



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: 5422/1

File Number: 2012/008990-1

Duration of Permit: From 28 December 2013 to 28 December 2019

PERMIT HOLDER

ABN Consolidated Holdings Pty Ltd

LAND ON WHICH CLEARING IS TO BE DONE

Lot 21 on Plan 8420 (Baldivis)

Lot 569 on Deposited Plan 152941 (Baldivis)

Lot 1263 on Deposited Plan 152941 (Baldivis)

AUTHORISED ACTIVITY

The Permit Holder shall not clear more than 9.2 hectares of native vegetation within the area cross hatched yellow on attached Plan 5422/1a.

CONDITIONS

1. Offset - Rehabilitation

In relation to the areas cross hatched red on attached Plan 5422/1b the Permit Holder must implement and adhere to the ABN Group Pty Ltd Offset Planting Plan, attached as Appendix A to this permit.

2. Records must be kept

The Permit Holder must maintain the following records in relation to the *revegetation* and *rehabilitation* of areas pursuant to condition 1:

- (a) the location of any areas *revegetated* and *rehabilitated*, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
- (b) a description of the *revegetation* and *rehabilitation* activities undertaken; and
- (c) the size of the area *revegetated* and *rehabilitated* (in hectares).

3. 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 2 of this Permit; and
 - (ii) concerning activities done by the Permit Holder under this Permit between 1 January to 31 December of the preceding calendar year.
- (b) If no clearing authorised under this Permit was undertaken between 1 January to 31 December of the preceding calendar year, a written report confirming that no clearing under this permit has been carried out, must be provided to the CEO on or before 30 June of each year.
- (c) Prior to 28 September 2019, the Permit Holder must provide to the CEO a written report of records required under condition 2 of this Permit where these records have not already been provided under condition 3(a) of this Permit.

DEFINITIONS

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

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

revegetate/ed/ion means the re-establishment of a cover of *local provenance* native vegetation in an area using methods such as natural *regeneration*, *direct seeding* and/or *planting*, so that the species composition, structure and density is similar to pre-clearing vegetation types in that area; and

direct seeding means a method of re-establishing vegetation through the establishment of a seed bed and the introduction of seeds of the desired plant species;

planting means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species;

regenerate/ed/ion means re-establishment of vegetation from in situ seed banks and propagating material (such as lignotubers, bulbs, rhizomes) contained either within the topsoil or seed-bearing mulch;

local provenance means native vegetation seeds and propagating material from natural sources within 20 kilometres and the same Interim Biogeographic Regionalisation for Australia (IBRA) subregion of the area cleared.



M Warnock
MANAGER
NATIVE VEGETATION CONSERVATION BRANCH

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

28 November 2013

Plan 5422/1a



LEGEND

-  Road Centrelines
-  Clearing Instruments
-  Areas Approved to Clear
-  Cadastre
-  Perth Metropolitan Area
Central 15cm Orthomosaic -
Landgate 2012
-  Local Government
Authorities



0 300 m

Scale 1:10823
(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.

M Warnock Date 28/11/13

M Warnock
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.



Government of Western Australia
Department of Environment Regulation

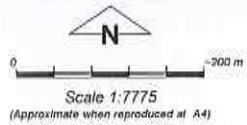
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Plan 5422/1b



LEGEND

- ✗ Road Centrelines
- ☐ Clearing Instruments
- ☐ Areas Subject to Conditions
- ☐ Cadastre
- ☐ Perth Metropolitan Area Central 15cm Orthomosaic - Landgate 2012
- ☐ Local Government Authorities



Geocentric Datum Australia 1994
 Note: the data in this map have not been projected. This may result in geometric distortion or measurement inaccuracies.

M Warnock Date *28/11/13*
 M Warnock

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.



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



Clearing Permit Decision Report

Government of Western Australia
Department of Environment Regulation

1. Application details

1.1. Permit application details

Permit application No.: 5422/1
Permit type: Area Permit

1.2. Proponent details

Proponent's name: ABN Consolidated Holdings Pty Ltd

1.3. Property details

Property: LOT 21 ON PLAN 8420 (House No. 392 SIXTY EIGHT BALDIVIS 6171)
LOT 1263 ON PLAN 152941 (House No. 974 BALDIVIS BALDIVIS 6171)
LOT 569 ON PLAN 152941 (House No. 968 BALDIVIS BALDIVIS 6171)
City of Rockingham

Local Government Area:
Colloquial name:

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
9.2		Mechanical Removal	Stockpile / Bulk earthworks

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 28 November 2013

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
Mapped Beard vegetation association 968: Medium woodland; jarrah, marri & wandoo (Shepherd et al, 2001).	Clearing 9.2 hectares of native vegetation within Lot 21, Lot 1263 and Lot 569, Baldivis, City of Rockingham, for the purpose of bulk earthworks for future urban development.	Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery 1994)	The vegetation under application consists of Marri, Jarrah and Tuart trees with no middle storey and a ground cover of weeds (predominately Veldt Grass).
Mapped Beard vegetation association 1001: Medium very sparse woodland; jarrah, with low woodland; banksia & casuarina (Shepherd et al, 2001).		To	The application area has previously been used as an old sand quarry that is no longer in use. The area under application also appears to be subject to past disturbances as the application area is very open with trees sparsely spread out over the application area (DEC, 2013).
Mapped Beard vegetation association 998: Medium woodland; tuart (Shepherd et al, 2001).		Completely Degraded: No longer intact; completely/almost completely without native species (Keighery 1994)	The vegetation under application is in a degraded to completely degraded (Keighery, 1994) condition (DEC, 2013).
Mattiske vegetation Karrakatta Complex - Central And/South: Predominantly open forest of Eucalyptus gomphocephala (Tuart) - Eucalyptus marginata (Jarrah) - Corymbia calophylla (Marri) and woodland of Eucalyptus marginata (Jarrah) - Banksia species (Mattiske and Havel, 1998).			The condition of the vegetation under application was obtained from a site inspection undertaken by the former Department of Environment and Conservation (DEC) on the 31 January 2013.

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

The application is to clear 9.2 hectares of native vegetation within a clearing footprint of 38.5 hectares for the purpose of bulk earth works for future urban development. The application footprint comprises of Marri, Jarrah and Tuart trees over a ground cover of weeds (DEC, 2013). The vegetation under application is in a degraded to completely degraded (Keighery, 1994) condition (DEC, 2013) and has been subject to past disturbances from activities such as sand extraction.

