

11 Land use

This chapter describes the historical and current land-use patterns within and surrounding the Project Area. Potential changes to land use associated with the proposed development are discussed, together with proposed management measures. Traditional use of the region, Aboriginal cultural heritage issues and other aspects of specific relevance to Aboriginal people are addressed in detail in Chapter 12.

11.1 HISTORICAL EUROPEAN LAND USE

Pre-1960

The first detailed records of the East Kimberley were made by Alexander Forrest during his 1875–79 expedition, where he noted the irrigation potential of the Ord River area (Western Australian Government 1964).

After Forrest's expedition, flocks of sheep and cattle were moved into the region to create pastoral stations in 1884–85 when the Buchanan, Durack and McDonald families moved to the district (Western Australian Government 1964) primarily from Queensland. The discovery of gold at Halls Creek around 1885 and more substantially in southern Western Australia in the 1890s, created a dependable market for meat, and cattle grazing soon became a dominant part of the local economy.

The town of Wyndham was gazetted in 1886. In 1918 the Wyndham abattoir was built and it became the natural focus for the processing and sale of beef (Ministry for Planning and the Kimberley Development Commission 1999). By 1920, cattle numbers in the Kimberley had risen to over 500,000. Thereafter, however, the cattle population has remained virtually static and is now in decline.

Despite Forrest's early recognition of the irrigation potential of the Ord River it was not until 1942 that an experimental irrigation area of approximately 5 ha was developed on the banks of the river in the area known as Carlton Reach. The area was placed under the control of the Agriculture and Public Works departments (Western Australian Government 1964). In 1943, survey work was undertaken for proposed dam sites, basin capacity, access roads, diversion dams and main irrigation channels. In 1945, the Kimberley Research Station was established on the site currently occupied by the Frank Wise Institute, to determine the likelihood of successfully irrigating sugar, cotton, rice and safflower from the proposed Ord River Dam.

In the early 1940s, a Jewish community considered the establishment of an agricultural settlement in the Kimberley. Approximately 120 lots covering a total area of some 200 km² were surveyed in riverine country between the Ningbing Range and

the Onslow Hills some 100 km north of Kununurra. The development did not reach fruition.

During World War II the Australian defence forces used the now disused airstrip at the Kneebone stockyards, located immediately east of the Keep River Plain.

Post-1960

The Kununurra Diversion Dam was completed in 1963 and irrigation from the dam commenced in April that year. Safflower, cotton and rice were the first crops grown.

Kununurra developed as the centre for irrigated agriculture with some seventy houses constructed by 1964 together with two service stations, two general agencies, a police station, a concrete culvert factory and a cotton ginnery capable of harvesting 1,400,000 lb (c. 635,600 kg) per season (Western Australian Government 1964). In 1964, and again in 1967, the Government of Western Australia presented submissions to the Commonwealth Government seeking financial assistance to construct the Ord River Dam and associated irrigation channels, land development and service buildings (Western Australian Government 1967).

While the area of crops under irrigation grew steadily and rapidly in the early 1970s, reliance on pesticides to control insect pests also grew. Development of resistance to pesticides in the resident insect populations, particularly *Heliothis*, caused failure of a number of crops, especially cotton in 1974.

In 1985, the Wyndham meatworks closed and there was a shift towards the export of live cattle to the Indonesian, Malaysian and Philippine markets, as well as the Katherine meatworks. Since that time, open-range grazing has become more integrated with the establishment of cattle fattening operations utilising irrigated pasture and leucaena.

In recent times agricultural processing facilities have been developed. A sugar mill with the capacity to crush 540,000 t/a of cane was constructed in 1995–96 by Ord Sugar Pty Ltd and there are currently approximately 3,800 ha of irrigated land under sugarcane. Transgenic varieties of cotton offering greater resistance to pests have also been introduced for large-scale trials, and a ginnery was established in 1997.

Mineral exploration in the Project Area has occurred since the 1960s, with extensive exploration of a lead, zinc and silver deposit at Sorby Hills. More recently, mineral exploration has focussed on petroleum beneath the Keep River Plain. Exploration for alluvial diamonds, in paleochannels formed by the Ord River, has occurred in the west Ivanhoe area.

11.2 CURRENT LAND USE IN AND AROUND THE PROJECT AREA

The Project Area and its surrounds have a diverse range of land uses, including pastoral and irrigated agriculture, tourism and recreation, minerals exploration and mining, and nature and heritage conservation. These land uses are shown in Figure 11.1 and are described in the following sections.

