GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose permit number:	CPS 911/2
Permit holder:	Water Corporation
Purpose of clearing:	Dam maintenance, road construction and maintenance and quarrying and rehabilitation.
Duration of permit:	17 February 2008 – 17 February 2020

The permit holder is authorised to clear native vegetation for the above stated purposes, subject to the conditions of this Permit.

PART I –CLEARING AUTHORISED

1. **Purpose for which clearing may be done**
   Clearing of up to 8.4 hectares of native vegetation for the following purposes:
   (a) construction spillway and embankment (3.0ha);
   (b) quarry haul Road and vehicle access (2.16 ha);
   (c) downstream construction area (3.2ha); and
   (d) quarry access and quarrying activities (0.06ha).

2. **Land on which clearing is to be done**
   State Forest No. 14, Hoffman, 6220 (PIN: 1045910)

3. **Area of Clearing**
   The Permit Holder must not clear more than 8.4 hectares of native vegetation within the area hatched yellow on attached Plan 911/2.

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.

5. **Compliance with Assessment Sequence and Management Procedures**
   Prior to clearing any native vegetation under conditions 1 and 2 of this Permit, the permit holder must comply with the Assessment Sequence and the Management Procedures set out in Part II of this Permit.

PART II – ASSESSMENT SEQUENCE AND MANAGEMENT PROCEDURES

6. **Avoid, minimise etc clearing**
   In determining the amount of native vegetation to be cleared for the purposes of road and bridge upgrades and extractive industry the Permit Holder must have regard to the following principles, set out in order of preference:
   (a) avoid the clearing of native vegetation;
   (b) minimise the amount of native vegetation to be cleared; and
   (c) reduce the impact of clearing on any environmental value.

7. Dieback and weed control

(a) 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*:

(i) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;

(ii) shall only move soils in *dry conditions*;

(iii) ensure that no *dieback* or *weed*-affected soil, *mulch*, *fill* or other material is brought into the area to be cleared; and

(iv) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

(b) At least once in each 12 month period for the term of this Permit, the Permit Holder must remove or kill any *weeds* growing within areas cleared under this Permit.

8. Revegetation

(a) The Permit Holder shall retain the vegetative material and topsoil removed by clearing in accordance with this Permit.

(b) The Permit Holder must revegetate all areas cleared and no longer required for a purpose authorised by this permit within 12 months by:

(i) Deliberately planting and/or seeding native vegetation that will result in a similar species composition, structure and density of native vegetation to pre-clearing vegetation types in that area;

(ii) Ensuring only local provenance seeds and propagating material from within 10km of the area cleared are used to revegetate the area;

(iii) Laying vegetative material and topsoil retained in accordance with condition8(a) on the area.

(c) Within one year of undertaking revegetation in accordance with condition 8(b), the Permit Holder must:

(i) Determine the species composition, structure and density of the area revegetated; and

(ii) Where, in the opinion of an *environmental specialist*, the composition structure and density determined under condition 8(c)(i) will not result in a similar species composition, structure and density to pre-clearing vegetation types in that area the Permit Holder must undertake additional planting or seeding of native vegetation in accordance with the requirements of condition 8(b)(i) and (ii).

9. Offsets

(a) Determination of offsets

(i) If part or all of the clearing to be done is or may be at variance with one or more of the clearing principles, then the permit holder must implement an *offset* in accordance with Conditions 9(a) and 9(b) of this Permit with respect to that native vegetation.

(ii) In determining the *offset* to be implemented with respect to a particular area of native vegetation proposed to be cleared under this Permit, the permit holder must have regard to the offset principles contained in condition 9(b) of this Permit.

(iii) Once the permit holder has developed an *offset* proposal, the permit holder must provide that *offset* proposal to the CEO for the CEO's approval prior to undertaking any clearing to which the *offset* relates, and prior to implementing the *offset*.

(iv) Clearing may not commence until and unless the CEO has approved the *offset* proposal.

(v) The permit holder shall implement the *offset* proposal approved under condition 9(a)(iii).

