CONSULTATIVE ENVIRONMENTAL REVIEW

OF THE PROPOSED CLEARING OF LAND

ON VICTORIA LOCATION 10598

COCKLESHELL GULLY ROAD

JURIEN

SHIRE OF DANDARAGAN

Prepared for Mr Craig Underwood
Jurien

by

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SUMMARY

Mr Craig Underwood of Jurien owns a property designated Victoria location 10598 which borders Drovers Cave National Park on its western boundary and Lesueur National Park on its northern boundary. It comprises 1704 ha of which 500 ha are cleared.

In its current state of development the property is not financially viable as a farm business. However if it was fully developed with the perennial shrub tagasaste (*Chamaecystisus palmensis*) it has the potential to be financially viable.

Mr Underwood therefore proposes to clear 873 ha of the 1179 ha which remains uncleared and plant this predominately to tagasaste. A small area will be planted to blue gums.

A comprehensive farm physical plan has been prepared by the Moora District Office of the WA Department of Agriculture.

Particular care has been taken in the farm plan to preserve areas of significantly diverse vegetation. This includes several ephemeral wetlands, shrublands adjoining the wetlands, heathland on lateritic outcrops and a tall woodland on a rise amongst *Banksia* woodlands. In addition large areas of *Banksia* woodlands have been retained as buffers along waterways and the Drovers Cave National Park boundary on the western side of the property.

The maintenance of buffers along waterways and on the boundary of the Drovers Cave National Park should ensure the potential for the invasion of weeds and the leaching of nutrients from fertilisers and animal faeces is eliminated. In addition the replacement of natural vegetation with tagasaste, which is a perennial shrub in many ways similar to the plants it is replacing, should ensure there is little or no adverse impact on existing water tables. This should guarantee the ephemeral wetlands are preserved in their existing state.

Consultations with the WA Department of Conservation and Land Management indicate the area proposed to be developed contains no rare or endangered flora or fauna.

The WA Department of Mines and Energy indicates there are no known mineral claims on the property despite extensive surveys in the recent past. The Hydrology Section of the Department indicates the proposed development should have no adverse effect on the caves in the Drovers Cave National Park.

The WA Department of Aboriginal Affairs indicates the development area contains no known Aboriginal sites

The Shire of Danadargan has indicated the development is in accordance with its existing land use plans.

Mr Underwood has agreed to :

1. develop the area to be cleared in accordance with the farm plan prepared by the Moora District Office of the WA Department of Agriculture

2. Maintain the natural vegetation reserves and buffers in the area to be cleared as designated in the farm plan

3. Burn the natural vegetation buffer with Drovers Cave National Park in accordance with the WA Department of Conservation and Land Management's prescribed burning program for the Park

4. Control feral fauna on the property to prevent their spread to Drovers Cave National Park and Lesueur National Park.

Recommendation : The Environmental Protection Agency approve the planned development program on Victoria location 10598.

1.0 Introduction

Mr Craig Underwood of Jurien owns a property designated Victoria location 10598. It comprises an area of 1704.6 ha. It is located 17 km north east of Jurien on the western side of Cockleshell Gully Road. On its western boundary it borders the Drovers Cave National Park. On its southern boundary it adjoins existing farmland. Its northern boundary is immediately south of the Lesueur National Park.

Mr Underwood purchased the property in February 1994. At the time of purchase there were c.500 ha cleared. At this time he was advised by the then owner that the Commissioner of Soil Conservation, in a letter dated 18 June 1989, had authorised the clearing of 500 ha of bush in the south western quadrant of the property.

When Mr Underwood purchased the property its livestock carrying capacity was limited to c.1000 dse (dry sheep equivalents). This was not sufficient to sustain a financially viable farm business. However he was aware of research undertaken by the WA Department of Agriculture and the UWA Dunmar Project in the region which indicated a viable farm business could be established if the property was developed with the perennial shrub tagasaste (*Chamaecystisus palmensis*). With appropriate management practices trial results indicated this shrub was capable of increasing annual stocking rates from 2.0 dse/ha to 10.0 dse/ha.

In recognition of this Mr Underwood in 1994 planted 450 ha of the existing cleared area to tagasaste. However this area is still not sufficient to sustain a financially viable farm business. To achieve a financially viable farm business in the long run he wishes to clear 870 ha of the remaining 1200 ha of uncleared land and plant 830 ha to tagasaste and 40 ha to Tasmanian blue gums for pulp wood or timber production.

2.0 Justification

2.1 Financial Viability

The justification for Mr Underwood wishing to clear 870 ha of his property to plant to tagasaste is that it will enable him to establish a financially viable farm business in the long run.

With 1280 ha of tagasaste in full production he will be able to carry c. 800 breeding cows, c.160 replacement heifers and c.40 bulls.

It is Mr Underwood's intention to target the South East Asian market for live cattle. With the property's proximity to Geraldton, which is a major port for the shipment of live cattle to SE Asia, he is in an ideal position to take advantage this market.

There is an increasing demand for live cattle in Indonesia, Malaysia and the Philippines as evidenced by the fact that exports have increased four fold in the last three years and are predicted to double within the next three (Peggs 1993), (Peggs 1994) (Peggs 1995).

2.2 Alternative Uses

The property has few alternative uses.

With its existing level of development it is unlikely to be a financially viable farm business in its own right.

If the proposed area to be cleared was not planted to tagasaste it may be technically feasible to plant it to blue gums for pulp wood or timber production. However no CALM or Bunnings Tree share-farming agreements are available for the area as yet. On this basis such an alternative use would not be commercially feasible at present.

There is potential to develop nature based tourism activities on the property given its proximity to Jurien. To this end Mr Underwood has plans to develop such activities within the next five years. However such activities are unlikely to be financially viable in their own right. Rather they are only likely to be viable as an adjunct to a viable farm business.

2.3 Preferred Site

The siting of the proposed area to be cleared and developed with tagasaste and blue gums has been determined in consultation with the Moora District Office of the WA Department of Agriculture and the Moora District Office of the WA Department of Conservation and Land Management. To this end a detailed Farm Plan has been prepared taking account of the need eliminate any potential environmental degradation to areas within and beyond the farm's boundaries.

Of the 1205 ha of uncleared land which remains at present it is proposed to clear 873 ha to be planted to tagasaste and blue gums and leave 332 ha in its natural state. As such 28% of the presently uncleared area will remain in its natural state. For the property as a whole 20% will remain in its natural state.

Area Cleared ha	**Area Uncleared** ha	**Total Area** ha	**Proportion Uncleared** %
Before			
500	1205	1705	70%
After			
1373	332	1705	20%

3.0 Proposal

3.1 History

The property was purchased by Mr Underwood in February 1994. At the time of purchase 500 ha of the 1700 ha were cleared and pastured. Prior to purchase Mr Underwood had established with the vendor and his selling agent that approval had been given by the Commissioner of Soil Conservation in 1989 to clear a further 500 ha. This was an important consideration in his purchase decision given that the farm at the time of purchase was only capable carrying c.1000 dse and as such not capable of sustaining a financially viable farm business.

In March 1994 Mr Underwood put forward to the Department of Environmental Protection a proposal to clear 1000 ha of land on Victoria location 10598.

In May 1994 the Environmental Protection Agency decided there were grounds to warrant a formal assessment of the proposal in the form of a Consultative Environmental Review.