11.2.1 Agriculture

Pastoralism

Pastoral leases associated with Ivanhoe Station in Western Australia, and Legune and Spirit Hills Stations in the Northern Territory cover most of the Project Area.

Grazing of cattle for beef production is a major local industry and more than half of the Kununurra–Wyndham area is used for pastoral activities (Ministry for Planning and the Kimberley Development Commission 1999). Total stock numbers were estimated at between 450,000 and 500,000 in the Kimberley in 1998. Stock numbers are currently lower than in previous years due in part to the influence of the brucellosis and tuberculosis eradication campaigns (Matt Bolum, Agriculture Western Australia, *pers. com.*, 17 November 1998). In addition, destocking of conservation areas has reduced total stock numbers.

The vegetation on the black-soil plains of the Ivanhoe Land System in the east Kimberley forms a valuable source of fodder for cattle, although that vegetation is not as good as that on the Mitchell and Flinders grass plains, which occur on black cracking clays on the Barkly Tablelands of the Northern Territory and in western Queensland. Stocking rates on individual areas are highly dependent on the condition of the vegetative cover. When good conditions prevail, the Ivanhoe Land System may support ten adult equivalents per square kilometre. The same area in fair or poor condition may support only as few as five or as little as one adult equivalent per square kilometre respectively (Matt Bolum, Agriculture Western Australia, *pers. com.*, 17 November 1998).

In 1996–97 some 1,400 ha of leucaena and hay were irrigated in the ORIA Stage 1 area to support cattle-grazing.

The majority of the cattle sold from the Kimberley are exported live via port facilities in Wyndham, Darwin, Broome and Port Hedland, while smaller numbers are processed at the Katherine abattoir. Traditional offshore markets have been in South East Asia, though in recent time markets have opened in the Middle East, including Libya and Egypt (Matt Bolum, Agriculture Western Australia, *pers. com.*, 17 November 1998).

Weed control is an important issue for the pastoral industry and Noogoora burr, belly-ache bush, mesquite and *Parkinsonia* and *Crotalaria* species can cause discomfort to animals or present a physical obstruction to sources of water. At present, rubber-vine and parthenium have not entered the Kimberley although they are present in Queensland. Another potential pest is *Mimosa pigra*, which could enter from the Northern Territory. This woody weed is highly invasive of waterways and floodplains. Maintaining strict quarantine measures at the Western Australian border is the main management measure used to prevent introduction of major pest species and the subsequent economic and environmental damage this would cause.

Clearing of vegetation on pastoral leases in the Northern Territory can only be carried out with the written approval of the Pastoral Lands Board, whose consent is required for any works other than fixed improvements such as fences and buildings, eradication of noxious weeds, and selective clearing of woody weeds over small areas of less than 2 ha (Department of Lands, Planning and Environment 1998). A similar requirement

exists in Western Australia, where the approval of the Commissioner for Soil and Land Conservation is required for all proposals to clear more than 1 ha of land.

Various leasehold improvements have been developed in the Project Area including fencing, holding yards, gates, groundwater bores, tanks, small dams and aircraft landing strips. A number of semi-formal and informal rubbish dumps also exist and some areas have been quarried to provide road construction materials.

Irrigated cropping

Irrigated cropping in the Kimberley is focused on ORIA Stage 1 within the Ivanhoe and Packsaddle plains straddling the Ord River (Figure 11.1).

A detailed description of ORIA Stage 1 is presented in Chapter 2.

11.2.2 Mining

The Argyle Diamond Mine is the only major mining activity in the Kununurra–Wyndham area (Ministry for Planning and the Kimberley Development Commission 1999). A local small-scale industry has developed in Kununurra based on zebra stone quarried around Lake Argyle and other local stone.

Most of the Kununurra–Wyndham area is covered by *Mining Act 1978* and *Petroleum Act 1967* exploration and mining tenements administered in Western Australia by the Department of Minerals and Energy. In the Northern Territory, the Department of Mines and Energy administers exploration licences and mining permits under the provisions of the *Mines Act 1980*.

The permits covering land in the vicinity of the Project Area are presented in Table 11.1. The locations of the tenements near to the Project Area are indicated in Figure 11.2.

