

# HOW PEOPLE USE THE MOORE RIVER ESTUARY FOR RECREATION



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COMMISSION



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Cover picture: Sandra Brown, from the University of Western Australia, interviewing a person at the Lookout - April 1998.

## PREFACE

In August 1997 the Water and Rivers Commission brought together a group of community representatives to assist with the preparation of a management plan for the Moore River Estuary. Divided community opinion, together with insufficient baseline information, made it difficult to deliberate on a range of issues. Therefore, it was resolved to assess how different human activities affect, directly or indirectly, the estuarine system.

The Water and Commission, with the assistance of the University of Western Australia, implemented an intensive recreation survey in April 1998. The results of the survey are contained within this report.

## ACKNOWLEDGEMENTS

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**Project Coordinator**  
**Jonelle Black**

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# INTRODUCTION

Recreation is defined as an agreeable or refreshing activity, relaxation or amusement. In 1997, Australians spent an average of 19% of their time on recreation and leisure activities (McLennan 1998).

In Western Australia, estuaries are a valuable recreational resource. They are sought for both passive (eg. wildlife appreciation) and active (eg. power boating) forms of recreation.

For a specific estuary, the level of participation in passive recreation will often be related to its aesthetic appeal. Active recreation is influenced more by the physical characteristics of the estuary (ie. water quality, depth, surface area, wind exposure, access). Hence, not all leisure activities are available everywhere. Indeed, in many instances active pursuits are not compatible with passive pursuits (eg. jet skiing and swimming).

According to Martinick and Associates (1995), active recreation on the Moore River Estuary is limited by its small size. From their analysis, the area is not conducive to rowing races and model boating. Water skiing is prohibited under the Navigable Water Regulations (1982). This is because, in many places, the estuary is less than 3 metres in depth. The Shire of Gingin also discourages jet skiing, due to safety hazards.

## Issues

There are a number of localised debates over recreation on the Moore River Estuary (*pers comm* Guilderton Community Association, Caraban Land Owners Action Group).

These include:

- Artificial breaching of the sand bar - effects on the ecology and sediment dynamics of the estuary.

- Powered watercrafts - bank erosion, noise and safety hazards.
- Foreshore access - bank erosion, intrusion on private land, litter and fire hazards.
- Provision of public facilities - toilets, signs, paths and boat launching ramps.

To optimise recreational opportunities and minimise such conflicts, we require some basic information about the behaviour and attitudes of people utilising the area for recreation.

## Aims

This study aims to:

1. Categorise the sorts of people that use the Moore River Estuary (MRE) in terms of their age, social group, permanent residence, length of visit and place of stay.
2. Determine what recreational activities and sites are most popular on the MRE.
3. Determine the overriding reason why people recreate on the MRE.
4. Determine people's attitudes towards powered watercrafts on the MRE.
5. Assess whether people are satisfied with recreation amenities on the MRE.
6. Evaluate people's attitudes toward recreation and the environment.

## Study Area

The Moore River enters the Indian Ocean at the townsite of Guilderton, approximately 75 kilometres north of Perth (Figure 1).

Guilderton is a holiday centre, with approximately 120 permanent residents. Recreational facilities in the town include a barbecue and picnic area, boat ramp, lookout, golf course, tennis courts, trampolines, mini-golf, bowling greens, park, Country Club and Community Hall.

Guilderton is contained on the north shore of the Moore River Estuary. The south shore is densely vegetated, and is only accessible by water, foot or off-road vehicles.

Significant natural features of the area include:

**The "Sand Bar"** - separates the mouth of the Moore River from the ocean and is broken by winter rains, groundwater buildup over summer or by people digging through it (plate 1).

**The "Desert"** - is a mobile sandsheet approximately 600 x 600 metres on the south side of the river (plate 2).

**The "Tuarts"** - are *Eucalyptus gomphocephala* woodlands. Although common along the banks of the Moore River, they are at the most northern extent of the species distribution (plate 3).

**Silver Creek** - is a small tributary of the Moore River. It is characterised by paperbark thickets, and is a point for groundwater discharge (plate 4).

## History

Recreational activities on the Moore River date back to when Aboriginal people used its banks as a camping and hunting ground and fished in its deep pools (O'Conner et al 1989). Back then, the Moore River Estuary was known as *Gabbadah*, meaning a "mouthful of water" (de Burgh 1976).

Europeans explored the Moore River in the 1830's, during the first years of the Swan River Colony (Udell 1980). Pockets of land along the river were eventually cleared and settled throughout the 1850's and 1860's. The Brockman family was the first to lease the land directly north and south of the mouth for grazing of cattle and sheep (de Burgh 1976).

The first mention of a camping expedition to the Moore River Estuary is made in the

Cowalla records in 1887. The following correspondence between two early settlers characterises a holiday to the area.

