Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 502/1

Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **ARC Energy Limited**

Postal address: Level 4 679 Murray St. West Perth WA 6005

1.3. Property details

Property:

LOT 11943 ON PLAN 218173 (ARROWSMITH 6525)
LOT 4 ON PLAN 13178 (MOUNT ADAMS 6525)
LOT M353 ON PLAN 2994 (YARDARINO 6525)
LOT 2 ON PLAN 6244 (MOUNT ADAMS 6525)
LOT 1 ON PLAN 6244 (MOUNT ADAMS 6525)
LOT 9835 ON PLAN 161899 (MOUNT ADAMS 6525)
LOT 3042 ON PLAN 120273 (MOUNT ADAMS 6525)
LOT 2 ON DIAGRAM 64258 (ARROWSMITH 6525)
ROAD RESERVE (ARROWSMITH 6525)
LOT 9917 ON PLAN 165732 (ARROWSMITH 6525)
LOT 3945 ON PLAN 232365 (ARROWSMITH 6525)
LOT 11 ON PLAN 18579 (Lot No. 11 BRAND ARROWSMITH 6525)
ROAD RESERVE (ARROWSMITH 6525)
LOT 11947 ON PLAN 218230 (MOUNT ADAMS 6525)
LOT 12452 ON PLAN 195105 (MOUNT ADAMS 6525)
LOT 123 ON PLAN 2993 (MILO 6525)
LOT M356 ON PLAN 2993 (MOUNT ADAMS 6525)
LOT M519 ON PLAN 2993 (MOUNT ADAMS 6525)
LOT 12297 ON PLAN 220114 (MOUNT ADAMS 6525)
LOT 12298 ON PLAN 220114 (MOUNT ADAMS 6525)
LOT 2 ON PLAN 4780 (YARDARINO 6525)
LOT 3 ON PLAN 13178 (YARDARINO 6525)
LOT M354 ON PLAN 2994 (YARDARINO 6525)
PART LOT 1 ON PLAN 4780 (MILO 6525)
LOT 9636 ON PLAN 160515 (MILO 6525)
LOT M452 ON PLAN 2993 (MILO 6525)
LOT 1882 ON PLAN 248520 (MILO 6525)
LOT 9549 ON PLAN 159028 (MILO 6525)
LOT 2266 ON PLAN 101500 (MILO 6525)
LOT 1339 ON PLAN 246720 (MILO 6525)
LOT 1881 ON PLAN 248600 (MILO 6525)
LOT M380 ON PLAN 2993 (MILO 6525)
LOT 1153 ON PLAN 246676 (MILO 6525)
LOT 2 ON DIAGRAM 24550 (MILO 6525)
LOT 1717 ON PLAN 246858 (MILO 6525)
LOT 465 ON PLAN 232049 (MILO 6525)
LOT 0 ON DIAGRAM 14398 (MILO 6525)
PART LOT 566 ON PLAN 231554 (MILO 6525)
LOT 1658 ON PLAN 248646 (MILO 6525)
LOT 2433 ON PLAN 232049 (MILO 6525)
LOT M361 ON PLAN 2944 (MILO 6525)
LOT 1 ON DIAGRAM 24550 (MILO 6525)
LOT M758 ON PLAN 2981 (MILO 6525)
LOT 1 ON DIAGRAM 19467 (MILO 6525)
ROAD RESERVE (MILO 6525)
ROAD RESERVE (MILO 6525)
LOT 3 ON DIAGRAM 63636 (MILO 6525)

