

**Application for exploration licences
04/646 and 04/647
between Coulomb Point and Willie Creek, Broome**

Terrex Resources NL

**Report and Recommendations
of the
Environmental Protection Authority**

**Environmental Protection Authority
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Summary and recommendations

Terrex Resources N L has applied for Exploration Licences 04/646 and 04/647 which are located immediately north of Broome (Refer Figure 1).

The Environmental Protection Authority has assessed the general environment of the licence area and concluded that while no exploration programme has yet been developed, environmentally acceptable exploration in parts of the area would be feasible, subject to appropriate conditions.

Granting the licence and minimal hand exploration would have no significant environmental impact. However, before any ground disturbing exploration takes place, it needs to be assessed to ensure adequate protection of the environment. The Authority therefore concludes that the licence may be granted, subject to a condition requiring any programme of ground disturbing exploration to be approved by the Authority.

Recommendation 1

The Environmental Protection Authority has considered the application for the granting of exploration licences in this area and has concluded that, subject to conditions, it has no objections in principle to the granting of exploration licences on environmental grounds. However, ground disturbing exploration activities under an exploration licence have the potential for causing environmental impacts. Accordingly, the Environmental Protection Authority recommends that the granting of exploration licences 04/646 and 04/647 are environmentally acceptable subject to the recommendations in this report which ensure that these potential environmental impacts are properly managed.

Recommendation 2

The Environmental Protection Authority recommends that no exploration activities involving ground surface disturbance should be carried out on any area unless or until the approval of the Environmental Protection Authority, subject to any conditions as it sees fit, has been obtained for the exploration programme.

Any dispute between the Environmental Protection Authority and the proponent regarding its decision on any additional conditions should be determined by the Minister for the Environment.

Recommendation 3

The Authority recommends that the following procedures for obtaining the approval of the Environmental Protection Authority for the exploration programme be implemented:

- (a) the tenement holder supplies the State Mining Engineer with a detailed exploration programme (Refer to guidelines in Appendix 1);
- (b) the State Mining Engineer evaluates the exploration programme (consulting the public where appropriate) and reports on its environmental impacts and their management to the Environmental Protection Authority; and
- (c) the Environmental Protection Authority determines whether the programme is or is not environmentally acceptable, sets such conditions as it sees fit and advises the proponent and the State Mining Engineer accordingly.

Any significant modification to the exploration programmes for these licences should also be processed in accordance with these procedures.

Recommendation 4

The Environmental Protection Authority recommends that any areas where the ground is disturbed by the exploration activities should be rehabilitated to the satisfaction of the Environmental Protection Authority.

The assessment of the licence area identified some 'no-go' areas in which exploration should not be undertaken because of special environmental values.

Recommendation 5

The Environmental Protection Authority recommends that no exploration or mining activities should occur within the vine thickets and coastal dune systems within the licence area.

This area includes some significant Aboriginal sites and the potential for more sites which require protection.

Recommendation 6

The Environmental Protection Authority recommends that the Western Australian Museum's Department of Aboriginal Sites and local Aboriginal community representatives including representatives from the Mamabulanjin Resource Centre, Broome, should be consulted prior to any sampling or disturbance of the ground to determine whether such sampling or works is likely to disturb known Aboriginal sites. The proponent and its contractors should appraise themselves of and abide by the requirements of the Aboriginal Heritage Act.

1 Introduction

Terrex Resources N L has applied for Exploration Licences 04/646 and 04/647 which are located immediately north of Broome (Refer Figure 1). This tenement application is being formally assessed as it is located in an area with high conservation values.

2 The standard assessment process

2.1 Granting of an exploration licence

An exploration licence is described in Part IV, Sections 57 to 70 of the Mining Act 1978. It is granted for five years and allows the holder, subject to the Mining Act and in accordance with conditions placed on the licence by the Minister for Mines, to:

- (a) enter the licence area with such agents, employees, vehicles, machinery and equipment as is necessary to explore for minerals in or under the land;
- (b) explore for minerals and to carry out such operations which are necessary for that purpose, including digging pits, trenches and holes, and sinking bores and tunnels in, on or under the land;
- (c) extract and remove from the licence area for sampling a prescribed amount of ore; and
- (d) take or divert water from the licence area and to use it for any purpose in connection with exploration.