*'We left home at 20 minutes to 8 driving the three horses Lincoln, Rags and Charity ... The road is very overgrown in places. We got there about half past 6 meeting Uncle Harry on the coast hills a few miles from the camp. He has fenced in a 100 acre paddock with barbed wire and put up a two roomed building with 4 tent rooms ... The children have got very much burnt. I have had two rows on the river and enjoyed them so much. We went up the river a long way and it is very pretty. Yesterday Uncle tried to let the river go but the sea breeze was strong and it did not go, but this morning when a land wind set in, out it went. We hope to have some fish now ...'*

de Burgh 1893

By about 1905, Henry Brockman's 100-acre block was made a reserve for picnicking and camping. Improvements to the land included the construction of three rentable cottages and a well (de Burgh 1976).

In 1917 the Road Board requested that the Fisheries Department prohibit netting in the river, from the mouth to four miles upstream, at all times except Christmas, New Year and Easter. In 1918 ovens were built into stone fireplaces and the first toilets were erected. In the following year, a part-time caretaker was appointed to ensure that livestock were kept out of the reserve and to reduce vandalism.

As the years passed, the reserve became ever more popular as a holiday destination for locals, and was increased in size to 257 acres. However, camping activities were ceased abruptly during the Second World War when the military authorities prohibited all access to the coast. Camping was permitted again by the end of 1943.

By 1949 it had been decided by the Lands Department to establish a town at the mouth of the Moore River. After consultation with the Road Board, the town of Guilderton was gazetted on the 30<sup>th</sup> of

November 1951. The name was derived from the Dutch ship *Vergulde Draek* (Gilt Dragon) which was wrecked nearby in April 1656, and was said to be carrying quantities of guilders as her cargo (de Burgh 1976).

The town has progressed since the 1950's, and holiday makers no longer have to 'rough it' with the provision of a levelled caravan park, cottages, public facilities, shop, town water supply and telephone connection. The town has also expanded with the sub-division of part of the old Creek House property.

## METHODS

To collect the relevant information it was necessary to conduct a *social survey*. In order to achieve a high response rate in a targeted population, *personal interviews* were selected as the appropriate survey method.

The survey questions were developed in consultation with the Ministry of Sport and Recreation, Department of Conservation and Land Management and the University of Western Australia. The questions were a combination of open questions, multiple choice, checklists and scales.

The interviewers were students enrolled in Agricultural Systems and Extension (401) at the University of Western Australia. All were briefed on the questions and expected outcomes. The students developed a standard introduction and interview schedule.

The interviews were conducted over the Easter holiday period, on Monday 13<sup>th</sup> of April (public holiday) and Tuesday 14<sup>th</sup> of April. From traffic records, the number of people in Guilderton increases considerably over Easter (Shire of Gingin, unpublished). On both days the weather was mild. It was 25 °C and partly cloudy on Monday and 26 °C and mostly cloudy on Tuesday (Bureau of Meteorology, unpublished).

Survey points were situated where the level of activity was thought to be the greatest. These included the Sandbar, Lookout, shop, picnic area, walkway, Silver Creek, Desert and the boat ramps (figure 2). Interviewers were regularly rotated between the survey points.

With respect to the survey program, the initial aim was to carry out 200 surveys over the two-day period. A total of 174 surveys were carried out.

Children under the age of 10 years were excluded from the survey. This may have caused an under-representation of children in the 10 - 14 age group.

## RESULTS

### Who makes use of the MRE for recreation?

#### Age

The MRE is visited by people of all ages, however not in equal proportions. The greatest number of people encountered during the survey were in the 35 - 44 age group (26% of total), closely followed by the 15 - 24 age group (23% of total).

The smallest represented age groups were the 55 - 64 year olds (9% of total) and over 65 year olds (8% of total). The MRE may be more popular amongst these age groups outside peak holiday periods.

#### Social group

Recreation on the Moore River has a strong family focus: 56% of people surveyed visited the area with their family and 15% with family and friends.

People that came with friends only (19% of total) were predominantly adolescents. In comparison, people that came with their partners (7% of total) were predominantly



senior citizens. No persons on an organised tour were encountered during the survey.

Few individuals used the MRE by themselves (3% of total). The low percentage in this category emphasises the social orientation of recreational activities on the MRE.

These figures closely resemble those collected by the Australian Bureau of Statistics on the proportion of time spent with other persons in sport and outdoor activities (figure 3).

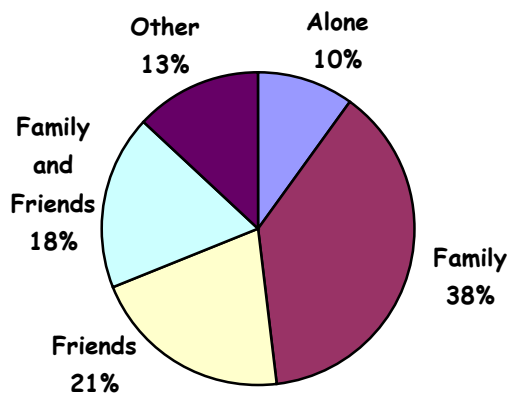


Figure 3. Time spent with other people in sport and outdoor activities (McLennan 1998).