(vi) Each *offset* proposal shall include a *direct offset*, timing for implementation of the *offset* proposal and may additionally include *contributing offsets*.

(b) Offset principles

For the purpose of this Part, the offset principles are as follows:

(i) *direct offsets* should directly counterbalance the loss of the native vegetation;
(ii) *contributing offsets* should complement and enhance the *direct offset*;
(iii) *offsets* are implemented only once all avenues to avoid, minimise, rectify or reduce environmental impacts have been exhausted;
(iv) the *environmental values*, habitat, species, ecological community, physical area, ecosystem, landscape, and hydrology of the *offset* should be the same as, or better than, that of the area of native vegetation being *offset*;
(v) a ratio greater than 1:1 should be applied to the size of the area of native vegetation that is *offset* to compensate for the risk that the *offset* may fail;
(vi) *offsets* must entail a robust and consistent assessment process;
(vii) in determining an appropriate *offset*, consideration should be given to ecosystem function, rarity and type of *ecological community*, vegetation *condition*, habitat quality and area of native vegetation cleared;
(viii) the *offset* should either result in no net loss of native vegetation, or lead to a net gain in native vegetation and improve the condition of the natural environment;
(ix) *offsets* must satisfy all statutory requirements;
(x) *offsets* must be clearly defined, documented and audited;
(xi) *offsets* must ensure a long-term (10-30 year) benefit; and
(xii) an *environmental specialist* must be involved in the design, assessment and monitoring of *offsets*.

PART III – RECORD KEEPING AND REPORTING

10. Records must be kept

The Permit Holder must maintain the following records for activities done pursuant to this Permit, as relevant:

(a) In relation to the clearing of native vegetation undertaken pursuant to condition 1:
(i) The species composition, structure and density of the cleared area;
(ii) The location where the clearing occurred, recorded using Geocentric Datum Australia 1994;
(iii) The date that the area was cleared; and
(iv) The size of the area cleared (in hectares).

(b) In relation to *revegetation* of areas pursuant to condition 8:
(i) The commencement date of *revegetation*;
(ii) The location of any area *revegetated* recorded using Geocentric Datum Australia 1994;
(iii) A description of the *revegetation* activities undertaken;
(iv) The size of the area *revegetated* (in hectares);and
(v) The species, structure and composition of *revegetation* measured.

(c) In relation to the *offsets* of areas pursuant to condition 9:
(i) the location of any area of *offsets* recorded using Geocentric Datum Australia 1994;
(ii) a description of the *offset* activities undertaken; and
(iii) the size of the *offset* area (in hectares).

11. Reporting

(a) The Permit Holder must provide to the CEO on or before 30 June of each year, a written report:
(i) of records required under condition 10 of this Permit; and
(ii) concerning activities done by the Permit Holder under this Permit between 1 January and 31 December of the preceding year.

(b) Prior to 17 November 2019, the Permit Holder must provide to the CEO a written report of records required under condition 10 of this Permit where these records have not already been provided under condition 11(a) of this Permit.

Definitions

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

condition means the rating given to native vegetation using the *Keighery scale* and refers to the degree of change in the structure, density and species present in the particular vegetation in comparison to undisturbed vegetation of the same type;

contributing offsets has the same meaning as is given to that term in the Environmental Protection Authority's *Position Statement No.9 Environmental Offsets*, January 2006;

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

direct offsets has the same meaning as is given to that term in the Environmental Protection Authority's *Position Statement No.9 Environmental Offsets*, January 2006;

environmental specialist means a person who is engaged by the permit holder for the purpose of providing environmental advice, who holds a tertiary qualification in environmental science or equivalent, and has experience relevant to the type of environmental advice that an environmental specialist is required to provide under this Permit;

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

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;

revegetate, revegetated, revegetation means the re-establishment of a cover of native vegetation in an area such that the species composition, structure and density is similar to pre-clearing vegetation types in that area, and can involve regeneration, direct seeding and/or planting;

road building materials means rock, gravel, soil, stone, timber, boulders and water;

term means the duration of this Permit, including as amended or renewed;

weed/s means a species listed in Appendix 3 of the "Environmental Weed Strategy" published by the Department of Conservation and Land Management (1999), and plants declared under section 37 of the *Agriculture and Related Resources Protection Act 1976*.

