



## 1. Application details

### 1.1. Permit application details

Permit application No.: 2043/1  
Permit type: Purpose Permit

### 1.2. Proponent details

Proponent's name: Shire of West Arthur

### 1.3. Property details

Property: LOT 101 ON PLAN 19020 ( WILLIAMS 6391)  
 LOT 1 ON PLAN 9770 (House No. 3094 QUINDANNING-DARKAN WILLIAMS 6391)  
 LOT 1 ON PLAN 9770 (House No. 3094 QUINDANNING-DARKAN WILLIAMS 6391)  
 LOT 1594 ON PLAN 115380 ( WILLIAMS 6391)  
 LOT 1594 ON PLAN 115380 ( WILLIAMS 6391)  
 LOT 1595 ON PLAN 141054 ( WILLIAMS 6391)  
 LOT 1595 ON PLAN 141054 ( WILLIAMS 6391)

Local Government Area: Shire Of Williams  
 Colloquial name:

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
9		Mechanical Removal	Drainage
		Mechanical Removal	Drainage
		Mechanical Removal	Drainage
		Mechanical Removal	Drainage

## 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
<p>There are two Beard (1980) mapped vegetation associations within the area under application:</p> <ul style="list-style-type: none"> <li>- association 4: medium woodland; <i>Corymbia calophylla</i> (Marri) and <i>Eucalyptus wandoo</i> (Wandoo); and</li> <li>- association 3: medium forest; <i>Eucalyptus marginata</i> (Jarrah) - <i>Corymbia calophylla</i> (Marri).</li> </ul> <p>There are three Matiske (1998) mapped vegetation complexes within the area under application:</p> <ul style="list-style-type: none"> <li>- Dk5: low woodland of <i>Casuarina obesa</i> (Swamp Sheoak) - <i>Melaleuca</i> spp. on low lying moister soils, and woodland of <i>Banksia prionotes</i> (Acorn Banksia) with occasional <i>Corymbia calophylla</i> (Marri) and <i>Eucalyptus rudis</i> (Flooded</li> </ul>	<p>A site inspection was undertaken by DEC staff on 4 January 2008. The area under application comprises predominantly of mature trees over introduced paddock grasses, with little indication of natural regeneration. Along the edges of the natural watercourse (Hillman River South) to the west of Quindanning Darkan Road the proposed clearing will impact predominantly on mature <i>Eucalyptus rudis</i> (Flooded Gum) over introduced paddock grasses. East of the Quindanning Darkan Road the proposed clearing will impact on an area of revegetation comprising what appear to be <i>Casuarina obesa</i> (Swamp Sheoak) and <i>Melaleuca cuticularis</i> (Saltwater Paperbark) over 3-4 species of shrubs. Vegetation within the Quindanning Darkan Road includes <i>Eucalyptus rudis</i></p>	<p>Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery 1994)</p>	<p>No supporting information regarding the composition, structure and condition of the vegetation.</p>



Gum) over *Acacia acuminata* (Jam) on sandy lunettes in the arid zone;

(Flooded Gum), *Acacia acuminata* (Jam) and *Dianella* sp.

- Dk2: mixture of open woodland of *Eucalyptus marginata* subsp. *marginata* (Jarrah) - *Banksia attenuata* (Candle Banksia) and low open woodland of *Eucalyptus wandoo* (Wandoo) and stands of *Eucalyptus drummondii* (Drummond's Gum, northern) and *Eucalyptus decipiens* (southern) on lower slopes in the arid zone; and

Thus the vegetation present within the area under application is surmised to be loosely consistent with Mattiske complexes Dk5, LK2 and Dk4 described above, and the average condition of the vegetation can be described as 'degraded' on the Keighery (1994) scale.

- LK2: woodland of *Eucalyptus wandoo* (Wandoo) with some mixtures of *Eucalyptus marginata* subsp. *thalassica* (Jarrah) and *Corymbia calophylla* (Marri) on the valley slopes with occasional *Eucalyptus rudis* (Flooded Gum) on valley floors in semiarid and arid zones.

