

026187

# Kalbarri Planning Study

FOR PUBLIC COMMENT



STATE PLANNING COMMISSION  
PERTH WESTERN AUSTRALIA

JUNE 1989

## FOREWORD

In January 1989 the Premier released the draft Geraldton Region Plan. The Region Plan provides general guidance for the planning of a large region focused on the City of Geraldton, but including the Shire of Northampton, in which Kalbarri is located. Kalbarri has grown more rapidly than any other town within the region and this has created some concerns which the State Planning Commission was requested to address in a planning study.



Kalbarri's growth requires careful planning particularly because it is surrounded by a National Park. While the study has concluded that the future need for land for residential, industrial and tourist development can be largely accommodated within the townsite, some requirements which go hand in hand with the growth of a tourist town may require some accommodation outside the townsite. The Study has provided guidance to enable the town to grow while ensuring that the natural assets of its surroundings are protected.

The Kalbarri Planning Study is published as a draft to enable the public to consider the contents and make submissions. Following assessment of the submissions the study will be finalised and the structure plan amended as necessary to guide the town's development over future years.

W A MCKENZIE AO JP  
CHAIRMAN  
STATE PLANNING COMMISSION

June 1989

# CONTENTS

	PAGE
EXECUTIVE SUMMARY	i
1. INTRODUCTION	1
2. OBJECTIVES AND METHODOLOGY	3
3. HISTORY AND DEVELOPMENT	5
4. NATURAL ENVIRONMENT	8
- Climate	8
- Geology/Soils	8
- Topography	10
- Vegetation	10
- Kalbarri National Park	11
- Coastal Processes	11
- Land Capability	12
5. ECONOMIC BASE	15
- Fishing	15
- Tourism	16
6. POPULATION	18
- Population History	18
- Projections	19
- The future prospects for Kalbarri	20
7. ACCOMMODATION	23
- Existing Accommodation	23
- Future Accommodation	24
8. SERVICES	25
- Water Supply	26
- Sewerage	26
- Drainage	27
- Rubbish Disposal	27
- Power	29
- Schools	30

9.	SPECIFIC LAND USE ISSUES	31
-	Aerodrome Investigation	31
-	Proposed Additions to the National Parks and Cooloomia Reserve	33
-	Marina Site	35
-	Estuary Foreshore Reserve	36
-	Sites for Road Making Materials	39
10.	KALBARRI TOWNSITE STRUCTURE PLAN	40
-	Introduction	40
-	Town Centre	40
-	Residential	41
-	Tourist Development	42
-	Special Use Precinct	45
-	Industrial	45
-	Rural Residential Development	46
-	Open Space	46
-	The Road System	47
11.	CONCLUSION	49
12.	RECOMMENDATIONS	51
	APPENDIX 1 - REFERENCES	53
	APPENDIX 2 - COMMITTEE MEMBERSHIP	54

## EXECUTIVE SUMMARY

The Kalbarri Planning Study has been prepared by the State Planning Commission to provide guidance for the planning of the town's growth for the next 25 years. The study was guided by a Steering Committee comprised of representatives of the Northampton Shire Council, the Geraldton Mid-West Development Authority, the Department of Conservation and Land Management, the Department of Land Administration and the State Planning Commission.

While more detailed studies will have to follow in some areas before development and future growth can be accommodated, the study has provided direction for this growth and sets out the parameters for growth.

Kalbarri has many natural assets. Its coastline is rugged but varied and offers good fishing. Its river, the Murchison, is one of the largest in the State and provides great opportunities for recreation. Kalbarri is unique to Western Australian towns in being completely surrounded by National Park. This is a great asset; the gorges and the flora and fauna alone make the area a major tourist attraction. However, the existence of the National Park imposes constraints upon the town's natural growth, suggesting careful planning and the need to find compromise between conservation and development.

Rock lobster fishing is important to the economy of Kalbarri. Many of the permanent residents are employed in the fishing industry which also adds to the character of the town. However, it is tourism that is most important and likely to account for most of the town's future prosperity and growth. The town currently accommodates a permanent population of approximately 1000 with a further 250 part time residents and up to 2500 visitors depending on the season.

The continuation of recent population growth suggests that the town's permanent population could increase to between 2000 and 3300 and visitors to increase to between 4000 and 6000 in 25 years. Certainly it would be prudent to plan, within the 25 year planning period set for the study, for a population of 10000 people. Sufficient housing land is available within the townsite to accommodate the numbers who will wish to reside in normal single residential development. However, there is likely to be an increase in the numbers wishing to stay in a range of tourist accommodation in prime locations. The study identified two specific areas, at Jakes Point and along the river reserve, where caravan sites, chalet, medium density and resort development should be planned for. These sites are limited in area and should be planned with care.

Kalbarri is fortunate in having an excellent water supply however some of the other necessary public infrastructure is not as easy to provide. In particular, basic raw materials to build housing and roads are scarce, a suitable site for the long term disposal of rubbish is not available within the town and the existing airstrip is unsuited for anything but small aircraft. In addition, the river mouth is frequently congested and the passage to the ocean is hazardous to negotiate.

Land not within the National Park but adjacent to the townsite provides some excellent opportunities for the provision of a range of lifestyles and for additional recreation facilities. Some land to the south of the town could lend itself to some limited development of larger rural residential lots (subject to a detailed land capability assessment). Reserve 12969, along the Murchison river, could cater for alternative recreation pursuits and some informal camping managed by a committee on which aboriginal interests are represented.

The study resulted in the preparation of a structure plan for Kalbarri which identified:

- \* areas for future expansion of the town centre and ways in which traffic congestion could be eased,
- \* sufficient land south of the town to accommodate up to 5000 people and land east of the town centre to accommodate up to 2000 people in residential lots,
- \* areas for higher density residential development near the town centre,
- \* a 30ha area between Clotworthy Street and the Murchison River for a range of tourist uses,
- \* an area for future tourist accommodation at Jakes Corner,
- \* land for future industrial development adjacent to the existing industrial area and to the south of the townsite,
- \* an interconnected open space/cycleway system,
- \* a road system which will relieve pressure on Grey Street, provide access to the industrial area and future residential areas and serve as a by-pass to the town centre.

As a result the following recommendations have been made:

1. the Northampton Shire Council and the State Planning Commission adopt the Recommended Structure Plan as the basis for the future development of Kalbarri.
2. the Department of Land Administration consider the Structure Plan and adopt it as a basis for future land releases.
3. development should take full account of the capability of the land to support a particular development, take account of the 500 m sewerage treatment plant buffer and avoid the flood plain of the Gabba-Gabba creek.
4. provision be made to extend the Primary School to enable it to development as a District High School.
5. land allocated for tourist sites be developed with close attention to design details and with a view to ensuring that prime sites remain useable for a range of tourist accommodation. Leasing arrangements should ensure that some of the land remains permanently for tourist uses.
6. detailed land capability assessment of the Brown's Farm property be undertaken to establish its suitability for rural residential development and other uses.
7. the policies for the use and management of Reserve 12996 outlined in the Strategy Plan which include the establishment of a Foreshore Reserve Management Committee and the placement of an Aboriginal representative on that Committee, be endorsed by Council and the Nanda tribe and be adopted as the basis for the administration of the Reserve.
8. Council pursue the rationalisation of Reserve No. 12996 as recommended by the West Coast Working Group and advocated by this study.
9. an approach be made through the Department of Conservation and Land Management to the National Parks and Natural Conservation Authority regarding the excision of the land behind Meanarra Hill required for the airstrip site. The proposal for an airstrip should be outlined via a series of discussion papers addressing:
  1. alternative sites outside the national park,
  2. economic viability of an airstrip, and
  3. physical constraints on the construction of an airstrip.

10. appropriate action be taken to ensure that the proposed airstrip is protected from structures being erected on Meanarra Hill.
11. the Department of Conservation and Land Management commence negotiations with the owners of Murchison House Station with a view to facilitating the rationalisation of holdings adjacent to the Cooloomia Reserve and the area of the Murchison river valley 5km west of the National Park.
12. Hardabut Pool be amalgamated with the National Park and be vested in the Department of CALM.
13. the Department of Marine and Harbours be requested to proceed with investigations in relation to the Marina sites at the Murchison river mouth and in the vicinity of Wittecarra Creek and assess the feasibility and cost of siting a dredge permanently at Kalbarri.
14. in view of the absence of known supplies of gravel, the Department of Conservation and Land Management adopt a flexible approach to the use of resources in the National Park where such resources are identified. Special consideration should be given to loosening the definition under 5.33(3) of the CALM Act to allow this to happen.
15. Council investigate the possibility of using the deposits of calcrete, limestone and sand identified by Geological Survey for road making materials and, if necessary, investigate the use and/or acquisition of sites outside the Study area for gravel reserves.
16. the Government be requested to provide funds for an engineering study to assess the feasibility of establishing a rubbish site either south west of Meanarra Hill or east of the existing airstrip in conjunction with an assessment of concurrent sand and gravel extraction. Should the results of the study be favourable for the establishment of a rubbish tip within the National park, an approach be made through CALM to the NPNCA to excise the land and its access route.

The Steering Committee commends the Planning Study and its Structure Plan as the basis for directing the future growth of Kalbarri. Those interested in the town's future are urged to carefully consider the information provided and the proposals resulting from the study with a view to making a submission.

Please consider the report carefully and let us have your views. Your comments should be sent to:

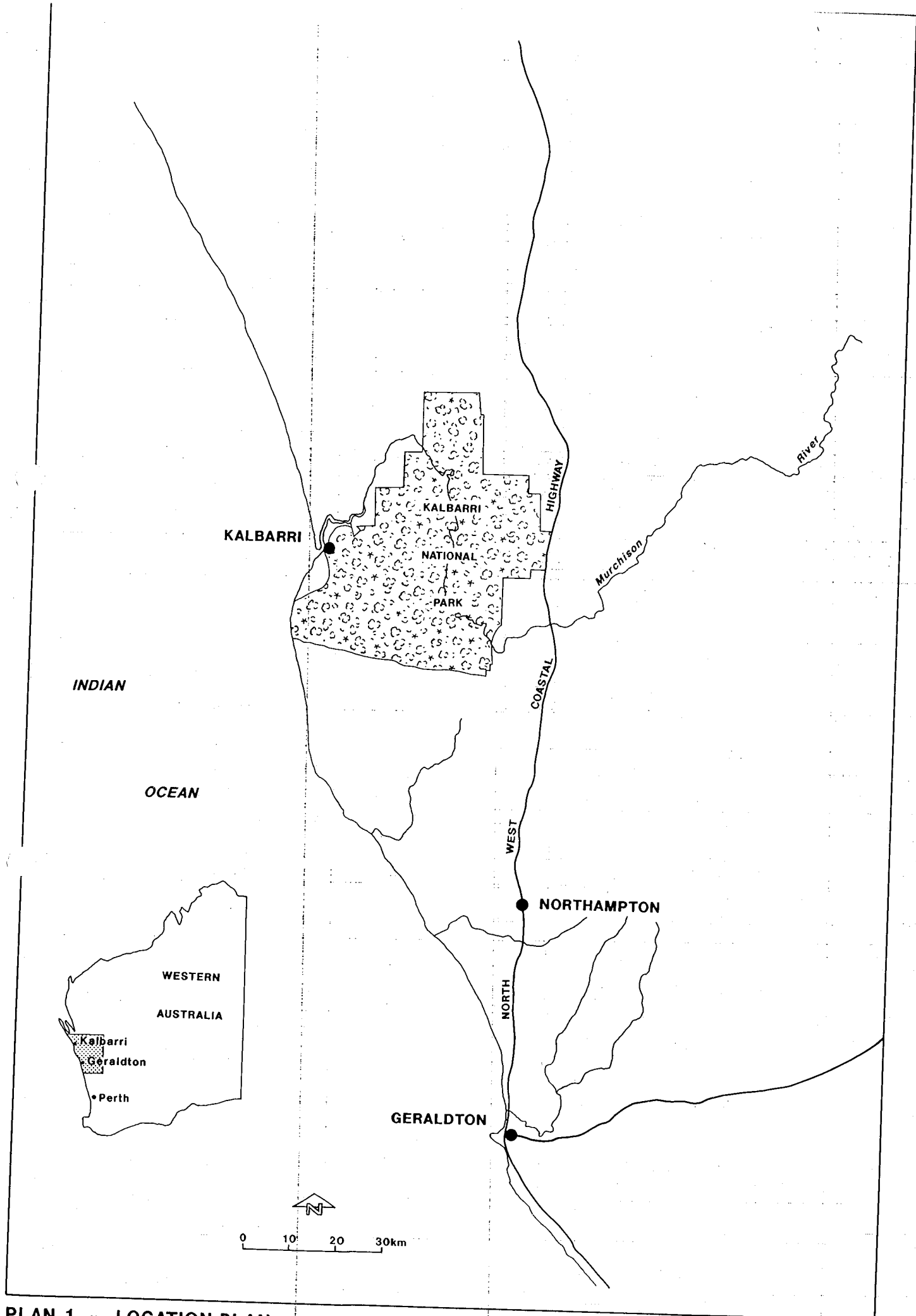
The Regional Manager  
State Planning Commission  
Geraldton Shopping Centre  
GERALDTON WA 6530

on or before July 21, 1989.



# 1. INTRODUCTION

- 1.1 Kalbarri is a small holiday and fishing settlement located at the mouth of the Murchison River some 624km north of Perth (refer Plan 1) in the Shire of Northampton and the State's Mid-West Region. The town is one of a number of small centres in this region which form a lower ring of an urban hierarchy centred on Geraldton, the regional centre.
- 1.2 While the primary function of other similarly sized centres in the region is to provide services to a surrounding agricultural/pastoral population, Kalbarri generally provides goods and services to a growing tourist trade and the local fishing industry.
- 1.3 The Commission has recently become aware of a number of pressing land use conflicts being experienced in the Kalbarri townsite and environs. These conflicts have resulted from the increasing popularity of Kalbarri as a tourist destination and the pressures for town growth that have followed. The conflicts were identified in the 1987 Geraldton Mid West Regional Study which recommended that a long term land use plan for Kalbarri be developed as soon as possible. (The References are contained in Appendix 1).
- 1.4 In order to resolve these issues promptly and to set the scene for the orderly development of the town and its hinterland, the State Planning Commission resolved in August 1987 to undertake a planning study of the area as an adjunct to the Geraldton Region Plan review.
- 1.5 Conclusions of the Kalbarri planning study which are of regional significance will be incorporated into the Geraldton Region Plan at a later date.