LOT M442 ON PLAN 2981 (MILO 6525)
ROAD RESERVE (MILO 6525)
LOT 2 ON DIAGRAM 19467 (MILO 6525)
LOT 12299 ON PLAN 220114 (MOUNT ADAMS 6525)
LOT 10119 ON PLAN 206697 (MOUNT ADAMS 6525)
LOT 578 ON PLAN 232049 (MILO 6525)
LOT 2774 ON PLAN 149615 (MILO 6525)
LOT 1 ON DIAGRAM 36800 (MILO 6525)
CLOSED ROAD (MILO 6525)
LOT 1343 ON PLAN 246736 (MILO 6525)
UNALLOCATED CROWN LAND (MILO 6525)
WATER FEATURE (MILO 6525)
ROAD RESERVE (MILO 6525)
ROAD RESERVE (MILO 6525)
LOT 652 ON PLAN 232250 (Lot No. 652 MILO MILO 6525)
LOT 558 ON PLAN 232250 (Lot No. 558 MILO MILO 6525)
LOT 2435 ON PLAN 232250 (MILO 6525)
LOT 278 ON PLAN 232250 (Lot No. 278 MILO MILO 6525)
LOT 574 ON PLAN 232250 (Lot No. 574 MILO MILO 6525)
LOT 559 ON PLAN 232250 (Lot No. 559 MILO MILO 6525)
LOT 560 ON PLAN 232049 (Lot No. 560 MILO MILO 6525)
LOT 12493 ON PLAN 220864 (MILO 6525)
LOT 12231 ON PLAN 215540 (MILO 6525)
WATER FEATURE (MILO 6525)
LOT 702 ON PLAN 21644 (MILO 6525)
ROAD RESERVE (YARDARINO 6525)
WATER FEATURE (MILO 6525)
LOT M359 ON PLAN 2991 (Lot No. 359 HUNT FARM YARDARINO 6525)
LOT M348 ON PLAN 2947 (MOUNT HORNER 6525)
LOT 230 ON PLAN 232250 (Lot No. 230 MILO MILO 6525)
LOT 701 ON PLAN 21644 (YARDARINO 6525)
LOT 703 ON PLAN 21644 (MILO 6525)
LOT 2770 ON PLAN 231928 (MOUNT HORNER 6525)
LOT 2613 ON PLAN 232250 (Lot No. 2613 BROWNING MOUNT HORNER 6525)
LOT 1 ON PLAN 22148 (MOUNT HORNER 6525)
ROAD RESERVE (MOUNT HORNER 6525)
PART LOT 2030 ON PLAN 248540 (MILO 6525)
ROAD RESERVE (MOUNT HORNER 6525)
ROAD RESERVE (MILO 6525)
ROAD RESERVE (MILO 6525)
LOT 706 ON PLAN 22149 (MOUNT HORNER 6525)
LOT M381 ON PLAN 2947 (MOUNT HORNER 6525)
LOT 3592 ON PLAN 131542 (MOUNT HORNER 6525)
LOT 1868 ON PLAN 246643 (IRWIN 6525)
LOT 5 ON PLAN 235109 (IRWIN 6525)
LOT 1 ON PLAN 235109 (IRWIN 6525)
LOT 1867 ON PLAN 252092 (IRWIN 6525)
LOT 7 ON PLAN 235109 (IRWIN 6525)
LOT 30 ON PLAN 157756 (IRWIN 6525)
LOT 29 ON PLAN 157756 (Lot No. 29 CRIDDLE IRWIN 6525)
LOT 15 ON PLAN 235109 (IRWIN 6525)
LOT 2 ON PLAN 235109 (IRWIN 6525)
LOT 4 ON PLAN 232250 (IRWIN 6525)
LOT 19 ON PLAN 125415 (Lot No. 19 THE MIDLANDS IRWIN 6525)
ROAD RESERVE (IRWIN 6525)
ROAD RESERVE (IRWIN 6525)
ROAD RESERVE (IRWIN 6525)
LOT 1184 ON PLAN 246679 (YARDARINO 6525)
LOT 6 ON PLAN 235109 (IRWIN 6525)
LOT 20 ON PLAN 255641 (IRWIN 6525)
ROAD RESERVE (YARDARINO 6525)

LOT 8 ON PLAN 123678 (IRWIN 6525)
LOT 430 ON PLAN 231555 (YARDARINO 6525)
LOT 18 ON PLAN 235109 (Lot No. 18 PHILLIPS IRWIN 6525)
LOT 10 ON PLAN 235109 (Lot No. 10 PHILLIPS IRWIN 6525)
ROAD RESERVE (YARDARINO 6525)
ROAD RESERVE (IRWIN 6525)
WATER FEATURE (YARDARINO 6525)
LOT 429 ON PLAN 232250 (YARDARINO 6525)
LOT 9 ON PLAN 235109 (IRWIN 6525)
LOT 877 ON PLAN 246574 (YARDARINO 6525)
LOT 1844 ON PLAN 248529 (YARDARINO 6525)
LOT 1246 ON PLAN 246691 (YARDARINO 6525)
LOT 876 ON PLAN 246573 (YARDARINO 6525)
LOT 1456 ON PLAN 246641 (YARDARINO 6525)
ROAD RESERVE (YARDARINO 6525)
ROAD RESERVE (YARDARINO 6525)
LOT M357 ON PLAN 2993 (YARDARINO 6525)
ROAD RESERVE (YARDARINO 6525)
LOT 878 ON PLAN 246575 (YARDARINO 6525)
LOT 1811 ON PLAN 248522 (YARDARINO 6525)
LOT 1491 ON PLAN 248617 (YARDARINO 6525)
ROAD RESERVE (YARDARINO 6525)
LOT 569 ON PLAN 232249 (YARDARINO 6525)
LOT 478 ON PLAN 232250 (YARDARINO 6525)
LOT 479 ON PLAN 232250 (YARDARINO 6525)
ROAD RESERVE (YARDARINO 6525)
LOT 209 ON PLAN 232250 (YARDARINO 6525)
LOT 31 ON PLAN 202671 (Lot No. 31 ROWLAND IRWIN 6525)
LOT 32 ON PLAN 202671 (Lot No. 32 ROWLAND IRWIN 6525)
LOT 33 ON PLAN 202671 (Lot No. 32 ROWLAND IRWIN 6525)
LOT 34 ON PLAN 202671 (Lot No. 32 ROWLAND IRWIN 6525)
LOT 35 ON PLAN 202671 (Lot No. 35 ROWLAND IRWIN 6525)
LOT 36 ON PLAN 202671 (IRWIN 6525)
LOT 37 ON PLAN 202671 (Lot No. 37 MORGAN IRWIN 6525)
LOT 38 ON PLAN 202671 (House No. 1 ROWLAND IRWIN 6525)
LOT 205 ON PLAN 232250 (Lot No. 205 HUNT FARM YARDARINO 6525)
LOT 2304 ON PLAN 255640 (Lot No. 2304 MOORE MILO 6525)
LOT 40 ON PLAN 202671 (IRWIN 6525)
LOT 39 ON PLAN 202671 (Lot No. 39 ROWLAND IRWIN 6525)
UNALLOCATED CROWN LAND (IRWIN 6525)
LOT 206 ON PLAN 232250 (Lot No. 206 HUNT FARM YARDARINO 6525)
LOT 1602 ON PLAN 246854 (Lot No. 1602 HUNT FARM YARDARINO 6525)
LOT 51 ON DIAGRAM 86327 (IRWIN 6525)
LOT 52 ON DIAGRAM 86327 (IRWIN 6525)
LOT 53 ON DIAGRAM 86327 (IRWIN 6525)
ROAD RESERVE (IRWIN 6525)
ROAD RESERVE (MILO 6525)
ROAD RESERVE (IRWIN 6525)
WATER FEATURE (IRWIN 6525)
LOT 8 ON PLAN 232250 (MILO 6525)
LOT 265 ON PLAN 232250 (Lot No. 265 MILO MILO 6525)
LOT 267 ON PLAN 232250 (Lot No. 267 THE MIDLANDS MILO 6525)
LOT 268 ON PLAN 232250 (Lot No. 268 THE MIDLANDS MILO 6525)
LOT 269 ON PLAN 232250 (Lot No. 269 MILO MILO 6525)
LOT 572 ON PLAN 232250 (Lot No. 572 MILO MILO 6525)
LOT 573 ON PLAN 232250 (Lot No. 573 MILO MILO 6525)
LOT 474 ON PLAN 232250 (MILO 6525)
LOT 571 ON PLAN 232250 (Lot No. 571 MILO MILO 6525)
LOT 24 ON PLAN 232250 (Lot No. 24 THE MIDLANDS MILO 6525)
LOT 132 ON PLAN 232250 (Lot No. 132 MILO MILO 6525)
LOT 277 ON PLAN 232250 (Lot No. 277 MILO MILO 6525)