Several priority flora have been recorded within 10 kilometres of the area under application. Of the identified priority flora, none has been mapped occurring within the same soil or vegetation associations/complexes as the application area. Additionally, the vegetation under application is in a degraded to completely degraded (Keighery, 1994) condition (DEC, 2013) and is not likely to provide suitable habitat for the known priority flora species.

A previous flora survey was undertaken of Lot 21 by RPS in April 2008. The survey recorded 74 taxa species, 55 introduced weed species and 19 native. Of the recorded native species none were listed as priority of rare flora. The vegetation under application was considered to be in a very good to completely degraded (Keighery, 1994) condition (RPS, 2008). Approximately 3.3 hectares of Lot 21 is not within the current application. The vegetation under application within Lot 21 is in a degraded to completely degraded (Keighery, 1994) condition (DEC, 2013).

Given that the vegetation under application is in a degraded to completely degraded (Keighery, 1994) condition (DEC, 2013), it is considered that the clearing area does not comprise of a high level of biological diversity.

The application is not likely to be at variance to this principle.

Methodology

References:

- DEC (2013)
- Keighery (1994)
- RPS (2008)

GIS Database:

- SAC Bio datasets accessed January 2013

(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 is at variance to this Principle

Several fauna species of conservation significance have been recorded within a 10 kilometre radius of the application area including Carnaby's cockatoo (*Calyptorhynchus latirostris*) and Forest Red-tailed black-cockatoo (*Calyptorhynchus banksii*).

A site inspection undertaken by the former DEC identified the vegetation under application to be Marri, Jarrah and Tuart trees over a ground cover of weeds. Of the identified trees, five were observed as having medium to large hollows that could potentially be suitable for breeding purposes for both cockatoo species.

The development of nesting hollows is a dynamic process and so the existing nesting hollows are important as well as the maintenance of healthy trees to allow for the development of future hollows. Clearing and subsequent land degradation has eliminated most of the breeding habitat for black cockatoos. These birds require old trees with large hollows in which to nest, which may take many decades for trees planted now to become suitable. Competition for nesting hollows by increasing numbers of galahs, western corellas and non native honey bees is significant (Burbridge 2004).

Bamford Consulting Ecologists (2011) undertook a Black-cockatoo tree survey within Lots 21, 569 and 1263. All three lots are within the application area, however approximately 3.3 hectares of Lot 21 is not under application. The survey identified 175 potential nesting trees with 41 of these containing obvious hollows and/or spouts. Most of the identified trees were recorded within Lot 21, with several containing large hollows, although no evidence of nesting was recorded (Bamford Consulting Ecologists, 2011). Additionally the survey identified the southern section of Lot 21 comprises of Banksia woodland, thus foraging habitat for Black-cockatoo species. This area has not been included within the current application. The adjacent vegetation on the western side of Lot 21 also comprises of Banksia woodland.

Given the presence of hollows suitable for nesting within the applied area and the presence of foraging habitat for Black-cockatoos in the southern section of Lot 21 and the adjacent property, the clearing as proposed, will impact on Black-cockatoos.

The application is at variance to this principle.

To offset the residual impacts identified above the applicant has committed to the rehabilitation of 2.5 hectares within the Rockingham Lakes Regional Park, in accordance with the ABN Group Pty Ltd PT Lot 21 and Lots 569 and 1263, Sixty Eight Road, Baldivis Offset Planting Plan. The offset involves the planting of 1040 Tuart

seedlings and 520 understorey plants.

Methodology References:
- Bamford Consulting Ecologists (2011)
- Burbridge (2004)
- DEC (2013)

(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**
Three species of rare flora have been recorded within 10 kilometres of the application, all three species are orchids. Of the recorded rare flora, none have been mapped as occurring on the same soil or vegetation associations/complexes as the application area. Additionally, the vegetation under application is in a degraded to completely degraded (Keighery, 1994) condition (DEC, 2013) and is not likely to provide suitable habitat for the known orchid species.

Considering the above, the application is not likely to be at variance to this principle.

Methodology References:
- DEC (2013)
- Keighery (1994)
GIS Database:
- SAC Bio datasets accessed January 2013

(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**
The closest threatened ecological community (TEC) mapped to the area under application is Endangered TEC Swan Coastal Plain 19b, Woodlands over sedgelands in Holocene dune swales of the southern Swan Coastal Plain. The TEC has been recorded approximately 4.5 kilometres away from the applied area.

The vegetation under application comprises predominately of Jarrah, Marri and Tuart trees with no middle story and a ground cover of weeds. The condition (DEC, 2013) of the vegetation under application is degraded to completely degraded (Keighery, 1994).

Considering that the vegetation under application is not a representation of the nearby TEC, nor is the clearing as proposed likely to impact on the TEC, the application is not likely to be at variance to this principle.

Methodology References:
- DEC (2013)
- Keighery (1994)
GIS Database:
- SAC Bio datasets accessed January 2013

(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**
The area under application is represented by Beard Vegetation Associations 968, 998 and 1001 which have 7, 38 and 25 percent respectively of their pre-European vegetation remaining. The application area is also represented by Heddle Vegetation Complex, Karrakatta Complex Central and South which has 26 percent of its pre-European vegetation remaining.

The National Objectives and Targets for Biodiversity Conservation include a target that prevents the clearance of ecological communities with an extent below 30 percent of that present pre-European settlement (Commonwealth of Australia, 2001). Two of the mapped Beard vegetation associations associated with the area under application are below the 30 percent threshold, as is the mapped Heddle vegetation complex. However, the Environmental Protection Authority (EPA) recognises the Perth Metropolitan Region as a constrained area, which provides for the reduction of vegetation complexes to a minimum of 10 per cent of the pre-European extent (EPA, 2006).

The application is within an extensively cleared landscape with approximately 20 percent of native vegetation remaining within a 10 kilometres radius of the applied area. Additionally, Beard Vegetation Association 968 falls below the 10 per cent threshold within a constrained area. Given the above and that the application contains medium to large hollows that would be suitable for breeding purposes for cockatoo species, the vegetation under application is considered significant as a remnant in an extensive cleared area.

The application may be at variance to this principle.

To offset the residual impacts identified above the applicant has committed to the rehabilitation of 2.5 hectares within the Rockingham Lakes Regional Park, in accordance with the ABN Group Pty Ltd PT Lot 21 and Lots 569

and 1263, Sixty Eight Road, Baldivis Offset Planting Plan. The offset involves the planting of 1040 Tuart seedlings and 520 understorey plants.