The granting of the licence by the Minister for Mines provides the holder of the licence with security of tenure and the right to enter the licence area to conduct exploration in accordance with conditions placed on the licence. On grant of the licence the Department of Mines has regulatory power and requires a security bond to ensure that rehabilitation is completed to an acceptable standard.

The *granting* of the licence, in itself, does not constitute an environmental impact and a full formal environmental assessment of a licence application is not always practical because:

- (a) at the time of applying for an exploration licence the proponent often has not formulated an exploration programme, which means insufficient information is available to assess the potential environmental impacts of exploration; and
- (b) numerous tenement applications are never granted, for reasons other than environmental considerations, so detailed environmental assessment at the early stage can be premature and unnecessary.

It is at the *exploration* stage that impacts will occur on the ground. Therefore the licence may be granted first with provision for more specific later assessment of the actual exploration programme.

For these reasons the Environmental Protection Authority has developed a simplified standardised procedure for the assessment of applications for exploration licences. This assessment procedure enables the Minister for the Environment to place legally binding conditions on the proponent under the Environmental Protection Act.

2.2 The assessment procedures

The assessment procedure used depends on the environmental sensitivity of the area covered by the licence.

- (a) Applications for exploration licences in existing national parks or nature reserves are assessed according to Government Policy on exploration and mining in national parks and nature reserves (outlined in the Government's brochure 'Balancing the Scales').
- (b) Applications which impinge on proposed conservation reserves or other significant areas are usually assessed at the level of Consultative Environmental Review, using the standardised procedure outlined below.



Figure 1: Location of exploration licence applications 04/646 and 04/647

- (c) Applications occurring outside existing or proposed conservation reserves which are referred to the Environmental Protection Authority are usually assessed at informal review with public advice.
- (d) Applications which involve no existing or proposed conservation reserves or other areas of known environmental significance do not require assessment and are not normally referred to the Environmental Protection Authority.

This assessment relates to exploration licence applications in Class (b). The standard procedure for these applications is in two stages:

Stage 1 - Granting an exploration licence

The Environmental Protection Authority, after receiving a referral on an exploration licence application which impinges on a proposed conservation reserve or other areas of significance, sets the level of formal environmental assessment at Consultative Environmental Review (CER). The public may register an interest in the proposal in response to the advertisement of the level of assessment in The West Australian on Saturdays. The public may appeal to the Minister for the Environment against the level of assessment .

The Authority, in consultation with a number of agencies, identifies the environmental issues likely to be affected by the proposal. It may be determined through investigations of the conservation values of the area that either;

- (a) exploration would be unlikely to be environmentally acceptable in which case the Authority would recommend refusal of the licence; or
- (b) environmental issues are of sufficient significance for the Authority to require more specific information on the exploration programme to determine whether exploration is likely to be environmentally acceptable. Assessment of this type will follow the normal assessment process when the proponent has prepared the exploration programme; or
- (c) exploration under appropriate conditions is likely to be acceptable. In this case the Authority will conduct a standard CER assessment of the application and report to the Minister for the Environment recommending that standard Ministerial Conditions be placed on the proponent.

Recommendation 1

The Environmental Protection Authority has considered the application for the granting of exploration licences in this area and has concluded that, subject to conditions, it has no objections in principle to the granting of exploration licences on environmental grounds. However, ground disturbing exploration activities under an exploration licence have the potential for causing environmental impacts. Accordingly, the Environmental Protection Authority recommends that the granting of exploration licences 04/646 and 04/647 are environmentally acceptable subject to the recommendations in this report.

Recommendation 2

The Environmental Protection Authority recommends that no exploration activities involving ground surface disturbance should be carried out on any area unless or until the approval of the Environmental Protection Authority, subject to any conditions as it sees fit, has been obtained for the exploration programme.

Any dispute between the Environmental Protection Authority and the proponent regarding its decision or any additional conditions should be determined by the Minister for the Environment.

Stage 2 - Assessment of a proposed exploration programme

When option (c) is identified as appropriate, the following procedures apply.

If the application is granted by the Minister for Mines and the licence holder wishes to proceed with ground-disturbing exploration, the licence holder is required to submit an exploration programme to

the Department of Mines. This report should include a description of the proposed exploration activity and its likely environmental effects, identify specific areas of impact and describe the management of these impacts, as outlined in Appendix 1. The Department of Mines will assess the potential environmental impacts of the proposed exploration programme, in consultation with the public, particularly those groups outlined in Appendix 2, and recommend conditions suitable for the protection of the environment.

