PROPOSED SOUTH WOOLMULLA SEISMIC SURVEY

MOUNT LESUEUR, WESTERN AUSTRALIA
BARRACK ENERGY LIMITED

Report and Recommendations
of the
Environmental Protection Authority

Environmental Protection Authority
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SUMMARY AND RECOMMENDATIONS

Barrack Energy Limited proposes to conduct a seismic survey north-east of Jurien in an area which includes Mt Lesueur. Part of this area has been recognised as having important conservation value. It is subject to Environmental Protection Authority Red Book Recommendation 5.17, which states that the area should be declared a Class A Reserve for the purpose of Nature Conservation and vested in the National Parks and Nature Conservation Authority.

An initial proposal was for 28 km of seismic line within the proposed park, but it is now of much less impact. Approximately 9.5 kilometres of seismic line would be required in the proposed reserve. Eight kilometres would require some ground disturbance. The method of seismic investigation would be the vibroseis technique. In uncleared areas a track would have to cleared. This track would be made using a combination of either roller and grader or bulldozer and grader thus allowing access for a truck containing the equipment.

The Environmental Protection Authority determined that the proposal required formal assessment under Part IV of the Environmental Protection Act 1986 and that a Notice of Intent would be required to assess the potential environmental impacts of the proposal. Specific advice was sought from NPNCA, CALM and various environmental experts.

The Environmental Protection Authority is aware of the environmental sensitivity of the Mount Lesueur area, including the diversity of the flora and the presence of gazetted rare species. The Authority has determined that the environmental impacts of the seismic survey would be small, provided that it was undertaken in a sensitive manner. The proponent has indicated that is is willing to undertake the survey in a sensitive manner and the Authority will require appropriate controls and checks.

Therefore, the Environmental Protection Authority has concluded that the proposed South Woolmulla Seismic Survey is environmentally acceptable subject to the following recommendations.

RECOMMENDATION 1

The Environmental Protection Authority has concluded that the proposal is environmentally acceptable subject to the operations being carried out in accordance with the commitments in the Notice of Intent (see Appendix 1) and the Environmental Protection Authority's Recommendations in this Assessment Report.

RECOMMENDATION 2

The Environmental Protection Authority recommends that the seismic line B89-305 should not be cleared by machine, but that the geophones should be walked in and placed by hand.

RECOMMENDATION 3

The Environmental Protection Authority recommends that all major breakaways be undershot (ie no direct access to the sensitive areas by the vibrating trucks) rather than bulldozed and graded.

RECOMMENDATION 4

The Environmental Protection Authority recommends a slight deviation of line B89-305 to ensure that the line crosses only one creek and that this creek be undershot.

RECOMMENDATION 5

The Environmental Protection Authority recommends that the installing of seismic lines be supervised by a qualified botanist with expertise in the area.

RECOMMENDATION 6

The Environmental Protection Authority recommends that the Department of Conservation and Land Management inspect the seismic lines on completion of the survey and that the proponent undertake any rehabilitation of lines that the Department of Conservation and Land Management deems necessary.

1. INTRODUCTION

Barrack Energy Limited proposes to conduct a seismic survey in the Mount Lesueur area.

The Mount Lesueur area has been recognised as an area of important conservation value. The area is subject to an Environmental Protection Authority Red Book Recommendation 5.17 which states that the area should be declared a Class A Nature Reserve vested in the National Parks and Nature Conservation Authority. Because of the importance of the area, the Environmental Protection Authority decided that the proposal required formal assessment under Part IV of the Environmental Protection Act 1986.

The original proposal presented by Barrack Energy Ltd required approximately 28 kilometres of seismic survey to be undertaken in the proposed reserve. The Environmental Protection Authority chaired a meeting with the proponent and interested bodies such as the Department of Conservation and Land Management, the Mines Department, the Conservation Council and the Australian Conservation Foundation to discuss the proposal and its environmental impacts.