### Permanent residence

Most people recreating on the MRE were visitors to the area (93% of total). Only 2% of the respondents were overseas visitors, and no respondents came from other states in Australia.

The remaining people encountered in the survey came from 84 different localities in Western Australia, with the proportion of metropolitan residents to country residents being approximately 3:1.

Within the metropolitan area, the MRE is most popular amongst residents in the northern suburbs (ie. north - 65%, south - 27% and east - 8%). The top five suburbs included; Woodvale, Karrinup, Dianella, Morely and Greenwood.

Within the country area, just under half were from the Shire of Gingin. Others

came from Beverley, Bunbury, Northam, Toodyay, Wagin and Wundowie.

## What do people do on their visit to the MRE?

### Recreational activities

Generally, there were high participation levels in both active and passive forms of recreation on the MRE. The most common activities were fishing (76%), viewing scenery (73%) and swimming (71%).

Participation in other activities was in the following declining order: canoeing - 54%, picnicking - 51%, bush walking - 51%, camping - 50%, boating - 47%, wildlife appreciation - 47%, sandboarding - 37%, photography - 37% and cycling - 12%.

A few individuals also participated in horse riding, 4 wheel driving, kite flying and model boating.

### Recreational sites

The Sandbar, a natural feature of the MRE, was the most common site to be visited by those surveyed (80%). This was followed by the Lookout (67%) and the picnic area (63%).

Attendance at other sites was in the following declining order: Desert - 29%, Reserve - 27%, Silver Creek - 24% and Diamond Island - 20%.

A few individuals also visited Bommy Rock and the Woodridge Boat Ramp.

### Total length of visit

A day trip to the MRE is now possible with better cars and improved roads. This option was taken by 31% of the respondents, who were mainly middle-aged people. This may be due to this age group having less time available for leisure activities (McLennan 1998).

However, the majority of people stayed at the MRE longer than a day. Of those surveyed, 36% stayed for part or the entire Easter Break, while 30% stayed for part or all of the School Holidays. Adolescents favoured the Easter Break.

Only 3% of people surveyed stayed beyond the school holiday, and were generally senior citizens.

### Place of overnight stay

There are various accommodation options for people wishing to stay at Guilderton.

The most common option appears to be the Guilderton Caravan Park, followed by staying in a house owned by the immediate or extended family (figure 5).

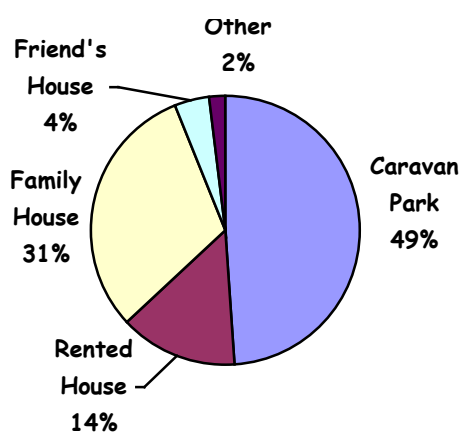


Figure 4. Place of overnight stay at Guilderton.

### What attracts people to the MRE?

There were a wide variety of reasons for recreating on the MRE. In fact, 31 different responses were given by those surveyed.

The top ten reasons were, in declining order:

1. Holiday, getaway
2. Relaxing
3. Fishing
4. Close to Perth
5. Peaceful

6. Fun
7. Nice time/place
8. Quiet
9. Scenery
10. Tradition

Many of these sentiments are captured in an article published by the Friends of the Moore River Estuary and Bushland (1995). In it, it states that Guilderton is an important asset to the people of Perth owing to "its relaxed atmosphere, relative remoteness, yet close proximity to the metropolitan area".

A similar survey question was presented to people visiting State Forests in WA (Schmidt 1980). Likewise, 'peace, quiet and solitude' were the top reasons for selecting a site to recreate in. It is interesting to note that the presence of water was also a major drawcard.

### What are peoples attitudes towards powered boats on the MRE?

#### Excess speed

The speed limit set for watercrafts on the MRE is 8 knots per hour (West Australian Marine Act 1982). Of those surveyed, 62% believed that boats exceeded this speed limit. The following reasons for speeding were presented to these respondents:

1. Speed limit is too slow
2. People don't know the speed limit
3. Lack of enforcement of the speed limit
4. Lack of parental supervision

When asked to rate how strongly they felt about these reasons, there was general *disagreement* that the speed limit is too slow (77% of total). Interestingly, those that agreed were predominantly adolescents. Respondents were equally divided over whether a person not knowing the speed caused them to speed.

There was general agreement that there is a lack of enforcement of the speed limit (80% of total). Many people also agreed that there was a lack of parental supervision (69% of total).

## Management

The survey indicates that the most popular management option for powered boats on the MRE is to restrict them to certain areas (figure 6). Few people favoured a complete ban on powered boats, while those that promoted free access stressed the need for policing and education.