A further two Mattiske (1998) mapped vegetation complexes may be impacted by the proposal:

- Dk4: woodland of *Eucalyptus wandoo* (Wandoo) - *Allocasuarina huegeliana* (Rock Sheoak) - *Acacia acuminata* (Jam) on slopes and woodland of *Eucalyptus rudis* (Flooded Gum) on lower slopes in the arid zone; and

- Dk1: woodland of *Eucalyptus marginata* subsp. *marginata* (Jarrah) - *Eucalyptus wandoo* (Wandoo) - *Corymbia calophylla* (Marri) over *Dryandra sessilis* (Parrot Bush) on uplands in the arid zone.

### 3. Assessment of application against clearing principles

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

##### Comments

##### **Proposal is not likely to be at variance to this Principle**

This application for a purpose permit proposes the clearing of up to 9 hectares of native vegetation in a linear fashion of approximately 9 kilometres long x 10 metres wide along Hillman River South (Shire of Williams), to facilitate the construction of an Environmental Engineering Initiative Drain by the South West Catchment Council, Department of Water, and Shire of West Arthur LCDC.

The proposal affects four private properties and Quindanning Darkan Road road reserve. Letters authorising the submission of an application for a clearing permit to undertake the clearing have been signed by the private property owners.

There are two Beard (1980) mapped vegetation associations within the area under application. The proposed clearing impacts predominantly on association 4, with approximately 12% of the proposed clearing impacting on association 3. Aerial photography indicates that in a local context, within a 5 kilometre radius of the area under application these associations are well represented in large continuous areas of remnant vegetation on private property and Timber Reserves and State Forest.





There are three Matiske (1998) mapped vegetation complexes within the area under application. Approximately 46% of the proposed clearing impacts on complex Dk5, with approximately 30% of the proposed clearing impacting on complex Dk2 and approximately 24% of the proposed clearing impacting on complex LK2. At the eastern end of the area under application there may be an impact on a small area of Dk4, approximately half way along the area under application there may be an impact on a small area of Dk1, and on the western side there may be an impact on a small area of DM2, depending on the final location of the proposed clearing. Aerial photography indicates that in a local context, within a 5 kilometre radius of the area under application the complexes Dk2 and LK2 are well represented in large continuous areas of remnant vegetation on private property and Timber Reserves and State Forest. Complex Dk5 appears to be associated with riparian corridors comprising scattered trees.

Given that a large proportion of the proposed clearing impacts on a vegetation complex that appears to be associated with riparian corridors, and that much of this complex in the local area appears to comprise scattered trees, it may be that the area under application comprises a high level of biodiversity.

A site inspection was undertaken by DEC staff on 4 January 2008. The site inspection determined that the area under application comprises predominantly of mature trees over introduced paddock grasses, with little indication of natural regeneration. Along the edges of the natural watercourse (Hillman River South) to the west of Quindanning Darkan Road the proposed clearing will impact predominantly on mature *Eucalyptus rudis* (Flooded Gum) over introduced paddock grasses. East of the Quindanning Darkan Road the proposed clearing will impact on an area of revegetation comprising what appear to be *Casuarina obesa* (Swamp Sheoak) and *Melaleuca cuticularis* (Saltwater Paperbark) over 3-4 species of shrubs. Vegetation within the Quindanning Darkan Road includes *Eucalyptus rudis* (Flooded Gum), *Acacia acuminata* (Jam) and *Dianella* sp.

Thus the vegetation present within the area under application is surmised to be loosely consistent with Matiske complexes Dk5, LK2 and Dk4 described above, and the average condition of the vegetation can be described as 'degraded' on the Keighery (1994) scale. For this reason it is not considered that the area under application comprises a high level of biodiversity.