3.2 Farm Plan

A detailed physical plan for the whole farm incorporating both cleared and currently uncleared land was prepared for Mr Underwood by the Moora District Office of the WA Department of Agriculture. (See attached map.) This plan aims to eliminate potential land degradation problems both within and beyond the farm's boundaries.

To prevent the possibility of wind erosion on areas developed to tagasaste it is proposed to plant on a north-south axis such that the rows are perpendicular to prevailing winds. In addition it is proposed to plant the inter-row areas between the tagasaste to both perennial and annual grasses and legumes to ensure these areas are stable and as such not susceptible to water or wind erosion.

Particular care has been taken in the farm plan to preserve areas of significantly diverse vegetation. This includes several ephemeral wetlands, shrublands adjoining the wetlands, heathland on lateritic outcrops and a tall woodland on a rise amongst *Banksia* woodlands. In addition large areas of *Banksia* woodlands have been retained as buffers along waterways and the Drovers Cave National Park boundary on the western side of the property.

The nutritional requirements of tagasaste vary according to soil fertility. With a root system in excess of 10m (Phil Scott, Department of Agriculture, South Perth, Pers. com.) tagasaste is able to extract nutrients far deeper in the soil profile than traditional annual crops and pastures. As a consequence it requires less fertiliser than would be the case with annual crops and pastures. A typical fertiliser regime would consist of an annual application of Super : Potash 3:1 at a rate of 75 kg/ha. This would supply 5 kg of P, 15 kg of K, 5 kg of Ca and 9 kg of S.

As a leguminous shrub tagasaste fixes its own nitrogen from the atmosphere. Hence nitrogenous fertiliser is not required.

The possibility fertiliser nutrients leaching into groundwater and/or running off from areas planted to tagasaste should be minimal. As a deep rooted perennial the plant has an ability to very efficiently take up nutrients.

The maintenance of buffers along waterways and on the boundary of the Drovers Cave National Park should ensure the potential for the invasion of weeds and the leaching of nutrients from fertilisers and animal faeces is eliminated. In addition the replacement of natural vegetation with tagasaste, which is a perennial shrub in many ways similar to the plants it is replacing, should ensure there is little or no adverse impact on existing water tables. This should guarantee the ephemeral wetlands are preserved in their existing state.

3.3 Development Program

Year	Clear	Tagasaste	Blue Gums	Natural Vegetation	Total
	ha	ha	ha	ha	ha
1995	368.5	328.5	40.0	181.3	549.8
1996	311.0	311.0	0.0	110.7	421.7
1997	193.6	193.6	0.0	6.7	200.3
Total	873.1	833.1	40.0	298.7	1178.8

3.4 Approvals Required/Obtained

The Moora District Office of the WA Department of Agriculture has approved the farm plan as proposed.

The Moora District Office of the WA Department of Conservation and Land Management has approved the proposed plan (See attached letter dated 15 September 1994.)

The Department of Mines and Energy has indicated that despite the area in question being extensively surveyed there are no known mineral claims. The Hydrology Section of the Department has also indicated the development is not anticipated to affect the hydrology of the area. (See attached CALM letter dated 15 September 1994.)

The Aboriginal Affairs Department has indicated in an area *outside* the farm's boundaries one Aboriginal site is known to exist. No sites are known to exist within the farm's boundaries. (See attached letter dated 17 January 1995.)

The President of the Shire of Dandaragan, Mr G.Snook, has indicated the development is in accordance with existing land use plans.

4.0 Existing Environment

4.1 Existing Environment and Proposed Land Uses

On the existing cleared area of the farm a sheep grazing enterprise was operated by the previous owner. It is apparent that a significantly larger area of the farm was once originally cleared but has been allowed to regenerate naturally to *Banksia* and *Eucalyptus todtiana* woodlands. Since Mr Underwood purchased the property in 1994 most of the existing cleared area has been planted to tagasaste and a small area of *Acacia saligna*.

The natural vegetation on the area proposed for development comprises two systems :

1. *Banksia* woodland on grey/yellow sands and
2. *Eucalyptus todtiana* woodland on yellow sands.

The *Banksia* woodland is characterised with the following species :
Banksia menziesii, B.attenuata, Jacksonia floribunda, J.sp., Conspermum stochadis, Hibbertia hypericoides, Stirlingia latifolia, Blancoa canescens, Mesomelaena (stygia), Allocasuarina humilis, Adenanthos cygnorum, Patersonia sp., Caladenia flava, Angiozanthus humilis. (Appendix CALM letter.)

The *Eucalyptus todtiana* woodland is characterised with the following species :
Eucalyptus todtiana, Adenanthos cygnorum, Angiozanthus humilis, Jacksonia floribunda, Mesomalaena (stygia), Burchardia umbellata, Banksia candollaena, B. attenuata, Hakea incrassata, H. amplexicaulis, Thysanotus sp., Eremaea sp., Patersonia sp., Drosera sp., Dryandra sessilis, Conospermum crassinervium, Calothamnus sanguineus, Hibertia hypericoides, Caladenia flava. (Appendix CALM letter.)

It is planned to plant the proposed area to be cleared to tagasaste for beef cattle production.

On the western boundary of the property is the Drovers Cave National Park. It is understood the Park's current use is to preserve natural features and flora and fauna. Occasionally the Park is used for recreational purposes in the form of caving expeditions and adventure training.

To the immediate north of the property is Lesueur National Park. As a newly established park no development has occurred as yet to facilitate tourism. Hence its principal use at present is to preserve natural features and flora and fauna.

To the south of the property is farmland.

To the west of the property on the eastern side of Cockleshell Gully Road is farmland and vacant crown land.

4.2 Town Planning Scheme/Local Rural Strategy

The proposed development has been endorsed by the Shire of Dandaragan.

4.3 Vegetation and Rare Flora

The area proposed for development comprises of *Banksia* woodland on grey/yellow soils and *Eucalyptus todtiana* woodland on yellow soils.

The *Banksia* woodland is characterised with the following species :
Banksia menziesii, B.attenuata, Jacksonia floribunda, J.sp., Conspermum stochadis, Hibbertia hypericoides, Stirlingia latifolia, Blancoa canescens, Mesomelaena (stygia), Allocasuarina humilis, Adenanthos cygnorum, Patersonia sp., Caladenia flava, Angiozanthus humilis. (Appendix CALM letter.)

The *Eucalyptus todtiana* woodland is characterised with the following species :
Eucalyptus todtiana, Adenanthos cygnorum, Angiozanthus humilis, Jacksonia floribunda, Mesomalaena (stygia), Burchardia umbellata, Banksia candollaena, B. attenuata, Hakea incrassata, H. amplexicaulis, Thysanotus sp., Eremaea sp., Patersonia sp., Drosera sp., Dryandra sessilis, Conospermum crassinervium, Calothamnus sanguineus, Hibertia hypericoides, Caladenia flava. (Appendix CALM letter.)

According to the Department of Conservation and Land Management there is "...no evidence of any rare flora..." on the property. (See attached letter dated 15 September 1994.) In addition Dr S.Patrick of the State Herbarium confirms that no declared rare flora or priority taxa are known, or are likely, to occur on the property.

However because it is thought by the Department of Conservation and Land Management some priority species may occur on lateritic heath in the north and north east of the property this entire area has been reserved. (See attached map.)