PLAN 1 - LOCATION PLAN

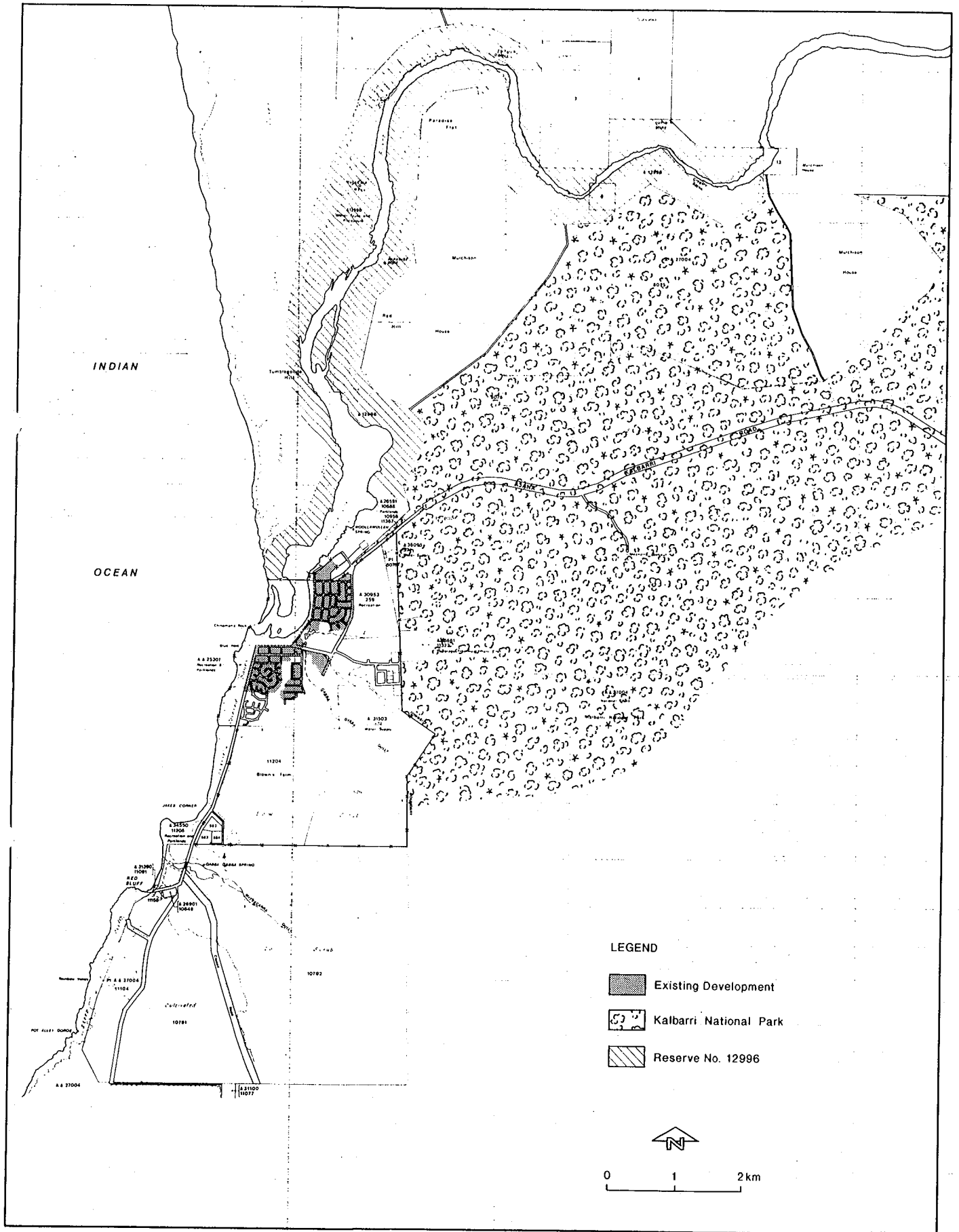
## 2. OBJECTIVES AND METHODOLOGY

- 2.1 The principle aim of the Kalbarri Study has been to resolve conflicts in land use by setting out a strategy and guidelines for the future development of the town of Kalbarri and the surrounding area. A plan for the district which takes into account the major competing demands for land is the result.
- 2.2 The specific objectives of the study are to:
- produce a structure plan showing preferred locations for various land uses. In particular, an expanded townsite (urban areas) and land for rural uses such as hobby farms, market gardens and stables if appropriate;
  - examine the pressures for recreation and tourist facilities in the district and determine suitable sites for various additional recreation facilities;
  - review National Park boundaries with a view to additional areas being included, or some areas being removed from the Park;
  - examine the mineral resources of the area with a view to identifying sites for the extraction of road making materials;
  - determine the need for, and location of, an upgraded aircraft landing strip;
  - investigate problems associated with the existing rubbish disposal site and nominate suitable alternative sites.
- 2.3 A working group was formed which included representatives from State Planning Commission, Department of Conservation And Land Management, Department of Land Administration and the Northampton Shire Council. A steering committee oversaw the formulation of the study comprising the Director of the Commission's Planning Services Division, the Associate Commissioner for the Northern Region Planning Committee, the Shire President, the Regional Manager - CALM, representatives from DOLA and the Geraldton Mid West Regional Development Authority. (see Appendix 2)
- 2.4 The study programme has involved consultation with affected Government agencies, a public meeting at Kalbarri and the acceptance of written public submissions.

2.5 The study has addressed a wide range of planning related issues, and papers on specific topics have been prepared by consultants. These papers are referred to in this report and are available for inspection.

### 3. HISTORY AND DEVELOPMENT

- 3.1 The coastal areas around Kalbarri have a rich and colourful history dating back to 1629 when the Dutch ship Batavia was wrecked on the Abrolhos Islands. Following this shipwreck, Commander Pelsaert marooned two sailors at the mouth of the Murchison River for their part in the Batavia mutiny and massacre. It is said that these men were probably the first white men to settle, albeit involuntarily, in Australia.
- 3.2 In 1696, the Dutch navigator Willem de Vlaming landed in the area in search of water and in 1712 the Dutch East India ship Zuytdorp was wrecked near Kalbarri. The fate of the crew of the Zuytdorp remains a mystery.
- 3.3 Gantheaume Bay, at the mouth of the Murchison, was named by a Captain Baudin who led a French expedition to the area in 1803. Following the establishment of the Swan River Colony, an attempt to explore this coast was made by Captain George Grey in 1839. This expedition also came to grief when its vessels were wrecked in the surf at Gantheaume Bay. Grey named the Murchison River after Sir Frederick Murchison, the then President of the Royal Geographical Society.
- 3.4 In the 1840's, workable mineral deposits were discovered at Northampton and on the lower Murchison. Several mines were opened and small townships were established at Galeena and Ajana. However, these towns gradually declined as resources ran out.
- 3.5 Several pastoral stations were established in the area in the late 1800's. However, the area is not of high agricultural or pastoral potential and therefore the rural areas remain thinly populated. A vermin-proof fence which separated the better pastoral land to the south from the Study Area was constructed in 1904.
- 3.6 One of the pastoral stations which is within the Study Area and is still operating today is Murchison House Station. During the 1800's, the station included land on both sides of the Murchison River. However, in 1910 a Reserve No. 12996 was resumed from the pastoral lease (refer Plan 2) and designated a C class reserve for the purposes of Water and Fauna (Pisciculture). The primary function of the reserve was to ensure that the



PLAN 2 - TOWNSITE AND ENVIRONS

freshwater springs lining the Murchison River Estuary remained under the control of the Crown, although the purpose "Fauna (Pisciculture)" was apparently inspired by references at the time to the abundance of fish in the estuary. When gazetted, the Reserve included both banks of the estuary to a distance of 20 chains (400m) from the river and extended from the river mouth upstream to the limit of tidal influence.

- 3.7 Notwithstanding this reservation of the land at the Murchison river mouth, the area was an informal tourist/fishing spot utilised by station owners and people from the hinterland and the north for some time. However, it was not until after World War II that there was pressure to create a settlement. During the late 1940's, the Department of Lands and Surveys received many requests for the release of freehold and leasehold land from professional fishermen and holidaymakers. At that time, a de-facto townsite existed at the river mouth. A substantial number of squatter shacks had been established and an informal holiday resort, run by two professional fishermen and which accommodated 5 to 10 boarders a week, was in operation.
- 3.8 While this area around the Murchison river mouth continued to be informally used for tourism and recreation purposes, its conservation potential was also being noted. In 1948, plans to establish a formal townsite in the area were deferred pending investigations of the then National Parks Board into the future of the area. In 1949, the then Town Planning Commissioner, in answering a request for comments on a proposed townsite in the locality, suggested that the whole area should be made a National Park.
- 3.9 Notwithstanding the above, Kalbarri townsite was finally gazetted in 1951 incorporating land resumed from the Murchison House pastoral lease and Reserve 12996. The first land release incorporated 50 lots that were sold for between 55 pounds and 75 pounds. Kalbarri was named after both a local native from the Murchison tribe and an edible seed found in the area. The streets in the townsite were all named after members of the ill-fated Grey expedition.
- 3.10 The town grew steadily until 1963 when the Kalbarri National Park was gazetted and a trend towards increasing tourist development was enhanced. Since then, the town has seen a steady increase in local population and greatly increased tourist traffic, being elevated to one of the primary holiday destinations of the State.

## 4. NATURAL ENVIRONMENT

### 4.1 CLIMATE

4.1.1 Kalbarri experiences a southern Mediterranean climate, characterised by mild winters and hot, dry summers. The town's average yearly rainfall is 381mm, of which 278mm falls between May and August. The year-round monthly rainfall is shown in Figure 1. (Ref 2)

4.1.2 Kalbarri's coolest month is July when the average temperature varies from 21.2°C to 9.5°C. During February, the town's hottest month, the average temperature ranges from a maximum of 34°C to a minimum of 20.4°C. Year-round monthly temperatures are shown in Figure 2.

4.1.3 During the summer months, the winds at Kalbarri generally blow moderately from the south/south-east in the mornings then shift to moderate to strong south-westerlies in the afternoons. In winter, moderate to light easterlies and north-easterlies prevail in the mornings while moderate winds ranging from westerly to southerly are common in the afternoons.

4.1.4 Kalbarri's climate (warm to hot all year round and few rainy days), is an obvious attraction for holidaymakers. It will continue to provide opportunities for people seeking a hot summer holiday or respite from the wetter winter of the south west.

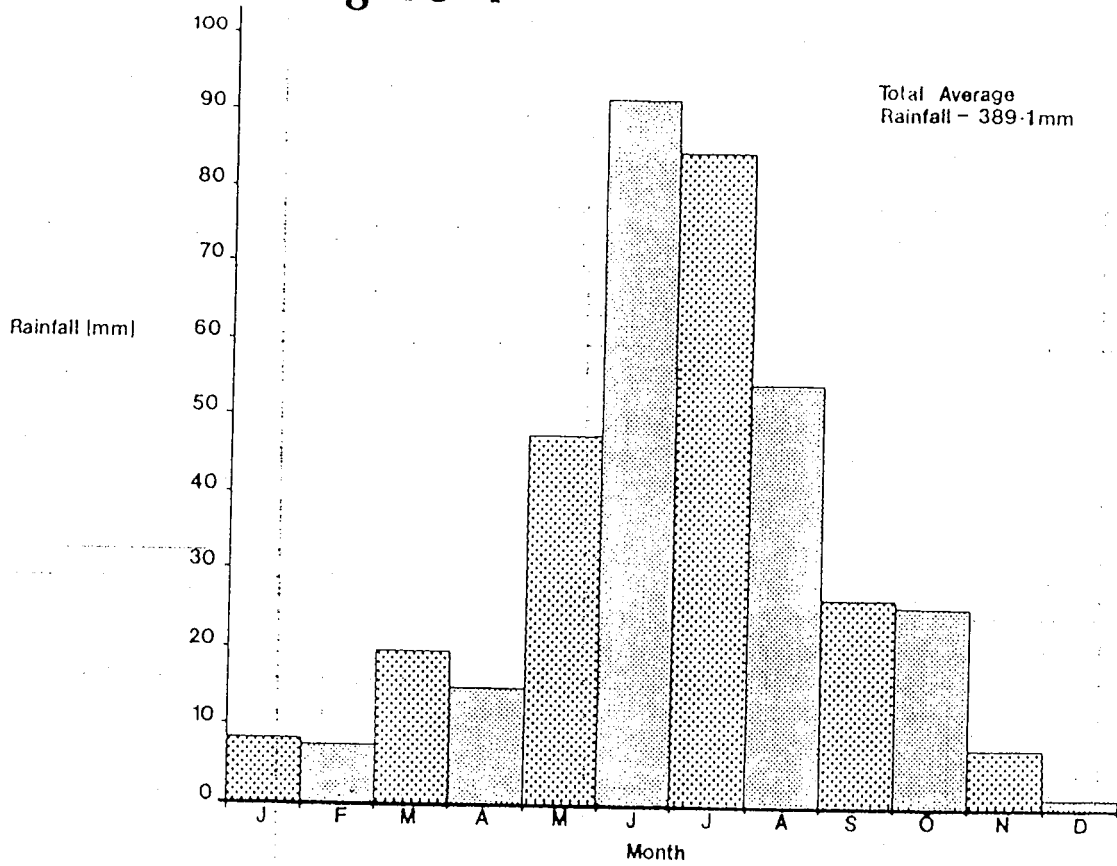
### 4.2 GEOLOGY/SOILS

4.2.1 In geological terms, the Study Area lies within the Carnarvon sedimentary basin. This basin contains a column of sediments, the lowest of which is Tumblagooda sandstone. This formation has been deeply entrenched by the Murchison River which has cut impressive gorges at various points within the area. This gorge country of the Murchison comprises soils that are rocky and skeletal.

4.2.2 The Tumblagooda sandstone formation is overlain by sandplain generally comprising yellow siliceous sands with darkened surfaces. South of Kalbarri, these sands may be bleached and underlain by laterite. In the north, the Tumblagooda sandstone formation is overlain by shales and chalk beds at certain points.