**Methodology** Site inspection report - 04/01/08  
GIS dataset  
- Pre-European Vegetation  
- Matiske Vegetation  
- Darkan 50cm Orthomosaic - Landgate 05

**(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 Proposal may be at variance to this Principle**

There are over 50 recorded occurrences of Threatened and Priority fauna within a 50 kilometre radius of the area under application, most associated with State Forest and other DEC-managed lands, and more than half being Threatened species. The nearest recorded occurrence is approximately 8.3 kilometres from the area under application. The lack of close-proximity records does not necessarily indicate a lack of occurrence, it may indicate that fauna have not yet been surveyed or reported in this vicinity.

The vegetation associations and complexes within the area under application, and aerial photography indicating scattered trees in some areas, indicate the presence of mature trees. These are likely to be Flooded Gum and possibly Marri and Wandoo and others, and some are likely to have hollows suitable for avian and arboreal fauna.

The proposed clearing occurs within vegetation along a watercourse that provides a degree of connectivity between large areas of remnant vegetation. A site inspection undertaken by DEC staff on 4 January 2008 determined the presence of mature *Eucalyptus rudis* (Flooded Gum) throughout the area under application, some of which may contain hollows suitable for avian and arboreal fauna. For these reasons the area under application may comprise significant fauna habitat.

**Methodology** Site inspection report - 04/01/08  
GIS dataset  
- SAC Bio dataset - Fauna 24/10/07  
- Pre-European Vegetation  
- Matiske Vegetation  
- Darkan 50cm Orthomosaic - Landgate 05

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

**Comments Proposal is not likely to be at variance to this Principle**

There are approximately 50 recorded occurrences of Declared Rare and Priority Flora within a 50 kilometre radius of the areas under application, approximately 20% of these comprise Declared Rare Flora. Some of





these records occur within the same vegetation associations and on similar soil / geomorphology types as those found within the areas under application. The nearest recorded occurrence is approximately 14.5 kilometres from the area under application. The lack of close-proximity records does not necessarily indicate a lack of occurrence, it may indicate that flora have not yet been surveyed or reported in this vicinity.

Aerial photography indicates that the vegetation within the area under application appears to comprise scattered trees along a riparian corridor. While this vegetation may provide an important ecological linkage between areas of remnant vegetation, given previous disturbance and the current condition it is unlikely to support populations of rare flora.

- Methodology** GIS dataset
- Soils Statewide DAWA 1999
  - Pre-European Vegetation
  - Matiske Vegetation
  - Darkan 50cm Orthomosaic - Landgate 05
  - SAC Bio dataset - DeFI 2007

**(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 Proposal is not likely to be at variance to this Principle**

There is one known occurrence of Threatened Ecological Communities (TECs) within a 50km radius of the areas under application. This is located approximately 44.5 kilometres from the area under application. The lack of close-proximity records does not necessarily indicate an absence of TECs, it may indicate that vegetation has not yet been surveyed in this vicinity.

Given that the area under application occurs within two Beard (1980) vegetation associations that appear to be well represented in large continuous areas of remnant vegetation in conservation estate within a 5 kilometre radius, and that aerial photography indicates that the vegetation within the area under application appears to comprise scattered trees along a riparian corridor, it is not likely that the habitat within the area under application is significant for TECs.

- Methodology** GIS dataset
- SAC Bio dataset - TEC 2005/01/07
  - Pre-European Vegetation
  - Darkan 50cm Orthomosaic - Landgate 05

**(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 Proposal may be at variance to this Principle**

There are two Beard (1980) mapped vegetation associations within the area under application. The proposed clearing impacts predominantly on association 4, with approximately 12% of the proposed clearing impacting on association 3.

There are three Matiske (1998) mapped vegetation complexes within the area under application. Approximately 46% of the proposed clearing impacts on complex Dk5, with approximately 30% of the proposed clearing impacting on complex Dk2 and approximately 24% of the proposed clearing impacting on complex LK2. At the eastern end of the area under application there may be an impact on a small area of Dk4, approximately half way along the area under application there may be an impact on a small area of Dk1, and on the western side there may be an impact on a small area of DM2, depending on the final location of the proposed clearing.