Kelly Faulkner
MANAGER
NATIVE VEGETATION CONSERVATION BRANCH

Officer delegated under Section 20
of the Environmental Protection Act 1986

21 June 2012

Plan 911/2

LEGEND

Clearing Instruments

Areas Approved to Clear

Perth Metropolitan South 40cm Orthomosaic - Landgate 2005

** Project Data. This data has not been quality assured. Please contact map author for details.*

N

0 ~300 m

Scale 1:11516

(Approximate when reproduced at A4)

Geocentric Datum Australia 1994

Note: the data in this map have not been projected. This may result in geometric distortion or measurement inaccuracies.

Date 21/6/12

K Faulkner

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

Information derived from this map should be confirmed with the data custodian acknowledged by the agency acronym in the legend.

Department of Environment and Conservation

Our environment, our future

Department of Environment and Conservation

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 911/2
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Water Corporation

1.3. Property details

Property: STATE FOREST 14 (HOFFMAN 6220)
Local Government Area: Shire of Waroona

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
8.4		Mechanical Removal	Dam construction or maintenance

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 21 June 2012

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
Mattiske Vegetation Complexes (Mattiske, 1998): Murray 1 - Open forest of Eucalyptus marginata subsp. marginata-Corymbia calophylla-Eucalyptus patens on valley slopes to woodland of fs24 Eucalyptus rudis-Melaleuca rhaphiophylla on the valley floors in humid and subhumid zones. Beard Vegetation Association (Shepherd, 2011): 3 Medium forest; jarrah-marri	The proposal includes the clearing a total of 8.4ha for the purpose of dam remedial works, comprising 3ha to construct a new spillway and embankments, 2.16ha for vehicle access to site, 3.2ha to establish a downstream construction area and 0.06ha for access to the blue metal quarry. The vegetation under application comprises two natural vegetation types which can be described as Jarrah (Eucalyptus marginata) and Marri (Corymbia calophylla) forest and wetland vegetation comprising Banksia littoralis, Melaleuca rhaphiophylla, Hakea lasianthoides, Gahnia decomposita and Pteridium esculentum. The vegetation is in excellent (Keighery, 1994) condition.	Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery 1994)	The Vegetation description was obtained from a flora survey conducted by GHD (2004) and during a site visit conducted by DEC officers on Friday 10 November 2006.

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 may be at variance to this Principle

The application was received to amend Clearing Permit 911/1 to extend the duration of the permit, decrease the total clearing area to 8.4 hectares by removing the access to the site from the west and to remove the rehabilitation of the old borrow pit as the vegetation proposed to clear within this site has been identified as black cockatoo habitat. A new access to the site has been identified.

The vegetation under application is described by GHD (2004) as having an overall condition of excellent, with 86 native flora species being identified within the applied area during a spring flora survey. All the priority flora species recorded within the local area (10km radius) are located in different vegetation complexes to the application area.

A flora and vegetation survey conducted by GHD (2004) identified two Priority species, Acacia oncinophylla subsp. oncinophylla located on the granite outcrop at the proposed quarry and Calothamnus rupestris which was found in small numbers along one of the southern access road options.

The local area is highly vegetated and the application area is surrounded by the Dwellingup State Forest No 14. Dieback has been mapped within the proposed clearing area and adjacent areas.

The area under application also contains both Jarrah and Marri forest vegetation growing in association with a watercourse and was identified as having the potential to support a range of indigenous fauna, including species of conservation significance.

Given the excellent (Keighery, 1994) condition of the vegetation under application and the potential for priority flora species to be within the footprint, the proposed clearing area may contain a high level of biodiversity. However as the site contains dieback, it may not hold as high a level of biodiversity as compared to surrounding vegetation. To mitigate the spread of weeds and dieback into adjacent vegetated areas, conditions will be imposed.