LOT 300 ON PLAN 231554 (Lot No. 300 MILO MILO 6525)
LOT 301 ON PLAN 232250 (Lot No. 301 MILO MILO 6525)
LOT 546 ON PLAN 232250 (Lot No. 546 MILO MILO 6525)
LOT 473 ON PLAN 232250 (MILO 6525)
LOT 2437 ON PLAN 232250 (Lot No. 2437 THE MIDLANDS MILO 6525)
LOT 684 ON PLAN 232049 (MILO 6525)
LOT 568 ON PLAN 232250 (MILO 6525)
LOT 1735 ON PLAN 246856 (MILO 6525)
LOT 570 ON PLAN 232049 (MILO 6525)
LOT 561 ON PLAN 232250 (MILO 6525)
LOT 685 ON PLAN 232049 (MILO 6525)
LOT 567 ON PLAN 232049 (MILO 6525)
LOT 1 ON DIAGRAM 2240 (YARDARINO 6525)
LOT 1334 ON PLAN 246733 (YARDARINO 6525)
LOT 5974 ON PLAN 232249 (YARDARINO 6525)
LOT 5975 ON PLAN 232249 (YARDARINO 6525)
LOT 1411 ON PLAN 246729 (YARDARINO 6525)
LOT M363 ON PLAN 2947 (YARDARINO 6525)
ROAD RESERVE (YARDARINO 6525)
LOT 8208 ON PLAN 137766 (IRWIN 6525)
LOT 26 ON PLAN 202290 (IRWIN 6525)
LOT 27 ON PLAN 202290 (IRWIN 6525)
LOT 3887 ON PLAN 137766 (IRWIN 6525)
UNALLOCATED CROWN LAND (IRWIN 6525)
ROAD RESERVE (YARDARINO 6525)
LOT 1316 ON PLAN 246696 (YARDARINO 6525)
LOT 1 ON DIAGRAM 54328 (YARDARINO 6525)
LOT 6474 ON PLAN 246779 (YARDARINO 6525)
LOT 1888 ON PLAN 248587 (YARDARINO 6525)
LOT 1185 ON PLAN 246686 (YARDARINO 6525)
ROAD RESERVE (YARDARINO 6525)
LOT 40 ON PLAN 23881 (YARDARINO 6525)
LOT 917 ON PLAN 231606 (YARDARINO 6525)
LOT 1279 ON PLAN 232249 (YARDARINO 6525)
LOT 1193 ON PLAN 246839 (YARDARINO 6525)
CLOSED ROAD (YARDARINO 6525)
LOT 1771 ON PLAN 246867 (YARDARINO 6525)
PART LOT 1289 ON PLAN 232249 (YARDARINO 6525)
PART LOT 1307 ON PLAN 232249 (YARDARINO 6525)
LOT 844 ON PLAN 248613 (YARDARINO 6525)
LOT 458 ON PLAN 232249 (YARDARINO 6525)
ROAD RESERVE (YARDARINO 6525)
LOT 20 ON PLAN 23881 (YARDARINO 6525)
PART LOT 1186 ON PLAN 232249 (YARDARINO 6525)
LOT 213 ON PLAN 114801 (YARDARINO 6525)
ROAD RESERVE (YARDARINO 6525)
LOT 1187 ON PLAN 231863 (YARDARINO 6525)
LOT 1824 ON PLAN 246651 (YARDARINO 6525)
LOT M345 ON PLAN 2947 (YARDARINO 6525)
LOT 403 ON PLAN 232249 (YARDARINO 6525)
LOT 1294 ON PLAN 159197 (YARDARINO 6525)
LOT 1306 ON PLAN 232249 (YARDARINO 6525)
LOT 2720 ON PLAN 108897 (YARDARINO 6525)
ROAD RESERVE (YARDARINO 6525)
LOT M347 ON PLAN 2947 (YARDARINO 6525)
LOT 9465 ON PLAN 156461 (MILO 6525)
LOT 9463 ON PLAN 156461 (MILO 6525)
ROAD RESERVE (MILO 6525)
ROAD RESERVE (YARDARINO 6525)
LOT 8 ON PLAN 16989 (Lot No. 8 ELLERY YARDARINO 6525)
ROAD RESERVE (YARDARINO 6525)