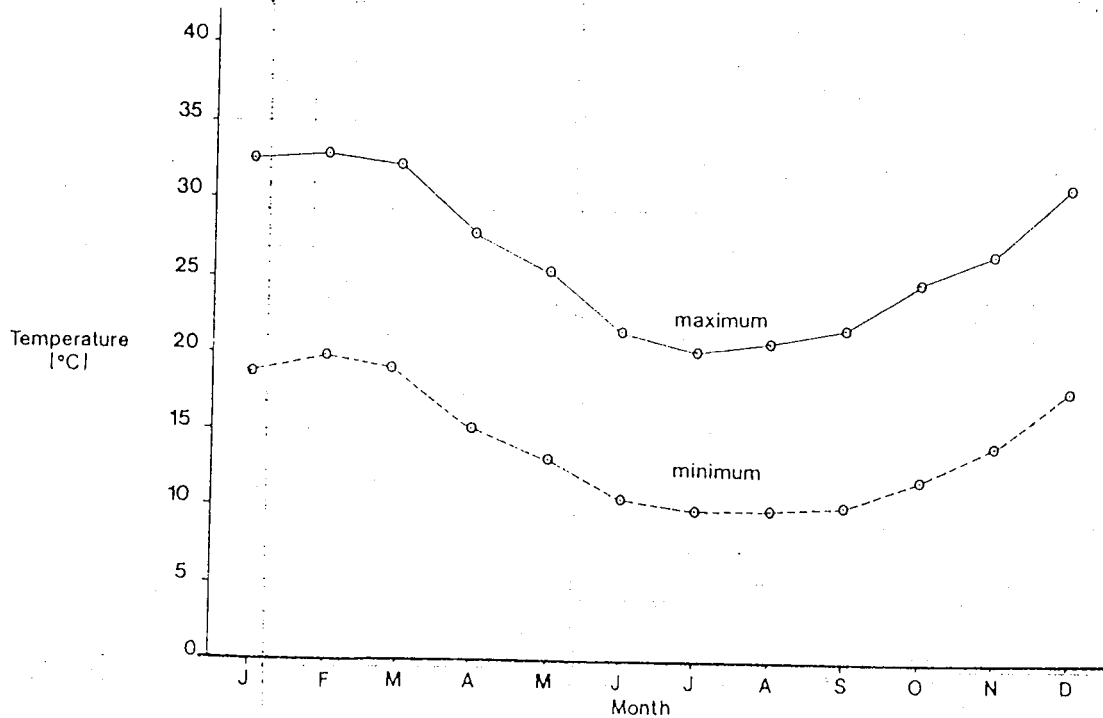
# Figure 1



## KALBARRI - AVERAGE MEAN MONTHLY RAINFALL

Source : Bureau of Meteorology

# Figure 2



## KALBARRI - AVERAGE MONTHLY MINIMUM AND MAXIMUM TEMPERATURES

Source : Bureau of Meteorology

- 4.2.3 Over time, large amounts of calcareous dune sands have been deposited on the shore line of the Study Area. These have consolidated into limestone which forms a range of hills up to 200m high, bordering the coast.
- 4.2.4 More detailed information on the geology/soil structure of the Study Area is provided in the Environmental Geology Report. (Ref 3)
- 4.3 TOPOGRAPHY
- 4.3.1 Most of the land within the Study Area consists of gently undulating, featureless sandplain. There is a maximum variation in elevation of only 100m (ie. 200m-300m) throughout the Area. With the prevailing rainfall conditions, the sandplain absorbs most precipitation and there is little run-off.
- 4.3.2 The Murchison River is a major watercourse which traverses the Study Area generally from east to west but meanders significantly along its route. At certain points the river has cut into the sandplain country and created a series of deep gorges. These are all within the Kalbarri National Park.
- 4.3.3 Along the coast is a belt of limestone hills. These fall gently on the east to the sandplain but on the seaward side are cliffed or have a very high steep erosion slope. A number of gullies (Gabba-Gabba and Wittecarra) which contain water during heavy rains, run from these hills to the estuary and the coast respectively, in the vicinity of the town.
- 4.4 VEGETATION
- 4.4.1 The sandplain country, which surrounds Kalbarri and includes large portions of the National Park, contains mostly scrub heath with areas of melaleucas on the hills and isolated strands of mallee. The sandplain scrub heath has a very rich flora including many wildflower species.
- 4.4.2 Areas along the Murchison River, including the gorges, support open woodlands of river gums, swamp oaks and clumps of wattles over pastures of introduced grasses.
- 4.4.3 The coastal areas, including Kalbarri townsite, contain wattle scrub and heath on the slopes facing the sea with wattle thickets and scrub heath on more sheltered sites. The low-lying areas near Wittecarra Gully, just to the south of the town, support a closed woodland of swamp oak and a wattle

thicket. The dunes along the coast support a variety of dune species including spinifex, coastal daisy, grevillia and butter creeper.

#### 4.5 KALBARRI NATIONAL PARK

4.5.1 Most of the significant attributes of the natural environment surrounding Kalbarri (rolling sandplain, river gorges and coastal cliffs) are situated within the 186,096 ha Kalbarri National Park (refer Plan 1). The Park is vested in the National Parks and Nature Conservation Authority and managed by the Department of Conservation and Land Management.

4.5.2 The vegetation of the Park is a complex mosaic of associations which are, as outlined in Section 5.4, generally described as scrub and tree heaths. Some 500 species of wildflowers, which produce an amazing array of colours, are evident throughout the Park. Eucalyptus woodlands and melaleuca thickets are also noticeable. The Park supports a number of declared rare flora (endangered species) and geographically restricted flora (poorly known species).

4.5.3 The fauna of the National park comprises the following:

- : 14 species of mammals including possums, wallabies and dunnart;
- : 53 species of reptiles including a species of blind snake which is found only in the Park;
- : some fish and a species of rare frog; and
- : extremely diverse avian fauna with 136 recorded species.

4.5.4 The landscape values of the National park include the gorges of the Murchison River with their fine views and interesting rock structures and the coastal gorges south of Kalbarri which offer attractive coastal scenery. The geology of the Park has also been of scientific interest with the discovery of animal fossils and fossilised animal tracks.

#### 4.6 COASTAL PROCESSES

4.6.1 The processes which affect the coastline of Kalbarri are well documented in the Coastal Management Plan for Kalbarri (Ref 4) which summarises these processes as follows:

"The coastline of Kalbarri is exposed to long periods of wave activity caused by storms and summer winds. The energy produced by this wave activity is largely dissipated by the limestone reef system and headlands. However, the area is vulnerable to damage caused by severe storms with associated surges which may lift sea levels sufficiently to be active above the reef system.

The older marine deposits are relatively stable and should not be affected by wind erosion. However, these deposits developed during a period in which the river followed a different course from present. It is possible that further changes in river course could occur after a period of extremely heavy rain. The stability of the river bank could also be threatened by waves during a period of storm surge.

The recent sand dunes are irregular in form and are stabilised by dune vegetation. They will become unstable and mobile if areas of vegetation are removed and the bare sand exposed to the prevailing winds."







#### 4.7 LAND CAPABILITY

4.7.1 A land capability analysis for the Kalbarri townsite and environs has been prepared for the Kalbarri Planning Study by the Department of Agriculture's Resource Management Division (Ref 5). The analysis provided a guide to the limitations and development potential of the Kalbarri Study Area by assessing the capability of particular areas of land to sustain various kinds of urban use having regard to their intrinsic characteristics.

4.7.2 The findings of the land capability analysis are set out below. These statements should be read in conjunction with the land capability analysis map attached to the full document, an extract from which is attached (Plan 3).

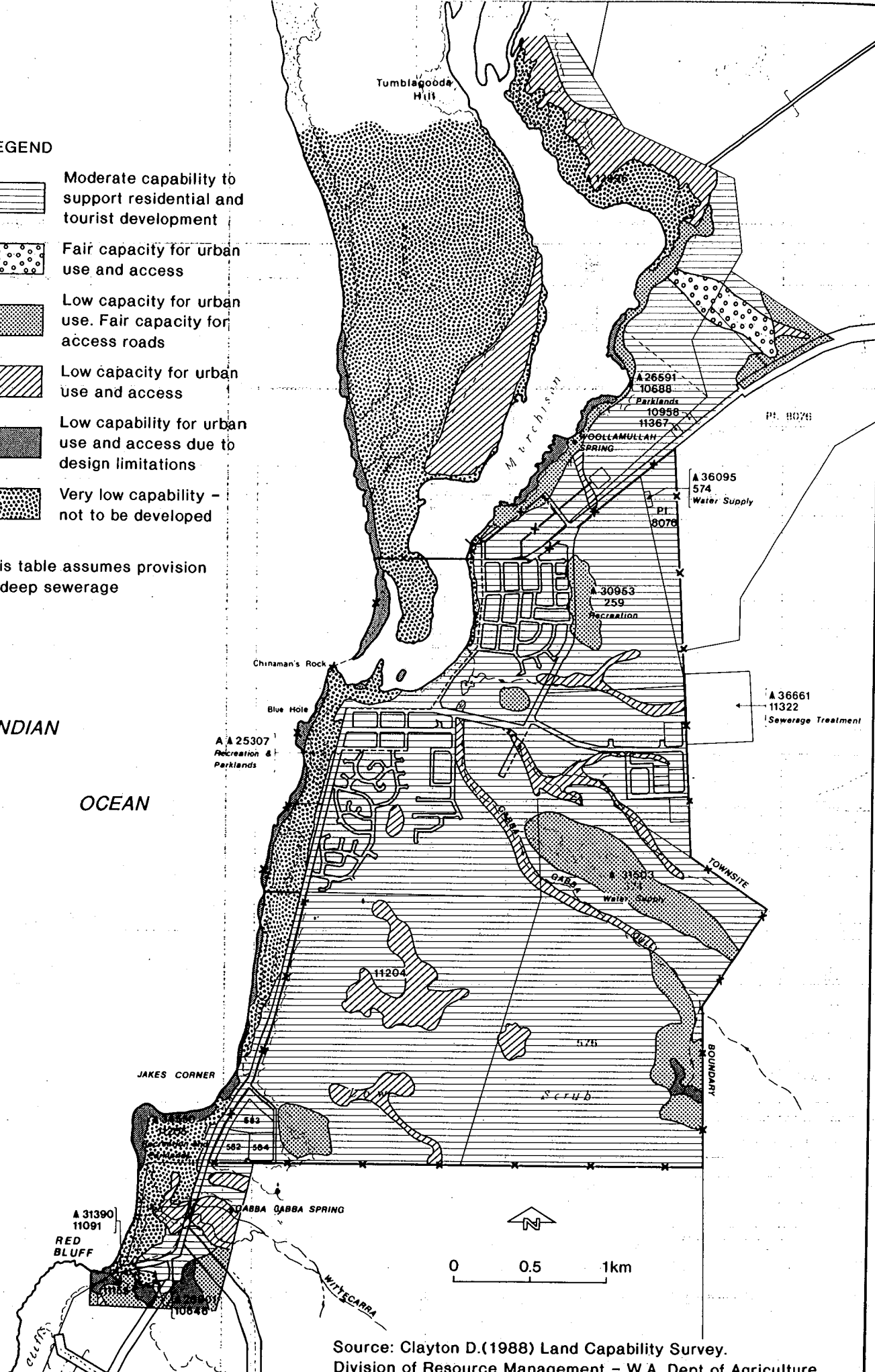
- \* Intensive urban development with on-site disposal of septic effluent is highly undesirable at Kalbarri due to the risk of groundwater pollution and pollution of the Murchison River estuary. This is cause for concern since the town relies on groundwater for its water supply and the estuary is an important recreation resource.
- \* The majority of the Kalbarri Study Area consists of gently undulating deep sands which have a moderate capability to support urban use provided developments are deep sewered. The chief limitation for the development of these areas is the possibility of wind and/or water erosion during the construction phase.
- \* Areas of shallow soil overlying sandstone which occur on crests and along the Murchison River have low capabilities for urban use due to the difficulty with excavation, though use for access roads and car parks may be appropriate at some sites.
- \* The soils associated with watercourses and other low lying areas are typically poorly drained and may be subject to inundation or waterlogging. These areas generally have low capabilities for both urban use and access.
- \* The dune sands which occur along the coast have low to very low capabilities for urban use and access due to the high risk of wind erosion. Land use should generally be limited to beach access at appropriate locations. Any development in these areas should be subject to detailed site investigations and environmental design.

**LEGEND**

-  Moderate capability to support residential and tourist development
-  Fair capacity for urban use and access
-  Low capacity for urban use. Fair capacity for access roads
-  Low capacity for urban use and access
-  Low capability for urban use and access due to design limitations
-  Very low capability - not to be developed

This table assumes provision of deep sewerage

INDIAN  
OCEAN



Source: Clayton D.(1988) Land Capability Survey.  
Division of Resource Management - W.A. Dept of Agriculture

**PLAN 3 - LAND CAPACITY**

## 5. ECONOMIC BASE

### 5.1 FISHING

5.1.1 Kalbarri supports a well established fishing industry. Up to 100 boats work out of Kalbarri at the peak of the season. The local catch mainly consists of rock lobster with a value of around \$4.7m in 1985-86 resulting from a 380 tonne catch. Rock lobsters account for 97% of the total catch with fish and molluscs contributing a further 2% and 1% respectively. The total catch statistics for Kalbarri are shown in Figure 3. These figures are likely to underestimate the value of the area for fishing on account of much of the local catch being processed, and therefore recorded, in Geraldton.

5.1.2 Figure 4 shows the total value of the fishing catch over the five year period 1981-86. In examining Figure 4, it is worth noting that while catch values have risen substantially over the five years, when the figures are adjusted for inflation, there is a slight decline over the period. This reflects strong improvement in rock lobster prices since rock lobster catch volumes have not recovered to the higher levels of 1981-82. Notwithstanding these lower catch volumes, fishing will remain as a vital industry in the economy of Kalbarri.

FIGURE 3

	TOTAL CATCH - KALBARRI				
	(TONNES)				
	81-82	82-83	83-84	84-85	85-86
Fish	4	14	39	99	76
Prawns	-	-	-	7	1
Rock Lobsters	532	458	288	369	381
Molluscs	5	4	49	14	17
<b>TOTAL</b>	<b>541</b>	<b>476</b>	<b>376</b>	<b>489</b>	<b>475</b>

FIGURE 4

TOTAL VALUE OF CATCH - KALBARRI

(\$'000)

	81-82	82-83	83-84	84-85	85-86
Fish	3	10	30	97	87
Prawns	0	0	0	48	8
Rock Lobsters	3,789	3,422	2,582	4,944	4,695
Molluscs	7	3	108	37	48
<b>TOTAL</b>	<b>3,799</b>	<b>3,435</b>	<b>2,720</b>	<b>5,126</b>	<b>4,838</b>

Source: Australian Bureau of Statistics

5.2 TOURISM

- 5.2.1 Kalbarri is one of the most important tourist destinations in Western Australia. Kalbarri offers spectacular coastal scenery, the National Park and its gorges, the Murchison River estuary and an attractive climate for most of the year. A variety of tourist activities including fishing, surfing, sailing and sightseeing can be carried out in and around the town.
- 5.2.2 While detailed statistics are not available for centres within the Northampton Shire, The Australian Bureau of Statistics (ABS) has produced figures for the whole of the Shire, in which Kalbarri is the major tourist centre. Trends for tourism in the town can be gleaned from these statistics.
- 5.2.3 Between 1980 and 1983, growth in guest arrivals to hotels, motels and guest houses in Northampton was moderate, increasing at an average of approximately 8% a year. Since 1984, guest arrivals have increased more substantially to reach 26,000 in 1987 or an average 26% increase per year over the 1984-1987 period.



- 5.2.4 The 1980-83 period was also reasonable for guest nights; increasing from around 17,200 in 1980 to 22,900 in 1983. Since that time, guest nights have increased rapidly and at a faster rate than arrivals. This indicates a longer length of stay in the district, from around 1.6 days in 1980 to a peak of 4.7 days in 1985, though tapering off to 3.7 days by 1987.
- 5.2.5 Statistics for guest arrivals to caravan parks in Northampton indicate a growth rate from 14,900 in September 1983 to 19,500 for the same quarter in 1987 and annual rate of increase of around 7.0%.
- 5.2.6 Future growth of the tourism industry is difficult to predict. However, the above statistics indicate a reasonably steady growth in tourism in the Northampton district over the recent past and there are no reasons to suggest that for the foreseeable future this trend will not continue, resulting in Kalbarri maintaining and perhaps expanding its tourist industry.