4.4 Fauna and Rare Species

According to report by Burbridge and Fuller (1990) on their survey of fauna in the Leseuer area, (just to the north of Mr Underwood's property) it "...is known to be rich in vertebrates, with 15 indigenous mammals, 124 bird species, 48 frog species and 9 frog species." The authors also concluded the area was likely to be rich in species of terrestial and aquatic invertebrates with104 species of macro-invertebrates sampled during their survey.

The survey area contained a number of land systems, two of which are contained in Mr Underwood's property. Hence it is likely some mammal, bird, reptile and amphibian vertebrates and some of the invertebrates found in the survey are also likely to be found on the property.

However as Burbridge and Fuller remark in their paper "...*none* of the species recorded has been declared *rare or likely to become extinct* or *in need of special protection* under the Wildlife Conservation Act, and none has restricted distributions."

In terms of feral fauna Burbridge and Fuller indicate the red fox, the feral cat and the house mouse are common through-out the area while the European rabbit is common on the border between farmland and bushland.

4.5 Hydrology

According to the Hydrology Section (Wade Johnson, pers.com.) of the Department of Mines and Energy the proposed development should not have any adverse effect on the hydrology of the area. This is because the Tamala limestone, which underlays the area, is quite transmissive. Hence it is highly unlikely groudwater levels will rise as a result of the proposed development. On this basis it is unlikley to have any significant impact on the caves in Drovers Cave National Park.

It is likely the watercourses in the north east quadrant of the property will drain into Cockleshell Gully and ultimately into the Lesueur National Park. To prevent any leaching of nutrients from fertilisers or animal faeces along these drainage lines wide buffers of natural vegetation will be retained to act as biological filters. (See attached map.)

4.6 Existing Public and Private Use

As private land owned by Mr Underwood there is currently no public use of the land. The only private use of the land is made by Mr Underwood. On the existing cleared area tagasaste and a small area of *Acacia saligna* have been planted for future cattle grazing.

4.7 Existing Communities

The closest community to the planned development is Jurien. The population totals c.2000 for most of the year although it may double in the summer when tourists visit.

The economic mainstays of the town are fishing and tourism.

4.8 Historical, Anthropological and Ethnographic Sites

According to the Aboriginal Affairs Department there are no known sites of anthropological or ethnographical significance on the property.

5.0 Key Environmental Impacts and Management

Based on the proposed farm plan the development is unlikely to have any significant impact on the environment in the area.

5.1 Representation of Native Vegetation in the Area

All areas of significantly diverse vegetation on the property will be preserved. This will incorporate a number of ephemeral wetlands, shrublands adjoining the wetlands, heathland on lateritic outcrops and a tall woodland rise amongst Banksia woodland.

With the Drovers Cave National Park and the Lesueur National Park adjoining the property it is considered native vegetation is well represented in the area.

According to Beard (1979) the Drovers Cave National Park is comprised primarily of scrub heath on limestone which is characterised by a *Dryandra-Calothamus* association. Leseuer National Park, based on Beard's vegetation survey, is made up of heath and scrub heath, banksia low woodlands and scattered patches of eucalypt woodland.

The area designated to be cleared is comprised primarily of banksia low woodlands and eucalypt woodlands.

On the basis of these vegetation systems being well represented in the Lesueur and Drovers Cave National Parks it is not considered the proposed clearing program will have any significant effect on the representation of natural vegetation in the area.

5.2 Effects of Land Clearing in a Regional Context

It is not expected the proposed development will have any significant impact on biodiversity in a regional context. The vegetation to be cleared is well represented in the region. In addition the preservation of buffers of natural vegetation along watercourses and farm boundaries will prevent leaching of nutrients and the spread of weeds into the surrounding National Parks.

Tagasaste is susceptible to Jarrah dieback (*Phytophora cinnamoni*). To date *Phytophora* has not been a problem for tagasaste plantings in the West Midlands. There is no evidence any of the existing tagasaste has been affected by *Phytophora*.

5.3 Effects on Wildlife Habitat

The planned development will, to a degree, have a negative impact on existing wildlife in the area to be developed. However most fauna will be able to seek alternative habitats in the Drovers Cave and Lesueur National Parks which adjoin the area to be developed. Once the area is planted to tagasaste is well established (year 3) it will offer a new habitat to a range of fauna. Anecdotal evidence suggests tagasaste provides nesting sites and shelter to a number of vertebrates and invertebrates (Tim Wiley, Department of Agriculture, Moora, Pers.com.).

5.4 Community Issues

The planned development of the cleared area has been prepared by the Moora District Office of the WA Department of Agriculture and as such fits into the Catchment Management Plan prepared for the local Land Conservation District Committee.

No other community issues are known to exist at present.

5.5 Impact on Drovers Cave National Park and Lesueur National Park.

The development has been planned to ensure it has no adverse impact on either Drovers Cave National Park or Lesueur National Park. To this end substantial areas of natural vegetation have been retained along watercourses and boundaries to prevent the leaching of nutrients from fertilisers and animal faeces and the spread of weeds into the Parks.

The soils in which tagasaste is to be planted are deep sands. Therefore rainfall runoff is unlikely to be significant. As a deep rooted perennial tagasaste should further reduce any potential for runoff. In addition it should reduce the potential for wind erosion and hence the possibility of sand and weed seeds being blown into either national park.

In terms of underground water flows the development is not anticipated to have any impact on the caves in the Drovers Cave National Park nor on the Lesueur National Park.

5.6 Weed, Feral Fauna and Fire Control

In consultation with the Department of Conservation and Land Management the farm plan incorporates buffers of natural vegetation along the farm's boundaries with the two parks in order to prevent the spread of weeds.

Mr Underwood has indicated he is prepared to enter into an prescribed burning agreement with the Department of Conservation and Land Management to manage the buffer on his western boundary in association with the Drovers Cave National Park's prescribed burning program. This will aid fire management in the Park.

Rabbits have the potential to be a problem in the area. Mr Underwood intends to undertake a series of eradication campaigns to rid his property of rabbits given that they can have a devastating impact on young tagasaste seedlings. This should benefit the adjoining National Parks.

The eradication campaigns will focus on the use of 1080 poison baits and warren ripping where appropriate. The use of 1080 poison baits should have minimal impact on surrounding wildlife.

5.7 Aboriginal Heritage Issues

Based on information from the Aboriginal Affairs Department there are no Aboriginal heritage issues associated with the planned development.

5.8 Cultural, Recreational and Educational Opportunities

Mr Underwood intends to incorporate nature based tourism into his farm business in the near future. This will be based on visiting the natural vegetation areas retained on property. This will offer recreational and educational opportunities to a wide range of people.

5.9 Visual Amenity

Rows of evergreen tagasaste interspersed with substantial areas of natural vegetation should provide a pleasing visual amenity.

5.10 Management of Remaining Vegetation

The remaining vegetation will be carefully managed to ensure it is preserved. To this end significant buffers have been planned to ensure areas of significantly diverse vegetation are maintained in their current state.

These areas will be fenced off from livestock in order to ensure their preservation. Fences will be constructed of four plain wires with two electrified. These should have little impact on small mammals and reptiles. However they may restrict the movement of larger animals such as kangaroos and emus.

6.0 Public Participation

The issue of clearing land on Mr Underwood is essentially a private matter. However he has discussed it with his neighbours, the Shire of Dandaragan, the Moora Office of the WA Department of Agriculture, the Moora Office of the Department of Conservation and Land Management, the Department of Mines and Energy, the Aboriginal Affairs Department and the Department of Environmental Protection.