In Western Australia a standard tenement clause has been attached to all permits issued in the ORIA since the 1970s. This requires that in the vicinity of any '*existing or planned irrigation area, or on any strip of land within 50 m of the banks of a Public Works Department irrigation channel, drain or maintained water course*

(e) No mining, other than exploration ... [may be carried out] without written approval of the State Mining Engineer and the Director of Engineering ...;

(f) No extension of previously approved surface mining operations... [may be carried out] without written approval of the State Mining Engineer and the Director of Engineering;

(g) Exploration ... confined to surface geological, geophysical and/or geochemical surveys, and drilling unless the written consent of the District Engineer, Public Works Department, Kununurra, is first obtained.'

A limited amount of mining exploration occurs in the region. Exploration for alluvial diamonds is presently under way in the west Ivanhoe area. Deposits of lead, zinc and silver are known to exist at Sorby Hills, located northeast of the Pincombe Range, but as yet the deposit has not proved sufficiently attractive for commercial development. The Weaber Gas Field, situated at the southern end of the Keep River Plain, is not commercially exploited at the present time. A number of spudded gas wells exist

within the Project Area in both Western Australia and the Northern Territory. In places, seismic lines were cleared across the plains to facilitate mineral exploration.

Table 11.1 Mining and exploration permits in the vicinity of the Project Area

Mining permit number	Holder
M80/285	Triako Resources
M80/196	Triako Resources
M80/286	Triako Resources
M80/197	Triako Resources
M80/287	Triako Resources

Two oil and gas permits covering the Project Area exist in the Northern Territory. These are summarised in Table 11.2.

Table 11.2 Oil and gas permits intersecting with the Project Area

Exploration/mining permit number	Holder
EP66	Amity Oil NL, Geopetro Company, Bonaparte Gulf Oil and Gas Pty Ltd, Frontier Bonaparte Pty Ltd
RL1	Amity Oil NL, Bonaparte Gulf Oil and Gas Pty Ltd, Frontier Bonaparte Pty Ltd

11.2.3 Fishing and aquaculture

Recreational and commercial fishing in the Kimberley is an important part of the local lifestyle and economy. Fisheries estimates that some 50,000 tourists fish in the Kimberley each year (Ministry for Planning and the Kimberley Development Commission 1999). Aboriginal people fish primarily for food, but great emphasis is also placed on the socio-cultural importance of fishing.

Recreational fishing participation in the Kununurra–Wyndham area is well above national averages. Important fishing locations include marine and estuarine areas as well as permanent waterholes and the tidal areas of the Keep River, the entire length of the Ord River downstream of the Argyle Dam and Lake Argyle itself. Awareness of the need for sustainable fishing practices is high, and management planning initiatives implemented to control fishing in the Ord River include the creation of a Fish Habitat Protection Area. Release of water from the Argyle Dam to provide hydroelectric power constitutes a significant portion of the base flow in the Ord River and has to a large extent created the current fishing environment.

The local commercial fishing industry includes the Lake Argyle Catfish Fishery as well as a hatchery, and a small-scale barramundi farm on Lake Argyle. Aquaculture development potential in the area is substantial and the Kimberley Aquaculture Development Plan (Fisheries Western Australia and Kimberley Development Commission 1995) identified the following opportunities:

- cage culture in Lake Argyle and Lake Kununurra for grow-out of juvenile barramundi, bream species and eel;