Interestingly, the survey results indicate that a person's preferred management option is not related to their age or participation in boating.

A number of individuals also suggested limiting the power of the engine fitted to the watercraft. Respondents owning a boat reported a large variability in engine sizes. The average size was 15-horse power, with the largest being 40-horse power.

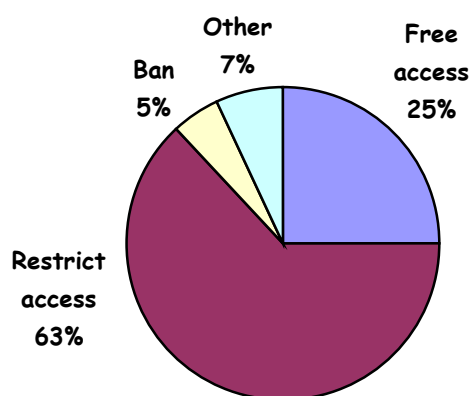


Figure 5. Management options for powered watercraft on the MRE.

## Are people satisfied with the provision of recreational amenities?

Recreational amenities are pleasant or useful features or facilities. A range of amenities exist on the MRE, including:

1. Guided tours
2. Tourist information
3. Vehicle access
4. Parking areas
5. Boat ramps
6. Walk trails
7. BBQ's
8. Toilets
9. Picnic area
10. Camping sites

In the survey respondents were asked to rate the provision of these items as either; inadequate, adequate or excellent. A 'no opinion' option was provided for those that had not used the amenity.

On average, 38% of the respondents thought the provision of amenities was adequate, while only 9% said it was inadequate. A further 26% of respondents believed that the supply of amenities was excellent.

On average, 27% of the respondents did not rate the amenity. This may be related to the high proportion of first time visitors to the MRE.

Parking areas, BBQ's and camping sites were seen as the top supplied amenities, while walk trails, toilets and tourist information were seen as the worst supplied amenities. Over three-quarters of the respondents were either not aware, or had not taken the opportunity to go on a guided tour of the MRE (appendix A).

## What are people's attitudes toward recreation and the environment?

Key environmental problems associated with recreation on the MRE include;

1. Rubbish dumping
2. Vegetation removal
3. Trampling of banks
4. Escaped camp fires
5. Artificial breaking of the bar
6. Over fishing

## 7. Disturbance of wildlife

In the survey, respondents were asked to rate the severity of these problems as either; none, small, moderate or major. A 'no opinion' option was provided for those who were unaware of the problem.

On average, 29% of the respondents believed that there were no environmental problems associated with recreation. A further 20% were not familiar with the impacts of recreation on the MRE.

Artificial bar breaking, over fishing and trampling of banks were seen as the most severe environmental problems on the MRE. Respondents were least familiar with the impact of recreation on wildlife (see appendix B).

### Specific activities

A number of recreational activities have also been attributed to the environmental degradation of the MRE. Respondents tended to be equally divided over whether powered boats and sandboarding were an environmental problem on the MRE.

## DISCUSSION

### Users

The MRE is a recreational resource utilised by all ages. People like to visit the area for a **relaxing time**, enjoying the quiet and peaceful natural surroundings. It is most popular amongst **family groups** and people living in the **northern suburbs**. One would expect this trend to continue, with the outer developing suburbs being characterised by a growth rate in excess of 25% and having a high proportion of dependent children (Australian Bureau of Statistics 1996).

The popularity of the MRE is increasing, with a large number of **first time visitors** to the area. However, the number of people that can stay overnight at Guilderton is

constrained by the amount of available accommodation. For people that *do not* own a house, or have other connections in the area (ie. relatives or friends), accommodation is limited to the caravan park, 20 holiday homes, 6 chalets, a bed and breakfast and Tuppin House (*pers comm* Moore River Cruises). Camping elsewhere is prohibited under the Caravan and Camping Act 1997.

In the future we may expect a greater number of day-trippers to the MRE. This may be more desirable than expanding Guilderton, as it will maintain the character of the area. However, if this type of visitor is to be encouraged to the MRE, then additional facilities may be required. For instance, there is only one public toilet block available to visitors, and already there are complaints that there are insufficient bins in the area.

### Activities

**Fishing, swimming and viewing scenery** are the most popular recreational activities on the MRE. Hence, any act that may pollute the water, reducing fish stocks and preventing swimming, or destroys the natural surroundings, will have an adverse affect on the popularity of the area.

Protecting the environment is an issue that is taken seriously by local community groups. The Guilderton Community Association recently received funds from the Natural Heritage Trust to rehabilitate degraded areas along the MRE. An area of focus is the severely eroded banks on the 'Catholic Archdiocese of Perth' property. The Water and Rivers Commission is supporting the project, through technical assistance and the implementation of a water quality monitoring program.