Mr Underwood's neigbours, farmers John Gregson, Jack Robinson and Rodney Ward, adjoin the property on the eastern and southern boundaries. They are supportive of the proposed development. They consider the farm will finally be managed appropriately given it was poorly managed in the past and that the development will confirm the potential for tagasaste in the area.

7.0 List of Environmental Commitments

1. Develop the area to be cleared in accordance with the farm plan prepared by the Moora District Office of the WA Department of Agriculture,

Responsibility : Mr C.Underwood
Audit : Land Conservation Officer, Moora District Office, WA Department of Agriculture

2. Maintain reserves and buffers:

54 ha, 2.9 ha, 1 ha, 124.4 ha, 69.7 ha, 3.6 ha, 3.1 ha, 1.1 ha, 3.4 ha, 6.3 ha, 2.9 ha, 7.7 ha, 19.6 ha as per attached map,

Responsibility : Mr C.Underwood
Audit : Land Conservation Officer, Moora District Office, WA Department of Agriculture
: Senior Ranger, Cervantes Office, Department of Conservation and Land Management

3. Burn the 69.7 ha buffer with Drovers Cave National Park in accordance with the Department of Conservation and Land Management's prescribed burning program,

Responsibility : Mr C.Underwood
Audit : Senior Ranger, Cervantes Office, Department of Conservation and Land Management

4. Control feral fauna on the property to prevent their spread to the Drovers Cave National Park and the Lesueur National Park.

Responsibility : Mr C.Underwood and the Agriculture Protection Board
Audit : Senior Ranger, Cervantes Office, Department of Conservation and Land Management

8.0 References

Beard, J.S., (1979), The Vegetation of the Moora and Hill River Area, Western Australia, Vegmap Publications, Perth

Burbridge, Andrew A. and Phillip J.Fuller, (1990), *Fauna*, in Burbridge Andrew A., Stephen D.Hooper and Stephen van Leeuwen, Nature Conservation, Landscape and Recreational values of the Lesueur area, Environmental Protection Authority, Perth, Western Australia, Bulletin 424, January, pp.71-82.

Peggs, Alan D. et al, (1993), A Business Plan for the Kimberley Beef Industry, Kimberley Beef Industry Development Team, WA Department of Agriculture, South Perth, September, p.69-71.

Peggs, Alan D. (1994), The Market for Live Cattle and Beef in Indonesia, Kimberley Beef Industry Development Team, WA Department of Agriculture, South Perth, August.

Peggs, Alan D., (1995), *Markets for Western Australian Beef*, in Wiley Tim and Juliet Mailey, Tagasaste Establishment, Grazing, Economics and Cattle Markets, WA Department of Agriculture, Moora, April, pp.15-24

Wiley, Tim, Oldham, C., Allen, G. and Wiese, T., (1993), Tagasaste, Department of Agriculture, South Perth, Buletin 4291, June.

Alan Peggs
18 May 1995
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File :Underwd1

APPENDICES :

GUIDELINES FOR THE CONSULTATIVE ENVIRONMENTAL REVIEW FOR THE PROPOSED CLEARING OF 1000 HA OF LAND FOR AGRICULTURE, VICTORIA LOCATION 10598, NORTH JURIEN, SHIRE OF DANDARAGAN.

Overview

In Western Australia, all environmental reviews are about protecting the environment, which for this proposal means that the environmental values associated with the Lesueur and Drover's Cave National Parks, and the preservation of remnant vegetation are protected.

These Guidelines have been prepared in response to a proposal by Mr Craig Underwood, for the clearing of 1000 Ha for agriculture, on Victoria Location 10598, 17 km north east of Jurien, and adjacent to the Drover's Cave National Park, and the Lesueur National Park.

The primary purpose of the Consultative Environmental Review (CER) is to provide information on the proposal to the Environmental Protection Authority (EPA) within a local framework. The Authority will assess this information and then provide advice to the Government on the environmental acceptability of the proposal. An additional function of the CER is to communicate clearly with the public so that the EPA can obtain informed public comment. As such, environmental impact assessment is quite deliberately a public process. It also seeks to inform decision makers, to identify risks and minimise adverse environmental impacts, to achieve environmentally sound proposals through research, management and monitoring, and to manage potential conflict through the provision of the means for effective public participation.

It is the responsibility of the proponent to design and implement a proposal which protects the environment and to present this proposal for review by all interested members of the public. The proponent should describe what is proposed, discuss the potential environmental impacts of the proposal, and then describe how these environmental impacts are going to be managed so that the environment is protected.

These Guidelines have been prepared to assist the proponent in identifying issues which should be addressed within the CER. They are not intended to be exhaustive, and the proponent may consider that other issues should also be considered within the document.

The discussion in the CER should be concise, accurate, and easily understood. Specialist information should be included where it assists in the understanding of technical aspects of the proposal. Where possible, all information should be referenced. A copy of these Guidelines should be included in the CER.

Objectives of the CER

The CER should have the following objectives :

• to place this proposal in the context of the local environment;

• to explain the issues and decisions which led to the choice of this proposal at this place at this time;

• discuss the need for the proposal, including potential benefits of proposed clearing;

• to set out the environmental impacts that the proposal may have; and

• for each impact, to describe any environmental management steps the proponent believes would avoid, mitigate or ameliorate that impact.

The CER should focus on the major issues for the area and anticipate the questions that members of the public may raise. Data describing the environment should be directly related to the discussion of the potential impacts of the proposal. Both should then relate directly to the actions proposed to manage those impacts.

1. Justification

• justification and objectives for the proposed clearing;
• an evaluation of alternative(s) including discussion of alternative land uses, and constraints associated with these; and
• justification of the preferred site. Discussion should make reference to the scale of the proposed clearing activity.

2. Proposal

This should include a discussion of the following points:

• History of the proposal
• Farm Plan;
• Approvals required/obtained

3. Existing Environment

• existing environment, including existing land uses and status, adjacent land uses and proposed land uses;
• consistency with Town Planning Scheme; and/or Local Rural Strategy
• vegetation, including any declared rare flora or priority species
• fauna including any rare or endangered species
• hydrology data
• existing public and private use of the area
• description of existing communities in the vicinity of the proposed development; and
• documentation of historical, archaeological and ethnographic sites.

4. Key Environmental Impacts and Management

The potential short term and long term impacts of the proposed clearing should be addressed, including the following specific issues:

- distribution and representation of native vegetation in the region and catchment
- an assessment of ecological significance of the remnant including loss of biodiversity and plans for protection of any declared rare flora or priority species
- effects of clearing of native vegetation on land and nature conservation in a regional context
- any dieback on the property, and the implementation of a dieback hygiene program
- effects on wildlife habitat
- community issues eg in relation to local revegetation efforts (LCDC/other)
- effects on Lesueur and Drovers Cave National Parks, especially effects on surface and sub-surface hydrology and hydrology effects on caves in the area
- consistency with management planning for Drovers Cave and Lesueur National Parks
- weed, feral fauna and fire control both in the National Parks and on the property in question
- Aboriginal heritage issues
- cultural, recreational, and educational opportunities
- visual amenity
- management of remaining vegetation to retain ecological values

5. Public Participation and consultation

A description should be provided of the public participation and consultation activities undertaken by the proponent in preparing the CER. It should describe the activities previously undertaken or proposed to be undertaken to promote public awareness and support for the proposal, the dates, groups and individuals involved, and the objectives of the activities.