LOT 2 ON PLAN 14204 (Lot No. 2 BRAND YARDARINO 6525)
ROAD RESERVE (YARDARINO 6525)
LOT 298 ON PLAN 232250 (Lot No. 298 MILO MILO 6525)
LOT 554 ON PLAN 232250 (Lot No. 554 MILO MILO 6525)
LOT 639 ON PLAN 232250 (Lot No. 639 MILO MILO 6525)
LOT 1676 ON PLAN 246855 (Lot No. 1676 MILO MILO 6525)
LOT 555 ON PLAN 232250 (Lot No. 555 MILO MILO 6525)
LOT 114 ON PLAN 232250 (Lot No. 114 HUNT FARM YARDARINO 6525)
LOT 2210 ON PLAN 248526 (Lot No. 2210 HUNT FARM YARDARINO 6525)
LOT 661 ON PLAN 232250 (Lot No. 661 HUNT FARM YARDARINO 6525)
LOT 483 ON PLAN 232250 (Lot No. 483 HUNT FARM YARDARINO 6525)
ROAD RESERVE (YARDARINO 6525)
LOT 3 ON DIAGRAM 3690 (IRWIN 6525)
LOT 41 ON PLAN 156642 (Lot No. 41 CAUFIELD IRWIN 6525)
LOT 42 ON PLAN 156642 (Lot No. 42 CAUFIELD IRWIN 6525)
LOT 43 ON PLAN 156642 (Lot No. 43 PARKFIELD IRWIN 6525)
LOT 44 ON PLAN 156642 (Lot No. 44 PARKFIELD IRWIN 6525)
LOT 45 ON PLAN 156826 (Lot No. 45 FRIPP IRWIN 6525)
LOT 46 ON PLAN 156826 (Lot No. 46 FRIPP IRWIN 6525)
ROAD RESERVE (IRWIN 6525)
ROAD RESERVE (IRWIN 6525)
ROAD RESERVE (MOUNT HORNER 6525)
ROAD RESERVE (IRWIN 6525)
ROAD RESERVE (IRWIN 6525)
ROAD RESERVE (IRWIN 6525)
LOT 13 ON DIAGRAM 95377 (Lot No. 13 FOSS IRWIN 6525)
LOT 12 ON DIAGRAM 95377 (IRWIN 6525)
LOT 11 ON DIAGRAM 95377 (IRWIN 6525)
LOT 10 ON DIAGRAM 95377 (IRWIN 6525)
LOT 9 ON DIAGRAM 95377 (IRWIN 6525)
LOT 8 ON DIAGRAM 95377 (IRWIN 6525)
LOT 1341 ON PLAN 246742 (IRWIN 6525)
ROAD RESERVE (IRWIN 6525)
PART LOT 1769 ON PLAN 246868 (YARDARINO 6525)
LOT 3 ON PLAN 232249 (IRWIN 6525)
LOT 23 ON PLAN 202290 (IRWIN 6525)
LOT 24 ON PLAN 202290 (Lot No. 24 THE MIDLANDS IRWIN 6525)
LOT 25 ON PLAN 202290 (Lot No. 25 THE MIDLANDS IRWIN 6525)
ROAD RESERVE (IRWIN 6525)
LOT 48 ON PLAN 156826 (Lot No. 48 PARKFIELD IRWIN 6525)
LOT 49 ON PLAN 156826 (Lot No. 49 PARKFIELD IRWIN 6525)
LOT 22 ON PLAN 202290 (Lot No. 22 HARRIET IRWIN 6525)
LOT 50 ON PLAN 156826 (Lot No. 50 PARKFIELD IRWIN 6525)
LOT 47 ON PLAN 156826 (Lot No. 47 PARKFIELD IRWIN 6525)
ROAD RESERVE (IRWIN 6525)
PART LOT 557 ON PLAN 232250 (MILO 6525)
PART LOT 556 ON PLAN 232250 (YARDARINO 6525)
ROAD RESERVE (MILO 6525)
LOT 18 ON PLAN 232250 (MILO 6525)
LOT 86 ON PLAN 231533 (Lot No. 86 THE MIDLANDS MILO 6525)
LOT 803 ON PLAN 246847 (MILO 6525)
LOT 1586 ON PLAN 248620 (MILO 6525)
ROAD RESERVE (MILO 6525)
ROAD RESERVE (MOUNT HORNER 6525)
LOT 0 ON PLAN 4304 (MILO 6525)
LOT 1990 ON PLAN 248522 (MILO 6525)
LOT 231 ON PLAN 232250 (MILO 6525)
CLOSED ROAD (MILO 6525)
LOT 577 ON PLAN 232049 (MILO 6525)
LOT 579 ON PLAN 232049 (MILO 6525)
ROAD RESERVE (MILO 6525)