The Department of Mines will forward its report, containing the exploration programme as an appendix, to the Environmental Protection Authority recommending appropriate environmental conditions. This report will be made available for public information by the Authority. The Authority will determine the exploration programme's environmental acceptability and, if it is to proceed, such additional conditions to which it should be subject. Any dispute regarding the decision or conditions required by the Environmental Protection Authority should be determined by the Minister for the Environment.

These procedures will form part of the Ministerial statement issued by the Minister for the Environment on the original exploration licence.

The Department of Mines will monitor and control the activity of licence holders, with the Environmental Protection Authority being responsible for the auditing of the conditions set by the Minister for the Environment.

2.3 Management of the environmental impacts

The Environmental Protection Authority considers that the environmental impact of any ground-disturbing exploration activities should be stringently controlled by assessing any proposed exploration programme and imposing appropriate conditions on exploration. Once a tenement is granted, a licence holder's exploration programme may involve several stages of activity. The first phase may not involve any activity on the ground and consequently would not involve any adverse environmental impacts. Non ground-disturbing activities are specified as follows:

- (a) use of a four-wheel-drive vehicle for access along existing tracks;
- (b) use of small hand-held equipment including a hand auger for sampling; and
- (c) removal of material up to 3 kg/sample.

However, any exploration programme that involves ground-disturbing activity has potential environmental impacts. Activities such as the use of machinery or drill rigs, off-road access, clearing and bulk sampling are considered ground disturbing. Their acceptability can only be determined by an assessment of a detailed exploration programme submitted by the licence holder when ready to proceed with on-ground exploration.

The Environmental Protection Authority believes that the environmental impacts and the acceptability or otherwise of exploration activities can only be assessed and appropriate management recommendations made at the stage when a proponent has a defined exploration programme.

Recommendation 3

The Authority recommends that the following procedures for obtaining the approval of the Environmental Protection Authority for the exploration programme be implemented:

- (a) the tenement holder supplies the State Mining Engineer with a detailed exploration programme (Refer to guidelines in Appendix 1);**
- (b) the State Mining Engineer evaluates the exploration programme and reports on its environmental impacts and their management to the Environmental Protection Authority (consulting the public where appropriate); and**
- (c) the Environmental Protection Authority determines whether the programme is or is not environmentally acceptable, sets such conditions as it sees fit and advises the proponent and the State Mining Engineer accordingly.**

Any significant modification to the exploration programmes for these licences should also be processed in accordance with these procedures.

Recommendation 4

The Environmental Protection Authority recommends that any areas where the ground is disturbed by the exploration activities should be rehabilitated to the satisfaction of the Environmental Protection Authority.

3 Specific assessment of this proposal

In response to the referral of exploration licence applications 04/646 and 04/647 the Environmental Protection Authority, in consultation with appropriate agencies, identified the major environmental issues likely to be raised by this proposal.

3.1 Environmental issues of this proposal

Preliminary investigation of the locality proposed for exploration activity has raised a number of environmental issues which need to be addressed in any proposed exploration programme. Extra recommendations address some of the site specific issues not adequately covered by the standard recommendations.

3.1.1 Existing environment

Exploration licence applications 04/646 and 04/647 are located in a semi-arid environment with low rainfall and high evaporation rates. Both applications cover Waterbank pastoral lease (Figures 2 and 3).

These exploration licences cover beaches, coastal dunes, coastal saline mudflats, reddish-grey sandplains, watercourses, seasonal freshwater swamps and permanent freshwater springs. All of these landforms require protection, particularly the holocene dune system which is fragile and mobile, and areas of permanent freshwater which are rare on the Dampier Peninsula. Waterbank pastoral lease, covered by exploration licence application 04/647, contains a number of these freshwater springs. (Burbidge, 1987).

Mangrove communities occur along the coastline in the inter-tidal zones of coastal bays and lower reaches of rivers such as Willie Creek which has a major mangrove community backed by extensive salt marshes. Shrublands occur on supra-tidal mudflats (mudflats beyond the tidal zone). Freshwater swamps occur where coastal dunes prevent drainage lines from reaching the ocean. The sand plains behind the dune system support a mosaic of woodland vegetation known as Pindan vegetation. Acacia dominated pindan occurs within the exploration licence areas.