The proposed clearing may be at variance to this principle.

Methodology References:
GHD (2004)
Keighery (1994)

(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**

The area under application comprises two natural vegetation types which can be described as Jarrah forest and riparian vegetation. This vegetation is in excellent (Keighery, 1994) condition and is likely to have some habitat potential for arboreal and ground dwelling fauna.

During a flora survey conducted by GHD (2004) the Forest Red-Tailed Black Cockatoo (Calyptorhynchus banksii subsp. naso) (Threatened under the Wildlife Conservation Act 1950), was observed feeding and socialising in Jarrah (Eucalyptus marginata) and Marri (Corymbia calophylla) trees.

Mature Eucalyptus trees with hollows could potentially be utilised as habitat by the Forest Red-Tailed Black Cockatoo and other native species. The dense and intact understorey may provide habitat for ground dwelling fauna such as Quenda, a Priority 5 species.

A fauna survey conducted by Bamford Consulting Ecologists (2006) found that there should be a low to moderately low impact on the fauna in the applied area. This rating is plausible given that the application area is located within the boundaries of the Dwellingup State Forest and that the Jarrah forest is well represented in the local area.

The proposed clearing may be at variance to this principle. Offsets may mitigate the impacts of clearing to habitat for fauna of conservation significance.

Methodology Reference:
Bamford Consulting Ecologists (2006)
GHD (2004)
Keighery (1994)

(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**

Within a 10km radius of the applied area there is one known occurrence of the rare flora species, Tetraria Australiensis, located 9.7km to the southwest. It is found on the Swan Coastal Plain and is associated with a different land form and a different vegetation complex and soil type than the area under application, which is located in the Scarp.

An appropriately timed spring flora and vegetation survey was conducted by GHD (2005) and no rare flora species were identified in the area under application. It is not considered likely that the vegetation under application includes, or is necessary for the continued existence of rare flora.

Methodology Reference:
GHD (2004)
GIS Database:
Sac biodatasets (31/5/12)
Soils, Statewide - DA 11/99

(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 are no known occurrences of threatened ecological communities (TEC) within a 10km radius of the local area of application.

A flora and vegetation assessment of the area under application by GHD (2005) did not identify any TECs within the boundaries of the applied area.

The proposed clearing is unlikely to be at variance to this principle.

Methodology Reference:
GHD (2005)
GIS Database:
Sac bio data sets (31/5/2012)

(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 is not likely to be at variance to this Principle**
The vegetation under application is identified by Mattiske as Murray 1 Complex which has 85.3% of its pre-European vegetation remaining (Mattiske, 1998) and Beard vegetation association 3 of which there is 69.3% remaining (WA Government 2011).

Given the above and the high level of vegetation remaining within the local area, the proposed clearing is not likely to be at variance to this Principle.

	Pre-European (ha)	Current (ha)	Remaining %	% in reserve
Jarrah Forest	4,506,657	2,473,559	54.89%	67.94%
Shire of Waroona	83,231	45,085	54.17%	78.47%
Mattiske vegetation complexes				
Murray 1	686,104	585,544	85.3%	
Beard vegetation associations				
3	2,661,405	1,844,285	69.30%	80.13%

Methodology Reference:
Mattiske (1998)
WA Goverment (2011)

(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 includes both sides of the Samson Brook for a length of approximately 95m. The riparian vegetation within this area is in excellent condition with Banksia littoralis, Melaleuca rhaphiophylla, Hakea lasianthoides Gahnia decomposita, Pteridium esculentum and a number of sedge species being observed (GHD, 2004).

The area under application is continuous riparian vegetation in excellent (Keighery, 1994) condition growing in association with the Samson Brook. The proposed works includes several vehicle access routes across the Brook and it is expected that there will be substantial clearing of vegetation growing in and in association with a watercourse.

There is a Conservation Category Wetland located 1.3km to the northwest of the application. The clearing is considered unlikely to impact the vegetation growing in association with this wetland.