## 6. POPULATION

### 6.1 POPULATION HISTORY

- 6.1.1 Analysis of the population statistics for Kalbarri is complicated by the fact that over the last 20-25 years the collection of census data for the area has been in an inconsistent format. Nevertheless, from the data that is available, general population trends for Kalbarri can be shown.
- 6.1.2 Prior to 1976, the town of Kalbarri was not a separate census district, as defined by the Australian Bureau of Statistics (ABS), but was part of a larger rural district. Between the years of 1966 and 1971 the population of this rural district grew from 256 to 569. Since there were no significant urban centres in the district other than Kalbarri and the rural areas of the State were generally declining in population at that time, this growth between 1966-71 (17.3% or between 3% and 4% per annum), can almost solely be attributed to Kalbarri.
- 6.1.3 In the years 1976 to 1981 Kalbarri townsite was established as a separate census district. During this period ABS records that the population of the town increased from 695 to 820; a gain of 18% or between 3% and 4% per annum.
- 6.1.4 Data from the ABS's 1986 census is less useful since the census of that year was conducted during school holidays. The number of people recorded at Kalbarri at that time was 2898. While this does give some indication of the popularity of Kalbarri during peak holiday periods, it does not give an accurate figure for the number of permanent residents in 1986.
- 6.1.5 Notwithstanding the above, figures have been obtained from Council for the number of dwellings constructed in Kalbarri between the 1981 and 1986 Census. These figures when multiplied by the average household size of 3.1 (ABS - Western Australia), suggests growth of 25% over the 1981-86 period, or 5% per annum. In using these figures to estimate permanent population, it must be noted, of course, that a significant number of the dwellings created are holiday homes, not permanent residences.
- 6.1.6 Other data which is useful in indicating Kalbarri's growth between 1981-1986 is the estimated resident population statistics produced by ABS. These are presented in local authority areas and are compiled

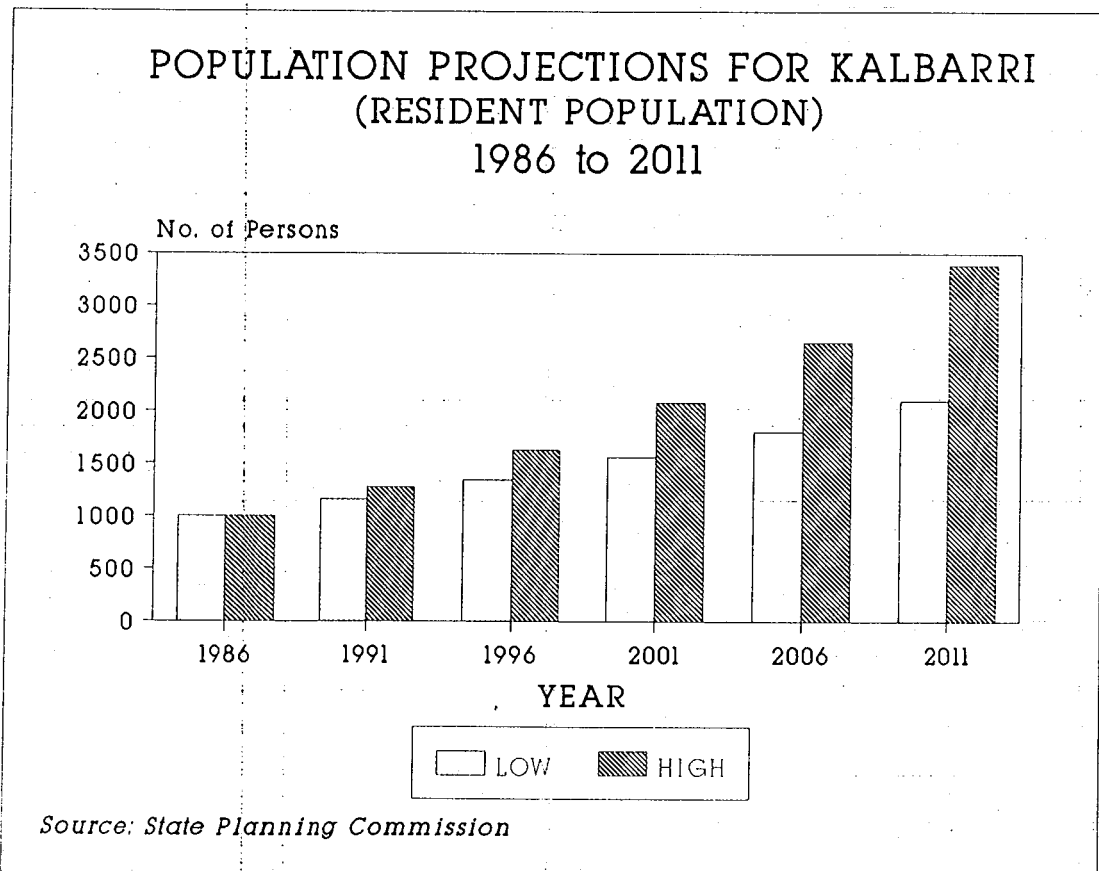
according to the usual residence of the population. For the Shire of Northampton the figures for 1981 and 1986 are 2366 and 3034 respectively, indicating a growth of 28.2% or between 5% and 6% per year. Again, since Kalbarri is the main growth area within this predominantly rural shire (the town of Northampton is the only other major centre and it has only increased marginally in size during this period), the major portion of this growth must be attributed to Kalbarri.

6.1.7 In conclusion, it appears that since 1966 Kalbarri has grown fairly steadily by between about 3% and 5% per year and the town's present permanent population is in the order of 1000 people.

6.2 PROJECTIONS

6.2.1 If this steady growth trend is extrapolated for 3% (low) and 5% (high) to the year 2011 the population figures for permanent residents (shown in Figure 5) would result:

FIGURE 5



- 6.2.2 While the current permanent population of Kalbarri is estimated to be about 1000 people, a significant number of people use Kalbarri as a part-time residence through the ownership of holiday homes. However, this segment of the population is difficult to quantify. According to the 1986 census, 1235 people were recorded in private dwellings while the estimated resident population at that time was between 900 and 1000. Therefore, it is apparent that an additional 200-300 people were accommodated in town in dwellings on census night. These people were either holiday home owners or tourists renting these dwellings and amount to a maximum of about 25% above the permanent population.
- 6.2.3 In addition to the above, the 1986 census records that 94 dwellings were unoccupied on the census night. Of these, 36 were listed as holiday homes although it is possible that more were unoccupied for this reason.
- 6.2.4 To those using Kalbarri housing either in a permanent or temporary capacity must be added those residing in caravan parks and holiday units to arrive at a figure of the number of people likely to be in Kalbarri at a particular time. While hearsay evidence suggested during the study that as many as 10000 people could be found in Kalbarri during the busiest long weekend, a lesser figure is suggested as the maximum permanent and holiday population given current facilities.
- 6.2.5 Based on the accommodation available, it would be reasonable to assume that to the 1000 permanent and 250 part-time residents a further 1000 could be accommodated in units and a maximum of 1500 in caravan parks. Altogether, this amounts to 3750 people. Using less conservative occupancy rates and accepting that at peak times some visitors may not be accommodated in the towns formal accommodation, it can be accepted that more people could be found at Kalbarri at its peak.

### 6.3 THE FUTURE PROSPECTS FOR KALBARRI

- 6.3.1 The projection of future visitor numbers requires a more general discussion of Kalbarri's role and future prospects.
- 6.3.2 Kalbarri has few rivals in Western Australia where climatic, coastal and geological features combine to provide a desirable tourist destination. The location of the coastal town at the mouth of the Murchison River yet surrounded by National Park presents unique vistas.

- 6.3.3 The standard of development has remained high and public areas (the foreshore and the National Park) are well managed and provide vital elements to the tourists perception of the town itself. Recent years have seen a greater emphasis on the development of resorts offering higher standard accommodation and a broader range of facilities and activities, however these still provide only a small portion of total accommodation and the centre remains predominantly one for relatively economical holidays.
- 6.3.4 It is likely as the State's population grows, and particularly as the population of regional centres such as Geraldton grows, so centres such as Kalbarri will grow at an accelerated rate. An optimistic scenario could be presented based upon the uniqueness and dramatic nature of Kalbarri's natural assets, the lack of comparable holiday centres north of Perth, and the availability of a wide range of services.
- 6.3.5 A pessimistic scenario could be suggested relying on the fact that Kalbarri lies nearly 600kms from Perth and 165kms from Geraldton - and is therefore vulnerable to increases in fuel costs, it is isolated from other centres by the surrounding National Park, it may suffer from trends resulting in rising temperatures and could be vulnerable to congestion around the Murchison River mouth.
- 6.3.6 Future growth prospects could certainly be enhanced by a range of public and private investments including the following:
- . the development of a marina would enable Kalbarri to be included on the route of tourist boat trips from Geraldton, would attract recreational boaters and reduce congestion on the Murchison River.
  - . the development of an improved airstrip could result in large aircraft frequenting the town and provide the possibility of charter flights.
  - . the sealing of the southern road would provide a more scenic choice of access to the town.
  - . the development of road access and facilities along the Murchison River reserve, north of Kalbarri, would provide a greater range of recreational possibilities for visitors.

- . the development of an extended and improved golf course would provide a greater range of recreational possibilities for visitors.
- 6.3.7 Future growth prospects could be detrimentally affected by:
- . insensitive development rapidly modifying the character of the town.
  - . congestion increasing along the foreshore and Murchison River mouth.
  - . significant cost increases resulting from land shortages, basic raw materials costs and increasing charges for state and local government services.
- 6.3.8 In conclusion, Kalbarri has a range of assets and development opportunities which suggest that an optimistic future growth rate should be planned for. However, its reliance on distant Perth will make Kalbarri vulnerable to fuel cost increases suggesting some caution in projecting growth. A wider range of client groups will need to be planned for in the future ranging from those seeking cheap holidays to those prepared to fly into comfortable units offering a wide range of facilities. Kalbarri is also likely to become more important as a centre for retired people as services improve and the town generally grows.
- 6.3.9 From the foregoing, projections for the next 20-25 years suggest that it is reasonable to plan for around 3000 permanent residents and the facilities need to be available for at least three times that number to accommodate tourist growth. In round figures it would be prudent to ensure that sufficient land and facilities for at least 10000 people (permanents and visitors) should be planned for in the current study.

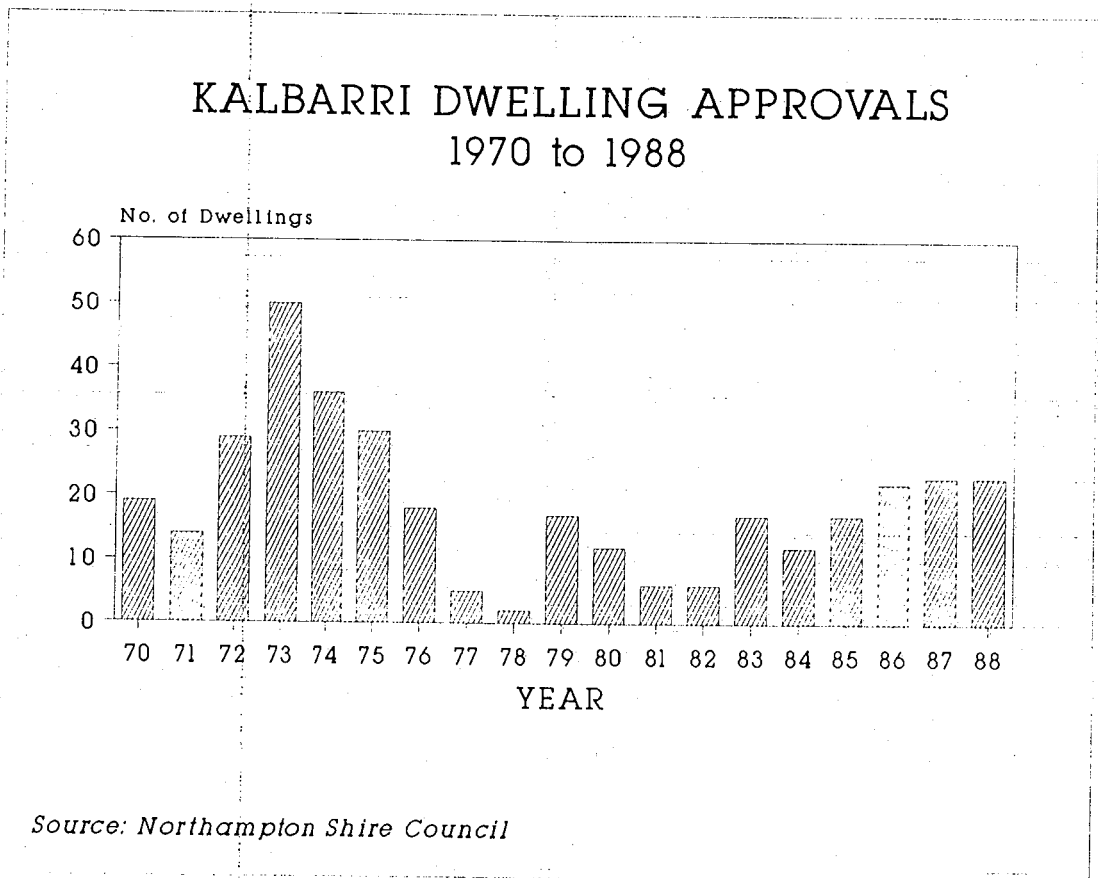
## 7. ACCOMMODATION

### 7.1 EXISTING ACCOMMODATION

7.1.1 Utilising both ABS data and Council's building records, it has been calculated that there are about 500 dwellings in Kalbarri. All but about 3% of these are privately owned. Many of the dwellings are of course holiday homes and are not occupied permanently. The exact ratio of holiday houses to permanent residences is difficult to quantify, however. A significant number of duplex and triplex units give the town a varied housing mix.

7.1.2 Council's records of the number of dwellings approved in the town since 1970 are shown below in Figure 6.

**FIGURE 6**



7.1.3 From Figure 6 it can be seen that dwelling construction in the town has varied considerably (from 50 in 1973 to 2 in 1978). However, over the 19 years between 1970 and 1988, an average of over 18 dwellings have been built per year.

7.1.4 The supply of new residential land for housing in Kalbarri is controlled by the Department of Land Administration (DOLA). DOLA has advised that between 1978 and 1988 some 150 residential lots have been sold in Kalbarri. This averages to 15 per year, although in reality, residential land is released in larger quantities every 4 or 5 years.

There has been a marked upturn in demand over the past few years with 44 residential lots being sold in 1986, 19 in 1987 and 39 in 1989.