Sub-coastal vine thickets and closed vine forests occur in isolated patches immediately behind the coastal dune systems. These remnant rainforest patches include a variety of plants with Indo-Malesian affinities. (Burbidge, 1987). The vine thicket communities are particularly well-developed between Barred Creek and James Price Point.

Although no specific faunal studies have been completed in this area numerous species are known to occur here. Much of the faunistic richness of the Peninsula is found in the coastal and near-coastal environments which are poorly represented in existing reserves. The mangrove communities support a number of bat species, some of which have not yet been described.

Birds are plentiful and at least 182 species have been estimated to occur in this area. This richness is mainly due to the diversity of habitats, especially those on or near the coast. Some of the birds occurring in this area are extremely rare. (Kimberley Conservation Group, 1989).

3.1.2 Remnant rainforest vegetation

Of the vegetation units found within the area covered by these exploration licence applications, the vine thickets and vine forests which are found directly behind the coastal dune systems are the most important.

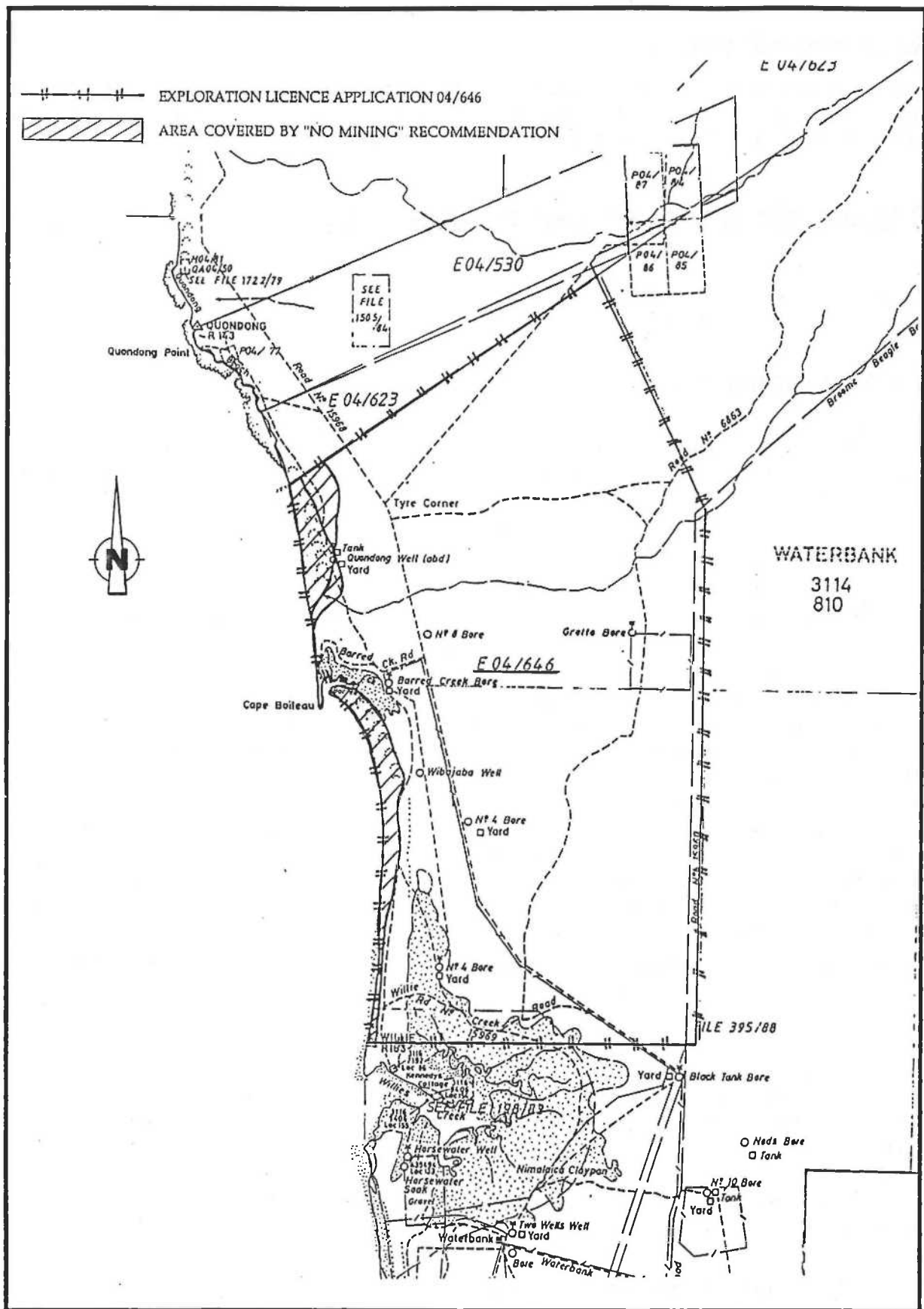


Figure 2: Exploration licence application 04/646 - location of vine thickets and coastal dunes

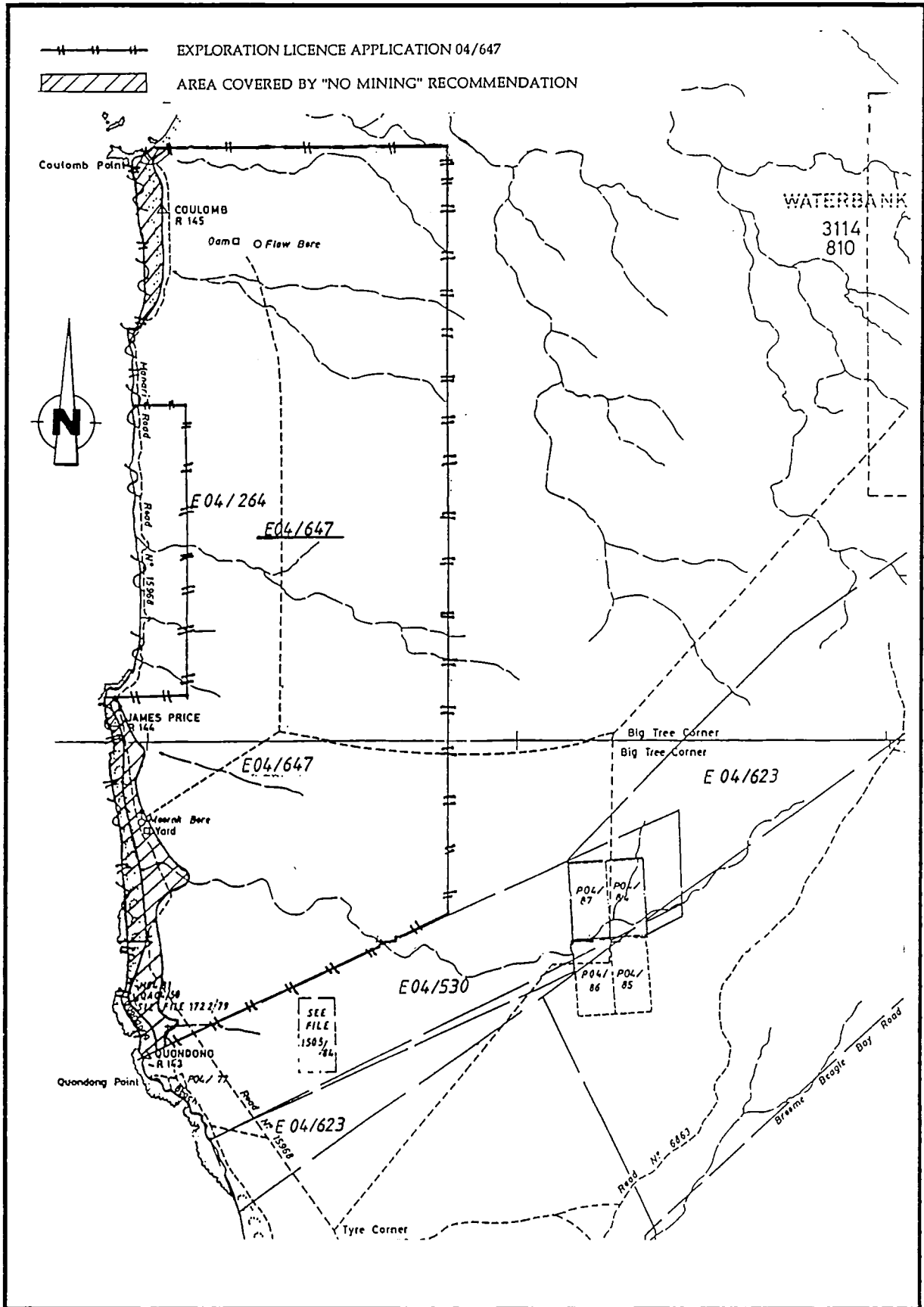


Figure 3: Exploration licence application 04/647 - location of vine thickets and coastal dunes