	Pre-European (ha)	Current Extent (ha)	Remaining (%)	Extent in DEC Managed Lands (%)
IBRA Bioregion Swan Coastal Plain	1,501,209	587,832	39.16	34.79
Shire City of Rockingham	26,335	8,018	30.4	10.14
Beard Vegetation Association in Bioregion				
998	50,867	19,372	38.09	40.97
968	136,188	9,798	7.19	15.86
1001	57,410	14,151	24.65	5.66
Hedde Vegetation Complex Karrakatta Complex Central and South	49,735	12,788	25.7	5.86

Methodology References:
 - Commonwealth of Australia (2001)
 - DEC (2013)
 - EPA (2006)
 - Keighery (1994)
 GIS Databases:
 Pre-European Vegetation

(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 not likely to be at variance to this Principle**
 The closest water course/body to the area under application is an unnamed multiple use wetland mapped approximately 200 metres east of the area under application.
 A site inspection of the application area identified that the vegetation under application consists predominately of Jarrah, Marri and Tuart trees over a ground cover of weeds (DEC, 2013). The vegetation under application is not growing in association with the nearby multiple use wetland or any other water course.
 The application is not likely to be at variance to this principle.

Methodology References:
 - DEC (2013)
 GIS Database:
 - Hydrography, linear

(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**
 The area under application is mapped as soil type JK9 which is described as undulating dune landscape with some steep dune slopes and underlain by aeolianite at depth: chief soils are brown sands (Northcote et al 1960 - 1968).
 A large proportion of the area under application was once a quarry of which sand was extracted from, thus the area under application is consequently suffering from land degradation in the form of wind erosion. Considering this and that the vegetation under application is in a degraded to completely degraded (Keighery, 1994) condition (DEC, 2013), it is unlikely that the clearing, as proposed will significantly further increase the amount of land degradation.
 The application is not likely to be at variance to this principle.

Methodology References;
 - DEC (2013)
 - Keighery (1994)
 - Northcote et al (1960-68)

(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

The closest conservation area to the application footprint is Bush Forever site 376. The boundary of the Bush Forever site and the application area are approximately 50 metres apart. The closest section of the application footprint to Bush Forever site 376 comprises of very little native vegetation, additionally the areas are separated by a road.

Considering the above, it is not likely that the application will impact on Bush Forever site 376. Therefore the application is not likely to be at variance to this principle.

Methodology GIS Databases:
- Bushforever

(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 closest water course/body to the area under application is an unnamed multiple use wetland mapped approximately 200 metres east of the area under application.

The groundwater salinity has been recorded at 1000-3000 mg/L which is considered to be moderately saline. There is an inherent risk of impacts to groundwater quality following the removal of deep-rooted native vegetation as ground water levels are subject to rises in these areas. However, given the degraded to completely degraded (Keighery, 1994) condition (DER, 2013) and historic extraction activities within the vicinity of the applied area, the proposed clearing of 9.2 hectares of native vegetation within a 38.5 hectare footprint is unlikely to significantly affect ground water quality.

The clearing as proposed is not likely to significantly impact upon the quality of surface or underground water. The application is not likely to be at variance to this principle.

Methodology References;
- DEC (2013)
- Keighery (1994)
GIS Database:
- Hydrography, linear
- Groundwater salinity, statewide

(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 proposed clearing of 9.2 hectares of native vegetation (the majority of which area trees) in a degraded to completely degraded (Keighery, 1994) condition (DEC, 2013), over an area comprising of 38.2 hectares is not likely to cause flooding.

The application is not likely to be at variance to this principle.

Methodology References;
- DEC (2013)
- Keighery (1994)
GIS Database:
- Hydrography, linear

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

Comments

The area under application is within an area subject to the Environmental Protection (Peel Inlet-Harvey Estuary) Policy 1992 (EPP). The Environmental Protection Authority (EPA) considers the implementation of Statement of Planning Policy 2.1 (SPP 2.1) by local authorities through their relevant planning schemes to be the most applicable way to move forward with the application.

The area under application is within the Stakehill groundwater area, Outridge subarea. The resource is currently fully allocated and new applications to take groundwater are likely to be refused (DoW, 2013). The applicant has already submitted an application for a groundwater licence for dust suppression and irrigation purposes associated with these properties. If the applicant requires any more water than what has already been applied for, they will need to seek an alternate source (DoW, 2013).

The City of Rockingham (2013) advises that they have no objections to the application to clear native vegetation.

The area under application is zoned as 'Development' under the Town Planning Scheme and - Urban Deferred under the Metropolitan Regional Scheme.

The clearing, as proposed, was referred to the then Department of Sustainability, Environment, Water, Population and Communities (DSEWPC) which determined the proposed clearing as not a controlled action, therefore the application does not require further assessment and approval under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

To offset the residual impacts identified above the applicant has committed to the rehabilitation of 2.5 hectares within the Rockingham Lakes Regional Park, in accordance with the ABN Group Pty Ltd PT Lot 21 and Lots 569 and 1263, Sixty Eight Road, Baldivis Offset Planting Plan. The offset involves the planting of 1040 Tuart seedlings and 520 understorey plants.

The proposed offset area, being the Rockingham Lakes Regional Park, is currently managed by Department of Parks and Wildlife (DPaW) which have given the applicant authorisation to undertake the offset within the property subject to conditions imposed by DPaW (DPaW, 2013).

The applicant commits to install 10 cockatubes (artificial nesting boxes) within the Rockingham Lakes Regional Park. The installation will be undertaken by the Serpentine - Jarrahdale Landcare Group.