Greater participation in other activities on the MRE may be encouraged through the provision of particular amenities. For instance, more people may bushwalk if defined walk trails were established in the area. Likewise, a cycle path taking in the

local attractions may provide greater tourism opportunities for Guilderton. Defined trails and paths would also discourage people from entering private properties and trampling the banks of the river.

Conflicts exist over the compatibility of powered watercrafts and other activities on the MRE. Powered boats can be a hazard to swimmers, and noise from their engines may be considered a nuisance. They can also have a significant impact on the environment, with wash eroding sandy shores, especially in low-wave energy environments (Carter 1995). Some of these problems could be avoided on the MRE, if people adhered to the 8-knot speed limit. This is definitely not the case, with nearly two thirds of the respondents observing speeding boats. Excess speed was mainly attributed to limited policing by the Department of Transport.

A lack of enforcement was also blamed for the presence of water and jet skiers on the MRE. However, confusion exists over whether jet skis are actually permitted on the MRE. Under the Western Australian Marine Act (1982), they are considered to be a powered watercraft, only restricted by the 8-knot speed limit.

Sandboarding is viewed by some as an undesirable activity, causing damage to the dune system and transporting sediments into the estuary. For this reason the Sand Slide, opposite the boat ramp, was fenced and rehabilitated in 1994 (plate 5). In comparison, it is difficult to quantify the impact of sandboarding on the Desert. Being a mobile sand dune, sediment transport into the river is a natural occurrence. However, it is evident that the area of sand exposed on the Desert has increased since 1941 (Grimes, unpublished).

## Sites

Recreational activity on the MRE is largely confined to specific sites, with natural barriers tending to restrict the wide

dispersal of visitors. The most popular recreational sites on the MRE include the **Sandbar, Lookout and picnic area**. Road access and parking facilities may concentrate visitors in these areas, as people tend to recreate no further than 200 metres of a bitumen road (Schmidt 1980).

Other facilities may contribute to the popularity of the Lookout and picnic area. The Lookout features ramp access, catering specifically for the elderly and disabled. The picnic area is well equipped for visitors, with toilets, BBQ's, shelters, picnic tables and a playground area. Trampling of the foreshore has also been minimised in this area, with clear access points to the water's edge.

In comparison, the Sandbar is a natural feature of the MRE. It is attractive to visitors, offering the sheltered waters of the estuary on one side, and the ocean on the other. When the bar is closed, parents can let young children play safely in the shallows of the estuary, while older children can enjoy the surf.

Deliberate breaking of the sandbar is a common activity, especially at Christmas and Easter time. People break the bar for fun and better surf. It also releases fish into the nearshore zone, improving the 'day's catch'. Unfortunately, the continual opening of the bar has effectively reduced water levels in the estuary (Grimes unpublished).

Frequent digging of the bar has been a controversial issue since the 1930's (Shire of Gingin 1930). In particular, complaints were made that water levels in the estuary were too low for swimming and fish stocks were being depleted. Mrs Maud Darch recalls that her father, the caretaker between 1934 - 1942, stopped people from opening the bar. However, many responded with clandestine journeys in the night (Grimes unpublished).

At the time of the survey, nearly two thirds of visitors believed that artificial breaking of the bar was a problem. The Shire of Gingin has erected a sign warning that it is

an offence to cause damage or erosion to the sandbar. However, some local residents want lights to be erected nearby to act as a deterrent to digging the bar at night (*pers comm Guilderton Community Association*).

The survey suggests that there is considerable room for improvement in visitor information and education. Pamphlets, on-site interpretive displays and signs are some of the most effective means available for communicating with the MRE visitor (Ford 1997). There is also scope for making better use of these tools in the development of self-guiding nature trails and guided tours (eg. plaques indicating local plant species).

## RECOMMENDATIONS

Issues raised in the survey are addressed by the following recommended actions. The likely party to follow up each action has been included in italics.

### Land use and management

1. Protection of the MRE and its natural surroundings should be a primary consideration in any plans for the area - *all stakeholders*.
2. Discourage vehicle and stock access in non-designated foreshore areas using barrier fencing - *Guilderton Community Association, with funds from the Natural Heritage Trust*.
3. Review the need for additional public toilet facilities - *Shire of Gingin*.
4. Provide more bins along the MRE foreshore, and ensure they are emptied regularly - *Shire of Gingin*.
5. Explore avenues for constructing a walk trail or path along the northern foreshore - *Shire of Gingin and local community*.

### Boating

1. Investigate the opportunity to provide designated areas for powered boats - *Department of Transport*.
2. Explore avenues to exclude jet skis from the MRE - *Department of Transport*.
3. Consider delegation of Department of Transport inspectorial powers to suitable officers within local government - *Shire of Gingin, Department of Transport*.
4. Produce a brochure on the use of powered boats on the MRE. Such a brochure would outline the responsibilities of users relating to safety, navigation and general waterways courtesy - *Guilderton Community Association*.