On the Dampier peninsula, monsoon forests are at the southern limit of their range in Western Australia and are represented by isolated pockets of coastal vine thickets. These semi-deciduous vine thickets and vine forest communities are of particular biogeographical significance because they are relic, outlying communities which belong to the continuum of monsoon forest that stretches across the humid north of Australia. The communities found in the south western portion of the Dampier Peninsula differ from the northern communities in that they are more depauperate in Indo-Malesian species and reflect a wetter era on the peninsula. These pockets of rainforest have survived along the Kimberley coastline for thousands of years, cut off from similar ecosystems by the arid savannah that surrounds them. (Burbidge, 1987).

This remnant rainforest vegetation is poorly represented in Western Australia.

These vine thickets provide a significant habitat for a diversity of wildlife including the smaller mammals, birds, frogs, reptiles, land snails and a large variety of insects. Vine thickets also act as important wildlife corridors and create links with another important vegetation unit the mangroves. These vine thickets contain many fire sensitive plants and act as a refuge habitat for uncommon and sometimes rare and endangered plants with edible fruits and berries. (Kimberley Conservation Group, 1989).

The vine thickets between Barred Creek and James Price Point are at the southernmost extremes of their natural range. North of Quondong these vine thickets are particularly well developed. (Broome Botanical Society, 1987).

"Recent fieldwork has brought to light the existence of a restricted population of *Pittosporum moluccanum* near James Price Point. With less than 20 individuals, this is the only known stand in W.A. The species is otherwise distributed from Taiwan southward to Timor." (Broome Botanical Society, 1987). This species was added to the schedule of Declared Rare Flora in August 1989.

These habitats are extremely vulnerable to misuse by both recreationists and developers and require careful study and management in order to be fully protected. Due to the significance of these habitats it is recommended that no exploration activity occur within the vine thicket and vine forest vegetation and that tracks through these areas are used only to gain access to other areas of the tenement.

The vine thickets occur immediately behind the coastal dune systems and the interrelationship between these two is extremely important. The coastal dune systems enable the vine thickets to occur in this semi-arid region because (a) the blockage of the drainage lines by the dunes increases the water available for the vegetation, and (b) the dunes protect this habitat from the harsh salt winds. In order to protect the vine thickets the dune systems also require protection. Although exploration on the dune system might be considered environmentally acceptable, mining would not be considered acceptable as any change to the height of the dunes would impact adversely on the vine thicket habitats.

Recommendation 5

The Environmental Protection Authority recommends that no exploration or mining activities should occur within the vine thickets and coastal dune systems within the licence area.

3.1.3 Recreation

The whole peninsula is networked with tracks and frequently visited by tourists. The coastal scenery is attractive and there is good fishing from the sandy beaches and in the mangrove creeks.

As the coastal strip is a very popular recreation and camping area many off-road vehicle tracks already exist. Uncontrolled access in this area would cause erosion and environmental disturbance such as the fragmentation of natural biological corridors. The standard recommendation in this report that no ground-disturbing exploration activities occur without the assessment of an exploration programme addresses this issue, as access other than on existing tracks is considered ground-disturbing.

3.2 Aboriginal Heritage

The coastal strip covered by the exploration licence applications contains 20 sites recorded under the Aboriginal Heritage Act, 1972 - 1980. (Department of Aboriginal Sites, 1990). An application for use of this land should be made under Section 18 of the Act prior to any disturbance of sites.

The coastal area west of the Broome-Minari Road has been surveyed by Officers of the Department of Aboriginal Sites and details of the Sites recorded are available in 'A Management Report for the Lurujarri Heritage Trail, Broome'. This area contains archaeological sites and ethnographic sites of great cultural significance to Aboriginal people from One Arm Point, Broome and La Grange. (Department of Aboriginal Sites, 1990). These exploration licences incorporate two proposed Protected Areas which occur along the coastal strip. The coastal strip between Coulomb Point and Gantheaume Point incorporates the Lurujarri Heritage Trail which follows the coastal dunes and is recommended as a development exclusion zone by the Department of Aboriginal Sites. (Bradshaw, 1989).