LOT 1404 ON PLAN 246723 (YARDARINO 6525)
LOT 1810 ON PLAN 248525 (YARDARINO 6525)
LOT 1800 ON PLAN 248541 (YARDARINO 6525)
ROAD RESERVE (MOUNT ADAMS 6525)
LOT 1847 ON PLAN 248546 (MOUNT ADAMS 6525)
LOT 249 ON PLAN 232049 (YARDARINO 6525)
VICTORIA LOCATION 12487 (MOUNT ADAMS 6525)
LOT 12251 ON PLAN 244036 (MOUNT ADAMS 6525)
LOT 1086 ON PLAN 246833 (MILO 6525)
LOT 6467 ON PLAN 246873 (YARDARINO 6525)
LOT 626 ON PLAN 232249 (YARDARINO 6525)
VICTORIA LOCATION 11701 (YARDARINO 6525)
ROAD RESERVE (YARDARINO 6525)
LOT 36 ON PLAN 231555 (YARDARINO 6525)
LOT 808 ON PLAN 232249 (YARDARINO 6525)
LOT 713 ON PLAN 110611 (YARDARINO 6525)
WATER FEATURE (YARDARINO 6525)
UNALLOCATED CROWN LAND (YARDARINO 6525)
LOT 22 ON PLAN 20774 (YARDARINO 6525)
LOT 2 ON DIAGRAM 54534 (YARDARINO 6525)
LOT 12659 ON PLAN 29572 (YARDARINO 6525)
LOT 2 ON DIAGRAM 53978 (YARDARINO 6525)
LOT 839 ON PLAN 246561 (YARDARINO 6525)
LOT 12661 ON PLAN 29573 (YARDARINO 6525)
LOT 1708 ON PLAN 251677 (ARROWSMITH 6525)

Colloquial name: Production licenses L1, L2, and L7; Exploration Permit EP 320

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
40		Mechanical Removal	Mineral Exploration

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description	Clearing Description	Vegetation Condition	Comment
Beard vegetation association 49: Shrublands; mixed heath. Beard vegetation association 352: Medium woodland;York gum. Beard vegetation association 359: Shrublands; acacia & banksia scrub. Beard vegetation association 378: Shrublands; scrub-heath with scattered Banksia spp., E. todtiana & Xylomelum angustifolium on deep sandy flats in the Geraldton Sandplain Region. Beard vegetation association 379: Shrublands; scrub-heath on lateritic sandplain in the central Geraldton Sandplain Region. Beard vegetation association 392: Shrublands; Melaleuca thyiodes thicket. Beard vegetation association 433: Mosaic: Shrublands; Acacia rostellifera & Melaleuca cardiophylla thicket / Sparse low woodland; illyarrie. (Hopkins et al. 2001, Shepherd et al. 2001).	The Geraldton Sandplain Region consists of a number of vegetation types consisting of scrub-heath with scattered Banksia spp., Eucalyptus todtiana and Xylomelum angustifolium on the deep sandy flats, instances of Melaleuca thyoides thicket, Acacia and Banksia spp., Acacia rostellifera and Melaleuca cardiophylla thicket and areas of medium woodland consisting of York gums and River gums. (Hopkins et al 2001, Shepherd et al, 2001)	Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery 1994)	Observed during site visit: The Leishman property, which has an Agreement to Reserve on it has had approximately half of the vegetation burnt from a recent bushfire which has destroyed the understorey and damaged the majority of the vegetation from the area. The rest of the vegetation on that property contained black wattle thicket, grasstrees, Acacia sp., Banksia sp. and Eucalyptus species. The area is mainly used for grazing which has reduced the understorey. The Irwin River is not well protected in some areas for example under bridges, however along the rest of the river they contain mainly Eucalyptus species with no understorey. Only some of the river is fenced off from stock. There are also other large areas of remnant vegetation however the private land has been mainly grazed leaving no understorey within these areas.

3. Assessment of application against Clearing Principles

(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.

Comments

Proposal may be at variance to this Principle

The area under application falls within the Geraldton Sandplains Bioregion; a region recognised for its high biodiversity values. The area under application contains seven different vegetation types consisting of scrub-heath with scattered Banksia spp., Eucalyptus todtiana and Xylomelum angustifolium on the deep sandy flats, instances of Melaleuca thyoides thicket, Acacia and Banksia spp., Acacia rostellifera and Melaleuca cardiophylla thicket and areas of medium woodland consisting of York gums and River gums (Hopkins et al 2001, Shepherd et al, 2001). The area occupied by Production Licences L1, L2, L7 and Exploration Permit 320 is either privately owned or crown land. Most of the area covered by the proposal is farming lands, and broad-acre cropping with sheep grazing predominating. The cleared areas under application are pasture or cropland with some regrowth of the Acacia rostellifera. The proposal also contains areas of patchy remnant vegetation. The Irwin River has original vegetation of York Gum woodland with River Gums along the river itself. However, this area has been cleared for agricultural purposes over many years and the surviving vegetation is usually degraded to scattered trees (ARC Energy, 2005).