	Pre-European (ha)	Current extent (ha)	Remaining (%)	Conservation status **	Pre-European % in reserve/DEC
<b>IBRA Bioregions: #</b>					
- Jarrah Forest	4,544,335	2,665,480	58.7	Least Concern	
<b>Shire of West Arthur #</b>	282,614	84,226	29.8	Vulnerable	
<b>Beard vegetation association: *</b>					
- association 4	1,022,712	239,267	23.4	Vulnerable	6.4
- association 3	2,390,590	1,642,606	68.7	Least Concern	57.6
<b>Matiske vegetation complex:</b>					
- complex Dk5	48,993	11,278	23.0	Vulnerable	
- complex Dk2	173,163	24,767	14.3	Vulnerable	
- complex LK2	238,028	55,199	23.2	Vulnerable	
<b>possibly also:</b>					
- complex Dk4	90,382	11,604	12.8	Vulnerable	





- complex Dk1	186,181	54,248	29.1	Vulnerable
- complex DM2	414,704	140,882	34.0	Depleted

# statistics from Shepherd et al 2001 (Technical Report 249)

\* statistics from AGWA 2006 (Shepherd et al) - within IBRA Bioregion

\*\* Department of Natural Resources and Environment 2002

\*\*\* Within the Intensive Landuse Zone

A large proportion of the proposed clearing impacts on Beard association and Mattiske complexes that are considered to be 'Vulnerable'. Aerial photography indicates that in a local context, within a 5 kilometre radius of the area under application these Beard associations and Mattiske complexes are well represented in large continuous areas of remnant vegetation on private property and Timber Reserves and State Forest, with the possible exception of Mattiske complex Dk5.

Aerial photography indicates that Mattiske complex Dk5 appears to be associated with riparian corridors comprising scattered trees, thus providing a specialised habitat of variable condition that may therefore be considered significant as a remnant.

A site inspection undertaken by DEC staff on 4 January 2008 determined that the area under application contains vegetation that is surmised to be loosely consistent with Mattiske complexes Dk5, LK2 and Dk4 described above, and the average condition of the vegetation can be described as 'degraded' on the Keighery (1994) scale.

In addition, the area under application is believed to fall within the 'agricultural area' defined within EPA's position statement No.2. Within this area there is a general presumption against clearing for agricultural purposes, and deep drainage falls within this category.

A condition will be imposed on the clearing permit requiring that clearing of vegetation be avoided, and where this is not possible, minimised.

**Methodology** Site inspection report - 04/01/08  
 Beard 1980  
 DAWA 2001  
 EPA Position Paper No 2 Agriculture Region - DEP 12/00  
 GIS dataset  
 - Pre-European Vegetation  
 - Mattiske Vegetation  
 - Interim Biogeographic Regionalisation of Australia - EA 18/10/00  
 - Darkan 50cm Orthomosaic - Landgate 05

**(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** **Proposal is at variance to this Principle**  
 The area under application occurs within a watercourse situated low in the landscape (275-315 metres ASL). The directional flow of the water is approximately north-east, into the Hillman River and ultimately part of the Blackwood River system.

There are three Mattiske (1998) mapped vegetation complexes within the area under application. Two of these complexes (Dk5 and LK2) are characterised by the presence of species associated with wetlands and water courses, being *Casuarina obesa* (Swamp Sheoak), *Melaleuca* spp., and *Eucalyptus rudis* (Flooded Gum).

A site inspection undertaken by DEC staff on 4 January 2008 confirmed the presence of *Eucalyptus rudis* (Flooded Gum) along most of the proposed deep drainage alignment. The revegetation within the area under application included what appear to be *Casuarina obesa* (Swamp Sheoak) and *Melaleuca cuticularis* (Saltwater Paperbark), two species associated with watercourses.