Cross reference should be made with the description of the environmental management for the proposal which should clearly indicate how community concerns have been addressed. Where these concerns are dealt with via other departments or procedures, outside the Environmental Protection Authority process, these can be noted and referenced here.

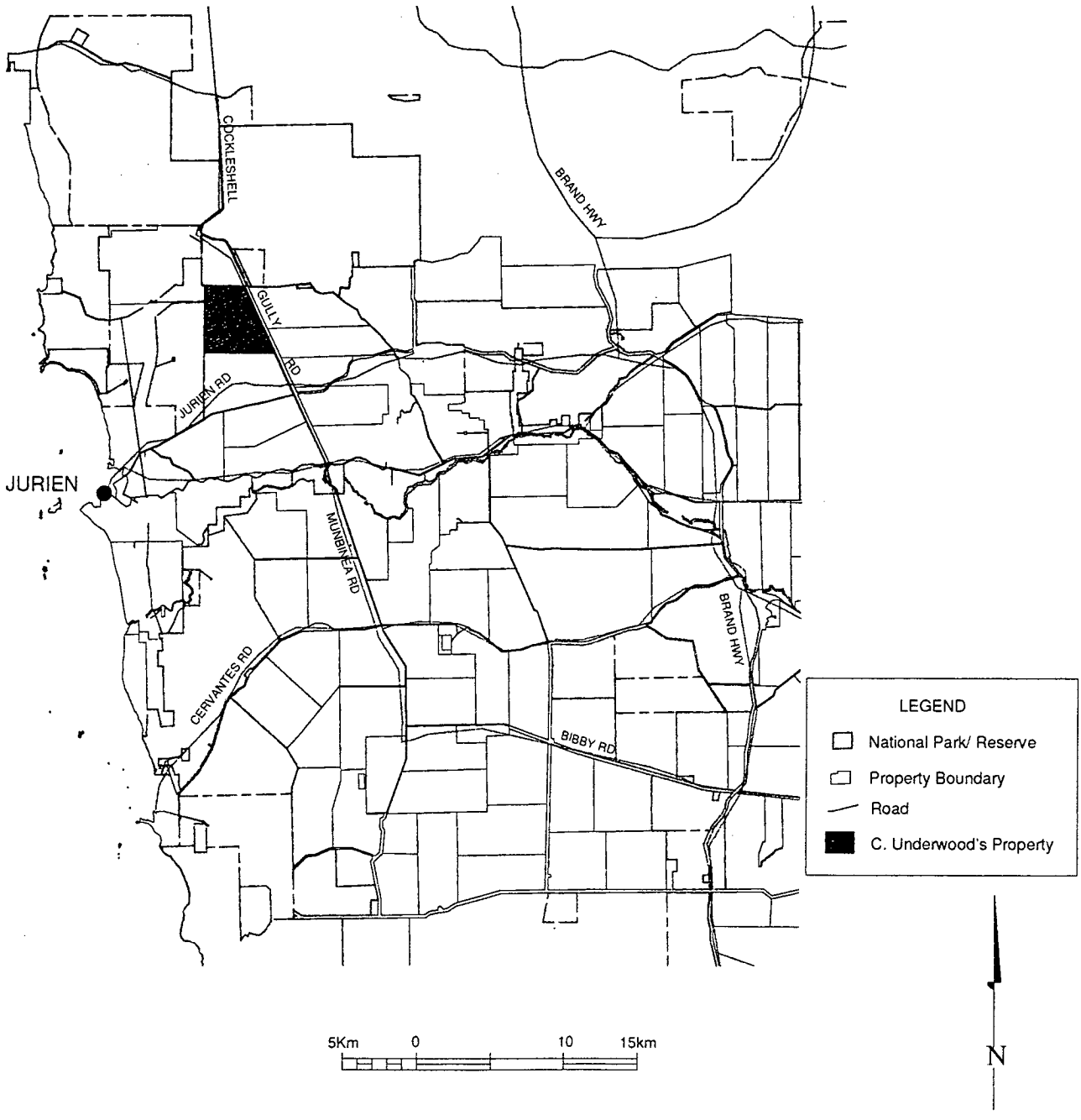
6. Detailed list of environmental commitments

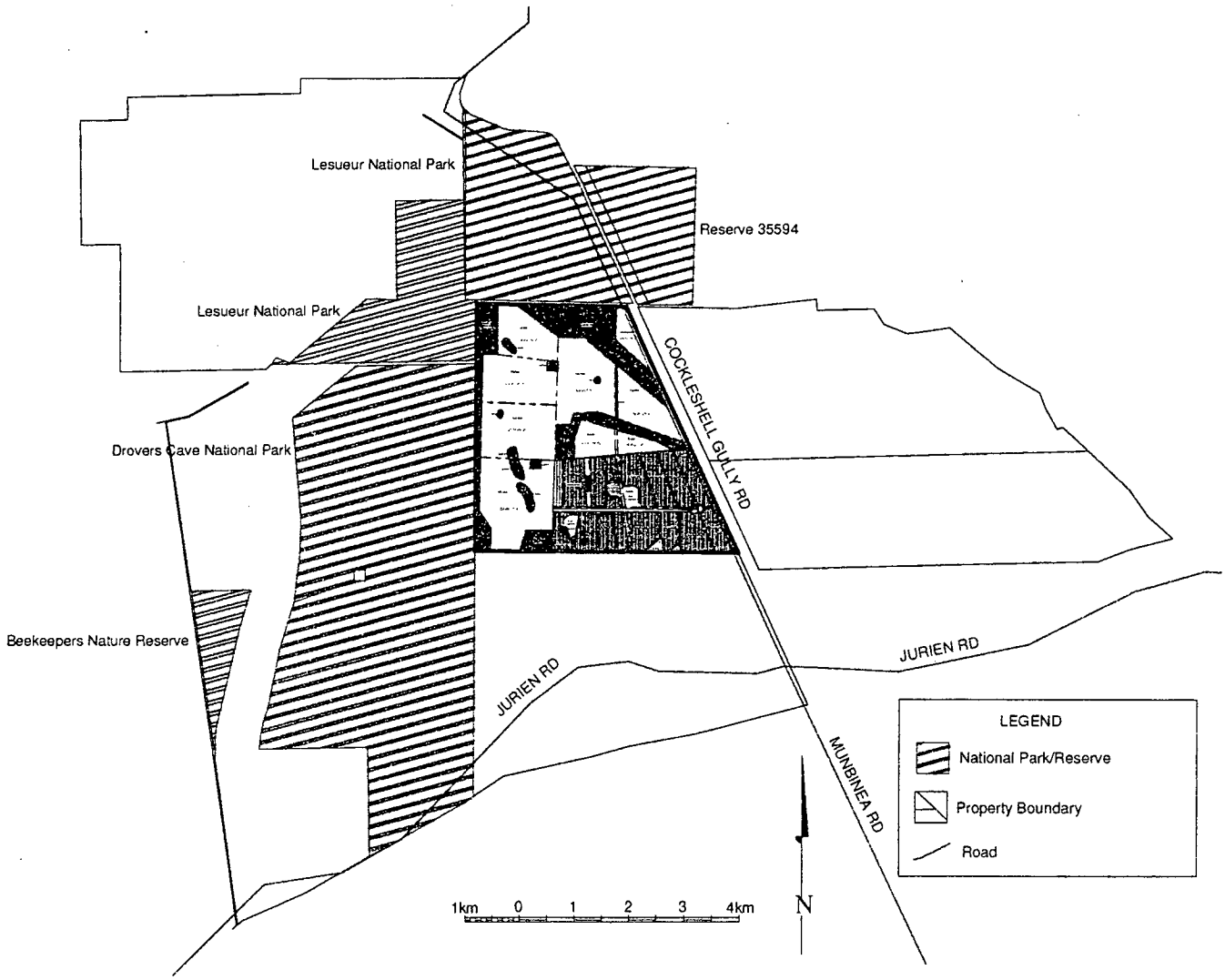
The commitments made by the proponent to protect the environment should be clearly defined and separately listed. Where an environmental problem has the potential to occur, there should be a commitment to rectify it. They should be numbered and take the form of:

(a). who will do the work;
(b). what the work is;
(c). when the work will be undertaken; and
(d). to whose satisfaction the work will be carried out.