The areas of remnant vegetation are a habitat for rare and priority species in an area that has been extensively cleared. With the use of desktop assessment from CALM and the WA Herbarium it was found that there are 18 occurrences of rare and priority flora in the area under application with a further 38 surrounding the project area, of which most have been identified through previous surveys undertaken (ARC Energy, 2005).

A total of 44 native and 7 introduced mammals, 125 birds, 11 amphibians and 94 reptiles occur or potentially occur within the area under application. Of these species, some have been recorded in areas to the North or South and may occur infrequently within the permit areas. An additional seven species, including six species of mammals, have been recorded previously in the area under application prior to 1943, but are considered unlikely to still occur. A request for threatened fauna information was sought from CALM with no threatened fauna species found (ARC Energy, 2005)

Geraldton Sandplains is known as a biodiversity hotspot and recognised for its high values of biodiversity. The areas of remnant vegetation in this proposal are likely to contain high biodiversity values, although possibly not higher in value that some of the surrounding nature reserves. ARC Energy has agreed to avoid all small remnants where possible and will divert their lines around these areas, they will hand cut lines through large areas of remnant vegetation that cannot be diverted and will roll the vegetation over the largest remnant covering most of a private property. The rolling of the vegetation is considered to minimise the effects on the vegetation as it leaves the soil and roots intact. In addition, conditions have been imposed requiring rehabilitation of all areas cleared under this permit.

Methodology

ARC Energy - EMP, 2005.
Hopkins et al, 2001.
Shepherd et al, 2001.
CALM, 2005.
GIS Databases:
- Interim Biogeographic Regionalisation of Australia-EA 18/10/00.

(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

Comments

Proposal is not likely to be at variance to this Principle

Fauna is closely aligned with landform-vegetation characteristics. A total of 44 native and seven introduced mammals, 125 birds, 11 amphibians and 94 reptiles occurs or potentially occurs within the Permit Areas L1 and L2. Of these species, some have been recorded in areas to the north or south and may occur infrequently within the permit areas. An additional seven species, including six species of mammal, have been recorded previously in the area under application prior to 1943, but it is considered unlikely that these persist. It is anticipated that no rare or priority fauna will be impacted during the survey (ARC Energy-EMP, 2005).
CALM (2005) advises that no Threatened or Priority fauna have been identified within a 10 kilometre radius of the notified area. The nearest record is Phasmodes jeeba (Priority 2) approximately 13.3km away. All areas cleared under the permit will be rehabilitated. This proposal is therefore not likely to be at variance to this Principle.

Methodology

CALM, 2005.
ARC Energy - EMP, 2005.
CALM's Threatened and Priority Fauna Database [The comprehensiveness of the database is dependent on the amount of survey carried out in the area and does not necessarily represent a comprehensive listing (CALM, 2005)].

(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.

Comments

Proposal may be at variance to this Principle

Using existing databases, ARC Energy reported that there are 18 occurrences of rare and priority flora in the area under application with a further 38 surrounding the project area, of which most have been identified through previous surveys undertaken (ARC Energy, 2005).

CALM advises that there are 9 occurrences of declared rare flora, 2 priority two species, 16 priority three species and 3 priority four species located within a 10km radius of the area under application. Due to the relatively close proximity (within 1 kilometre) of populations of Tricoryne robusta (Priority 2), Grevillea tenuiloba (Priority 3), Villarsia congestiflora (Priority 3) and Eucalyptus ebbanoensis subsp. Photina (Priority 4), and the expected similarity in landscape position, it is possible that these species may also occur within the notified area (CALM, 2005). CALM recommended that a survey be undertaken to establish whether the identified priority and DRF flora taxa are present in the area under application.

A flora survey of the area under application (Woodman Environmental Consultants, 2005) indicated that no Declared Rare Flora were recorded within the survey area. A total of four Priority Flora species were recorded within the survey area. One of these four, Anigozanthos humilis subsp. chrysanthus has not been previously recorded within the vicinity of the survey area. Several of the plant communities identified were significant in that they contained or potentially contain Declared Rare or Priority Flora species. These communities include W3, W3d, H7, H7d and the mosaic T1d/T4d.

The proponent has committed to several management actions, which will be included as conditions on the permit to reduce the impact of this proposal. These include avoiding all trees and old growth species such as Xanthorrhoea and Macrozamia, avoiding plant communities within wetland systems and riparian zones, and avoiding Declared Rare Flora (Woodman Environmental Consulting, 2005). In addition it is recommended that to minimise the impact on other Declared Rare and Priority Flora species that occur or potentially occur within the survey area, the proponent have a qualified botanist search the lines to be rolled within the W3 and W3d plant communities to identify individuals of Declared Rare Stawellia dimorphantha and Priority Flora species for avoidance.