## 7.2 FUTURE ACCOMMODATION

7.2.1 DOLA released 40 lots January 1989, which were all sold on the day of auction indicating a current demand for lots. These lots form a stage of residential land releases moving south towards Jakes Point. At present, DOLA has structure plans in place which allocate enough land in this area for residential growth for between 5 and 8 years. When these figures are taken into account with the vacant lots that exist in town (about 80 at present) Kalbarri's requirements for housing sites are well catered for into the 1990's.

7.2.2 Beyond that time, the residential areas of the town will move further south towards Jakes Point. The DOLA has earmarked land between the proposed town bypass and Red Bluff Road for long term residential uses. In this area, between 250 and 300 housing sites will be created, satisfying demand until at least the year 2010.

7.2.3 Increasingly, visitors to Kalbarri are relying on being accommodated in units, caravan parks or motels, rather than in a standard house. Currently there are 199 registered holiday accommodation units and 65 motel rooms in Kalbarri.

7.2.4 Kalbarri's five caravans parks provide for a total of 424 sites for caravan and tent camping. These sites are fully utilised on holiday weekends. In fact, additional sites tend to be found within the caravan parks to enable capacity to expand by at least 25% during peak periods.



- 7.2.5 Taking account of the conclusion of the last chapter that there was a need to plan for up to 3000 permanent residents and 6000 visitors, it is necessary to estimate the future land requirements to accommodate such numbers of permanent residents and visitors.
- 7.2.6 The additional 2000 permanent residents could be accommodated at prevailing single residential densities on 75-100 ha. However, the additional 4000 visitors are likely to require a range of accommodation. Some would choose to rent normal detached housing while others would select caravan parks or holiday units. Twenty-five ha would accommodate approximately 750 visitors in detached housing, and 50 ha would adequately accommodate 3250 visitors in unit accommodation or caravan parks.
- 7.2.7 In conclusion, the Plan needs to make provision for at least an additional 125 ha for single residential housing and 50 ha for unit accommodation and caravan parks.

## 8. SERVICES

### 8.1 WATER SUPPLY

8.1.1 The growth of Kalbarri is unlikely to be constrained due to inadequate water supplies. Kalbarri obtains plentiful and good quality water from a bore field situated at the south east extremity of the townsite. The bore field consists of five production bores, drilled to depths of between 80 and 160 m.

8.1.2 All of the bores are located on water reserve 31503. In April 1988 the water reserve was extended to encompass the water catchment area for the borefield. The water reserve now encompasses the Kalbarri townsite and further extends into the National Park. The Water Authority has advised that certain developments within the water reserve have the potential to pollute the ground water source, and these should be restricted.

8.1.3 It is envisaged that the existing aquifer can serve a population three times that currently at Kalbarri by upgrading existing bores and increasing the number of bores. In the long term, future supplies will be drawn from bores to the south of the town which will involve expensive drilling and expenditure on pipelines.

### 8.2 SEWERAGE

8.2.1 As Kalbarri is a mandatory sewerage town, any new developments in the town will need to be deep sewered. The existing sewerage treatment plant is located on Reserve 36661, east of the industrial area. This treatment plant can be readily extended by developing to the north of existing facilities. Long term development may require a further excision of land from the National Park, or acquisition of land to the south of Kalbarri. The Water Authority has advised that it has not undertaken detailed site investigations for a new sewerage treatment plant site but the need for additional treatment plant siting in fifteen or twenty years hence should be recognised.

8.2.2 There is considerable effluent generated from the existing sewerage treatment plant in Kalbarri, particularly in the summer holiday period. Valuable use of this water could be made for greening the town, particularly on public reserves.

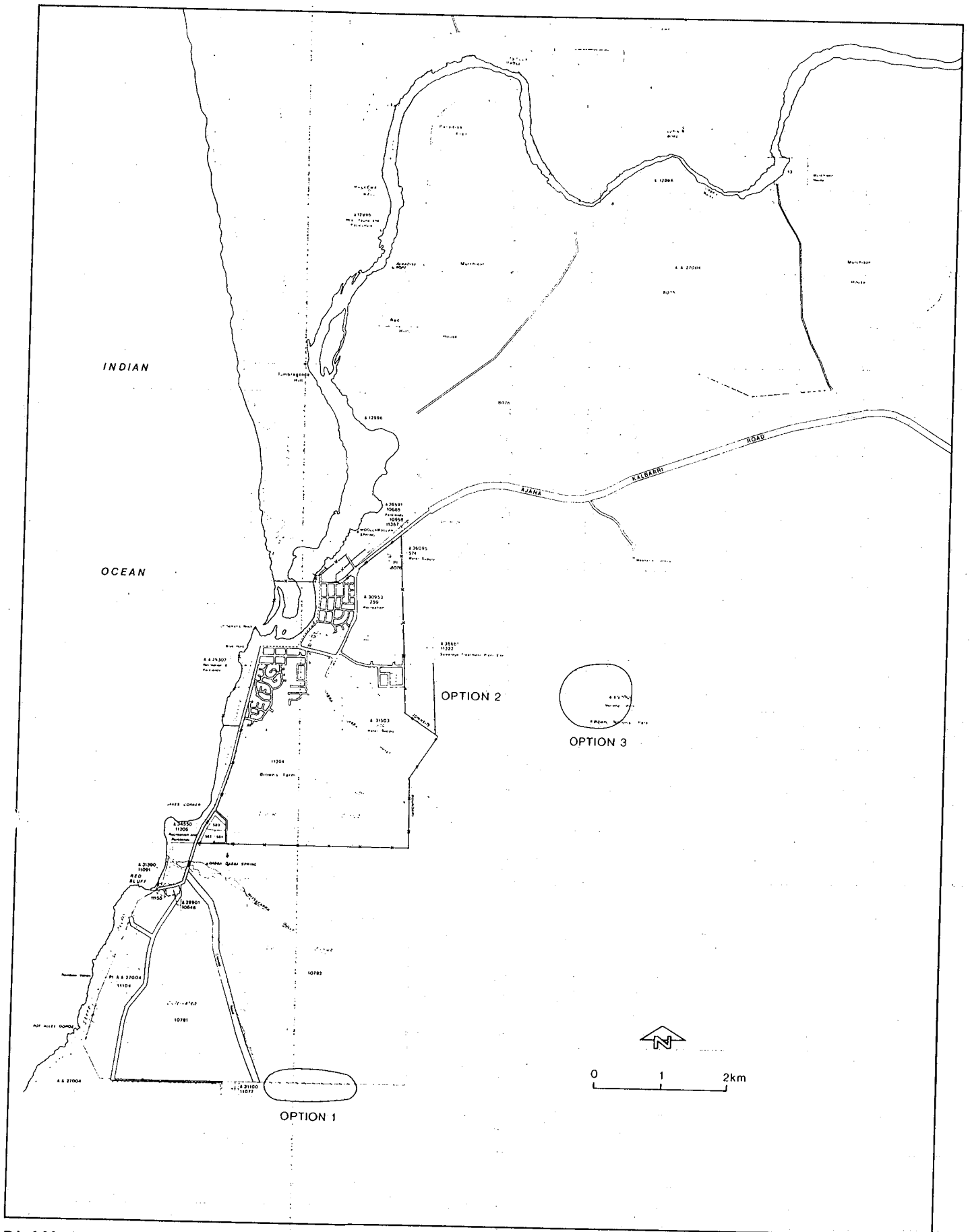
- 8.2.3 A major consideration when planning developments around sewerage treatment plants is to allow an adequate buffer zone for odours. In smaller towns such as Kalbarri a 500 m buffer zone is required around sewerage treatment plant sites. Within this 500 m zone, no residential development (this includes caravan parks and semi rural lots) should be permitted. Some suitable uses within the 500 m zone would include passive recreation areas and light industrial areas.

### 8.3 DRAINAGE

While there have been few requests for developments in flood prone land to date, in a major storm event, which could occur during or following a cyclone, there is potential for flooding in the flood plain area of the Gabba-Gabba creek which flows through Kalbarri. Development should be restricted adjacent to this creek; and only permitted after a complete flood study of the creek is carried out.

### 8.4 RUBBISH DISPOSAL

- 8.4.1 The Kalbarri rubbish tip is located south east of the industrial area within Reserve 31503. As this is the primary water reserve area, the Water Authority is anxious to relocate the rubbish tip because of the pollution threat to the groundwater reserve, particularly in the event of the disposal of harmful products containing heavy metals such as cadmium.
- 8.4.2 The West Cost Working Group recommended that an area for an alternative rubbish disposal site be excised from the National Park in 1982. This site lies to the south of the current sewerage plant, outside of reserve 31503 but within the Water Authority's recently gazetted Kalbarri Water Reserve (Refer Plan 4). Clearly the site is more peripheral to the groundwater area than the current site and given proper management the site would have a number of advantages. Accordingly, a consultant's study was commissioned (Ref 6) to examine the real risk of pollution of the groundwater source. The report, while making recommendations on tip management and monitoring of pollution, was inconclusive. Extensive investigations would be required prior to a firmer recommendation being made.



PLAN 4 - POSSIBLE RUBBISH DISPOSAL SITES

The Water Authority maintains the view that the future rubbish tip site should be located away from the Kalbarri Groundwater area as soon as possible. Even if a tip management plan was provided for a site within the groundwater area, there would be risk from illegal dumping of dangerous chemicals. There has already been evidence of dumping of dangerous agricultural chemical and used engine oil at the existing rubbish site.

8.4.3 Kalbarri is a tourist town surrounded by a National Park. The disposal of rubbish should be a matter undertaken with more care than would be expected in an ordinary town and this may incur additional costs. The management of any resulting tip would require careful supervision, frequent burying and site fencing to avoid pollution and the development of an eyesore.

8.4.4 Investigations during the study were unable to locate a suitable site north of the Ajana road. A physically suitable site within the National Park may be found, although such a site would present major management problems for CALM and could prejudice the values of the Park itself. Other approaches, such as incinerating, compacting and trucking could be considered. Such alternatives would involve considerable establishment costs and additional running costs. During the study, two sites were identified as having some potential although detailed engineering study would be required to provide justification for the excision from the National Park and commencement of rubbish disposal. One site, east of the existing airstrip on the edge of the National Park, may have potential although it is some distance from the town and could, by attracting birds, be a hazard to the airstrip users until the airstrip is relocated. The other site, east of the existing site and south west of Meanarra Hill, is closer to the town within an area of sand and outside of the Groundwater area, but surrounded by National Park requiring battleaxe access.

8.4.5 There is a need to undertake a detailed engineering study into the above two site options to assess the suitability for rubbish disposal, and assess the potential for sand extraction within the same site.

## 8.5 POWER

Up until the early 1980's, Kalbarri received its power supply from a local diesel fired power station operated by the State Energy Commission. Kalbarri

has since then been serviced by the SEC's main electricity supply grid which was extended via Northampton from Geraldton. Since the sources of the town's current supply are the Muja and Kwinana power station, the SEC believes that the growth anticipated in Kalbarri can be adequately serviced.

#### 8.6 SCHOOLS

Kalbarri currently has a primary school located on Hackney Street. This school is likely to require upgrading to a District High School in the medium term. This would require the extension of the current site by two hectares to six hectares, which is the standard requirement for a district high school.

## 9. SPECIFIC LAND USE ISSUES

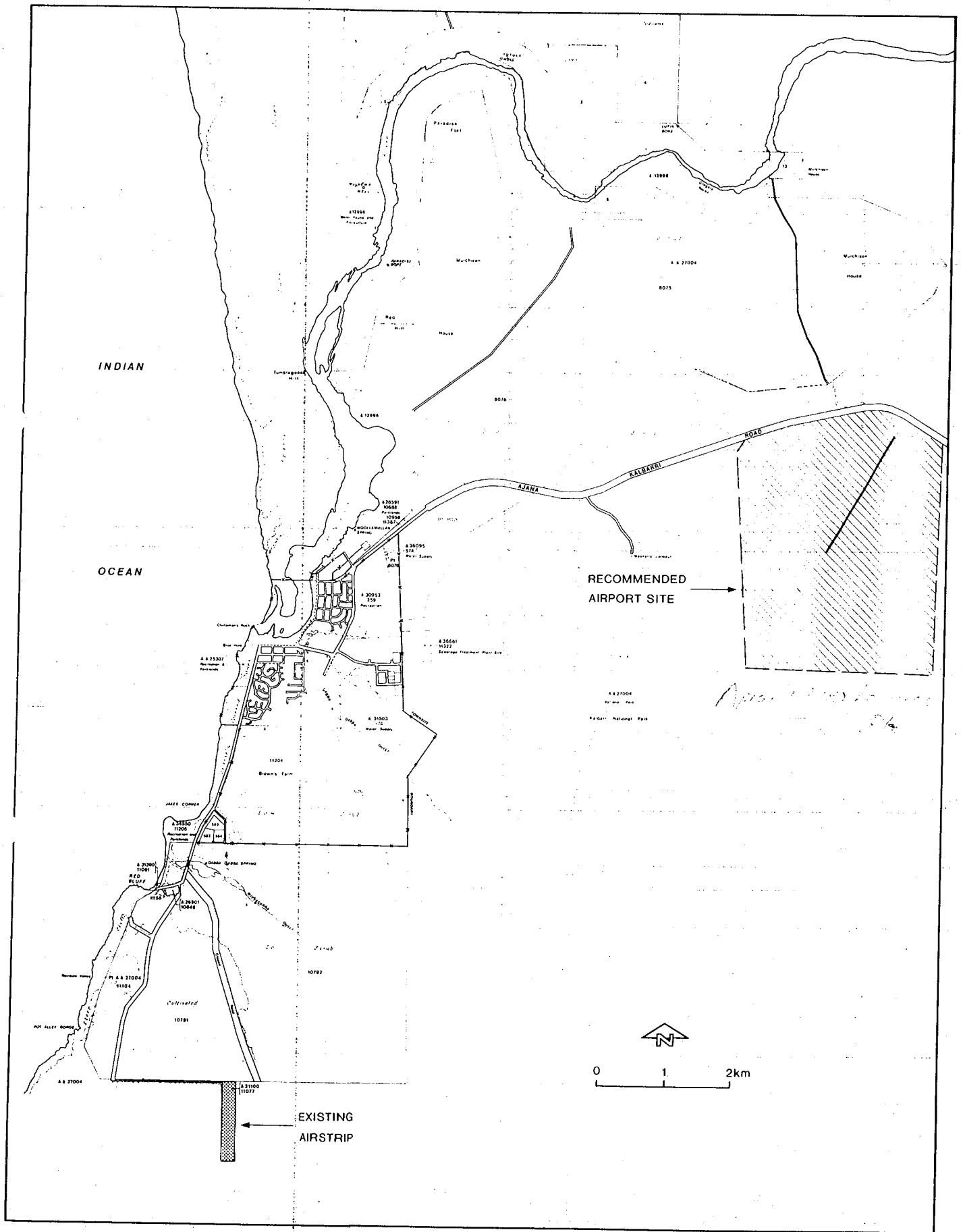
9.1 In addition to producing a Structure Plan for Kalbarri, which is outlined in Chapter 10, the Planning Study has examined a number of specific issues that are relevant to the future of the town. These are outlined below.