**Methodology** Site inspection report - 04/01/08  
 GIS dataset  
 - Topographic Contours Statewide DOLA 2002  
 - Darkan 50cm Orthomosaic - Landgate 05  
 - Mattiske Vegetation

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

**Comments** **Proposal is not likely to be at variance to this Principle**  
 Given that the area under application is located at the top of a catchment, the proposed clearing may result in increased surface water runoff and water flow speed and therefore potentially waterlogging downstream at least





in the short term.

Salinity mapping and salinity risk indicate that the eastern half of area under application, which is located at the top of a catchment, is subject to increasing salinity. It is not expected that the proposed clearing of 9 hectares of vegetation along several kilometres of drainage channel to enhance the flow of water through the system will exacerbate the spread of salinity, although the removal of deep-rooted vegetation may have an effect on the depth of the local water table.

There are two dominant soil types within the area under application (JZ2 and Tf3). Both are characterised by undulating relief and valleys, with lateritic gravels and (to some extent) sandy acidic yellow mottled soils. The soils present within the area under application have predominantly a low to moderate potential for water erosion, and a low to moderate potential for acidification.

Advice received from the Department of Agriculture and Food WA (TRIM Ref. DOC42473) indicates that the clearing is unlikely to be at variance with this principle. DAFWA advice describes the vegetation condition to be degraded through grazing, waterlogging and salinity, and does not consider that the proposed clearing will result in a significant change to depth of the local water table, nutrient runoff, wind or water erodibility of the soil, waterlogging, flooding or soil acidification.

**Methodology** DAFWA (2007) advice on principle (g) land degradation. TRIM Ref. DOC42473  
Schoknecht 2002  
GIS dataset  
- Salinity Mapping LM (25m) DOLA 2000  
- Salinity Risk LM (25m) DOLA 2000  
- Topographic Contours Statewide DOLA 2002  
- Soils Statewide DAWA 1999

**(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** **Proposal is not likely to be at variance to this Principle**  
Aerial photography indicates that in a broader landscape context, within a 50 kilometre radius of the area under application approximately 20% of the landscape is contained within DEC-managed conservation estate (predominantly State Forest) plus some areas under private management agreement (covenants etc). In a local context however, within a 5 kilometre radius of the area under application approximately 10% of the landscape is contained within DEC-managed conservation estate.

The nearest conservation areas to the area under application are Timber Reserve 172/25 (1.2 kilometres), Muja State Forest (2.2 kilometres), Boolading Nature Reserve (8.6 kilometres), Hillman Nature Reserve (11.2 kilometres), a National Trust of Australia (WA) conservation covenant site (11.7 kilometres), and Lavender Nature Reserve (15.9 kilometres). Given that all of these areas occur within different catchments it is unlikely that the proposed clearing will impact on them.

**Methodology** GIS dataset  
- Ramsar Wetlands CALM 2003  
- Topographic Contours Statewide DOLA 2005  
- Darkan 50cm Orthomosaic - Landgate 05  
- System 1-5 and 7-12 Areas DOE 1995  
- CALM Managed Lands and Waters CALM 2005  
- Clearing Regulations - Environmentally Sensitive Areas DOE 2005  
- Agreement to Reserve (ATRs)  
- Register of the National Estate EA 2003  
- SAC Bio dataset - Covenants CALM 2006  
- SAC Bio dataset - National Trust of Australia (WA) covenant sites 2006

**(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** **Proposal is not likely to be at variance to this Principle**  
The western-most end of the area under application is adjacent to a Public Drinking Water Source Area, being the Wellington Dam catchment area. It is unlikely that the proposed clearing will have an impact on water quality within this catchment as the directional water flow within the area under application is approximately north-east, away from the Wellington Dam catchment.