The proposal will have a significant impact on the flora species identified that grow in association with Samson Brook.The proposal is at variance with this Principle.

Methodology Reference:
GHD (2004)
Keighery (1994)
GIS Databases:
Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain - DEC
Hydrography, linear (hierarchy) - DOW

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

Comments **Proposal is at variance to this Principle**
The area under application is mapped as soil type Mw31, described as 'deeply incised, steep scarp and valley side slopes of the Darling scarp and its more deeply incised tributary valleys: chief soils of the steep scarp and valley side slopes, on which massive rock outcrops are a feature, seem to be acid red earths on the colluvial slope deposits. Associated are soils on moderate to steep upper slopes with some soils containing ironstone gravel on spurs and ridge tops' (Northcote et al 1960 - 1968).

The main land degradation risk associated with the removal of vegetation on the identified soil type is considered to be wind erosion and water erosion. Given the area under application is surrounded by Jarrah Forest it is considered that the risk of wind erosion is low.

The Commissioner of Soil and Land Conservation advised there is a high risk of water erosion occurring due to the soil type and location of the proposed clearing amongst the deeply incised valleys and steep slopes (DAFWA, 2006).

Water Corporation has proposed that temporary diversion and protective works such as levee banks, channels, flumes, conduits, drains and pumps will be utilised to control and manage surface water runoff to reduce water erosion and potential discharges into the Samson Brook.

The construction activities associated with the proposed upgrade of the Sampson Brook Dam includes proposed roads that will transect the Samson Brook below the dam wall numerous times, and clearing of 3.2ha for construction equipment adjacent to and along the banks of the Brook. The clearing and associated works are likely to result in short term land degradation.

The proposed clearing is at variance to this principle.

Methodology Reference:
DAFWA (2006)
GIS Databases:
Salinity Risk LM 25m - DOLA 00
Soils, Statewide - DA 11/99

(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 may be at variance to this Principle**
The area under application is located within the boundaries of the Dwellingup State Forest which will be directly impacted upon through the removal of vegetation. The proposed clearing may impact the environmental values of the State Forest through the spread or introduction of dieback or weed species by machinery or the importation of fill required for road access construction.

To reduce the spread of dieback, the Water Corporation (2006) has proposed to undertake excavation work during the drier months of December to April and to establish wash down areas to ensure vehicles and earthmoving equipment is weed and dieback free. Entry into protected dieback areas will be strictly limited and only dieback free soil will be taken into these areas.

The proposed clearing maybe at variance to this clearing principle. Dieback and weed management conditions may mitigate impacts to the state forest.

Methodology References:
Water Corporation (2006)
GIS Databases:
CALM Managed Lands and Waters - CALM 1/07/05

(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 area under application is located within the Dwellingup State Forest and the proposed access road is within the Samson Brook Catchment area. The applied area is located approximately 1.3km from the nearest

Conservation Category Wetland and is situated at an elevation of 200-320 metres. The applied area is located within a Priority 1 Public Drinking Water Source Area (PDWSA) which is managed to ensure that there is no degradation of the drinking water.

Groundwater salinity in the local area is 500-1000 mg/L. As the area under application is located within the boundaries of the Dwellingup State Forest and is situated directly below the Samson Brook Dam, the proposed clearing is not likely to impact upon the quality of the drinking water or salinity levels within the Samson Brook Dam.

The area under application transects the Samson Brook below the dam wall numerous times and it is likely that the water quality in the Brook will be impacted by the clearing adjacent to and along the banks as part of the proposed works.

Soils in the applied area have a high water erosion risk and removal of vegetation is likely to result in short term sedimentation. Any short term impacts can be managed through Water Corporations Water Quality Management Plan.

The construction of the spillways, roads and other construction activities required during the proposed upgrade of the Samson Brook Dam may result in increase runoff into the Brook and therefore the transportation of sediments downstream.

The proposed access roads will be constructed across Samson Brook which will likely result in temporary sedimentation and deterioration in the quality of the surface water. Long term sedimentation of the Brook may also occur if the fill associated with the road across the Brook is not adequately managed. The hydrology of the Brook may be altered if adequate drainage measures are not implemented. This may affect surface water quality of the Brook by impacting flows.