Methodology

CALM, 2005.
Woodman Environmental Consulting, 2005.
ARC Energy, 2005.
CALM'S Herbarium Specimen Collection Database [The comprehensiveness of the database is dependent on the amount of survey carried out in the area and does not necessarily represent a comprehensive listing (CALM, 2005)].

(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

Comments

Proposal is not likely to be at variance to this Principle

No Threatened Ecological Communities (TEC) have been identified within a 10 kilometre radius of the project area and therefore the proposal is not likely to be at variance to this Principle (CALM, 2005).

Methodology

CALM, 2005.
GIS Databases:
- Threatened Ecological Communities - CALM 15/07/03

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

Comments

Proposal may be at variance to this Principle

The Geraldton Sandplain Bioregion has 26.8% of native vegetation remaining within the intensive landuse zone and Beard vegetation associations 352, 359 and 379 have 15.2%, 21.1% and 20.2% respectively of the native vegetation remaining, making them vulnerable by conservation status standards.

The clearing of native vegetation under this proposal will be rolled. The method of rolling the vegetation is likely to promote quick regeneration of the vegetation. In addition, conditions requiring rehabilitation and revegetation have been imposed on the permit.

	Pre-European area (ha)	Current extent (ha)	Remaining %*	Conservation status**	Reserves/CALM-managed land, %
IBRA Bioregion - Geraldton Sandplain	2,474,401***	663,290***	26.8	Vulnerable	Not available
Shire - Irwin	238,186	114,164	47.9	Depleted	Not available
Beard veg type - 49	59,113	23,904	40.4	Depleted	45.7
Beard veg type - 352	874,652	133,255	15.2	Vulnerable	8.5
Beard veg type - 359	51,008	10,762	21.1	Vulnerable	0.0
Beard veg type - 378	109,796	68,049	62.0	Least concern	21.1

Beard veg type - 379	633,325	128,007	20.2	Vulnerable	20.3
Beard veg type - 392	3,646	1,554	42.6	Depleted	16.4
Beard veg type - 433	37,257	15,234	40.9	Depleted	11.7

* Shepherd et al. (2001)
** Department of Natural Resources and Environment (2002)
*** Area within the Intensive Landuse Zone

Methodology GIS Databases:
- Interim Biogeographic Regionalisation of Australia - EA 18/10/00
- Pre-European Vegetation - DA 01/01
- Local Government Authorities - DLI 08/07/04
- EPA Position Paper No 2 Agriculture Region - DEP 12/00

Shepherd et al, 2001.
Department of Natural Resources and Environment, 2002

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Comments

Proposal is not likely to be at variance to this Principle

The Irwin River valley is the only major coordinated drainage indentation within the area of the proposed survey. There are also a number of swamps surrounded by dense scrub and minor non-perennial watercourses within the area under application. The Irwin River has original vegetation of York Gum woodland with River Gums along the river itself. However, this area has been cleared for agricultural purposes over many years and the surviving vegetation is usually degraded to scattered trees (ARC Energy, 2005). The fragile nature of the riparian zone makes this area vulnerable to disturbance however ARC Energy have committed to no clearing within the riparian zone and will hand walk receiver lines through these areas to minimise impact. In addition existing bridges and vehicle tracks will be used with no further access tracks to be created within the riparian zone. A condition has been imposed prohibiting the clearing of riparian vegetation. The proposal is therefore not likely to be at variance to this Principle.

Methodology ARC Energy, 2005.
GIS Databases:
- Hydrography, linear - DoE 01/02/04

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

Comments

Proposal is not likely to be at variance to this Principle

DAWA (2005) report: The proposed clearing of seismic lines on the sandplain soils is potentially a land degradation hazard. However, the Commissioner of Soil and Land Conservation was consulted during the development of the environmental management plan for this seismic survey. The Commissioner is of the view that the land degradation hazards can be managed provided areas subject to disturbance and traffic by heavy machinery are rehabilitated in accordance with the environmental management plan. The Commissioner considers the clearing as proposed is likely to be at variance to Principle g.

The clearing of native vegetation under this proposal will be rolled. The method of rolling the vegetation is likely to promote quick regeneration of the vegetation. In addition it will be a requirement for the areas cleared under this application to be rehabilitated. This proposal is therefore unlikely to be at variance with this Principle.

Methodology DAWA (2005).
GIS Databases:
- Rainfall, Mean Annual - BOM 30/09/01
- Salinity Risk LM 25m - DOLA 00
- Acid Sulphate Soil risk map, SCP DOE 01/02/04
- Soils, Statewide - DA 11/99

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

Comments

Proposal is not likely to be at variance to this Principle

An ATR (Agreement to Reserve) between the Landowner and the Commissioner of Soil and Land Conservation (Department of Agriculture) exists over Victoria Location 6467 and portions of Victoria Locations 839 and 1888. This ATR preserves the vegetation from damage. The Commissioner for Soil and Land Conservation has granted approval for clearing under this application. In addition the area under the ATR has recently suffered structural damage due to fire.

CALM advise that there are a number of conservation areas within a 10km radius of the notified area, however the nearest CALM managed area is approximately 5.2km from the notified area and is unlikely to be significantly impacted by the proposal. This proposal is therefore not likely to be at variance with this Principle.