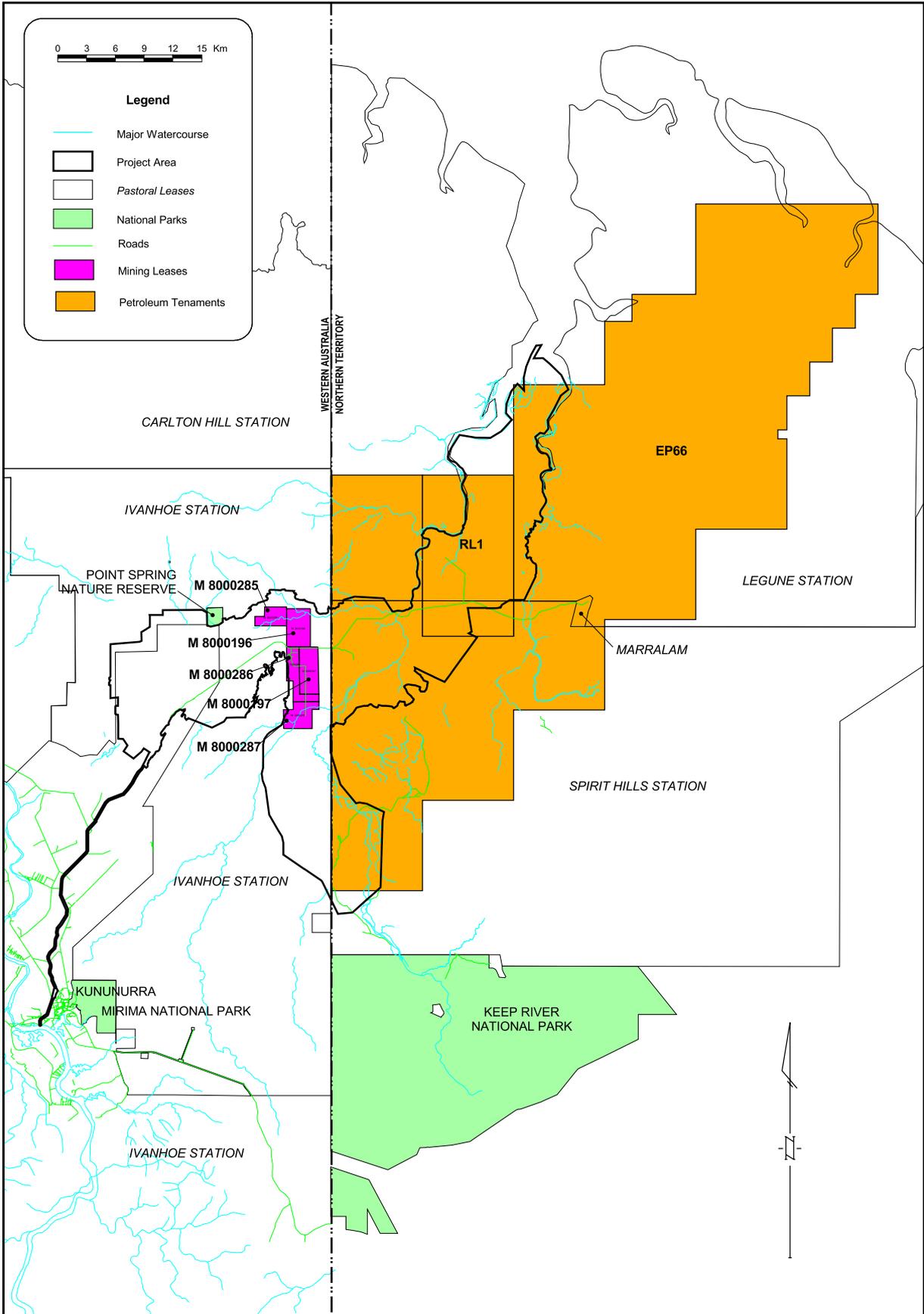


Figure 11.2 Mining permits in the Project Area

- pond culture and grow-out of barramundi, bream species and prawns in the north-eastern floodplains of the lower Ord River (Carlton Station), the Packsaddle Plain, the Ord River West Bank and the western floodplains of the lower Ord River;
- hatchery production of fish at Lake Argyle.

Assessment of potential sites for aquaculture ventures as part of ORIA Stage 2 has been undertaken (Sinclair and Ostle 1998); however, no firm development proposals for the Project Area exist at the present time.

11.2.4 Tourism and recreation

Northern Australia has become an increasingly popular holiday destination for Australian and international tourists because of the region's scenic beauty, unique landforms, and relaxed and distinctively Australian lifestyle. The Tourism Commission of Western Australia has estimated that 206,000 visitors travelled to the Kimberley Region in 1994–95.

Tourism is largely a seasonal industry, with an estimated 60% of tourists arriving during the dry season (April to September) when temperatures are low relative to the wet season. Kununurra acts as the departure point for tourist visits to Purnululu National Park (Bungle Bungle) and other major attractions including Lake Argyle, the Ord River, Hidden Valley National Park, Kelly's Knob Lookout, Ivanhoe Crossing, Lake Kununurra and Valentines Pool, as well as local national parks and reserves including the Keep River National Park. Water-dependent activities include tour boat operations on Lake Argyle as well as on the Ord River between Kununurra and the diversion dam and the river downstream of the diversion dam.