### 9.2 AERODROME INVESTIGATION

9.2.1 As part of the Planning Study, Wallace, Emery and Associates were commissioned to undertake (Ref 7) an investigation into the need for, and location of, an upgraded aerodrome site. These consultants prepared a report of their investigation which examined options for future aerodrome facilities in the town.

9.2.2 The consultants suggest that because of the existing tourist facilities at Kalbarri and the demand for air transport to the town, annual air traffic growth can be expected at between 7% and 30%, with a likely value of 15%. With this volume of air traffic, the standard of aerodrome considered justified in the short and medium term at Kalbarri is one which can accommodate jetstream aircraft.

9.2.3 Three options for aerodrome facilities are put forward by the consultants: the extension of the existing aerodrome northwards, the extension of the existing aerodrome southwards or the development of a new aerodrome site. These options were analysed in terms of aviation suitability, cost, engineering and the excisions required from the National Park. While there is no one option that is clearly superior to the others, the consultants recommend that a new aerodrome site, located behind Meanarra Hill (refer Plan 5), as the preferred option because of its long term potential and the fact that there would be no interference to existing air services during its construction. While this recommendation is endorsed by the Planning Study, it is appreciated that CALM will have to be satisfied that there is no other feasible option for the aerodrome, for instance to the south of the National Park, prior to agreeing to the large excision required for the preferred site.



PLAN 5 - RECOMMENDED AIRPORT SITE



9.2.4 The consultants also point out that proposals are being considered by the Department of Computing and Information Technology for the erection of a communications tower on Meanarra Hill and recommend that action be taken to protect the suggested aerodrome site from this tower. This recommendation is also supported by the Planning Study.

9.3 PROPOSED ADDITIONS TO THE NATIONAL PARK AND COOLOOMIA RESERVE

9.3.1 The Department of Conservation and Land Management (CALM) has identified three areas in the Kalbarri region where land rationalisation is considered desirable.

9.3.2 Cooloomia

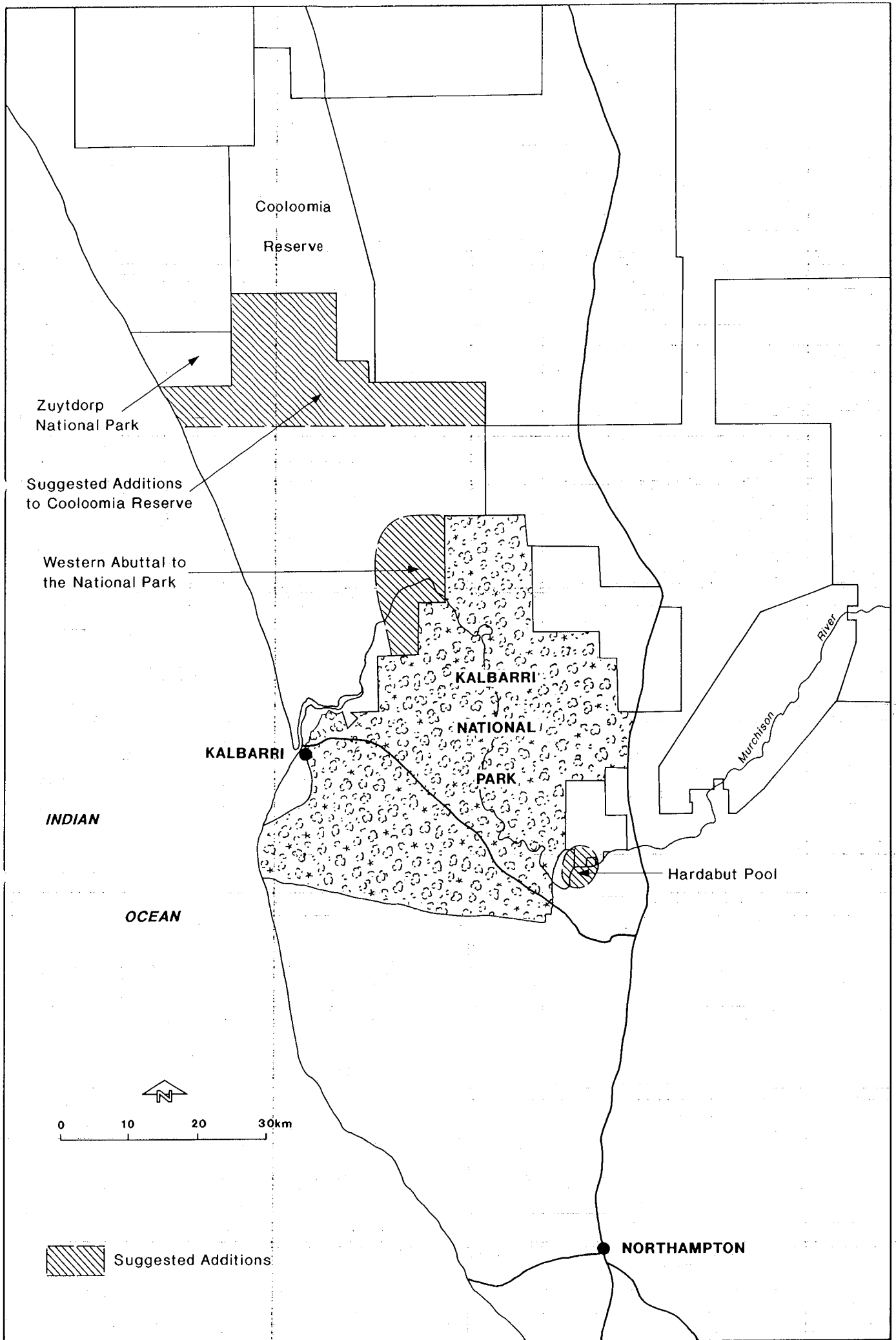
CALM has expressed an interest in acquiring an area of land in the very north of the Study area for addition to the Cooloomia Reserve (refer Plan 6). The land is comprised of vacant Crown Land and a portion of Murchison House Station which is not used for grazing purposes.

The Cooloomia Reserve, which lies in the Shark Bay Shire immediately to the north, is of natural significance and also abuts the Zuytdorp National Park. The land identified by CALM would provide a useful addition to these reserves, particularly in terms of access to the National Park.

The owners of Murchison House Station have indicated that the excision of the subject land from the pastoral lease is possible but this would be subject to further negotiation. It is recommended that these negotiations be instigated.

9.3.3 Hardabut Pool

Hardabut Pool is an attractive point along the Murchison River which abuts the south east corner of the Kalbarri National park (Refer Plan 6). It is presently contained in a Reserve No.13126 which is designated for camping purposes but is unvested. CALM has indicated that rather than having a Reserve subject to intensive use abutting the National Park, it is more appropriate to amalgamate the Reserve with the Park and have the camping site developed and managed by CALM. It also points out that the Kalbarri National park does not contain camping facilities. The Study supports this proposal and recommends that CALM approach DOLA with a view to



**PLAN 6 - SUGGESTED ADDITIONS TO THE KALBARRI NATIONAL PARK AND THE COOLOOMIA RESERVE**

instigating the procedure necessary to cancel Reserve 13126 and incorporate it into the National Park.

9.3.4 Western Abuttal to the National Park

An area of the Murchison River Valley 5km to the west of the National Park has been identified by CALM as containing interesting gorge country and being a useful addition to the Park (refer Plan 6). The area is heavily populated with feral goats and pigs which constantly move into the Park. This would be more easily controlled and managed if the land were included in the Park. The area is presently part of Murchison House Station but generally is considered unsuitable for grazing. The possibility of exchanging this land for an area of vacant crown land more suitable for grazing has been put forward. The study supports the inclusion of additional land into the National park and recommends that CALM commence negotiations with the owners of Murchison House Station in this regard.

9.4 MARINA SITE

9.4.1 The Murchison River estuary presently provides mooring and servicing facilities for the fishing industry and recreational boating, as well as areas for more passive aquatic pursuits such as sailing and windsurfing. At the height of the fishing and tourist seasons, the estuary is congested and as the town grows, potential for conflict between these uses will increase. In addition, the present access to the estuary through the river mouth is awkward and in many weather conditions is dangerous.

As a result of the above problems, the Department of Marine and Harbours (DMH) has investigated options for the provision of a marine facility at Kalbarri in the long term and interim measures to ease the congestional problems in the short term.

9.4.2 Three options for a marina site have been put forward by DMH: at Red Bluff, Jakes Point and the Murchison Rivermouth. The Red Bluff and Jakes Point options involve the enclosure of an existing embayment with a breakwater. These options are likely to result in costly construction of fabricated armour or caissons since local stone is not suitable as a breakwater material. Furthermore, these two sites are significant scenic attractions and their development with a marina would be at high cost to the area's amenity.

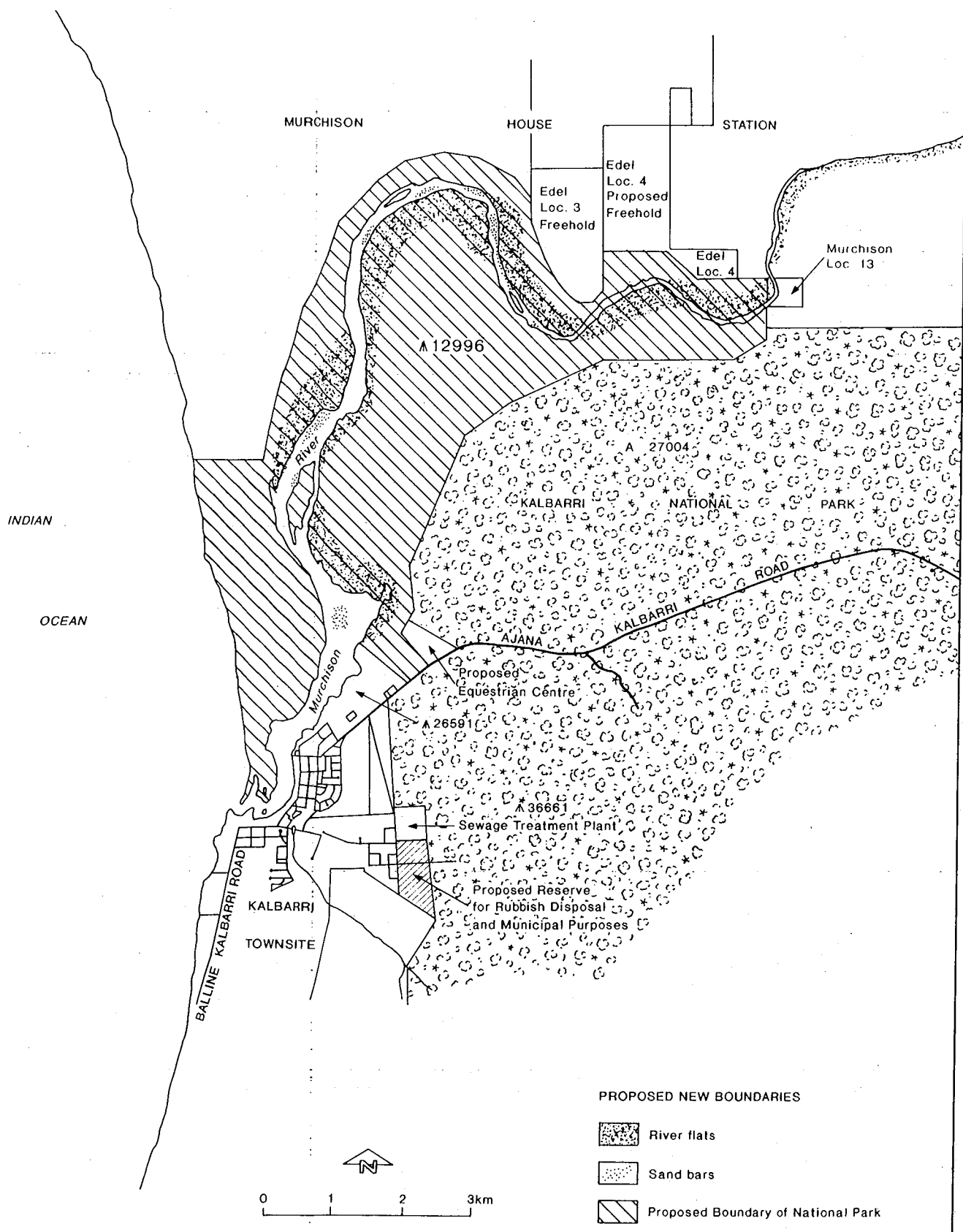
9.4.3 The rivermouth option involves the diversion of the flood flow of the river through a non-navigable entrance and the development of the existing entrance and lower estuary as a harbour. The Department of Marine and Harbours anticipates using simple techniques of dredging, blasting and revetment construction with only small quantities of breakwater subjected to heavy sea action. It is the least-cost option, both financially and visually. An alternative would involve the dredging and controlling of siltation of the river opposite the existing jetty. It is recommended that the detailed investigation of the feasibility and development of a marina in the Murchison River or adjacent to Wittecarra Creek proceed and be assessed against a further option which would involve the stationing of a dredge permanently at Kalbarri.

9.4.4 The interim measures suggested by DMH to ease the congestion in the estuary include the extension of the main jetty, more efficient fuel dispensers on the jetty, the installation of additional moorings upstream, the provision of an additional jetty to service recreational boats and the revision of designated areas for river users. These measures are supported.

## 9.5 ESTUARY FORESHORE RESERVE

9.5.1 With the steady growth of Kalbarri as a tourist destination, increased pressure is being placed on the foreshore of the Murchison River estuary. In particular, Reserve No. 12996 which encompasses the estuary foreshore, is the subject of demands for additional recreational use from both tourists and local residents. Reserve 12996 is presently vested in Council for the purposes of Parkland and Recreation. The existing boundaries of the Reserve are shown on Plan 2.

9.5.2 In 1982, the West Coast Working Group (Ref 8) recommended that the boundaries of Reserve 12996 be rationalised so as to enable more efficient management of the foreshore, to achieve a more topographic representation of the Lower Murchison Valley and to increase the diversity of vegetation on the Reserve. The proposed rationalisation of the Reserve is an important step in ensuring that the foreshore is managed properly and the recommendation of the West Coast Working Group is also endorsed by this Study. The recommended boundaries of Reserve 12996 are shown on Plan 7.



