PEEL-HARVEY ESTUARINE SYSTEM STUDY

Report on Mandurah Attitudinal Survey

Department of Conservation and Environment
Perth, Western Australia

Bulletin 235 August 1985

DEPARTMENT OF CONSERVATION

AND ENVIRONMENT

REPORT ON MANDURAH

ATTITUDINAL SURVEY

Prepared by:

Kinhill Stearns
47 Burswood Road
Victoria Park, WA 6100

August 1985
P84048

ISBN 0 7309 0738 4

CONTENTS

LIST OF TABLES

1 INTRODUCTION

1.1 BACKGROUND TO THE SURVEY

For the past decade, the shallows along the shores of the Peel Inlet and Harvey Estuary, near the town of Mandurah 80 km south of Perth, have been fouled by the accumulation of green algae, which decomposes into an offensive-smelling black ooze. Since 1976, the Western Australian Government has funded a wide range of research programmes aimed at understanding the nature and causes of the algae problem in the Estuary, determining practical management measures likely to improve the condition of the Estuary, and evaluating the proposed measures on a cost/benefit basis.

The research undertaken to date indicates that a combination of management measures (known as the preferred strategy) has the potential to restore the Estuary to a condition where the beaches will be largely free of weed and the water clear for most of the time (Department of Conservation and Environment 1984). The three components of this preferred strategy are:

- continuation (on a larger scale) of present weed harvesting measures;
- modification of fertilizer practices by farmers on the coastal plain;
- construction of a new channel from Harvey Estuary to the ocean to increase the flushing of Estuary water to the sea.

These components represent either expensive or long-term solutions to the algae problem. The effects of the algae problem are not all detrimental; for example, fishery and amateur catches of crabs and prawns appear to be marginally improved by the present unhealthy state of the Inlet and Estuary, while the worst effects tend to be experienced only in certain locations around the shores of the Inlet and Estuary. Thus it is to be expected that local and Perth regional opinions could differ as to the need for, and timing of, a solution to the algae problem. As the community living in or visiting the Mandurah and Peel Inlet/Harvey Estuary areas has never been asked officially what it thinks about the problem (although many people have given unsolicited opinions), the Department of Conservation and Environment commissioned an attitudinal survey to gauge community opinion on the algae problem and potential solutions to it.

1.2 OBJECTIVES OF THE SURVEY

The objectives of the survey were to:

- determine local (permanent and temporary residents) as well as regional views on the algae problem and what should be done;
- provide input into an Environmental Review and Management Programme for a major engineering solution; that is dig a new cut to the ocean at the cost of approximately $31 million (1984 estimate);
- determine the minimum requirement for status of the Inlet and Estuary for professional fishermen, local residents, and daily, weekly and longer-term tourists.

1.3 COMPONENTS OF THE SURVEY

The survey involved two components:

- an interview survey with 155 randomly selected respondents in the Mandurah area, 99 of whom where interviewed by telephone and 56 of whom were interviewed face-to-face in holiday homes, caravan parks and motels in the Mandurah area;

- five group discussions with groups of up to ten people representative of selected community interest groups associated with the Peel Inlet and Harvey Estuary.

The interview survey was conducted over the weekend 1-4 March 1985, while the group discussions were conducted on 9 and 10 March 1985.

2 SUMMARY OF SURVEY FINDINGS

2.1 FINDINGS OF THE ATTITUDINAL SURVEY

The key conclusions which can be drawn from the household survey and the main findings are summarized as follows:

- there is a strong identification with natural environmental attributes. This and the casual, friendly life-style are the main aspects of the Mandurah area that respondents like;

- mosquitoes, traffic problems and canal developments were all identified (without prompting) ahead of the algae/weed growth on the Inlet/Estuary as matters which concerned people about living in or visiting Mandurah;

- there is considerable and frequent recreational use of the Inlet/Estuary for both passive and active recreation, particularly prawning, crabbing, fishing and boating;