There are also a number of regular social and sporting activities in the region (Kimberley Tourism Association 1998):

- Lake Argyle Sailing Regatta (April)
- Kununurra Rodeo (April)
- Dam to Dam Dinghy Race (June)
- Agricultural Show (July)
- Kununurra Rodeo (July and August)
- Wyndham Races (August)
- East Kimberley Art Show (August)
- Kununurra Race Meeting (August)
- Kununurra Cup Race Day and Ball (August)
- Round Australia Car Rally (September)
- Night Rodeo (September)
- El Questro Barra Bash (October).

In addition to the events listed above, annual events include a diamond hunt, the Ord Festival, and the Kununurra Bachelors and Spinsters Ball (Kununurra Tourist Bureau, *in litt*, 5 November 1998).

In Kununurra there are currently four hotels, a number of budget (backpacker) accommodation locations and four caravan parks. The lack of available tourist accommodation in Kununurra during the dry season has been an issue for a number of years and is viewed by the industry as a limiting factor for future tourism growth. The industry also considers the limited transportation links to the area, including the lack of an international airport, to be a constraint in terms of future tourism growth.

11.2.5 Transportation

The Victoria Highway is the only sealed road that links Kununurra with the Northern Territory in the east and Wyndham to the west. The Great Northern Highway and the Gibb River Road provide access to the remainder of Western Australia and the Kimberley respectively. An unsealed road (the Weaber Plain Road) links Kununurra to the Project Area.

Main Roads Western Australia recently initiated a planning study assessing road needs within the region. The outcomes of this study are anticipated to be available by late 1999.

Road transport across the Western Australia – Northern Territory border is monitored at the quarantine checkpoint on the Victoria Highway some 40 km east of Kununurra. Checkpoint statistics have been maintained and processed until recently by the Kimberley Tourism Association in Broome. A summary of vehicle entry data for 1994 is presented in Table 11.3.

Table 11.3 Vehicle numbers entering Western Australia via the Kununurra Quarantine Checkpoint, 1994

Vehicle type	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
Cars/station wagons	354	288	242	468	562	981	1,580	1,348	823	593	362	473	8,074
Vans/4WD	474	366	360	856	1,071	1,670	2,422	2,065	1,379	1,056	624	480	12,823
Trucks	172	150	135	242	300	299	440	465	493	550	329	258	3833
Coaches/buses	29	31	25	100	59	63	80	98	76	54	43	30	688
Motorcycles	21	13	11	35	61	36	65	40	49	35	43	33	442
Caravans/trailers	45	13	53	206	495	1,012	1,730	1,392	620	275	150	151	6,142
Total	1095	861	826	1907	2,548	4,061	6,317	5,408	3,440	2,563	1551	1425	32,002

Note: Coach/bus numbers for April, July and December are estimates based on 1995 data.

Source: Kimberley Tourism Association.

The peak tourism period is June to August when temperatures are cooler and road access is not affected by local flooding.

11.2.6 Conservation reserves

Figure 11.1 shows the conservation reserves in the region. The nearest of these to the Project Area are:

- the Point Spring Nature Reserve—abutting the Weaber Plain portion of the Project Area;
- the Keep River National Park—located approximately 6 km south of the Project Area on the Knox Creek Plain portion of the Project Area.

Chapter 10 provides a description of the conservation reserves in the region and their significance to the Project.

11.2.7 Population and settlements

There is only one permanent residence within the Project Area, the Spirit Hills Station homestead. The pastoral lease for Spirit Hills Station is owned by the Northern Territory Land Corporation and subleased to the Carlton Pastoral Company.

A number of permanent residences are located within 20 km of the Project Area; these include:

- the Marralam Aboriginal community (consisting of around twenty to twenty-five people), located approximately 15 km east of the Project Area;
- the Policeman’s Waterhole, Bucket Spring and Bubble Bubble Springs Aboriginal communities, located within the Keep River National Park (and reported to be sparsely occupied particularly during the wet season).

The Kumbarumba Aboriginal community in the vicinity of Mt Septimus between Eight Mile Creek and the Keep River is reported to have been abandoned.

The Legune Station homestead is located some 30 km northeast of the northernmost reaches of the Keep River Plain.

11.2.8 Port of Wyndham

The proposed port storage facilities at Wyndham would be sited on land zoned for industry. Consequently no rezoning application would be necessary for construction of this facility, although building approval would be required. Surrounding land is also zoned ‘industrial’ or for ‘port purposes’, and the proposed storage facilities are considered to be compatible with these land uses.