Barrack Energy Ltd modified its proposal on advice from that meeting. The modified proposal reduced the actual kilometres of seismic survey to be undertaken in the proposed reserve area to approximately 9.5 kilometres. About 2 km of this was on firebreak or previous seismic lines.

The Environmental Protection Authority determined that a Notice of Intent would be required to assess the proposal, and that the proponent should arrange a visit to site for interested parties. A public invitation to the site visit was advertised in newspapers. A site visit was conducted on Monday 13 February 1989. The following parties were represented.

. Department of Conservation and Land Management;

. National Parks and Nature Conservation Authority;

. Conservation Council; and

. Australian Conservation Foundation

The Environmental Protection Authority then concluded its assessment after receiving submissions from the interested bodies.

2. PROJECT DESCRIPTION

Barrack Energy Limited has programmed three seismic lines to enter the Mount Lesueur area, totalling 9.5 kilometres. Of the 9.5 kilometres, approximately 2 kilometres would be on existing tracks and therefore would not cause further land disturbance.

The method of seismic acquisition would be the vibroseis technique. This consists of four trucks which move in sequence and lower a pad to the ground and the pad is vibrated sending shock waves into the ground. The reflected shockwaves are then recorded via geophones onto magnetic tapes.

In areas of uncleared land, a track has to be cleared so that the geophones and cables can be laid on the ground, and to allow the vibrator trucks to move along the seismic lines. Some of the lines would be cut using the combination of a roller and a grader. The roller flattens the flora to the

ground but leaves the top soil and root stock in place. The grader would then be used to cut a one metre wide track so that the geophones could be laid. East of the Peron fault scarp a bulldozer would be used to clear a track, as the vegetation is very thick and the topography rugged. The bulldozer would not however, being using its blade. This would be held 10 cm about the ground level.

There would also be a requirement for two holes to be drilled to 50 to 100m deep to allow uphole shooting to estimate surface weathering velocity control. Uphole shooting consists of lowering a geophone down the hole. A shock wave is then generated at the surface by hitting a steel plate with a hammer, and the shock wave is recorded by the geophone.

3. EXISTING ENVIRONMENT

The Mt Lesueur area has been recognised as requiring protection by the Environmental Protection Authority. The System 5.17 recommendation proposes that it be proclaimed a Nature Reserve.

The Mt Lesueur area is very rich floristically, as well as containing six gazetted rare species.

- Banksia tricuspis;
- Hakea megalosperma;
- Australasia drummondii (Syn Urocarpus phebaliodes);
- Thelymitra fuscolutea var stellata;
- Eucalyptus suberea; and
- Eucalyptus lateritica.

The area also contains a number of restricted species including some undescribed species of Andersonia and Xanthosia tomentosa.

The area has been subjected to ground disturbance by exploration in the past. As least two seismic surveys have been conducted in the area. The rehabilitation of the seismic lines has been variable. The revegetation of lines has been affected by the soil type, how sensitively the lines were originally located, how much topsoil was removed during the installation of the lines and the amount of vehicle traffic along the lines since that establishment.

4. ENVIRONMENTAL IMPACTS AND MANAGEMENT

The major environmental impact associated with seismic surveys is ground disturbance, and the associated problems of erosion and revegetation.

The methods suggested by Barrack Energy Ltd would limit the ground disturbance. Particular care would have to be taken with line B89-305. The vegetation in this area regenerates mainly from seed not root stock. The majority of the plants have not flowered since the last fire and so there is a much reduced seed stock for regeneration of disturbed area.

The area around B89-305 also contains crab hole areas. These are areas where there are depressions in the ground surface and the soil type and structure at the top of the depression and the base of the depression are different. Grading of these areas would remove these differences and may not allow the regeneration of the same species.

RECOMMENDATION 2

The Environmental Protection Authority recommends that the seismic line B89-305 should not be cleared by machine, but that the geophones should be walked in and placed by hand.

Other areas of concern are those most prone to erosion, such as creek crossings and breakaways. It is possible for these areas to be undershot. This involves the geophones being placed by hand in the sensitive area so that no grading is required. The vibrator trucks are then used on either side of the creek or breakway but not in the creek or breakaway itself.