Methodology References:

- City of Rockingham (2013)
- DoW (2013)
- DPaW (2013)
- EPA (2013)

4. References

- Bamford Consulting Ecologists (2011) Black-Cockatoo Nest Tree Survey, Sixty Eight Road, Baldivis, June 2011 (DEC Ref:A582749)
- Burbidge, A. (2004) Threatened Animals of Western Australia, Department of Conservation and Land Management, Perth, Western Australia.
- City of Rockingham – Submission received in relation to Clearing Permit Application CPS 5422/1 (DEC Ref:A605963)
- Commonwealth of Australia (2001) National Objectives and Targets for Biodiversity Conservation 2001-2005, Canberra.
- DEC (2013) Site Inspection Report for Clearing Permit Application CPS 5422/1, Lot 21, 569 and 152941, Sixty Eight Road, Baldivis. Site inspection undertaken 31 January 2013. Department of Environment and Conservation, Western Australia (TRIM Ref. Doc:A605781).
- DoW (2013) Advice received in relation to Clearing Permit Application CPS 5422/1 – Department of Water (DEC Ref:A593521)
- DPaW (2013) Advice received in relation to Clearing Permit Application CPS 5422/1 – Department of Parks and Wildlife (DER Ref:A697054)
- EPA (2013) Advice received in relation to Clearing Permit Application CPS 5422/1 - Environmental Protection (Peel Inlet-Harvey Estuary) Policy 1992 (EPP) (DEC Ref:A595877)
- EPA (2006) Guidance for the Assessment of Environmental Factors - Level of Assessment for Proposals Affecting Natural Areas Within the System 6 Region and Swan Coastal Plain Portion of the System 1 Region. Guidance Statement No 10. Environmental Protection Authority, Western Australia.
- 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.
- RPS (2008) Rare Flora Search and Vegetation Survey. Lot 21 Sixty Eight Road, Baldivis. Additional information within Clearing Permit Application CPS 5422/1 (DEC Ref:A582749)
- 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.

CPS 5422/1

Appendix A

Offset Planting Plan

**PT LOT 21 AND LOTS 569 AND 1263
SIXTY EIGHT ROAD, BALDIVIS**

OFFSET PLANTING PLAN

Prepared for

**ABN Group Pty Ltd
133 Hasler Rd
OSBORNE PARK 6017**

**Report No. J11009b
26 September 2013**

**BAYLEY ENVIRONMENTAL SERVICES
30 Thomas Street
SOUTH FREMANTLE WA 6162**

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1.0 INTRODUCTION

1.1 Background

ABN Group Pty Ltd is applying for a permit to clear 9.2ha of native vegetation on Pt Lot 21 and Lots 569 and 1263 Sixty Eight Road, Baldivis. The vegetation includes 126 trees, mostly Tuart, with diameter at breast height (DBH) of at least 0.5m (Bamford, 2011). Of these, 31 trees (including 13 Tuart, 14 Jarrah and 3 Marri) have visible hollows or spouts that may be suitable as nesting sites for black cockatoos. Figure 1 and Table 1.1 show the affected trees.

As part of its clearing proposal, ABN Group has undertaken to plant 1040 Tuart trees, more than eight times the total number of trees removed and 33 times the number of potential breeding trees removed. The Department of Parks & Wildlife (DPAW) has identified a 2.5ha area of cleared land within the Rockingham Lakes Regional Park that is available and suitable for replanting with Tuarts. A letter from the DPAW confirming this agreement is attached in Appendix A.

1.2 Objectives

The overall objective of this planting programme is to offset the potential variance to two Clearing Principles as defined under the *Environmental Protection Act 1986*, which state that native vegetation should not be cleared if:

- "(b) it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia; or
- (e) it is significant as a remnant of native vegetation in an area that has been extensively cleared".

The DEC considered that the proposed clearing was likely to be at variance to Principle (b) due to the presence of trees with potential as black cockatoo breeding sites.

The DEC's Preliminary Assessment Report (14/3/2013) noted that the application area supported three Beard Vegetation Associations: 968, 998 and 1001, of which Association 968 (Jarrah, Marri, Wandoo woodland) has approximately 7.2% of its original extent in the Swan Coastal Plain bioregion remaining. On this basis, the DEC advised that the proposed clearing may be at variance to Principle (e). Figure 1 shows the Beard vegetation mapping over the clearing area.

Association 968 occurs only in the east of the site, where it is represented by about 0.5ha of scattered Jarrah and Marri trees over grass and weeds. Three Marri and two Jarrah trees in this area have potential as cockatoo nesting trees.

The proposed planting will replace the number of trees lost in the clearing many times over. Over the long term, as these trees reach senescence, they will provide significantly more breeding sites than have been lost in the clearing. In the short term, the establishment of artificial nesting boxes on and/or around the site (under separate agreement) will provide interim nesting sites.

The vegetation in and around the planting site is mapped as Beard Association 3048 (coastal shrubland/scrub heath), although the dominance of Tuart suggests that it should instead be mapped as Association 998.1 (Tuart woodland), which is mapped a short distance to the east. Thus the proposed planting will directly replace the loss of this vegetation association in the clearing area. Although it will not directly replace the lost Association 968, it will satisfy the stated intent of Clearing Principle (e), which refers to extensive clearing overall rather than of particular vegetation types.

Table 1.1 Potential Nesting Trees in Clearing Area

<i>Species</i>	<i>DBH (mm)</i>	<i>State</i>	<i>Features</i>	<i>Easting</i>	<i>Northing</i>
Tuart	1200	Alive	Hollows, dead limbs	389080	6419367
Tuart	1115	Alive	Hollows, dead limbs	389182	6419414
Tuart	1270	Alive	Hollows	389212	6419419
Tuart	1400	Alive	Hollow	389228	6419291
Tuart	1400	Alive	Several hollows	389223	6419211
Jarrah	1300	Alive	Hollow	389222	6419050
Jarrah	1500	Alive	Hollow	389228	6419014
Jarrah	1600	Alive	Hollow	389236	6418954
Jarrah	1200	Alive	Hollows	389226	6418919
Jarrah	1000	Alive	Hollows	389114	6419134
Tuart	1600	Alive	Hollow	389280	6419314
Jarrah	1500	Alive	Hollows	389259	6419411
Jarrah	700	Alive	Hollow	389435	6419426
Jarrah	650	Alive	Hollow	389440	6419424
Marri	1400	Dead	Hollows	389806	6419043
Jarrah	1400	Alive	Dead limbs	389429	6418901
Tuart	1200	Alive	Spout	389114	6419460
Jarrah	750	Dead	Spout	389111	6419443
Tuart	1000	Alive	Spout	389121	6419448
Tuart	1100	Alive	Spout	389166	6419420
Tuart	1100	Alive	Spout	389162	6419431
Tuart	1400	Alive	Spout	389204	6419286
Jarrah	750	Alive	Spout	389197	6419268
Tuart	1900	Alive	Hollows and spouts	389178	6419223
Tuart	800	Alive	Spout	389156	6419145
Jarrah	900	Alive	Spout	389173	6418994
Jarrah	1500	Dead	Spout	389236	6419331
Jarrah	1200	Dead	Spouts	389238	6419323
Jarrah	1800	Alive	Spouts	389471	6419445
Jarrah	1300	Alive	Spouts	389485	6419426
Jarrah	950	Alive	Spouts	389773	6419417
Jarrah	500	Dead	Spout	389842	6419438
Marri	1100	Alive	Spout	389857	6419438
Marri	600	Alive	Spout	389842	6419427
Marri	900	Alive	Spouts	389823	6419395
Jarrah	1500	Dead	Hollows and spouts	389841	6419344
Jarrah	1400	Dead	Hollows and spouts	389856	6419110
Marri	800	Alive	Spout	389774	6418922
Jarrah	1200	Dead	Spout	389753	6418927
Jarrah	1100	Dead	Spout	389762	6418976
Marri	1200	Alive	Spouts	389778	6418979
Marri	900	Alive	Spouts	389778	6418971