All actionable and auditable commitments made in the body of the document should be numbered and summarised in this list.

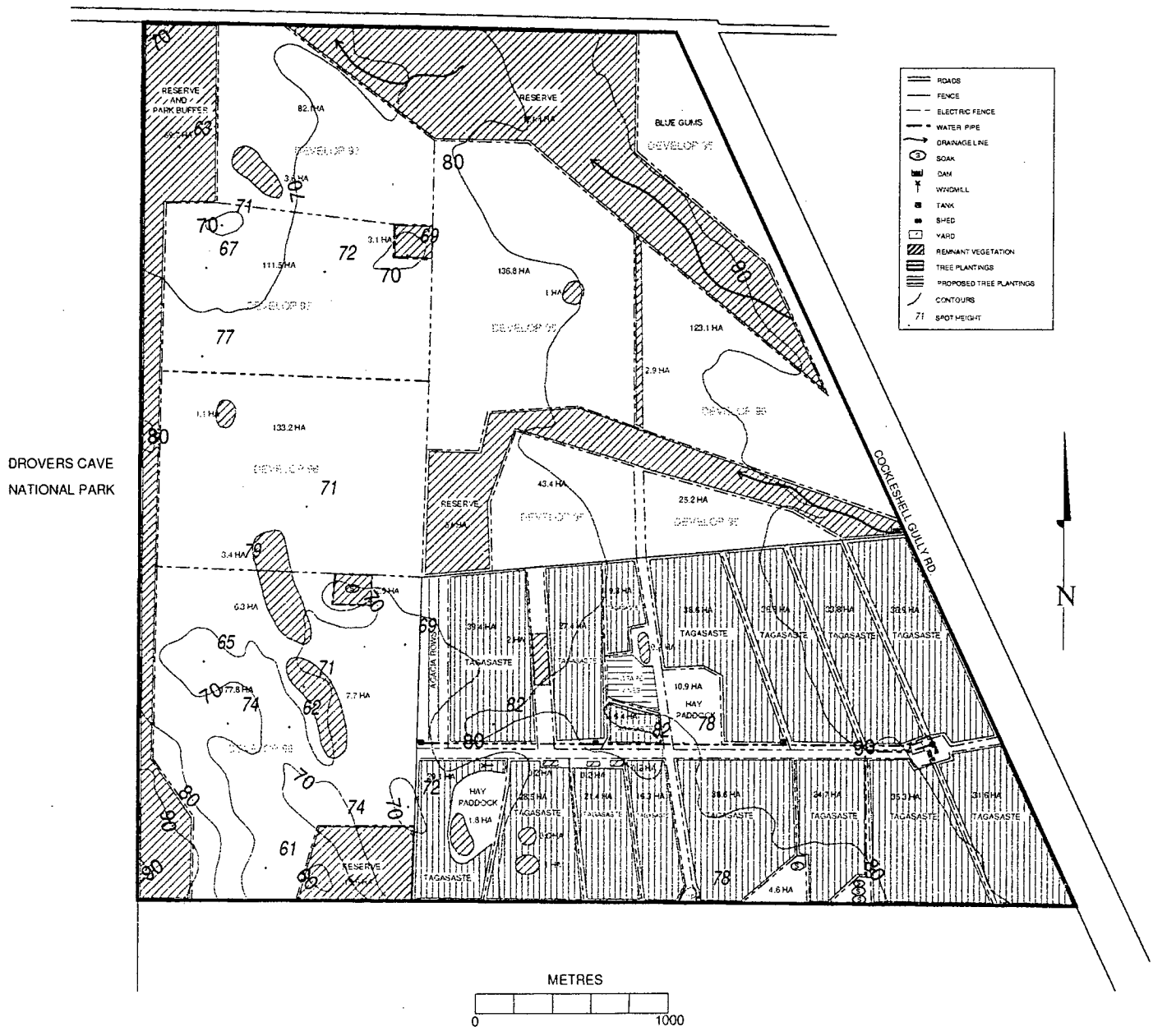
LOCATION DIAGRAM





Plan showing C. Underwood's property, surrounding properties and national parks/reserves

CRAIG UNDERWOOD
FARM PLAN
VICTORIA LOC. 10598



DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

Form CLM 808

To: **David Rose**
CALM Moora

Your Ref:
Our Ref:
Enquiries: **Bill Evans**
Phone: **(096) 527043**

Subject: **Private Property Inspection, Vic. Loc. 10598 - Craig Underwood**

As requested, I carried out an inspection of the above property on Tuesday, 6 September. Mr. Underwood outlined his plans for clearing a substantial portion of his property with the intention of implementing a tree (*Acacia saligna & Cytisus proliferus* [Tagasaste]) and beef farming operation.

Background

The property is located on the west side of Cockleshell Gully Road and immediately due south of Lesueur National Park and due east of Drover's Cave National Park. A large part of the property is already cleared and has been used in the past to run sheep. This does not appear to have been a very successful venture from the point of land care as there is little in the way of vegetation cover and several severe erosional problems. Other parts of the property are believed to have been cleared in the past and have regenerated naturally to *Banksia* and *Eucalyptus todtiana* woodlands. Mr. Underwood has begun planting his fodder crops in north/south lines and has attempted to stabilize the eroded sections using oats in the open areas and mallee root and brush in the deep blowouts. Considerable work has already been done in this area and from my discussion with Mr. Underwood I believe he has a good understanding of the problems and will continue to undertake measures to alleviate them.

From the details given to me by Mr. Underwood, I believe he intends to clear several hundred hectares of *Banksia* woodlands and reserve all of the areas of significantly diverse vegetation. This includes several ephemeral wetlands including a magnificent stand of paperbarks (*Melaleuca rhaphiophylla*), some shrublands adjoining the wetlands, heathland on a lateritic outcrop and an unusual, tall woodland on a rise among *Banksia* woodlands. In addition to this, large areas of *Banksia* woodlands will be retained as buffers.

DISCUSSION

During the course of the inspection I frequently walked sections of the proposed bush to be cleared and saw no evidence of any rare flora of which I am acquainted. In addition to this, I contacted Sue Patrick at the State Herbarium and requested a check of Declared Rare Flora and Priority taxa. Her reply is attached and confirms that no D.R.F. is known or is likely to occur on the property. Although the Herbarium report indicates that several of the priority species are unlikely to occur on the property, I believe that due to the occurrence of the lateritic heath it is quite possible that these species do occur. Under the development plans outlined to me by Mr. Underwood the laterite where the priority species may possibly occur would be reserved. It is my understanding that Mr. Underwood has plans to incorporate nature based tourism into his farm plan in the intermediate future.