RECOMMENDATION 3

The Environmental Protection Authority recommends that all major breakaways be undershot (ie no direct access to the sensitive areas by the vibrating trucks) rather than bulldozed and graded.

The current alignment of line B89-305 means that the line crosses two creeks very close together, a small deviation would allow the line to cross only 1 creek.

RECOMMENDATION 4

The Environmental Protection Authority recommends a slight deviation line B89-305 to ensure that the line crosses only one creek and that this creek be undershot.

In view of the significant flora in the area close supervision should occur during the installation of the seismic lines.

RECOMMENDATION 5

The Environmental Protection Authority recommends that the installing of seismic lines be supervised by a qualified botanist with expertise in the area.

RECOMMENDATION 6

The Environmental Protection Authority recommends that the Department of Conservation and Land Management inspect the seismic lines on completion of the survey and that the proponent undertake any rehabilitation of lines that the Department of Conservation and Land Management deems necessary.

5. CONCLUSION

The Environmental Protection Authority has assessed the proposed South Woolmulla Seismic Survey. The Authority has noted the sensitivity of the Mt Lesueur area including the presence of rare and endangered flora. The Authority has concluded that a seismic survey could be undertaken in an environmentally sensitive manner and that the environmental impacts from the survey are acceptable.

RECOMMENDATION 1

The Environmental Protection Authority has concluded that the proposal is environmentally acceptable subject to the operations being carried out in accordance with the commitments in the Notice of Intent and the Environmental Protection Authority's Recommendations.