SOURCE : WEST COAST WORKING GROUP (1982)  
 REPORT TO THE ENVIRONMENTAL PROTECTION AUTHORITY

**PLAN 7 - PROPOSED BOUNDARY RATIONALISATION - RESERVE No. 12996**

- 9.5.3 A number of Aboriginal sites are located within Reserve 12996 - largely associated with fresh water springs. A local Aboriginal tribe, the Nanda Tribe, claims association with these sites. Accordingly, the Minister for Lands required that the Shire of Northampton submit a plan detailing the development and management of reserve 12996 which defines the Aboriginal use of the Reserve as a condition of the vesting of the Reserve in the Council.
- 9.5.4 Consultants Taylor and Burrell (Ref 9) were commissioned by the Shire of Northampton to prepare a plan for tourist sites and this included proposals for the development and management of Reserve 12996. The consultants recommended that vehicular access be limited to a low-key informal track, following the southern side of the estuary flood plain with a 100 m - 300 m setback to protect the amenity of rivers users.
- 9.5.5 The consultants propose three categories of use for the Reserve in the form of day use areas, informal camping areas and other specific recreation uses. The Plan advocates selected locations for day use activities, comprising barbecue/picnic facilities, parking areas, rubbish disposal facilities and bush walking trails. Access to these areas is to be limited to single tracks leading off the scenic drive and their design is to be sensitive to the natural assets of the area.
- 9.5.6 The consultants recommended that regulated, informal camping be permitted on Reserve No. 12996 subject to compliance with stated management policies. A management structure for the Reserve, which involves the convening of a Foreshore Reserve Management Committee and the appointment of an Aboriginal ranger, is also proposed.
- 9.5.7 The area of land between the proposed scenic drive route and the rationalised National Park Boundary was considered suitable by the consultants for the siting of specific active recreational uses. Provided these uses complement the passive nature of the reserve, the proposal is supported.

- 9.6 SITES FOR THE EXCAVATION OF ROAD MAKING MATERIALS
- 9.6.1 In order to have continued access to supplies of materials for road making, Council has identified the need to assess the construction material resources of the area and identify potential excavation sites. Geological Survey of Western Australia was commissioned to make this assessment and report on the matter for the Study.
- 9.6.2 Geological Survey (Ref 10) suggests that there are limited supplies of road construction quality gravel in the Kalbarri area and little potential for the identification of further gravel deposits. It does, however, suggest that other materials such as calcrete, limestone and construction sand are prevalent in the area and may be suitable for road base purposes.
- 9.6.3 The Main Roads Department has also made comment to the Study on this matter. It agrees that gravel supplies are limited in the Kalbarri area but questions the suitability of some of the alternatives suggested by Geological Survey. Calcrete is considered too dusty and absorptive and limestone very difficult to work, due to the nature of the hardcap. The Main Roads Department considers that construction sand is suitable as a cover aggregate for primer sealing or a sub-base material.
- 9.6.4 There appears to be no immediate solution to the problem of the apparent lack of road making material in the Kalbarri area. Certainly Council should earmark the areas identified as sand deposits by Geological Survey for further investigation. The use of calcrete and limestone should also be evaluated by Council.
- 9.6.5 With respect to gravel resources, Council could either provide for the supply of resources from outside the National Park or a flexible approach should be employed between Council and CALM where resources are located within the National Park. Such an approach would have to comply with the requirements of Section 33(s) of the CALM Act which specifies that gravel may only be extracted where necessary for the management of the National Park but that doubtful cases should be referred to the General Manager. It would be appropriate for the detailed engineering study relating to the rubbish tip site (see 8.4.5) to incorporate an assessment of the potential of sites for gravel extraction.

## 10. KALBARRI TOWNSITE STRUCTURE PLAN

### 10.1 INTRODUCTION

10.1.1 A structure plan is required to guide development over the next 20-25 years by providing for:-

- . future residential areas;
- . future tourist development;
- . future industrial land;
- . low density living areas;
- . alignments for the major road network; and
- . various public uses.

10.1.2 The preceding chapters have focused on the constraints to townsite development relating to land capability and the National Park. Other constraints relate to the sewerage plant buffer zone, drainage areas and the topography in general. It has also been suggested in preceding chapters that it would be prudent to plan for a permanent and visitor population of up to 10000 people.

10.1.3 During the Study, a consultant report (Ref 9) was prepared which proposed a Townsite Strategy, setting out the main components for the town's future development. In addition, a report and plan was prepared by the Department of Land Administration which proposed a different future which has been taken into account in the preparation of the recommended Structure Plan shown on Plan 8. The components of the Structure Plan are discussed below.

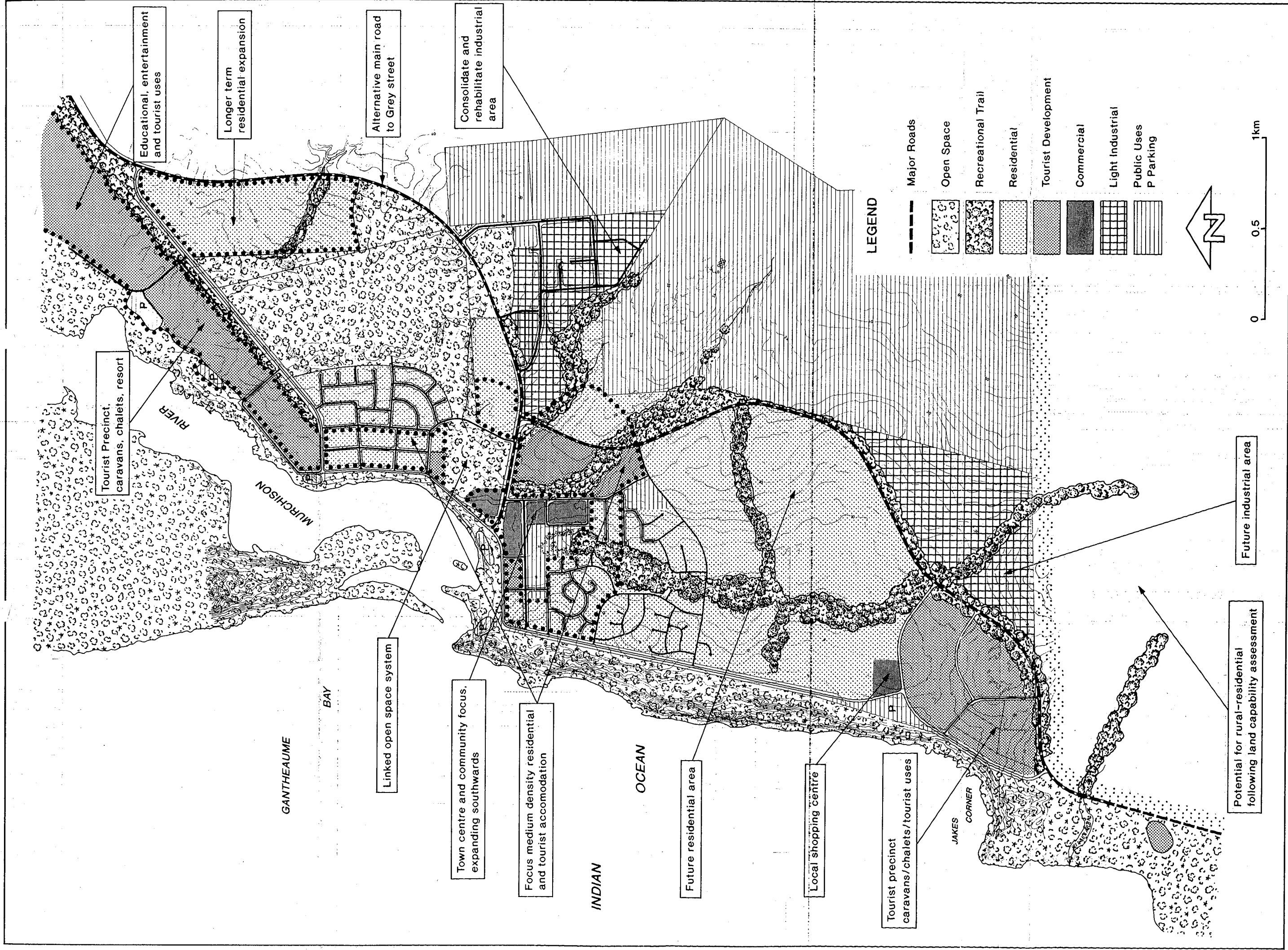
### 10.2 TOWN CENTRE

10.2.1 The Kalbarri town centre is centrally located within the townsite and contains its major retail shopping functions as well as hotel/motel, tavern, office and civic uses. However, the town centre is subject to traffic congestion and pedestrian/vehicular conflict and has constraints on its future expansion.

10.2.2 In response to the deficiencies of the town centre it is recommended that:

- i) traffic management options, such as channelling of traffic and the use of a





PLAN 8 - KALBARRI STRUCTURE PLAN

roundabout configuration at the Porter/Grey Street intersection, be assessed;

- ii) commercial uses be encouraged to extend southwards along Walker Street to Magee Crescent; and
- iii) in the long term, commercial uses could be accommodated in the existing holiday accommodation precinct to the south east of the Porter/Walker Street intersection.

### 10.3 RESIDENTIAL

- 10.3.1 Residential uses in Kalbarri are located in two distinct areas; in the older, more established part of town between Clotworthy Street and Woods Street and in the developing area south of Grey Street, between Walker Street and Red Bluff Road.
- 10.3.2 The latter area is approximately 190 hectares in extent and provides the opportunity to accommodate up to 5,000 people. This area will be the largest residential area within the town and provides an optimum sized catchment for the development of a school, community, commercial and local recreation facilities. A number of these uses including the school and commercial facilities have already developed within this area and current planning decisions have been based on the development of this area as the focus for the residential development. While the land does not benefit from views it does enjoy proximity to the coast and central area.
- 10.3.3 Additional consideration should be given to the location of local shopping facilities and services. As the town centre is located to the north of the neighbourhood, consideration has been given to the development of local and tourist related facilities at the junction of the collector road and Jakes Corner. This could relate both to the permanent residents of the neighbourhood and the tourist population utilising facilities at Jakes Corner.
- 10.3.4 The area between Walker Street and Red Bluff Road would provide for foreseeable land requirements for Kalbarri's permanent residents (with the potential to accommodate an additional 5000 residents). However, additional areas have been identified to provide greater choice and the opportunity to develop small residential areas which relate to recreational or natural features. The areas identified, east of the town centre, would also

obtain attractive views of the town, estuary and the surrounding national park.

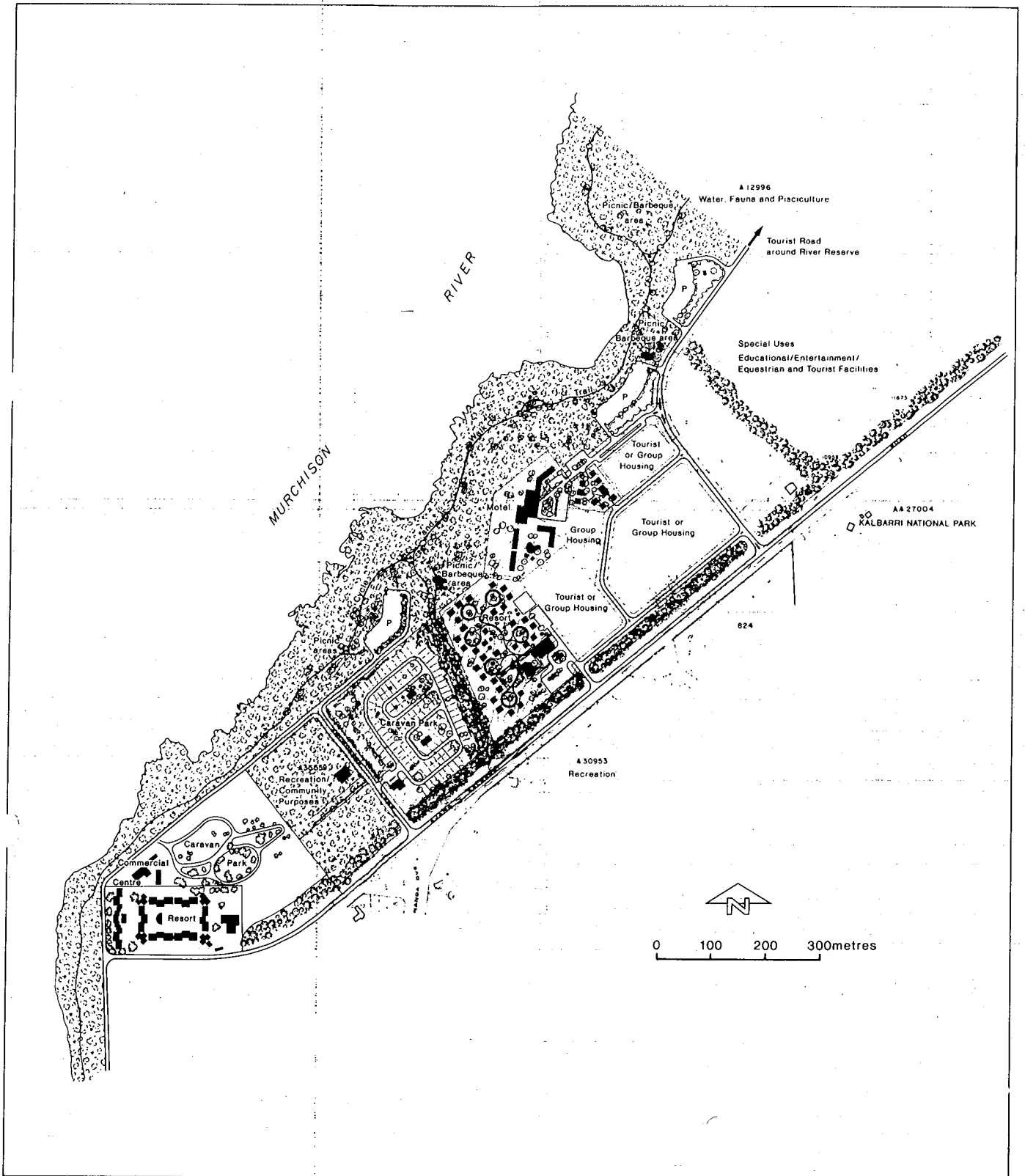
10.3.5 90ha of land has been earmarked east of the town for residential development. These various locations would in total provide the opportunity to accommodate in excess of 2000 people based on standard residential densities. It is important to stress that numbers would be substantially increased by providing the opportunity for increased residential densities which it would be reasonable to assume would occur in a tourist town such as Kalbarri.

#### 10.4 TOURIST DEVELOPMENT

10.4.1 The impact of tourist development in Kalbarri is of major significance and its importance in structure planning cannot be overstated. Adequate land to accommodate future tourism is vital to the planning of the town. To accommodate future needs at least 50 ha is required.