### Environment

1. Raise public awareness on the fragility of the MRE and its natural surroundings through a visitor information program - *community and government agencies*.
2. Opening and closing of the bar should be maintained in as natural condition as possible - *Shire of Gingin*.
3. The bar should only be forced open when levels threaten flooding of the Guilderton Caravan Park - *Shire of Gingin*.
4. The water quality monitoring program recently established for the MRE should be continued for at least the next 5 years - *Water and Rivers Commission, Guilderton Community Association*.

## CONCLUSION

It is surprising that the amount of time Australians are spending on recreational pursuits is decreasing. Between 1992 to 1997, the average time spent on recreation per day decreased by 90 minutes (McLennan 1998).

As a consequence, one would expect a greater demand for enjoyable recreational experiences close to home. The MRE fits this criterion, it is close to Perth, yet sufficiently remote to getaway from the 'hustle and bustle' of suburbia. According to Peter Fry of Mt Lawley "... it's a beautiful spot. There's no other estuary like it so close to Perth" (Guilderton Community Association 1996).

The MRE, despite being small in comparison to the Swan, Peel or Leschenault Estuaries, can support a diverse range of recreational activities. However, the use of powered watercraft, especially jet skis, warrants further consideration by the local government authority and the Department of Transport.

It is clear from the survey that the popularity of the area is reliant on a healthy estuarine system. Hence, government and community efforts need to be directed towards;

1. Protecting the river foreshore,
2. Improving water quality, and
3. Maintaining the natural hydrodynamics of the estuary.

Attention should also be focused on the sustainable management of the entire catchment, as what happens further upstream will eventually affect the Moore River Estuary.

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Figure 1. Location of the Moore River Estuary