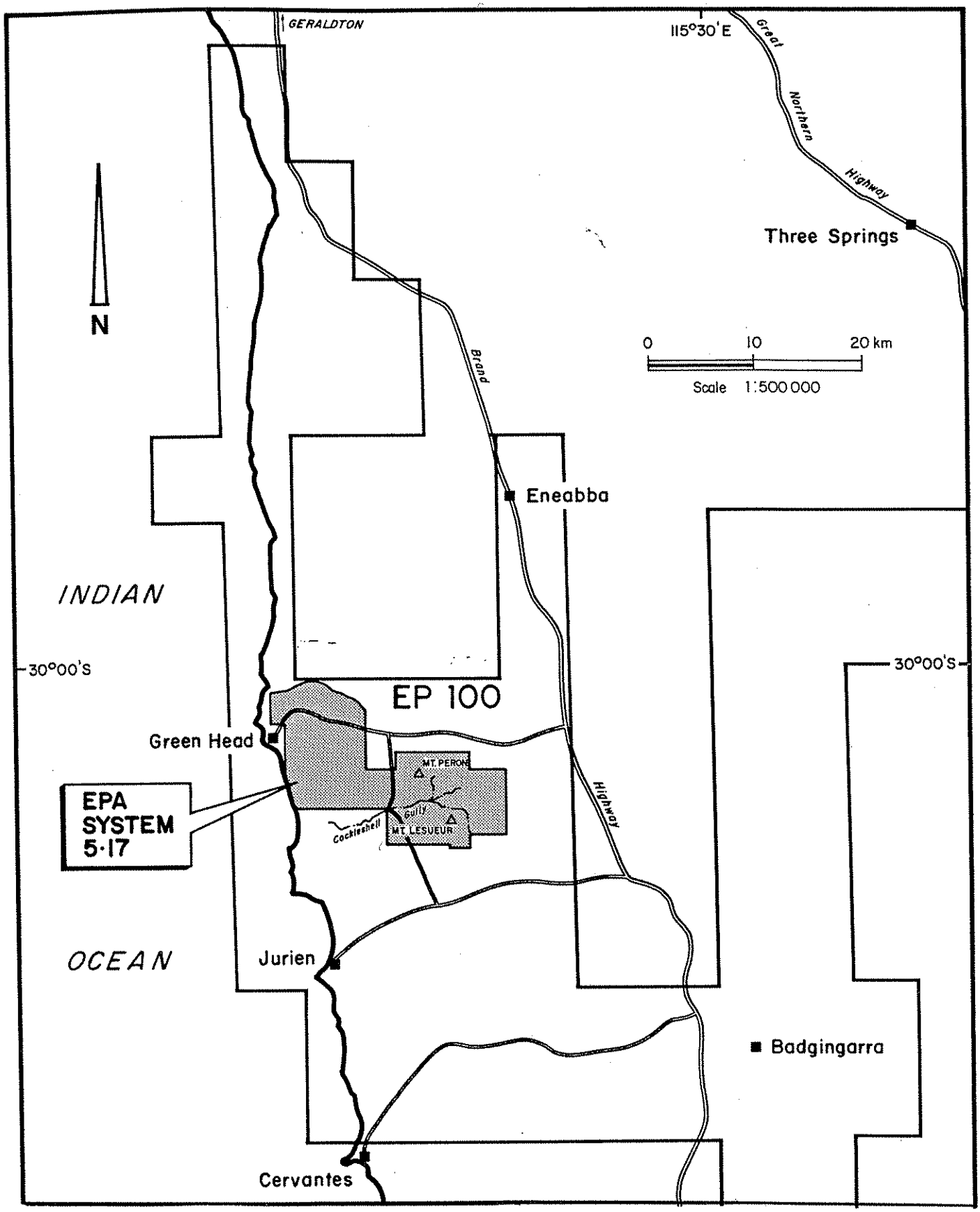

Figure 1. Locality Map.