- there is a very clear identification that there are problems which adversely affect the recreational use of the Inlet/Estuary, with the principal problem being related to the algae/weed growth and the smell associated with it;

- 95% of respondents who had identified or acknowledged that the algae/weed growth problem existed thought that it was 'very serious' or 'fairly serious';

- the main ways in which the algae/weed growth problem affects people are by its smell or stench and its adverse effects on crabbing and fishing;

- almost 100% of respondents who had identified or acknowledged that algae/weed growth was a problem thought that something should be done about this problem;

- State Government was the most frequently mentioned authority which respondents thought should be responsible for taking some action about the algae/weed problem;

- almost three-quarters of respondents thought that the existing programme to encourage farmers to change their methods of applying agricultural fertilizer (a low-cost/long-term solution) was acceptable in varying degrees;

- over half of the respondents thought that a solution involving the cutting of a channel from the ocean to the Estuary in conjunction with the fertilizer strategy (a high-cost/immediate solution) was acceptable in varying degrees;

- more support was expressed for the high-cost/immediate solution than for the low-cost/long-term solution;

- there is considerable support for the expenditure of $31 million to improve water quality in the Estuary relative to other things that the State Government has to spend money on.

2.1.1 Views about the Mandurah area

The most frequently mentioned aspects that respondents liked about the Mandurah area were all related to the proximity of the ocean or freshwater bodies, namely:

- nearby beaches/sea/ocean
- fishing/prawning/crabbing
- nearby waterways and Estuary.

Life-style attributes related to the tranquil/peaceful life-style, the country/rural atmosphere and the casual way of life were the second most frequently mentioned aspects liked by respondents.

Over 80% of respondents indicated that there were things that concerned them about living in Mandurah while only 16% indicated that there was nothing that concerned them. The most frequently mentioned concerns were mosquitoes (26%) which appear to be of considerably more concern than traffic problems/bottlenecks (9%), canal projects (9%), algae/weed (6%) or dissatisfaction with the Mandurah Shire Council (5%).

Thus in terms of unsolicited aspects of concern to people living in or visiting the Mandurah area, the issue of algae/weed growth was of considerably less concern than other local environmental or development issues, such as mosquitoes, traffic and canal developments.

2.1.2 Recreational use of the Peel Inlet and Harvey Estuary

The most popular recreational uses of the Peel Inlet and Harvey Estuary undertaken often or occasionally by approximately two-thirds of respondents were passive recreational activities (such as strolling), prawning, crabbing, fishing and boating. Water-skiing and, to a lesser extent, swimming were hardly ever or never undertaken by most respondents.

2.1.3 Identification of problems with the Peel Inlet or Harvey Estuary

Over four-fifths of respondents (83%) thought that there were problems with the Peel Inlet or Harvey Estuary that might affect the recreational use of these areas. Only 14% of respondents thought that there were no problems with the Inlet or Estuary.

Respondents who thought that there were problems with the Inlet/Estuary identified the following matters in particular:

- smell/terrible smell (28%)
- algae (20%)
- weeds/seaweed (15%)
- mosquitoes (11%)
- dirty water (5%)

When prompted, 70% of those respondents who had not thought that there were any problems with the Inlet/Estuary or who had thought that there were problems but had not identified weed or algae growth, did indicate that the growth of algae and weed was a problem.

Thus, of the 155 respondents, a total of 133 (86%) indicated that they thought algae and weed growth was a problem in the Peel Inlet or Harvey Estuary and only 14% did not acknowledge or identify this problem. Of the 133 respondents who did identify or acknowledge that there was a problem with weed growth, most (128 respondents) identified it without prompting, which is a clear indication of the extent of the perception of the problem by the general public in the Mandurah area.

2.1.4 Perception of duration and seriousness of the algae/weed problem

Just over half the respondents thought that the algae/weed growth was a problem for only part of the year, while a quarter thought it was a problem all the year round. The other quarter did not know, or could not say, when it was a problem. According to respondents, the problem was most evident in the late spring and summer months between November and March, while the autumn and winter months generally were infrequently mentioned.