10.4.2 Two tourist development precincts are shown on the Structure Plan. The most significant is the precinct between Clotworthy Street and the Murchison River estuary which is shown in more detail on the attached Plan 9. This 34 ha area of prime land (the area is sheltered from the prevailing south-westerly winds and has attractive northerly aspects across the estuary) should be used for caravan park and chalet type uses, subject to the following design parameters:

- i) the provision of a wide foreshore reserve which is subject to pedestrian access from Anchorage Lane but is developed with day use car parks and picnic areas which are accessed from Clotworthy Street and a proposed scenic drive to the north;
- ii) a landscaped buffer strip being provided along Clotworthy Street;
- iii) the location of the day use areas to be subject to landform, the proximity to access and known Aboriginal sites; and
- iv) the existing community hall on Reserve 3559 remaining and being upgraded and integrated with the estuary open space system.
- v) building design should compliment the foreshore and the existing character of the



**PLAN 9 - TOURIST DEVELOPMENT AND SPECIAL USE PRECINCT**

town. (Council should formulate design guidelines by which to assess proposals.)

- vi) Direct road access to the nominated sites to be restricted to Anchorage Lane, the proposed scenic route forming the northern boundary of the site, and select entry points off Clotworthy Street, The northerly extension of Grey Street is not supported.
- vii) An open space spine to be introduced, reflecting the low lying area subject to seasonal inundation which lies centrally within the precinct. This open space area provides an opportunity to connect the existing townsite uses south of Clotworthy Street with the estuary foreshore.
- viii) The northern-most holiday accommodation site to be developed in the longer term dependent upon the staging of services.
- ix) The precinct provides the opportunity for caravan park and chalet type uses to be accessed by the touring population, in preference to the development of prime land within the Precinct solely for private development by individuals. It is recommended that the strata-titling of development within this locality not be supported.

10.4.3 A second tourist development precinct is identified at Jakes Corner. The Structure Plan shows a minor expansion of the existing holiday accommodation use within the present holdings in the area, subject to the realignment of the access road at its intersection with the Kalbarri-Balline Road. In view of the dramatic natural environment in this locality and the potential visibility of any tourist development from the road and from the tourist destination of Red Bluff and Jakes Corner, development should be landscaped and designed in sympathy with the natural environment. This area, which has seen the development of some special uses such as a Bird Park, should also accommodate additional special uses of a tourist nature.

10.4.4 It has been estimated that at least 50 ha should be planned for tourist accommodation. While 34 ha is provided for in the plan north of Clotworthy Street for tourist development and 50 ha near Jakes Corner, it is expected that unit development will occur through the redevelopment of single

residential properties in prime locations. In addition, 15 ha has been suggested for medium density development east of the town centre and south of the Golf course. It is important to ensure that land for tourist development remains committed to that purpose, particularly for tourist accommodation in the long term. It would be appropriate for a proportion of such land to be leased exclusively for tourist type uses.

#### 10.5 SPECIAL USE PRECINCT

A Special Use Precinct is located on the entry road to Kalbarri bounded by the Kalbarri - Ajana Road, the proposed boundary of the National Park and scenic drive route. The precinct contains an equestrian centre, vacant Crown Land and residential use occupying small holdings.

A majority of the precinct displays a moderate capability to support tourist development, (assuming full servicing) with the exception of the northern corner of the precinct which contains moderate physical limitation to development. The latter area supports the existing equestrian facility.

It is recommended that the precinct allow for the consolidation of educational/entertainment and special tourist uses such as horse riding, wild flower nursery and associated facilities and that a buffer strip be introduced along the Kalbarri - Ajana Road with access being restricted to nominated driveway entries. The establishment of holiday accommodation uses within the precinct should not be supported.

#### 10.6 INDUSTRIAL

10.6.1 The Structure Plan identifies land in addition to and in the vicinity of the existing industrial area for additional industrial land. A buffer strip between this area and the major road system is recommended and any industrial use which incorporates a residential component should have regard for the 500m buffer requirement of the nearby sewerage treatment plant.

10.6.2 In view of much of the land in the vicinity of the existing industrial area, a new industrial area and rubbish disposal site being committed or undevelopable, may be required in the long term. An additional area has been allocated to the south of the town on land which is not visible from

residential areas. This site should also be planned to accommodate an additional sewerage treatment plant which may be required in 15-20 years. While this land may be required in the future, it is important that industrial uses be consolidated in the existing industrial area and that rehabilitation of the sterilized areas be encouraged.

## 10.7 RURAL RESIDENTIAL DEVELOPMENT

10.7.1 Kalbarri has little rural-residential development. A demand for these uses appears to exist in the town. The land known as "Brown's Farm", in the south of the townsite could be developed for this purpose. However, while the Brown's Farm area is generally suitable for this use, a detailed land capability assessment would be required to confirm this.

10.7.2 While there may be a demand for special rural residential lots at Kalbarri, the amount of land identified for this purpose should be conservative to ensure that sufficient land is available for future urban requirements. It is not thought appropriate to plan for extensive rural residential areas if in the foreseeable future it will be necessary to excise land from the National Park to accommodate urban growth. Furthermore, it is important for the detailed subdivision design of the resulting rural residential areas to cater for possible conversion to residential areas in the long term.

## 10.8 OPEN SPACE

With respect to the open space system in Kalbarri, the Structure Plan advocates the following:

- i) the provision of interconnected open space areas within town, clearly linked to town centre uses and following the main natural drainage courses;
- ii) the consolidation and extension of the golf course precinct as the town's main recreation and leisure centre;
- iii) the continued implementation of the coastal management plan prepared for the town by the Department of Conservation and Environment; and
- iv) the establishment of a co-ordinated cycleway system in conjunction with the open space network.

## 10.9 THE ROAD SYSTEM

- 10.9.1 The present traffic circulation system in Kalbarri is inadequate. Grey Street and Clotworthy Street facilitate the only entry and exit into town and since Grey Street is contiguous with the coast, this entry/exit road system separates the town from the coast and estuary. This feature is exacerbated by the town centre being on this route and some of the tourist and other attractions being located to the south.
- 10.9.2 An alternative road system is required now and will certainly be required in the future. However, it is necessary to be pragmatic and ensure that new roads will be built by aligning them in proximity to future development. The major roads will also have to serve as district distributors - the town is too small to justify the construction of a by-pass primary distributor in the foreseeable future.
- 10.9.3 The major road alignment shown on the structure plan provides alternative access into the town centre and is divided into a northern and southern section.

The Northern section of the main road system aims to:-

- (1) relieve pressure on Grey Street as the only entry and exit from town, provide direct access to the industrial area adjoining Porter Street and overcome the need for industrial traffic to use Grey Street;
- (2) provide the opportunity to develop an attractive approachway;
- (3) relate closely to the adjoining residential areas which would also enjoy impressive views of the estuary and the town;
- (4) provide the opportunity to control access landscaping and development as the adjoining land is either undeveloped or can benefit from location on an important road (eg tourist developments); and
- (5) relieve pressure on Grey Street by providing direct access to holiday accommodation south of Porter Street and a direct link to the proposed southern collector road and destinations south.



The southern section of the main road system aims to:-

- (1) encompass the residential areas;
- (2) provide access to the possible future industrial area;
- (3) provide direct access to recreational and tourist areas at Jakes Corner and Red Bluff;
- (4) relate to the boundary of the existing water supply reserve; and
- (5) avoid a second, expensive crossing of Wittecarra Creek.

## 11. CONCLUSION

- 11.1 Kalbarri is likely to continue to experience a steady growth in the foreseeable future. Notwithstanding the constraints that the National Park places on the expansion of the town, this expected growth can generally be accommodated with minor rationalisations and excisions from the Park and little effect on its amenity.
- 11.2 Kalbarri has a range of assets and development opportunities which suggest that an optimistic future growth rate should be planned for. However, its reliance on distant Perth will make Kalbarri vulnerable to fuel cost increases suggesting some caution in projecting growth. A wider range of client groups will need to be planned for in the future, ranging from those seeking cheap holidays to those prepared to fly into comfortable units offering a wide range of facilities. Kalbarri could also become more important as a centre for retired people as services improve and the town generally grows. The development of major facilities in Kalbarri itself, such as a new airstrip, a marina, an expanded golf course and sealed road access from the south would certainly enhance growth prospects.
- 11.3 Land to the south of the town centre has the potential to accommodate foreseeable residential requirements, however a choice of residential land is recommended with land being earmarked for normal and medium density residential development to the east of the town centre. Some additional industrial land should be planned for and large lot rural residential type development could be accommodated in the area known as Brown's farm.
- 11.4 It is important to ensure that the prime sites for potential tourist development are planned with care. Sufficient land for future growth has been earmarked along the Murchison river, opposite Jakes Corner and east of the town centre for a range of tourist accommodation. Commercial development should be focused on the existing towncentre and extended southwards along Walker Street but congestion relieved by an alternative road system enabling some traffic to by-pass the main commercial and foreshore areas while providing improved access to the industrial and residential areas.

- 11.5 In addition to the normal growth pressures associated with a tourist town such as Kalbarri, some significant redirections of townsite and tourist development are possible. The use and development of Reserve 12996 along the Murchison estuary could provide a major alternative recreational destination for residents and visitors. The development of a marina, whether it be to the south, near Wittecarra creek, or in the Murchison river mouth, would provide impetus to townsite and tourist growth presenting opportunities but requiring careful management.
- 11.6 The study has concluded that an alternative airstrip should be planned for to the east of Meanarra Hill and that an alternative rubbish site may be feasible east of the townsite. However, there are no easy solutions to some of the planning issues which are concomitant to the growth of a town surrounded by National Park. Basic raw materials are in scarce supply and can not be easily extracted from the National park and special consideration needs to be given to the needs of the town for such materials on one hand and the need to retain the natural values of the Park on the other.
- 11.7 In accommodating future uses in Kalbarri, Council should carefully assess developments against the guidelines set out in this report. With the recommended structure plan and relevant guidelines in place, Kalbarri can look forward to a prosperous future that is free from land use conflict.

## 12. RECOMMENDATIONS

The Study recommends that:

- 12.1 The Northampton Shire Council and the State Planning Commission adopt the Recommended Structure Plan as the basis for the future development of Kalbarri.
- 12.2 The Department of Land Administration consider the Structure Plan and adopt it as a basis for future land releases.
- 12.3 Development should take full account of the capability of the land to support a particular development, take account of the 500 m sewerage treatment plant buffer and avoid the flood plain of the Gabba-Gabba creek.
- 12.4 Provision be made to extend the Primary School to enable it to develop as a District High School.
- 12.5 Land allocated for tourist sites be developed with close attention to design details and with a view to ensuring that prime sites remain useable for a range of tourist accommodation. Leasing arrangements should ensure that some of the land remains permanently for tourist uses.
- 12.6 Detailed land capability assessment of the Brown's Farm property be undertaken to establish its suitability for rural residential development and other uses.
- 12.7 The policies for the use and management of Reserve 12996 outlined in the Strategy Plan which include the establishment of a Foreshore Reserve Management Committee and the placement of an Aboriginal representative on that Committee, be endorsed by Council and the Nanda tribe and be adopted as the basis for the administration of the Reserve.
- 12.8 Council pursue the rationalisation of Reserve No. 12996 as recommended by the West Coast Working Group and advocated by this study.
- 12.9 An approach be made through the Department of Conservation and Land Mangement to the National Parks and Nature Conservation Authority regarding the excision of the land behind Meanarra Hill required for the airstrip site. The proposal for an airstrip should be outlined via a series of discussion papers addressing:

1. alternative sites outside the national park,
  2. economic viability of an airstrip, and
  3. physical constraints on the construction of an airstrip.
- 12.10 Appropriate action be taken to ensure that the proposed airstrip is protected from structures being erected on Meanarra Hill.
- 12.11 The Department of Conservation and Land Management commence negotiations with the owners of Murchison House Station with a view to facilitating the rationalisation of holdings adjacent to the Cooloomia Reserve and the area of the Murchison river valley 5km west of the National Park.
- 12.12 Hardabut Pool be amalgamated with the National Park and be vested in the Department of CALM.
- 12.13 The Department of Marine and Harbours be requested to proceed with investigations in relation to the Marina sites at the Murchison river mouth and in the vicinity of Wittecarra Creek and assess the feasibility and cost of siting a dredge permanently at Kalbarri.
- 12.14 In view of the absence of known supplies of gravel, the Department of Conservation and Land Management adopt a flexible approach to the use of resources in the National Park where such resources are identified. Special consideration should be given to loosening the definition under §.33(3) of the CALM Act to allow this to happen.
- 12.15 Council investigate the possibility of using the deposits of calcrete, limestone and sand, identified by Geological Survey, for road making materials and if necessary investigate the use and/or acquisition of sites outside the Study area for gravel reserves.
- 12.16 The Government be requested to provide funds for an engineering study to assess the feasibility of establishing a rubbish site either south west of Meanarra Hill or east of the existing airstrip in conjunction with an assessment of concurrent sand and gravel extraction. Should the results of the study be favourable for the establishment of a rubbish tip within the National park, an approach be made through CALM to the NPNCA to excise the land and its access route.

## APPENDIX 1

### References Referred to in the Text

1. Geraldton Mid West Regional Study - October 1987.
2. Shire of Northampton Town Planning Scheme No. 4 - Kalbarri Townsite - Russell Taylor and William Burrell.
3. Environmental Geology Report EV39 - Geology and Mineral Resources of the Geraldton Region - Geological Survey of Western Australia.
4. Coastal Management Plan Kalbarri Townsite - Department of Conservation and Environment (1983).
5. Survey to Assist Kalbarri Tourists Expansion - D. Clayton - Division of Resource Management - Western Australian Department of Agriculture.
6. Groundwater Assessment - Proposed Rubbish Tip Site, Kalbarri. Australian Groundwater Consultants, Pty Ltd 1988.
7. Kalbarri Aerodrome Investigation - Wallace, Emery and Associates.
8. West Coast Working Group - Report to the Environmental Protection Authority.
9. Kalbarri Townsite Strategy Working Papers - Russell Taylor and William Burrell
10. Environmental Geology Report EV40 - Construction Resources of the Kalbarri Area - Geological Survey of Western Australia.

## APPENDIX 2

### STEERING COMMITTEE MEMBERSHIP

Mr John Forbes	Chairman -
	State Planning Commission
Clr Richard Maslen	Associate Commissioner -
	State Planning Commission
Clr Ron Allen	Shire President -
	Shire of Northampton
Mr Ian Johnston	Mid West Development Authority
Mr Geoff Mercer	Regional Manager -
	Conservation and Land Management
Mr David Allen	Department of Land Administration

### WORKING GROUP MEMBERSHIP

Mr Ian MacRae	Chairman -
	State Planning Commission
Mr Cliff Perry	Shire Clerk -
	Shire of Northampton
Mr David Allen	Department of Land Administration
Mr Geoff Mercer	Conservation and Land Management
Mr Tony Arias	]Regional Manager
Mr Stuart Thompson	]State Planning Commission
Ms Anne Reid	]
Mr Jeff Barham	State Planning Commission

### ACKNOWLEDGEMENTS

Department of Agriculture - Division of Resource Management	-	Land Capability Study
Shire of Northampton	-	Funding for Consultant Planning
Department of Transport	-	Funding for Aerodrome Study
Department of Mines, Geological Survey	-	Environmental Geology Report