As Aboriginal Heritage is a significant issue in the area covered by these applications the Authority recommends that the proponent and its contractors should consult both the Department of Aboriginal Sites and local Aboriginal communities, and abide by the requirements of the Aboriginal Heritage Act.

Recommendation 6

The Environmental Protection Authority recommends that the Western Australian Museum's Department of Aboriginal Sites and local Aboriginal community representatives including representatives from the Mamabulanjin Resource Centre, Broome, should be consulted prior to any sampling or disturbance of the ground to determine whether such sampling or works is likely to disturb known Aboriginal sites. The proponent and its contractors should appraise themselves of and abide by the requirements of the Aboriginal Heritage Act.

References

- Bradshaw, E and Fry, R, 1989 A Management Report for the Lurujarri Heritage Trail, Broome, Western Australia. Department of Aboriginal Sites, Western Australian Museum, Perth. May 1989.
- Broome Botanical Society, 1987 Dampier Peninsula Vine Thickets: Barred Creek to James Price Point. Submission to the National Rainforest Conservation Program (WA). Unpublished.
- Broome Botanical Society, 1989 Objection to the Application for Exploration Licences 04/646 and 04/647 (Numbers 3/89 and 4/89). Submission to the Warden's Court, Broome. 30 October 1989. Unpublished.
- Burbidge, A A, McKenzie, N L and Kenneally, K F, 1987 Nature Conservation Reserves in the Kimberley, Western Australia. Submission by the Department of Conservation and Land Management to the Kimberley Region Planning Study. Unpublished.
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Appendix 1

**Guidelines for the report,
required under Recommendation 3(a), on any
proposed exploration programme for
Exploration Licences 04/646 and 04/647**

The report should be comprehensive enough to allow assessment authorities to fully understand the proposal, the environment it affects, the short and long-term impacts and the proposed management methods to avoid or mitigate those impacts. The attached guidelines are as comprehensive as possible but it is the proponent's responsibility to consult all relevant authorities and to report appropriately on the proposal. If in doubt consult the Department of Mines or the Environmental Protection Authority. Maps and diagrams should be used where appropriate.

1. Introduction

- identify the proponent, including contact names and addresses
- briefly describe the objectives of the proposal, location of the proposal and the basic outline of the proposal
- identify the responsible local and state government authorities and the assessment and approval processes that are required

2. Description of the proposal

- identify minerals sought
- provide details of all phases of the proposed exploration activities and the methods proposed
- quantify the various aspects of the proposal as much as possible, particularly those aspects which relate to potential environmental impacts
- provide a recent colour aerial photograph
- provide a suitable cadastral map including contours, access, lease boundaries etc.

3. Existing environment

- describe the biological and physical environment of the area, concentrating particularly on the area which will be affected by the proposal
- describe the cultural and heritage values of the area including any archaeological or ethnographical interest in the area
- describe the present and proposed land use of the area

4. Environmental impacts

- identify the direct and indirect impacts arising from all phases of the proposal, with quantification if possible
- describe the management techniques, operational constraints and other methods proposed to address the impacts
- indicate the consultation and negotiation agreements reached with relevant regulatory and management authorities of the area
- indicate why it is necessary to explore in environmentally sensitive areas and why a combination of extrapolation from outside these areas and non-ground disturbing exploration within them is inadequate.

5. Environmental management, conclusions and commitments

- summarise the overall environmental impact of the proposal
- detail the environmental management methods proposed to address and monitor the impacts
- specific commitments should be made to manage the impacts
- list these commitments

6. References

- list and provide appropriate documentation of authorities consulted, literature referred to in the text and maps and figures used.

Appendix 2

**Recommended groups to be consulted on the
proposed exploration programme
(advice for the Department of Mines)**

- Department of Conservation and Land Management
- National Parks and Nature Conservation Authority
- Western Australian Museum (particularly Department of Aboriginal Sites)
- Western Australian Herbarium
- Shire of Broome
- Australian Conservation Foundation
- Conservation Council of W.A. Inc
- Wilderness Society of W.A.
- Kimberley Conservation Group
- Broome Botanical Society

This list is not exhaustive and other groups or individuals expressing an interest in the proposal should be consulted.