2.0 SITE DESCRIPTION

2.1 Location and Tenure

The proposed planting site is located in the Rockingham Lakes Regional Park, about 800m south-west of Lake Cooloongup and about 6.3km north-west of the proposed clearing area. Figure 2 shows the location and layout of the planting site.

The planting site has an area of about 2.5ha and is owned freehold by the WAPC and managed by the Department of Parks and Wildlife in accordance with a management agreement under the *Conservation and Land Management Act 1984*.

2.2 Existing Vegetation

The planting site is mostly devoid of native vegetation. The cover consists mainly of invasive weeds. A few mature Tuart trees are present. Some regrowth is occurring around the margins. Dense sapling regrowth (0.5 – 5m spacing) is present beneath many of the mature Tuarts, although most of these are unlikely to survive to maturity. There are also thickets and scattered individuals of *Acacia rostellifera* and dense growths of *Xanthorrhoea preissii* around the planting site. The vegetation condition in the planting site is Completely Degraded to Cleared.

Hedde *et al.* (1980) mapped the planting site as 55 – Karrakatta Complex – Central and South. Beard (1981) mapped the area as Association 3048 (coastal shrubland/scrub heath), although the dominance of Tuart suggests that it should instead be mapped as Association 998.1 (Tuart woodland), which is mapped a short distance to the east.

Syrinx (2006) mapped native vegetation and weeds in the Rockingham Lakes Regional Park, including the planting site. The Syrinx survey included only one 10m x 10m plot in the Tuart Woodland vegetation type, located about 600m south-west of the planting site. Syrinx listed 18 native species from this plot.

Bayley Environmental Services surveyed the vegetation of the planting site and surrounds (within 500m) in July 2013, recording all species observed. Table 2.1 lists the species found.

Table 2.1 Flora Species List – Planting Site and Surrounds

<i>Acacia pulchella</i>	Prickly Moses
<i>Acacia rostellifera</i>	Summer-scented Wattle
<i>Acacia saligna</i>	Orange Wattle
<i>Acanthocarpus preissii</i>	Prickle Lily
* <i>Brassica tournefortii</i>	Mediterranean Turnip
<i>Clematis linearifolia</i>	Old Man's Beard
<i>Eucalyptus ?gomphocephala</i>	Tuart
* <i>Euphorbia terracina</i>	Geraldton Carnation Weed
<i>Gahnia trifida</i>	Coast Saw-sedge
* <i>Geranium molle</i>	Dove's Foot Cranesbill
<i>Geranium solanderi</i>	Native Geranium
<i>Hardenbergia comptoniana</i>	Native Wisteria
<i>Jacksonia furcellata</i>	Grey Stinkwood
<i>Kennedia prostrata</i>	Running Postman
<i>Lepidosperma pubisquamum</i>	A saw-sedge
<i>Leucopogon parviflorus</i>	Coast Beard-heath
<i>Lomandra maritima</i>	Coastal Mat-rush
<i>Myoporum insulare</i>	Blueberry Tree
<i>Nitraria billardierei</i>	Nitre Bush
*? <i>Oenothera ?drummondii</i>	Beach Evening Primrose
<i>Opercularia hispidula</i>	Hispid Stinkweed
<i>Phyllanthus calycinus</i>	False Boronia
* <i>Poaceae</i> sp.	A grass
<i>Rhagodia baccata baccata</i>	Berry Saltbush
<i>Rhagodia baccata dioica</i>	Sea Berry Saltbush
* <i>Romulea rosea</i>	Guildford Grass
<i>Spyridium globulosum</i>	Basket Bush
<i>Templetonia retusa</i>	Cockies Tongue
* <i>Trachyandra divaricata</i>	Dune Onion Weed
* <i>Trifolium</i> sp.	A clover

2.3 Unexploded Ordnance

The Rockingham Lakes area was used as a live firing range by the Army during World War II. Unexploded ordnance (UXO) including artillery shells, mortars and small arms rounds is known to exist in the area. A comprehensive search undertaken by the Warnbro Clearance Project in the 1980s found UXO on the edge of the live firing range about 0.5km south and west of the planting site.

The planting site itself was the headquarters and main camp for the firing range, as well as the site of an artillery battery, so it is unlikely to have been targeted, but UXO may have been lost or disposed there. If ammunition were disposed there it would likely have been buried at least one metre deep.

FESA has advised that, if planting is carried out by hand tools (e.g. hand auger) and ground disturbance is limited to a depth of 200mm, the risk of disturbing UXO will be very minimal. Vehicle traffic (including water trucks) will also present minimal risk. The advice from FESA is attached in Appendix B. Based on this advice, no further investigation of UXO is proposed. FESA has provided a protocol (attached in Appendix C) that will be followed in the event that any UXO is discovered or suspected during the planting.

3.0 PLANTING PLAN

3.1 Implementation

The planting will be undertaken by a professional rehabilitation specialist contracted to ABN Group. Whichever contractor is chosen will be accredited with the Revegetation Industry Association of Western Australia or equivalent.

3.2 Site Preparation

Site preparation will consist of spot weed control using an appropriate herbicide such as Roundup Biactive® over a 2m diameter around each planting location. The weed control will be undertaken at the appropriate time for each species, at least one month before the planting. Due to the proximity of the site to the Rockingham Lakes, no residual herbicides will be used.

Given the sandy soils of the site, no ripping or other soil preparation will be required before planting.