Methodology CALM, 2005.
GIS Databases:
- CALM Regional Parks - CALM 12/04/02
- WRC Estate - WRC 05/99
- CALM Managed Lands & Waters - CALM 01/06/04
- Proposed National Parks FMP-CALM 19/03/03
- Register of National Estate - EA 28/01/03

(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

Comments

Proposal is not likely to be at variance to this Principle

The area under application falls within the Irwin River, Arrowsmith River and Coastal catchment and covers the Dongara-Denison, Allanooka and Allanooka-Dongara Water Reserve Public Drinking Water Source Area (PDWSA) Protection Zone. The area under application is classed as Priority 2 for land use planning, which is compatible with this end land use with conditions. Due to the relatively low impact nature of rolling the vegetation, the proposal is not likely to cause deterioration in the quality of surface or underground water (Midwest Gascoyne Hydro Unit, 2005).

Methodology GIS Databases:
- PDWSA Protection Zones - DOE 07/01/04
- Public Drinking Water Sources (PDWSAs) - DOE 29/11/04
- Hydrographic Catchments - Catchments - DOE 03/04/03.
Midwest Gascoyne Hydro Unit, 2005.

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

Comments

Proposal is not likely to be at variance to this Principle

The area under application is characterised by a Mediterranean-type climate with an average rainfall of 500mm. The area under application is subject to high wind speeds, dust storms, lighting storms, high summer temperatures and low winter night temperatures. The application proposal is approximately 8km from the town centre and is characterised by sandy soils and is not in a low lying area. Due to the relatively low impact nature of rolling the vegetation and the sandy porous nature of the soil, the proposal is not likely to lead to an incremental increase in peak flood height or duration.

Methodology GIS Databases:
- Rainfall, Mean Annual - BOM 30/09/01

Planning instrument, Native Title, RIWI Act Licence, EP Act Licence, Works Approval, Previous EPA decision or other matter.

Comments

The Shire of Irwin has not indicated that there are any planning requirements or approvals that would affect the clearing.

There is no further requirement for a RIWI Act Licence, Works Approval or EP Act licence for the area under application.

The area under application is covered by Production Licences L1, L2 and L7 and Exploration Permit EP320, which are all owned by the proponent. The grant of a clearing permit constitutes a secondary approval that removes the prohibition on the applicant exercising its rights on the granted tenements.

There are 11 records of Aboriginal Sites of Significance within the area under application. The proponents commissioned a survey to address this issue. Two ethnographic and eight archaeological sites of significance were located within the project area. The survey lines have been planned to avoid these sites so that the Irwin 3D Seismic Survey will not operate near or impact on any ethnographic or archaeological sites of significance. The proponent will be advised of their obligations under the Aboriginal Heritage Act 1972 on the covering letter.

An ATR (Agreement to Reserve) exists over Victoria Location 6467 and portions of Victoria Locations 839 and 1888, which protects areas of native vegetation under the Soil and Land Conservation Act 1945. The Commissioner of Soil and Land Conservation was consulted during the development of the environmental management plan for this seismic survey. The Commissioner is of the view that the land degradation hazards can be managed provided areas subject to disturbance and traffic by heavy machinery are rehabilitated in accordance with the environmental management plan and has provided written advice to this effect as required under section 51D of the Environmental Protection Act 1986. The Commissioner has granted approval to carry out the proposed seismic survey within the ATR area on the proviso that the land is rehabilitated in accordance with the undertakings given by Arc Energy.

Methodology

4. Assessor's recommendations

Purpose	Method	Applied area (ha)/ trees	Decision	Comment / recommendation
Mineral Exploration	Mechanical Removal	40	Grant	The assessable criteria have been addressed and no objections were raised. The assessing officer therefore recommends that the clearing permit be granted with conditions: - to avoid clearing within wetland systems and riparian zones - to prevent the spread or introduction of weeds and Phytophthora - to revegetate and rehabilitate rolled tracks - to reduce the impacts on Declared Rare or Priority Flora

5. References

ARC Energy, 2005, Environmental Management Plan - Irwin 3D Seismic Survey, ARC Energy, Western Australia.

CALM (2005) Land clearing proposal advice. Advice to A/Director General, Department of Environment (DoE). Department of Conservation and Land Management, Western Australia. DoE TRIM ref GD563.

DAWA (2005) Land degradation assessment report. Office of the Commissioner of Soil and Land Conservation, Department of Agriculture Western Australia. DoE TRIM ref GD521.

Department of Natural Resources and Environment (2002) Biodiversity Action Planning. Action planning for native biodiversity at multiple scales; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.

Hopkins, A.J.M., Beeston, G.R. and Harvey J.M. (2001) A database on the vegetation of Western Australia. Stage 1. CALMScience after J. S. Beard, late 1960's to early 1980's Vegetation Survey of Western Australia, UWA Press.

Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.

Woodman Environmental Consulting (2005) Irwin 3D Seismic Survey Vegetation Studies - Areas Proposed For Rolling Of Vegetation. Woodman Environmental Consulting Pty Ltd, Western Australia. DEC TRIM ref DOC4863.