11.3 REGIONAL DEVELOPMENT AND LAND-USE CONTROL

11.3.1 Strategic planning

A Kununurra–Wyndham Area Development Strategy (KWADS) is now being developed by the MfP with the Department of Lands, Planning and Environment. This process is being steered by a committee with agency representatives from both the State and the Territory. The objective of the KWADS is to provide assistance to, and guide development in, the area (Ministry for Planning and the Kimberley Development Commission 1999).

The draft KWADS released for public comment in late August 1999, takes into consideration the future development of the Project Area as well as the proposed

irrigation areas on the Carlton Plain, the Ord River West Bank and Green Swamp. Decisions on regional development are also guided by the need to avoid national parks, wildlife reserves, and sites of cultural heritage or other significance.

The draft KWADS land-use plan indicates the anticipated locations of regional infrastructure and development. In addition, the strategy has developed objectives for key industries within the area, including the realisation of the area's irrigated agriculture potential through the release and development of suitable land, and through the application of planning or policy ordinances that help to minimise conflict with, or impact from, other uses (Cane Spaseski, Ministry for Planning, *pers. com.*, November 1998).

11.3.2 Statutory planning

Western Australia and ORIA Stage 1

Development within Kununurra and ORIA Stage 1 is controlled through the provisions of the Kununurra Town Planning Scheme. Development outside the areas covered by the scheme may occur within, for example, the provisions of leasehold conditions or under specific other legislation such as the *Mining Act 1978*.

The Kununurra Town Planning Scheme defines two different agricultural production zones. A Rural A zone with a minimum lot size of 80 ha is designed to accommodate broad-acre farming. A Rural B zone with a minimum lot size of 8 ha (and maximum of 80 ha) allows more intensive horticultural production. Rural-residential living is permitted within a limited number of areas through a Rural C zone having a minimum lot size of 2 ha (and a maximum of 8 ha) (Ministry for Planning and the Kimberley Development Commission 1999). One intent of this zoning is to protect the integrity of the irrigation area from urban development. Another intent is to minimise the risk of inappropriately locating residential developments within farming areas.

Pastoral lease is the dominant land tenure within the Western Australian portion of the Project Area. Pastoral leases in Western Australia, together with conditions of lease, have been granted under the *Land Act 1933*, which was recently repealed and replaced by the *Land Administration Act 1997* (Steve Turner, Department of Land Administration, *pers. com.*, 16 November 1998). All pastoral leases in Western Australia expire in 2015.

Northern Territory

The Department of Lands, Planning and Environment (DLPE) administers statutory and strategic planning in the Northern Territory as well as land tenure. Land-use control over the Northern Territory portion of the Project Area is currently effected through conditions on the various pastoral leases administered under the *Pastoral Land Act 1996*. However, this control only applies to lawful pastoral uses. A change to the tenure over part of the pastoral leases is required to provide for substantial uses not allowed on a pastoral lease, including irrigated agriculture.

The DLPE has commenced work on a planning scheme that, subject to due process, would cover all of the Northern Territory. Within this broad framework, it is intended that there would be primary focus on regions (largely based on catchments), then sub-

regions (largely based on cadastral and/or administrative boundaries) followed by districts, localities and precincts as deemed appropriate. Completion of all components is a long-term task, and ranking of priorities is regularly reviewed (Graham Bailey, Department of Lands, Planning and Environment, *pers. com.*, 14 January 1999).

A Bill to amend the *Planning Act 1993* has been passed and is scheduled for commencement in March 2000. Broadly, its purpose is to refine and reinforce the existing strategic planning framework.

Subject to the completion of a Northern Territory Planning Scheme, and on the basis that the Project Area within the Northern Territory were developed as freehold land, it is possible that application of a planning scheme would come into effect.

11.4 LAND TENURE WITHIN THE PROJECT AREA

The Project Area is impacted by native title and land rights claims in Western Australia and the Northern Territory. The approach taken by Wesfarmers–Marubeni and the Water Corporation with respect to native title and land rights issues in the Project Area is for resolution by way of a negotiated settlement with the Miriuwung and Gajerrong people (Chapter 12 refers).