3.3 Species Selection and Source

Tuart will be the primary species used in the planting. Understorey species will be included in the planting to maximise the sustainability and the habitat value of the planting. These will be a mixture of species drawn from the local species listed in Table 2.1.

All plants will be supplied as nursery tube stock from Men of the Trees (Rockingham Branch), which collects seed from Lake Cooloongup. The exact understorey species grown will depend upon the species in fruit at the time of the seed collection. Should certain species not be available, further nursery tube stock may be grown from seed collected within 500m of the planting site.

3.4 Planting Density

Planting will be undertaken at a 4m spacing, giving a density of 625 seedlings per hectare and a total of about 1,562 seedlings over the 2.5ha planting site. The seedlings will be planted at a rate of two Tuarts for each one other species, giving a total of about 1,040 Tuarts and 520 other species across the site.

This planting density will allow for considerable self-thinning of Tuarts by the time they reach maturity. The density of large (>1m DBH) Tuarts in the vicinity of the planting site is about one tree per 20m to 50m; however smaller Tuarts may be as little as 5m apart,

and seedling regrowth beneath mature Tuarts may be as close as 0.5m. The proposed planting therefore mimics the density of natural recruitment.

Tuarts may also be planted in treeless areas around the central planting site. Other species will be planted only within the central planting site.

3.5 Timing of Planting

The planting will be undertaken in about June 2014 after the first significant winter rains. Pre-planting weed control will occur about one month before planting.

3.6 Planting Method

A hand auger will be used to drill a hole 200mm deep and 50mm wide for each seedling. Each seedling will be planted with a slow-release native plant fertiliser pill.

3.7 Protection of Seedlings

Mesh tree guards will be placed around each seedling to protect them from grazing by rabbits and kangaroos. The Tuart seedlings are unlikely to be targeted by kangaroos as the essential oils they contain are harmful to kangaroos' digestion and are normally avoided (ABC Science, 2013). The juvenile native plants present in the area show little evidence of grazing by kangaroos, which appear to favour the irrigated grass of the nearby Rockingham Golf Course.

4.0 POST-PLANTING MAINTENANCE

4.1 Weed Control

Follow-up weed treatments using an appropriate herbicide applied by hand sprayer or wand will be undertaken in August-September 2014 and 2015.

4.2 Watering

If necessary, the seedlings will be watered up to monthly during the first summer (January–April) after planting in order to ensure the required survival. The occurrence, frequency and duration of watering will depend upon the severity of the summer.

Watering, if required, will be carried out by a truck or trailer mounted tanker. FESA has advised that such traffic will present no significant risk of disturbance to any UXO.

4.3 Monitoring

The condition of the mesh tree guards will be monitored every two months for the first two years after planting. Any guards that become displaced or damaged will be repositioned or replaced.

The success of the plantings will be monitored annually for five years after the completion of the planting programme. For the first two years this will be undertaken by the planting contractor; thereafter it may be done by the planting contractor or by a botanist contracted by ABN Group.

The monitoring will be undertaken by means of two fixed transects, one running the length of the planting site (285m) and the other running across the widest part of the site (165m), as shown on Figure 2. The identity, height, width and health of all plants intersecting the transects will be recorded, giving data on species composition, cover and structure. Photographs will be taken at fixed points on each transect. Comparison between monitoring dates will provide data on survival rates.

The results of each round of monitoring will be reported to the DER and the Regional Parks Unit of DPAW.

4.4 Success Criteria

The planting density is designed to allow for 25% attrition of seedlings. Success of the planting will therefore defined as at least 75% survival of all species planted after five years.

4.5 Contingencies

If at any time within five years after planting, monitoring shows that the survival rate of any planted species is approaching or below 75%, infill plantings of the same species will be undertaken. If low survival appears to be affecting a particular species then, subject to DPAW agreement, an alternative local species may be used for the infill planting for the remainder of the five-year maintenance period.

5.0 IMPLEMENTATION SCHEDULE

ABN Group will undertake and fund the revegetation work described in this plan. Following planting, ABN Group will monitor and maintain the revegetation for five years, undertaking infill planting as necessary to achieve the completion criterion.

After five years, assuming the completion criteria as set out in this report have been achieved, ABN will hand the rehabilitation over to the DPAW, which will assume responsibility for future management.

Table 5.1 summarises the schedule of implementation of the plan.

Table 5.1 Implementation Schedule

<i>Date</i>	<i>Activity</i>
April-May 2014	Pre-planting weed control with knockdown herbicide.
June 2014	Plant seedlings, install tree guards.
September 2014	Weed inspection and control if required.
January 2015	Water seedlings (if no significant rain in preceding month)
February 2015	Water seedlings (if no significant rain in preceding month)
March 2015	Water seedlings (if no significant rain in preceding month)
April 2015	Water seedlings (if no significant rain in preceding month)
June 2015	Monitor transects, report results to DER and DPAW.
June 2015	Infill planting if necessary.
September 2015	Weed inspection and control if required.
June 2016	Monitor transects, report results to DER and DPAW.
June 2016	Infill planting if necessary.
June 2017	Monitor transects, report results to DER and DPAW.
June 2017	Infill planting if necessary.
June 2018	Monitor transects, report results to DER and DPAW.
June 2018	Infill planting if necessary.
June 2019	Monitor transects, final report results to DER and DPAW.
June 2019	Handover to DPAW (if completion criteria met).

6.0 REFERENCES

ABC Science (2013). *Kangaroos Turn Up Noses at Gum Leaves*.

<http://www.abc.net.au/science/articles/2004/02/25/1052204.htm>

Beard J.S. (1981). *Vegetation Survey of Western Australia, Swan 1:1,000,000 Vegetation Series*. University of Western Australia Press.

Heddle E.M., Loneragan O.W. and Havel J.J. (1980). *Vegetation Complexes of the Darling System, Western Australia*. In: *Atlas of Natural Resources Darling System, Western Australia*. Department of Conservation and Environment, Perth.

Syrinx (2006). *Rockingham Lakes Regional Park Weed Species and Rehabilitation Plan*. Report prepared for Department of Environment & Conservation, Perth.