At my request, Mr. Underwood is considering a wide buffer adjacent to Drover's Cave National Park and is prepared to enter into a joint agreement to operate this in conjunction with prescribed burning in the park. This will allow much longer rotations than would otherwise be possible. The land at the northern end of the property, adjacent to Lesueur National Park, is proposed to be left uncleared and it may be possible in the future to incorporate this into a joint fire protection agreement. We also discussed the possibility of a fuel reduced buffer bisecting the property along a north/south axis. I emphasized the point that clearing to the boundary line would be likely to increase weed encroachment in the adjoining parks. Mr. Underwood appreciated this and pointed out that his proposal did not include clearing to the fenceline on any boundary adjoining the parks.

As the farm will probably have some nutrient runoff from fertilizers and animal faecal material, I have suggested that wide buffers of native vegetation are retained along watercourses to act as biological filters. According to the advice given to Mr. Underwood by the Dept. of Minerals and Energy, the hydrology of the area is dominated by drainage away from Drovers Cave National Park. However it is obvious that the watercourse to the north of the property drains into Cockleshell Gully through Lesueur National Park. A wide buffer around this system should be a condition of approval in order to protect the wetland both on the property and further downstream in the park.

Vegetation of the land proposed for clearing.

During my inspection I compiled very basic flora composition on each of the main vegetation complexes proposed for clearing. All proposed clearing is to take place in two basic vegetation types, *Banksia* woodland and open *Eucalyptus todtiana* woodland.

Banksia woodland on grey/yellow sands.
Banksia menziesii, B.attenuata, Jacksonia floribunda, J. sp., Conospermum stoechadis, Hibbertia hypericoides, Stirlingia latifolia, Blancoa canescens, Mesomelaena (stygia), Allocasuarina humilis, Adenanthos cygnorum, Patersonia sp., Caladenia flava, Anigozanthos humilis.

Eucalyptus todtiana woodland on yellow sands.
Eucalyptus todtiana, Adenanthos cygnorum, Anigozanthos humilis, Jacksonia floribunda, Mesomelaena (stygia), Burchardia umbellata, Banksia candolleana, , B.attenuata, Hakea incrassata, H.amplexicaulis, Thysanotus sp., Eremaea sp., Patersonia sp., Drosera spp., Dryandra sessilis, Conospermum crassinervium., Calothamnus sanguineus, Hibbertia hypericoides, Caladenia flava.

The purpose of including these lists is to indicate the general floral structure of the area and is not intended to constitute an exhaustive list of all species.

SUMMARY

Overall the impression given to me by Mr. Underwood was one of professionalism and a genuine concern for his land. He seems keen to incorporate environmental protection into his farm plan and has already demonstrated a willingness to improve the land by undertaking rehabilitation of eroded areas and erosion prevention measures on his tillage to date. Substantial areas of unusual vegetation types are proposed to be left uncleared with a view to promoting nature-based tourism in the future.

Provided the vegetation to be cleared is not regarded as poorly represented in the area, and adequate consideration is given to buffers around wetlands and boundaries, I can see no reason to object to Mr. Underwood's proposal on the grounds of impact on adjoining reserves.

Bill Evans
A/Senior Ranger

15 September, 1994

District Office

Department of Agriculture — Western Australia

Your Ref:
Our Ref:
Enquiries Mr. Borger
Date: 26th, June 1989

Colorado Holdings Pty. Ltd.
140 Fremantle Road
GOSNELLS WA 6110

RE: CLEARING LOT 10598.

Dear Sir,

The Commissioner of Soil Conservation has no objection to your "Parkland clearing" of Lot 10598 as per your diagram, with the proviso that the larger trees will be retained.

Also the plant I brought back to identify was "Mulla mulla", it is considered a good sheep feed.

Yours faithfully,

John Borger
ADVISER
MOORA DISTRICT OFFICE

GOVERNMENT OF WESTERN AUSTRALIA

ABORIGINAL AFFAIRS DEPARTMENT

ENQUIRIES: Liz Bloor 235 8103

OUR REF: 93240

YOUR REF:

DATE: 17 January 1995

Mr Craig Underwood
PO Box 97
JURIEN
WA 6516.

Dear Mr Underwood

RE: REQUEST FOR INFORMATION FROM THE REGISTER SYSTEM (VICTORIA LOCATION: FARMING PROPERTY 10598, NEAR/ADJACENT TO COCKLESHELL GULLY ROAD, JURIEN EAST)

Thank you for your phone call of 17 January 1995. Although we are not sure of the exact location of Farming Property 10598, a search of our Register system indicates that there is one listed Aboriginal site known to this Division within the land marked on the attahed map. The result of our search is set out on Attachment 1. However it is possible that sites that have not yet been recorded may exist.

The *Aboriginal Heritage Act 1972* (the Act) protects all Aboriginal sites in Western Australia whether they are known to this Division or not.

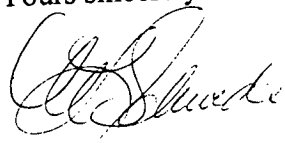
Prior to your proposed development/activity, so that no site is damaged or altered (which would result in a breach of Section 17 of the Act) it is recommended that you engage suitably qualified consultants to conduct ethnographic and archaeological surveys of the area. This will ensure that all Aboriginal interest groups are consulted so that all sites on the designated land are avoided or identified. Such a survey would involve archival research, consultations and on the ground inspections. This Division is not able to recommend individual consultants, however we can provide contact details of the professional associations whose members do conduct surveys. A survey should also ensure that the provisions of the Act are met.

It is our preference that any development plans are modified to avoid damaging or altering any site. If this is not possible, and in order to avoid the breach of the Act, the land owner should submit a Notice in writing under Section 18 of the Act to the Trustees of the West Australian Museum seeking the Minister for Aboriginal Affairs'

prior written consent to use the land. A form to lodge a Notice under Section 18 is available from the Division.

Please do not hesitate to contact Steve Corsini, of our Midland office, if we can be of further assistance.

Yours sincerely



Madge Schwede
Heritage Assessment Officer
Heritage & Culture Division

att: Attachment 1

cc **Steve Corsini, Acting Heritage Officer, Midland (ph: (09) 274-4288.**

ATTACHMENT 1 **File ref: 93240**

RESULTS OF REGISTER SEARCH:
VICTORIA LOCATION: FARMING PROPERTY 10598, NEAR/ADJACENT TO COCKLESHELL GULLY ROAD, JURIEN EAST
17.1.95

The Aboriginal site tabled below does not necessarily represent a complete record of all sites in your area of interest. The information should be used solely for the purpose of planning the development/activity identified.

All Aboriginal sites in our Register System have been designated into either the OPEN ("O") Access Code or the NOT OPEN ("R", "X", "D", "S" and "U") Access Codes. These access codes signify the degree of openness or confidentiality of the information relating to each site.

Access to site files with "Open" information (ie. sites without known significance to Aboriginal people) is available on request, while those sites with a "Not Open" Access are not available without the prior approval of Aboriginal informants.

A list of known sites on the above land that have been placed into the OPEN Access Code is provided below for purposes under the Act. Should you wish to see more detailed information on these site files please contact the Cataloguer for an appointment to view the relevant site files.

TABLE 1:
SITES WITH OPEN ACCESS CODE (An index to abbreviations used follows.)

(See attached.)

