundwater aquifers"; and
- "Protect larger and dead habitat trees from wildfire and thinning operations".

An Aboriginal Site of Significance has been mapped within the application area, corresponding with the location of the mapped watercourse. The applicant will be advised to contact the Department of Aboriginal Affairs in relation to their obligations under the *Aboriginal Heritage Act, 1972*.

The application was advertised in *The West Australian* newspaper on 8 August 2016 with a 21 day submission period. One request from the public was received in relation to this application, requesting further information on the proposed clearing. The 'Native Forest Harvest Management Plan' (DoW, 2016) provided by the applicant has been forwarded. No further comment or submission's have been received.

Methodology References:
DoW (2016)

GIS Datasets:
Aboriginal Sites of Significance

4. References

- Commonwealth of Australia (2001) National Objectives and Targets for Biodiversity Conservation 2001-2005, Canberra.
- Department of Environment Regulation (DER) (2016) Site Inspection Report for clearing permit application CPS 7169/1. Inspection undertaken 8 September 2016 (DER ref: A1173988).
- 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 September 2016.
- Department of Parks and Wildlife (Parks and Wildlife)(2015) South West Forest and Swan Coastal Plain Vegetation Complex Statistics: a report prepared for the Department of Environment Regulation. Current as of March 2015. Department of Parks and Wildlife, Perth, Western Australia.
- Department of Parks and Wildlife (Parks and Wildlife)(2016) Advice received in relation to clearing permit application CPS 7169/1. Received 20 September 2016 (DER ref: A1172835).
- Department of Water (DoW)(2016) Native Forest Harvest Management Plan, Lot 9 on Plan 14975, Collie. Submitted in support of clearing permit application CPS 7169/1. 19 August 2016 (DER ref: A1172835).
- Environmental Protection Authority (EPA)(2008) Environmental Guidance for Planning and Development. Guidance Statement No. 33. May 2008.
- Government of Western Australia (2015) 2015 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of June 2015. WA Department of Parks and Wildlife, Perth.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Mattiske, E.M. and Havel, J.J. (1998) Vegetation Complexes of the South-west Forest Region of Western Australia. Maps and report prepared as part of the Regional Forest Agreement, Western Australia for the Department of Conservation and Land Management and Environment Australia.
- Schoknecht, N., Tille, P. and Purdie, B. (2004) Soil-landscape mapping in South-Western Australia – Overview of Methodology and outputs' Resource Management Technical Report No. 280. Department of Agriculture.
- Shepherd, D.P., Beeston, G.R., and Hopkins, A.J.M. (2001), Native Vegetation in Western Australia. Technical Report 249. Department of Agriculture Western Australia, South Perth.
- Western Australian Herbarium (1998-) FloraBase - The Western Australian Flora. Department of Parks and Wildlife. <http://florabase.dpaw.wa.gov.au/> (Accessed September 2016).