Figures



- Clearing permit application area
- Tree >0.5m with hollows or spouts
- Tree >0.5m without hollows or spouts
- Beard (1981) vegetation association

Figure 1

**PROPOSED
CLEARING**

Appendix A

DPAW Agreement to Planting Site

From: [Prideaux, Catherine](#)
To: [Damien Giudici](#)
Cc: [Evans, Renee](#); [Campbell, Robert](#); [Jenkins, Derek](#); bayley@iinet.net.au
Subject: RE: Revegetation of portion of Lot 0 on Plan 1118 north of Safety Bay Rd within Lake Cooloongup
Date: Wednesday, 24 July 2013 1:05:01 PM
Attachments: [image003.png](#)
[LCS-4.3A.pdf](#)
[RORP2006_FINAL.pdf](#)

Hi Damien

I have discussed the proposal with Renee Evans (Acting Manager Regional Parks Unit) and can confirm that DPaW agrees in principle to the planting of tuart trees within a degraded portion of Rockingham Lakes Regional Park as an offset for bulk earthworks and future urban development in Baldvis (CPS 5422/1). The Regional Parks Unit would appreciate being able to provide comments on and endorsement of a revegetation plan for the site, prior to DER approval. I understand that this is being prepared by Phil Bayley.

Please note that the agreement relating to the portion of Lot 0 on Plan 1118 lasts for a minimum of 6 months from the date of this email or until such time as DPaW may be approached by another proponent for a tuart rehabilitation site as part of an offset agreement.

The attached plan of vegetation community types shows that the degraded vegetation portion is likely to have comprised *Eucalyptus gomphocephala* open woodland. Also please find attached a Weed Species and Rehabilitation Plan for Rockingham Lakes Regional Park that was prepared as a tool for planning weed control and rehabilitation projects in the regional park. This version of the document contains the text only - the weed maps are stored separately as they are such large files. The most useful part for your purposes is Section 5: Revegetation Guidelines. The revegetation guidelines table illustrates the composition of the various community types - the dominant species and additional species of the community is listed on page 66. Page 84 lists further species typical of Rockingham Lakes Regional Park, according to dryland vegetation community type. DPaW recommends this document is used to compile a species list for the rehabilitation site.

DPaW advises that the optimum planting density for tuart woodlands 200 - 500 stems per hectare (ha) so you should be able to plant 1500 trees within the proposed 0.7 ha site. DPaW's preference however is for the offset to include the planting of understory species to prevent a monoculture from forming in the regional park. This would mean fewer tuart stems per hectare but the balance of stems to be made up with understory species. There will be a suite of plant species available within the park of Rockingham Lakes Regional Park to make up the balance. Agreement to revegetation of the site is subject to the following conditions:
1. The revegetation plan must be approved by the relevant DPaW Regional Parks Unit.
2. The revegetation plan must be approved by the relevant DPaW Regional Parks Unit.
3. The revegetation plan must be approved by the relevant DPaW Regional Parks Unit.

4. The revegetation plan must include any measures to be implemented to protect the plants from kangaroos. The fence should be along the fire tracks so that access is not interrupted. The revegetation site should be fenced with a 1.8m high fence. The fence should be constructed of a material that is suitable for the site. The revegetation site should be fenced with a 1.8m high fence. The fence should be constructed of a material that is suitable for the site. The revegetation site should be fenced with a 1.8m high fence. The fence should be constructed of a material that is suitable for the site.

monitoring that would be required.

After speaking with Derek Jenkins of DER, you also need to clarify where the Serpentine Jarrahdale Landcare group are to install cockatubes because this has not been made clear to DPaW or DER at this stage. Derek has requested written evidence of agreement from the landcare group.

Please do not hesitate to contact me with any queries. I look forward to hearing from you.

Kind regards
Catherine

Catherine Prideaux
Planning Officer
Regional Parks Unit, Swan Region
Dept of Parks and Wildlife (DPaW)
PO Box 1167
Bentley Delivery Centre
BENTLEY WA 6983
Ph. 9219 9294



Appendix B

FESA Advice on UXO

From: ARNOLD Andrew [<mailto:Andrew.Arnold@dfes.wa.gov.au>]
Sent: Friday, 21 June 2013 11:15 AM
To: Jackie Hams
Cc: AUSTIC Merv
Subject: RE: maps of areas of interest

Hi Jackie,

As previously discussed, this clearing was the site of the Australian Army Head Quarters and main camp area for the former Rockingham Artillery Range training area, WWII. As such, it is highly unlikely that the site and immediate surrounds would have been targeted or impacted during training scenarios by artillery, mortar or other weapons systems, however, there may still be a slight possibility that ammunition or other produce stored at the site during occupation could remain abandoned and buried on or close to this site. Our records indicate that no UXO were found on or close to this site when the area was assessed by way of a surface inspection and limited shallow detector (+/- 300mm) survey in the early 1980's by the former Warnbro Clearance Project, however, my records confirm that actual UXO were found at the start of the impact/targets areas within ½ kilometre south and west of this site.

In regards to the possibility that ordnance may have been buried at this site, when abandoned ordnance and or other hazardous material is wilfully buried, it is generally done by the military at reasonable depth below the surface to avoid future disturbance, and in this case, given the very soft soil conditions of the site, it is highly likely that if any such material was to be present, it should have been buried in pockets or pits at least 1m + below the surface.

In this regard, if the intention of your rehabilitation seeding programme is to subject this site to deep augur, excavation or ripping by mechanical means in order to plant tuart saplings and other species of understory seedlings, it would be highly recommended that a formal "deep" sensing UXO detector survey be conducted on the rehabilitation areas prior to any soil disturbance activity. As the site is in excess of 2.7ha overall, any such survey would have to be undertaken by one of the available Defence accredited, Commercial UXO Search Companies, which could amount to significant cost to your programme. I am more than happy to prepare a Scope of Works should you choose to take this option, but am unable to assist any further with a localised survey at this scale.

However, if the planting method is shallow scrapings with minimal digging @ less than 200mm with hand tools only, then the risk of being exposed to any remnant UXO hazards would be extremely minimal, (no guarantee however) and it is my opinion that no detector surveys should therefore be necessary.