INDEX TO ABBREVIATIONS USED IN SITE FILE INFORMATION

SITENo: Division of Heritage & Culture Aboriginal Sites' Number

P:
P = Permanent Register
I = Interim Register
S = Stored Data

A: (ACCESS CODE to information)
O = OPEN Access
R = RESTRICTED Access
X = Refer to Aboriginal community for details
S = SIGNIFICANT
U = UNCERTAIN Insufficient information currently held to allocate code.

D: D = DANGEROUS to enter

Si: Significance of site.

MAP: Number of 1:250,000 scale Map Sheet

METGRID:
Metric Grid Reference (either 4- or 6-figures)
A 6-figure grid ref. = site located within $1km^2$*
A 4-figure grid ref. = site located within $10km^2$*
* But also see Position Reliability

POS: (POSITION RELIABILTY)
r = reliable (within 1 mile or $1km^2$)
a = approximate (probably within 1 mile or $1km^2$)
d = doubtful (possibly within 10 miles or $10km^2$ area)
u = unknown
e = extensive area (site itself covers more than 1 mile or $1km^2$), and the grid reference supplied is at the centre of the site.

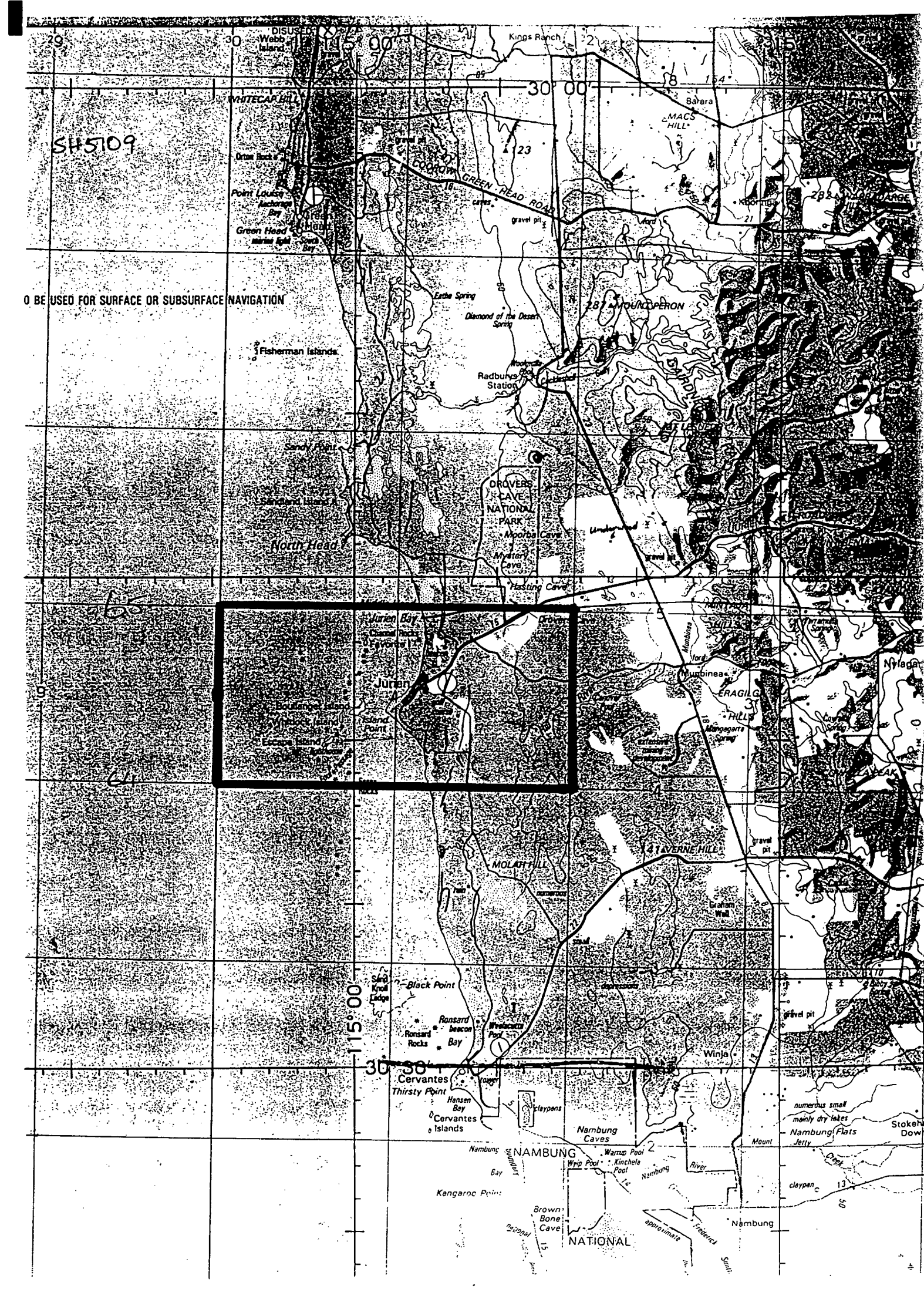
CATEGORY:
ETH = Ethnographic (Aboriginal informant)
ARC = Archaeological (physical archaeological features)

SITE TYPE:
C = Ceremonial
M = Mythological
R = Repository/Cache
B = Skeletal material/Burial
S = Man-made structure
F = Fish trap
T = Modified tree
P = Painting
E = Engraving
G = Grinding Grooves/Patches
Q = Quarry
A = Artefacts
M = Midden
O = Other (eg. Camp, Water Source, Rockshelter etc.)
N = Not an Aboriginal Site

Site Register Search Results **Criteria:** Area Search: Map No =SH5009 with Metric Easting and Northing between 30-,64- and 320,650

Date: 17/01/95
User: LIZB

SiteNo	S	A	D	Si	MapNo	Metric	Pos	Category	Site Type	Site Name
S00941	I	O		O	SH5009	311 650	r -	---	ARC - - - - - - - - - - - - A M ? -	MIDDLE HEAD MIDDEN


SH5709
O BE USED FOR SURFACE OR SUBSURFACE NAVIGATION
DISUSED
Webb Island
WHITECAP HILL
Point Louisa
Anchorage Bay
Green Head
Green Head marine light
South Bay
Kings Ranch
Bavara
MACS HILL
COOROW GREEN HEAD ROAD
gravel pit
caves
Aard
Kloorings
Eadie Spring
Diamond of the Desert Spring
287 MOUNT PERON
Fisherman Islands
Radburys Station
Sandy Point
Sandland Island
DROVERS CAVE NATIONAL PARK
Mooballa Cave
Mystery Cave
Hasting Cave
North Head
Jurien Bay
Channel Rocks
Favorite I.
Jurien
Boullanger Island
Whitlock Island
Escape Island
Island Point
Drovers
Mumbinea
ERAGILGA HILLS
Mangagara Spring
extensive tuberal development
AVERNE HILL
MOLATT HILL
numerous
Graham Well
gravel pit
Sand Knoll Ledge
Black Point
Ronsard Rocks
Ronsard beacon
Bay
Wreckers Pool
Cervantes
Thirsty Point
Hansen Bay
Cervantes Islands
claypans
Winjia
Nambung Caves
NAMBUNG
Warrup Pool
Wrip Pool
Kinchela Pool
Nambung River
Kangaroo Point
Brown Bone Cave
NATIONAL
Nambung
numerous small mainly dry lakes
Nambung Flats
Jetty
Mount
Creek
claypan
Stokeh
Dow
29
30
115° 00'
30° 00'
30° 30'
115° 00'