The preferred land tenure of particular portions of the Project Area such as the proposed Conservation Area, would vary depending upon their intended use, and is subject to a resolution that satisfies all of the affected parties (see Table 11.4.)

Table 11.4 Preferred land tenure within the Project Area

Land Status	Preferred Land Tenure	Land ownership	Land Management
Developed Land	Freehold	Wesfarmers-Marubeni/Individual Owners	Wesfarmers-Marubeni/Individual Owners
Sugar mill site and airstrip	Freehold	Wesfarmers–Marubeni	Wesfarmers–Marubeni
Construction camp/workers camp	Freehold	Wesfarmers–Marubeni	Wesfarmers–Marubeni
Conservation area	Subject to resolution	Subject to resolution	Environmental Management Entity*
Airstrips	Special-purpose reserve	Subject to resolution	Wesfarmers-Marubeni
Public roads	Special-purpose reserve	WA and/or NT Government	WA and/or NT Governments
Irrigation, drainage and flood protection infrastructure	Freehold	Water Corporation	Water Corporation
Powerlines and associated infrastructure	Special-purpose reserve	WA and/or NT Government	Subject to resolution
Communications sites	Special-purpose reserve	WA and/or NT Government	Subject to resolution

* Refer to Chapter 16 for the roles and responsibilities of the Environmental Management Entity.

11.4.1 Developed land

Wesfarmers–Marubeni would seek freehold title over the developed land. Upon resolution of the native title and land rights issues, it is envisaged that the Western Australian and Northern Territory Governments would issue a development lease to Wesfarmers–Marubeni. The Project Area would be progressively converted to freehold once the development lease conditions have been met.

11.4.2 Sugar mill site and airstrip

Wesfarmers–Marubeni would seek freehold title over the land underlying the sugar mill site and its associated airstrip.

The airstrip has been designed to service the sugar mill and the construction camp/workers camp and secure land tenure would enable the airstrip to be maintained, thereby ensuring health and safety standards are met.

11.4.3 Construction camp/workers camp

Wesfarmers–Marubeni would seek freehold title over the land underlying the construction camp which may eventually become a workers camp. It is considered appropriate that the construction camp/workers camp would be on freehold land to ensure that regulations are enforced with contractors and employees.

11.4.4 Conservation area

The Conservation Area within the Project Area would be managed by the Environmental Management Entity (see Chapter 16).

The Conservation Area would be established to ensure those significant habitats are protected. It is envisaged that the native title rights of the Miriuwung and Gajerrong people with respect to access to the Conservation Area would be maintained for the purposes of pursuing traditional practices on the land and waters.

It is envisaged that access to locations on the Keep River within the Conservation Area would remain open with designated recreation sites for fishing and picnicking purposes being managed by the Environmental Management Entity. Access to the remainder of the Conservation Area would be restricted to control erosion and weeds as well as to protect the regeneration of the flora and fauna habitats.

11.4.5 Airstrips

Wesfarmers–Marubeni would seek special purpose reserves over the land underlying the airstrips that would be required in order to service the farms. Wesfarmers–Marubeni would be responsible for the management of the airstrips (see Chapter 16).

11.4.6 Roads

Public roads in the Project Area would be contained within special–purpose reserves vested in the Western Australian and/or Northern Territory Governments.

Roads on and leading to individual farms would be private property managed by Wesfarmers-Marubeni and/or individual owners.

11.4.7 Irrigation, drainage and flood protection infrastructure

The land underlying the irrigation channels, drains, and flood protection infrastructure would be freehold vested in the Water Corporation.

11.4.8 Powerlines and associated infrastructure

The land underlying the powerlines and associated infrastructure would be contained within special-purpose reserves vested in the Western Australian and Northern Territory Governments.

11.4.9 Communications sites

The land underlying the communications sites would be contained within special – purpose reserves vested in the Western Australian and Northern Territory Governments.

11.5 LAND-USE IMPACTS AND MITIGATION MEASURES

11.5.1 Pastoral uses

Potential impacts on pastoral land use would include:

- a reduction in size of existing pastoral leases due to land being excised for the proposed development;
- the development of road networks that would alter access in the region;
- potential synergies with the Project, including opportunities for irrigated pasture or leucaena grown on independent farms, or lot-feeding with molasses;
- the potential introduction of noxious flora (weeds).

Displacement of pastoral activities

Displacement of existing pastoral activities would be an unavoidable consequence of the proposed development.