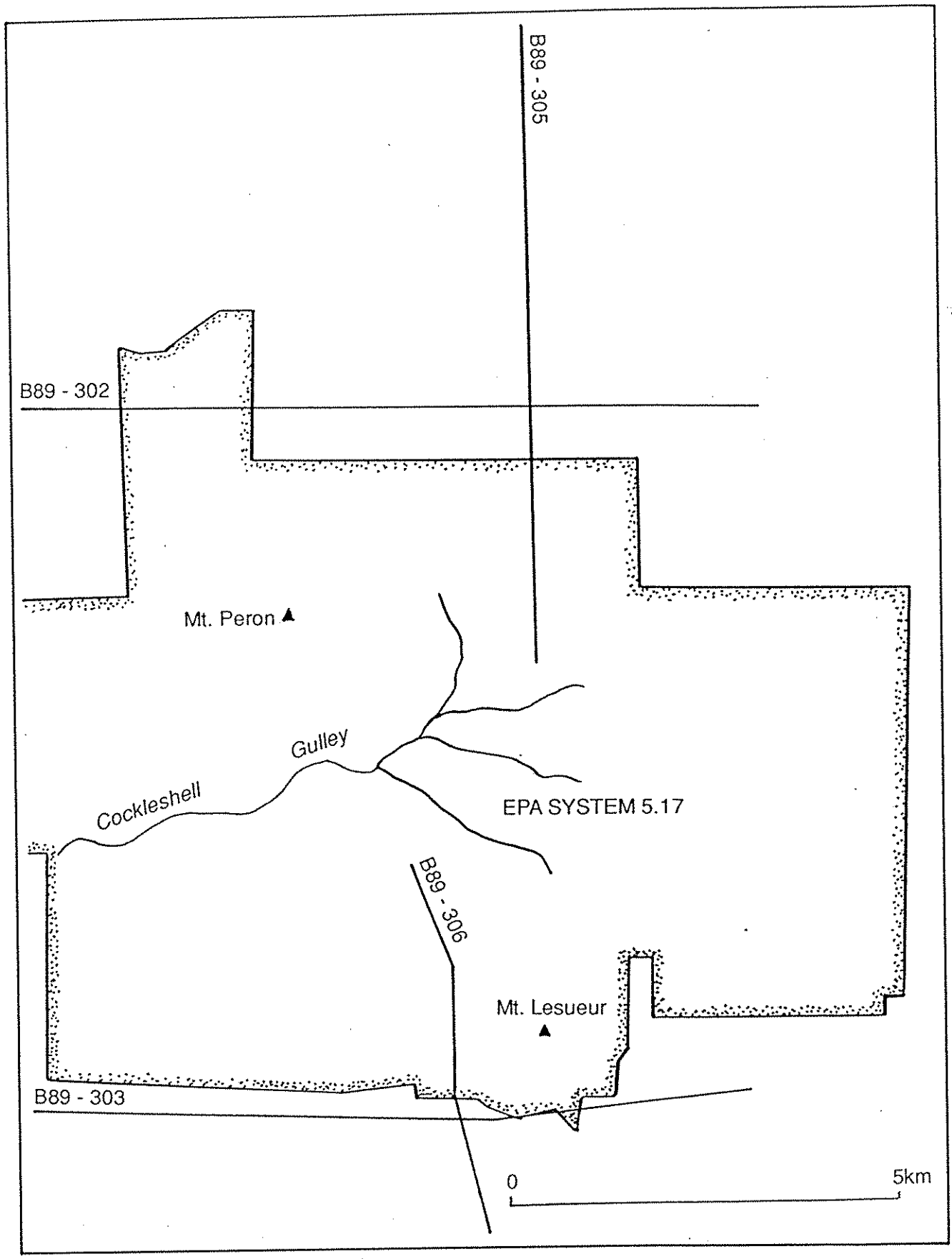

Figure 2. Seismic Lines.

APPENDIX 1

LIST OF ENVIRONMENTAL COMMITMENTS

1. All equipment and vehicles will be washed down prior to the survey to prevent the introduction of foreign seeds, insects and soil born diseases.

2. A truck with a 500 gallon tank plus fire fighting equipment will accompany the survey crew at all times. In addition all vehicles will be fitted with exhaust diverters to minimise the risk of fire.

3. The field camp and rubbish and sewerage pits will be located outside the proposed Reserve. In addition all seismic lines will be kept free of all litter, rubbish and other waste. No water resources will be needed from the proposed Reserve.

4. No domestic animals or firearms will be taken onto the proposed Reserve.

5. All seismic lines will be designed to minimise the removal of soil and vegetation. To this end, a combination roller and grader will be used where possible.

6. Once the line has been recorded, the top soil, vegetation and seed along the windrow will be backgraded and regeneration along the entire line will be rapid following the next winter rains.

7. In respect of the grader and the laying of geophones, in areas of rare wildflowers and other sensitive area (eg. "crab holes"), the geophones will be carried and implanted by hand to avoid the grading of these areas.

8. Each seismic survey line will be restricted to a maximum width of six metres which will allow a service vehicle to pass an operating vehicle. Parallel tracks, turning circles and bypass points will be avoided, and all vehicular traffic will be kept to a minimum and will use only the survey line.

9. Access to and from and the movement of vehicles within the proposed Reserve will be restricted to existing roads and tracks and the seismic lines themselves.

10. The use of the roller and careful grading and bulldozing will avoid the creation of windrows which can cause the diversion of runoff and later soil erosion problems. Existing drainage patterns will be maintained.

11. Seismic survey line B89-302, B89-305 and B89-306 within the proposed Reserve will cut the Cockleshell Gully Road, Green Head Road and Black Arrow Road respectively. These lines will be rendered inaccessible to the public by doglegging a barrier at their points of crossing.

12. Copies of these guidelines will be distributed to all personnel (company and contractors) involved in the operation. Barrack Energy Limited, as operator for the EP-100 Joint Venture and the South Woolmulla Seismic Survey, will provide specific guidelines to staff, agents and contractors, explaining to them their specific responsibilities and the approval methods for conducting these operations with minimum disturbance to the environment.

13. Barrack Energy Limited will submit weekly reports each Friday to the Petroleum Division of the Western Australia Mines Department and the Regional Manager of Conservation and Land Management on the progress of the seismic operations.

14. Prior to cessation of exploration activity in the proposed Reserve, Barrack Energy Limited will notify the Petroleum Division of the Western Australian Mines Department and the Regional/District Manager of Conservation and Land Management and arrange an inspection as required.