Water Corporation (2006) propose the implementation of a Water Quality Management Plan to control surface water runoff and discharge to the environment by limiting the removal of riparian vegetation adjacent to Samson Brook, establishing suitable settling ponds for contaminated water and to monitor downstream turbidity on a daily basis.

Water Corporation (2006) has proposed that temporary diversion and protective works such as levee banks, channels, flumes, conduits, drains and pumps will be utilised to control and manage surface water runoff that may reduce water erosion and potential discharges into the Samson Brook, which will be removed at the end of construction.

The proposed clearing is at variance to this principle.

Methodology

References:
DAFWA (2006)
Water Corporation (2006)
GIS Databases:
Groundwater Salinity, Statewide - 22/02/00
Hydrography, linear (hierarchy) - DOW
Public Drinking Water Source Areas (PDWSAs) - DOE 07/02/06

(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 is located in the Scarp at an elevation of 200-320 metres, directly below the Samson Brook Dam. The soils identified on site have a nil to moderate risk of waterlogging. There is a very high risk of flooding on the valley floor (DAFWA, 2006).

Given the elevated height of the area under application, it is not considered likely that the removal of vegetation from site would have an impact on peak flood height or duration.

Methodology

Reference:
DAFWA (2006)
GIS Databases:
Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain - DEC
Hydrography, linear (hierarchy) - DOW
Topographic Contours, Statewide - DOLA 12/09/02

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

Comments

The application was received to amend Clearing Permit 911/1 to extend the duration of the permit, decrease the total clearing area to 8.4 hectares by removing the access to the site from the west and to remove the

rehabilitation of the old borrow pit as the vegetation proposed to clear within this site has been identified as black cockatoo habitat. A new access to the site has been identified.

The Department of Water (DoW, 2012) advised that in accordance with the Metropolitan Water Supply, Sewerage and Drainage Act By-Laws 1981, pollution of the Samson Brook Catchment Area is prohibited.

The Shire of Waroona (2012) advised that no planning consent is required for the clearing of native vegetation in the subject area under the shire's Town Planning Scheme No.7.

The area under application is located with a Native Title Claim area and is part of State Forest 14, which is vested in the Conservation Commission for State Forest/Timber Reserve.

Samson Brook Dam does not comply with current Australian National Committee on Large Dams (ANCOLD) dam safety guidelines and remedial work is required to bring this dam up to the required standards for safety reasons.

Methodology

References:
-Shire of Waroona (2012)
- DoW (2012)
GIS Database:
Native Title Claims - DLI

4. References

DAFWA Land degradation assessment report. Office of the Commissioner of Soil and Land Conservation, Department of Agriculture and Food Western Australia. DEC TRIM ref DOC 1770.

DEC (2006) Department of Environment and Conservation (DEC), Western Australia. Site Visit 10/11/06. TRIM ref DOC27032.

DoW (2012). Department of Water advice. DEC Ref: A508659.

GHD (2004) Water Corporation - Samson Brook Dam Remedial Works: Preliminary Design - Flora and Vegetation AssessmentReport (DEC TRIM ref. IN24238).

Government of Western Australia (2011); 2011 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). WA Department of Environment and Conservation, 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.

Northcote, K. H. with Beckmann G G, Bettenay E., Churchward H. M., van Dijk D. C., Dimmock G. M., Hubble G. D., Isbell R. F., McArthur W. M., Murtha G. G., Nicolls K. D., Paton T. R., Thompson C. H., Webb A. A. and Wright M. J. (1960-68): 'Atlas of Australian Soils, Sheets 1 to 10, with explanatory data'. CSIRO and Melbourne University Press: Melbourne.

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.

Shire of Waroona (2012). Shire of Waroona advice. DEC Ref: A508278.

Water Corporation (2006). Samson Brook Dam Remedial Works, Contract Environment Management System. Water Corporation 2006.

5. 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)