Removal of stock from the Project Area would occur progressively and would finally cease as development advances, but the areas involved would be relatively small in comparison with the existing pastoral leases.

As a result of the proposed excision of the Project Area from Legune Station, the northwestern portion of Legune Station would be cut off from the remainder of the pastoral lease. Some rationalisation of pastoral lease boundaries may therefore be required.

Pastoral activities would be incompatible with the land-use objectives proposed within the Project Area. As a consequence, the boundary of the Project Area would be fenced, where appropriate, to prevent the ingress of cattle.

Development of road networks

Development of roads would lead to improved access to Kununurra for pastoralists and others along the Kununurra–Legune road. This would reduce the time required to obtain provisions and access medical assistance if required.

Road development may also have perceived negative impacts resulting from an increase in human impact in and around the Project Area. These negative impacts could include problems for stock management (e.g. gates being left open and disturbance from dogs); risk of fire (e.g. from camping and fishing activities); opportunities for spreading weeds; and general disturbance. Project development would include the erection of signs at strategic locations throughout the Project Area that would advise travelers that access to pastoral leases is restricted.

Potential synergies with the Project

Leucaena and other pasture crops are currently grown within ORIA Stage 1, and it is possible that some of the area proposed for independent farmers within the Project Area could also be used for these crops. This outcome would be beneficial to the pastoral industry by providing greater opportunity for fattening or finishing of stock prior to export.

Molasses and bagasse, which are by-products from raw-sugar production, are used elsewhere in Australia for lot feeding or supplementing the diet of cattle. Hence, it is possible that production of either or both of these by-products by the Project could support a lot-feeding or feed-supplementing industry.

Introduction of noxious flora

Increased opportunities for spreading of weeds would result from the use of agricultural machinery in the Project Area, as well as from increased vehicle and personnel movements in the region generally. Careful surveillance and control of weeds within the Project Area are proposed as part of the Project. Chapter 16 describes the allocation of responsibility for this task.

11.5.2 Tourism, recreation and conservation reserves

It is likely that regional tourism and recreation area usage in the region will continue to increase whether or not the Project proceeds. However, it is anticipated that improved infrastructure and services such as roads and accommodation resulting from the proposed development would lead to increased tourist numbers and to longer durations of stay.

Many of the current conservation reserves in the region are heavily utilised by tourists for recreational pursuits and nature study. Management of these areas currently ensures that these pressures do not reduce their conservation or tourism significance.

In Western Australia, national parks and nature reserves are vested in the National Parks and Nature Conservation Authority and managed by CALM. In the Northern Territory, conservation parks are vested in the Conservation and Land Corporation, and managed by the Northern Territory Parks and Wildlife Commission.

Increased tourism and population pressure are anticipated to have their greatest effects on popular tourist and ecological 'nodes' such as waterholes, waterfalls and scenic areas accessible by roads. Expectations for improved access to, and facilities at, these popular destinations are also likely to grow. Consequently, development of management plans and implementation of strategic monitoring programmes by the managing agencies would be required in the future.

Recreational visitation in and adjacent to the Project Area is presently focussed on particular activities such as fishing, and known accessible localities including the lower Keep River, and Point Springs. Access to these localities would be maintained, and in the case of the Keep River where it abuts the Conservation Area, managed by the Environmental Management Entity (EME). Measures to maintain the recreational values within the Project Area are detailed in the Environmental Management Plan EMP (see Appendix O).

11.5.3 Other issues

Quarantine

Subject to the outcome of current planning studies, it is possible that the Keep River National Park road would be constructed to enable all weather access to the Project Area from the Victoria Highway. If constructed, this would create a 'loop road' that would link Kununurra, the Project Area and the Keep River National Park. The road would also provide an alternative point of entry into Western Australia. Consequently, it may be necessary to relocate the present quarantine checkpoint and washdown facility eastwards, possibly to the junction with Duncan Road.

It is anticipated that quarantine matters would be dealt with by the joint Western Australian and Northern Territory Ministerial Council described in Chapter 16.

Sustainability of land-use changes

An objective of the Project is to create an irrigated agricultural industry, sustainable in perpetuity. Consequently, long-term land use in the Project Area is anticipated to remain agricultural. Protection of this land use may be necessary through a planning scheme mechanism to prevent subdivision of irrigation blocks or development of non-agricultural land uses that may conflict with agricultural practices.