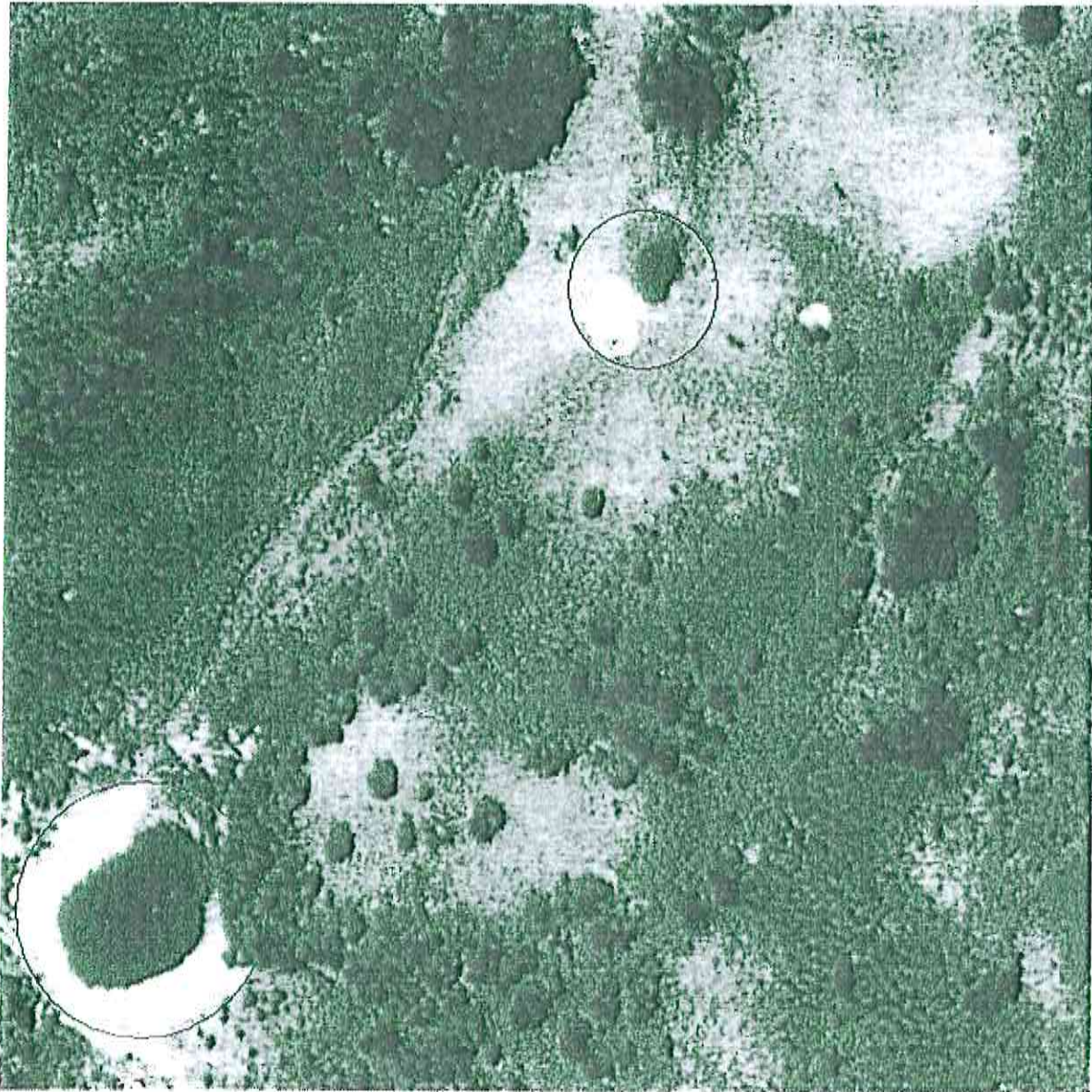
I am more than happy for you to run with this option.

Also I did a bit of a review of Landgate's historical and recent aerial mosaics to see how the site has been used post war and it is apparent that there has been regular surface disturbance on the site, mainly being rented off and used as a stock yard through to the early 1970s (camping etc) through the 80's and 90's and in 2010 appears to have been recently slashed, probably to keep the weeds and fuel fire down in case of fire.



965

It is also noted that the depression with the sand pile next to it in the clearing was dug out as a water hole around the same time as the other one sometime in the late 60's, early 70's, so was definitely not there when the Army occupied the area



1974

I have a couple of urgent tasks to get on with at the moment, but will email you again next week to provide you with a permit management plan outlining the process that must be followed in the event that a known or suspected mine is located on, or in any corner of your work sites.

Best regards,
Andrew

For

Andrew Arnold
Unexploded Ordnance Liaison Officer
Operations Support & Capability
EM & Hazard Planning

Andrew.Arnold@dfes.wa.gov.au

Appendix C

UXO Protocol



UXO Services 600-01-01

<p style="text-align: center;">WARNING CONCERNING UNEXPLODED ORDNANCE (UXO)</p>
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1. In most cases in Western Australia, any unexploded ordnance (UXO) likely to be found is of the form that is designed to kill or to maim. In most circumstances, it is very difficult for an untrained person to be able to determine if a UXO or a suspected UXO is dangerous or if it is harmless. All such objects must therefore be treated as dangerous unless or until proven otherwise.
2. UXO is ammunition, explosives and pyrotechnics such as artillery shells, mortar bombs, flares, TNT, gelignite and grenades of military origin that did not fully function when used or which was intentionally or inadvertently abandoned. Much of the UXO pollution in the State results from training during World War II and can still be dangerous for many decades, if not centuries, later.
3. Explosive ordnance to be found in non-training areas, such as storage and disposal sites, would not normally have been initiated or fired but it is, nevertheless, inherently dangerous, and is generally treated as UXO.
4. UXO may be found on or below the soil surface. Of the small percentage of artillery projectiles, mortars and aerial bombs which did not explode on impact, some will have penetrated the soil. In stable soil conditions, most of these are likely to be found within two metres of the natural ground surface with density increasing towards the surface. In unstable soil conditions, (for example in active sand dunes), UXO may lie at depths beyond the capacity of contemporary detecting equipment to locate.
5. There are no known cases of UXO exploding involuntarily. However, UXO can and have exploded in the following circumstances:
 - a. Movement/vibration (eg. when handled or being transported by vehicle);
 - b. Wilful tampering (eg. by a souvenir collector attempting to separate the components of the UXO);
 - c. Mechanical disturbance (eg. when ploughing, digging or cultivating); and
 - d. Increase in temperature (eg. bush fires).
6. If a UXO or suspected UXO is located, the following procedure should be adopted:
 - a. Do not disturb the site of the suspected UXO;
 - b. Without disturbing the immediate vicinity, clearly mark the site of the UXO;
 - c. Notify the Western Australia Police Service of the circumstances by the fastest possible means; and
 - d. Maintain a presence near the site until advised to the contrary by a member of the Western Australia Police Service or a member of the Defence Forces.