Given that the proposed clearing is to occur at the top of the catchment, the proposed clearing may result in increased surface water runoff and water flow speed and therefore potentially an increase in turbidity and sedimentation downstream at least in the short term. In the long term it is not expected that the proposed clearing will impact on the quality of surface or ground water.

**Methodology** GIS dataset





- Topographic Contours Statewide DOLA 2002
- Darkan 50cm Orthomosaic - Landgate 05
- Public Drinking Water Source Areas - DOW August 2006

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

**Comments** **Proposal is not likely to be at variance to this Principle**  
 The area under application receives approximately 700 millimetres of rainfall per year, with an evaporation rate of approximately 600 millimetres per year (resulting in approximately 100 millimetres of recharge per year).

Given that the area under application is located at the top of a catchment, the proposed clearing may result in increased surface water runoff and water flow speed and therefore potentially affect the incidence and intensity of flooding downstream at least in the short term.

Advice received from the Department of Agriculture and Food WA (TRIM Ref. DOC42473) indicates that the clearing is unlikely to be at variance with this principle. DAFWA advice describes the vegetation condition to be degraded through grazing, waterlogging and salinity, and does not consider that the proposed clearing will result in a significant change to waterlogging or flooding.

**Methodology** DAFWA (2007) advice on principle (g) land degradation. TRIM Ref. DOC42473  
 GIS dataset  
 - Evapotranspiration Area Actual BOM 2001  
 - Mean Annual Rainfall Isohyets BOM 2001  
 - Topographic Contours Statewide DOLA 2002

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

**Comments**  
 This proposal to undertake clearing aims to enhance the movement of water through the river system, which may have a benefit to the long-term survival of remnant vegetation in the upper catchment (in relation to salinity).

The preliminary notice of intent to drain (NOID) process raised 'objection' to the design of the proposed drain on hydrological grounds. Subsequent amendment to the design of the proposed drain resulted in 'no objection' advice from the Soil and Land Commissioner (DAFWA).

The clearing permit will impose a condition requiring that clearing of vegetation be avoided, and where this is not possible, minimised.

**Methodology** DAFWA (28Mar08) NOID advice of no objection. TRIM Ref. DOC49678

**4. Assessor's comments**

Purpose	Method	Applied area (ha)/ trees	Comment
Drainage	Mechanical Removal	9	Construction of an Environmental Engineering Initiative Drain (South West Catchment Council, Dept of Water & West Arthur LCDC).  The assessing officer has assessed the application and found that the proposed clearing: - is at variance with principle f); - may be at variance with principles b) and e); and - is not likely to be at variance with principles a), c), d), g), h) i) and j).
Drainage	Mechanical Removal		
Drainage	Mechanical Removal		
Drainage	Mechanical Removal		

**5. References**

AGPS (2001) The national objective and targets for biodiversity conservation 2001-2005. Commonwealth of Australia, Canberra.  
 DAFWA (2007) advice on principle (g) land degradation. TRIM Ref. DOC42473  
 EPA (2000) Environmental protection of native vegetation in Western Australia. Clearing of native vegetation, with particular reference to the agricultural area. Position Statement No. 2. December 2000. Environmental Protection Authority.  
 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 Consulting (1998) Mapping of vegetation complexes in the South West forest region of Western Australia, CALM.  
 Schoknecht N. (2002) Soil Groups of Western Australia. A simple guide to the main soils of Western Australia. Resource



## 6. Glossary

Term	Meaning
BCS	Biodiversity Coordination Section of DEC
CALM	Department of Conservation and Land Management (now BCS)
DAFWA	Department of Agriculture and Food
DEC	Department of Environment and Conservation
DEP	Department of Environmental Protection (now DEC)
DoE	Department of Environment
DoIR	Department of Industry and Resources
DRF	Declared Rare Flora
EPP	Environmental Protection Policy
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
TEC	Threatened Ecological Community
WRC	Water and Rivers Commission (now DEC)