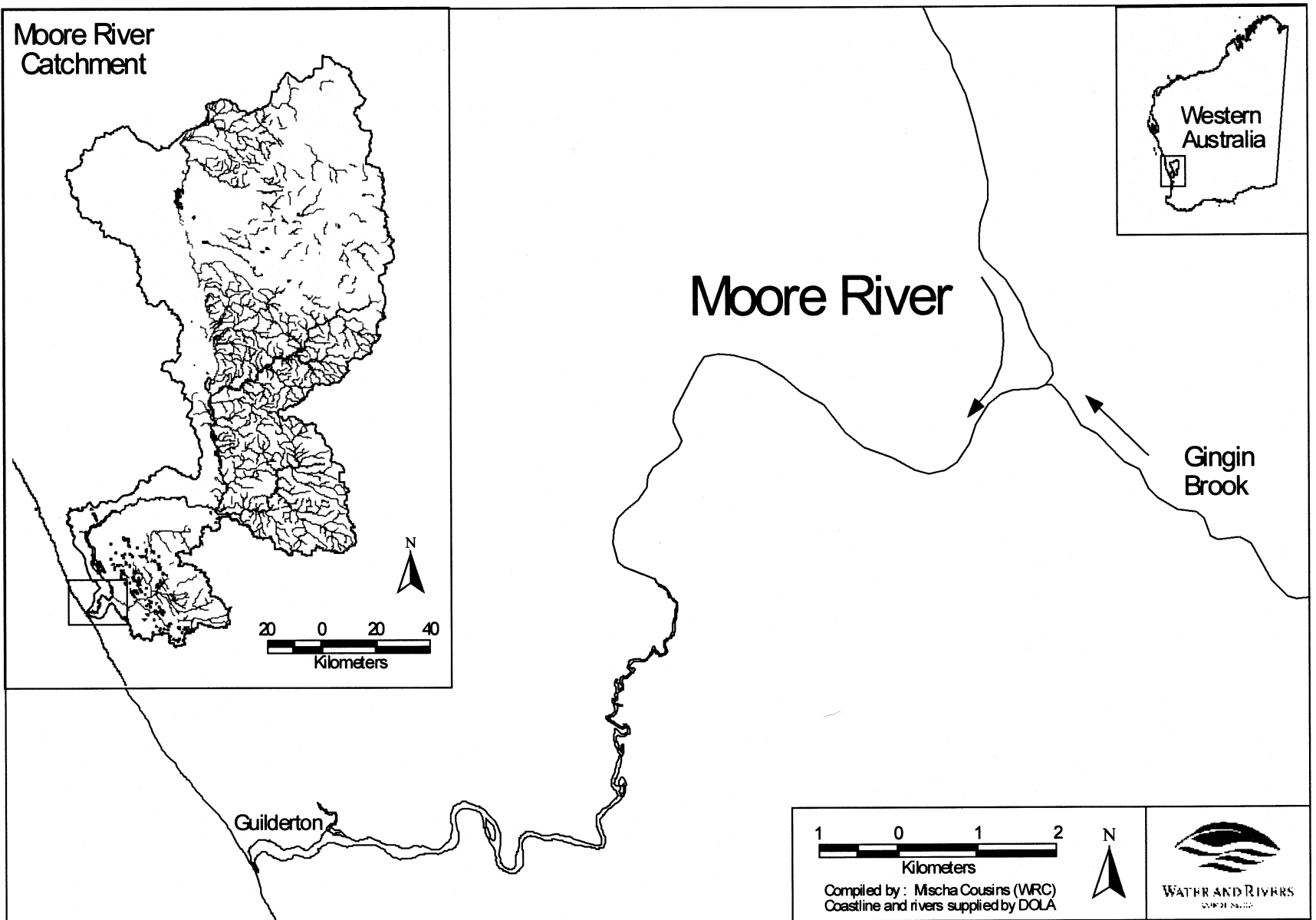


Figure 1. Location of the Moore River Estuary

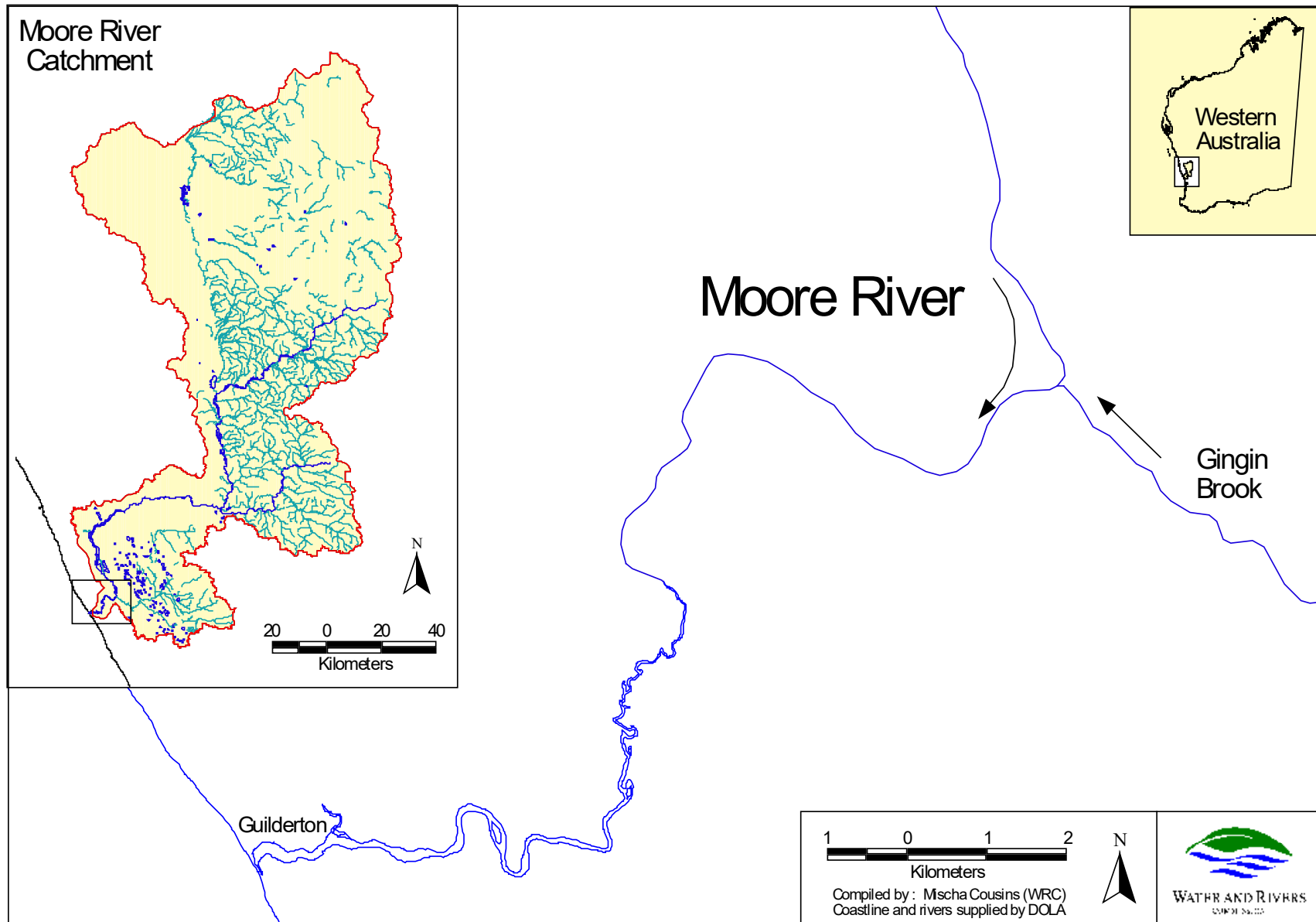


Figure 1. Location of the Moore River Estuary

Figure 2. Survey sites along the Moore River Estuary

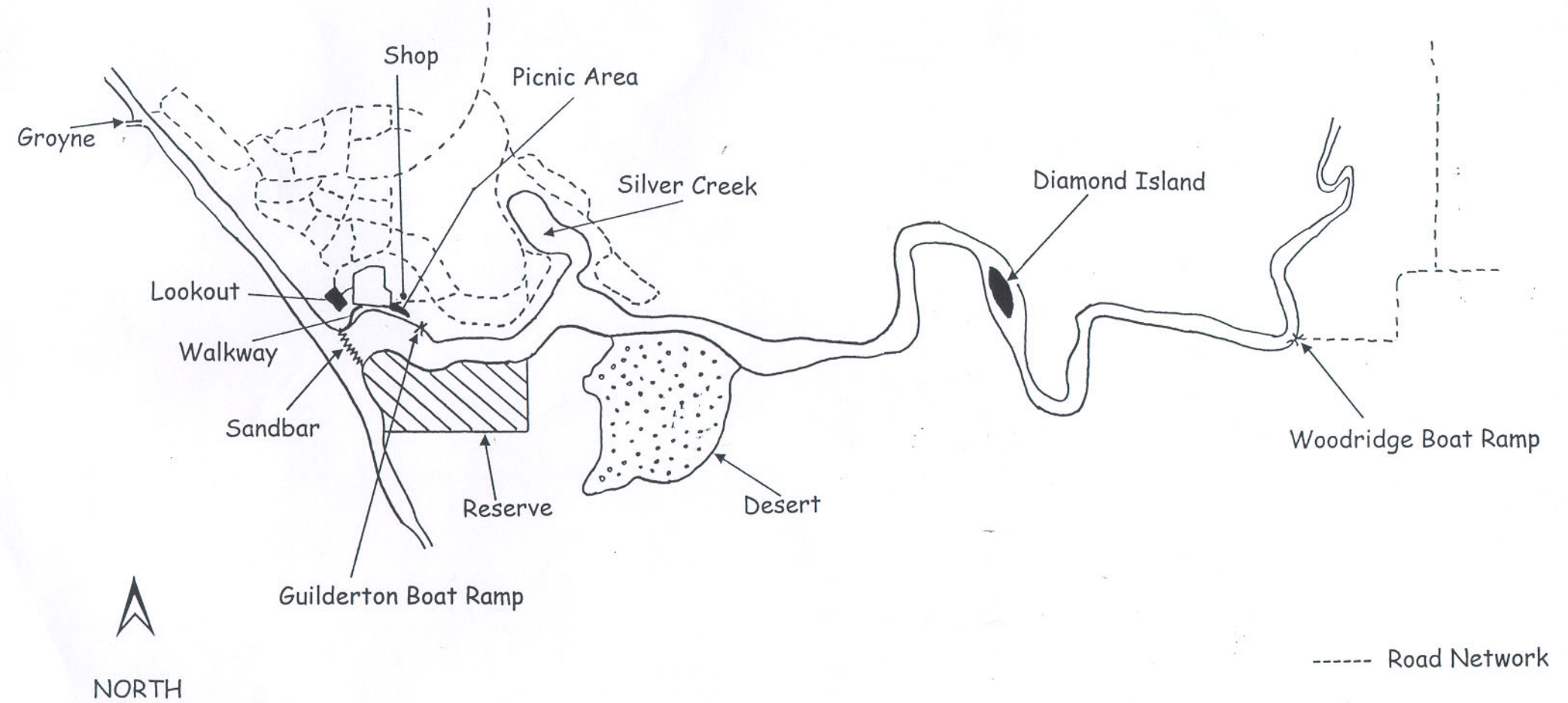


Figure 2. Survey sites along the Moore River Estuary

Plate 1. The 'Sandbar'

Plate 2. The 'Desert'







Plate 3. Tuarts fringe the Moore River Estuary

Plate 4. Silver Creek





Plate 5. The 'Sand Slide' was stabilised with fencing and tree branches in November 1997.



Appendix 1. Respondent satisfaction with the provision of recreation amenities on the MRE.

	Inadequate	Adequate	Excellent	No Opinion
Guided Tours	2%	9%	12%	77%
Tourist Information	12%	48%	11%	29%
Vehicle Access	7%	62%	23%	8%
Parking	6%	47%	43%	4%
Boat Ramps	11%	34%	17%	38%
Walk Trails	19%	36%	12%	33%
BBQ's	4%	38%	41%	17%
Toilets	13%	40%	28%	19%
Picnic Area	9%	45%	29%	17%
Camping Sites	6%	26%	39%	29%
<i>Average</i>	26%	38%	9%	27%

Appendix 2. Respondent rating of environmental problems associated with recreation on the MRE.

	Not A Problem	Small Problem	Moderate Problem	Major Problem	No Opinion
Rubbish Dumping	34%	32%	15%	14%	5%
Vegetation Removal	36%	16%	15%	12%	21%
Trampling of Banks	21%	24%	21%	18%	16%
Escaped Camp Fires	39%	11%	11%	17%	22%
Artificial Bar Breaking	22%	10%	18%	32%	18%
Over Fishing	28%	16%	14%	22%	20%
Wildlife Disturbance	24%	11%	12%	15%	38%
Average	29%	17%	15%	19%	20%