Almost two-thirds of respondents thought that the algae/weed problem was very serious, while one-third thought it was fairly serious and only 4% thought that it was not very serious. Thus a total of 95% of respondents who had identified or acknowledged that this problem existed thought it was 'fairly serious' or 'very serious'.

2.1.5 Ways in which the algae/weed growth affects respondents

Approximately one-fifth of respondents were either not affected by the algae/weed growth problem directly or were not resident all the time in Mandurah. Of the remaining respondents, the most frequently mentioned ways in which the problem affected them was the smell/terrible stench of the algae/weed, followed by adverse effects on crabbing and fishing. Less frequently mentioned effects included effects on the community in general/quality of life, effects on boating, polluted water, effects on swimming and effects on prawning. Longer-term permanent residents of Mandurah and respondents who lived in the areas north of the Estuary more frequently mentioned the smell/terrible stench than other subgroups of respondents.

2.1.6 Perception of whether anything should be done about the algae/weed problem

Almost 100% of respondents who had identified or acknowledged that algae/weed growth was a problem thought that something should be done about this problem. This belief was consistent across all subgroups.

2.1.7 Perception of who should be responsible for doing something about the algae/weed problem

State Government was the most frequently mentioned authority (42%) which respondents thought should be responsible for taking some action, followed by local government (30%). This perception of who should be responsible was generally consistent across all subgroups of respondents.

2.1.8 Acceptability of a long-term/low-cost solution

Almost three-quarters (72%) of respondents considered that the existing programme to encourage farmers to change their methods of applying agricultural fertilizer - a low-cost/long-term contribution to improving water

quality - was acceptable in varying degrees, while 16% thought it was not acceptable.

The most frequently advanced reasons supporting the acceptability of the low-cost/long-term solution were that:

- it will help the situation but not necessarily cure it (15%)
- it is a good idea/makes sense (12%)
- it is a long-term process/long-term solution (11%).

The most frequently advanced reasons why this solution was not acceptable were that:

- it was too slow/not well organized/needs speeding up (14%)
- it was not the farmers' fault (11%)
- it was not the total answer (11%)
- the dams are also responsible (9%).

2.1.9 Acceptability of a high-cost/immediate solution

Over half (57%) of the respondents thought that a solution involving the cutting of a channel from the ocean to the Estuary, in conjunction with the fertilizer strategy, was acceptable in varying degrees, while one-third of respondents thought this solution was unacceptable.

The most frequently advanced reasons supporting the acceptability of the high-cost/immediate solution were that respondents considered:

- it was the only solution to flush out the river Estuary (19%)
- it was a good idea/good for the future (15%)
- the better water flow would make the water cleaner (14%)
- it was worth a try/something must be done (10%).

The most frequently advanced reasons why this solution was not acceptable were:

- it was too costly (38%) - this was proportionally the clearest statement either in favour or against either solution

- doubtful whether it will work (22%).

2.1.10 Preference for alternative solutions

When asked to choose between the two solutions presented, 47% indicated a preference for the high-cost/immediate solution compared with 36% who preferred the low-cost/long-term solution. Approximately one-fifth of respondents did not express a preference for either solution, did not give an answer or did not know.

The most frequently advanced reasons for preferring the high-cost/immediate solution were that it was seen as a rapid/immediate solution (44%) or as the most direct/effective method of resolving the problem (16%). In relation to the longer-term/low-cost solution, the lower cost of the fertilizer programme was the most frequently mentioned reason (41%) followed by the belief that the cutting of a channel may not work (10%).

2.1.11 Perception of whether $31 million expenditure is warranted

Two-thirds of respondents who thought that something should be done about the algae/weed problem thought that spending $31 million to improve water quality in the Estuary was warranted relative to other things that the State Government has to spend money on. Of the remaining one-third, most did not think that such expenditure was warranted and a small proportion did not know or did not answer.

This belief that the $31 million expenditure was warranted was particularly evident among respondents aged 60 years or more (73%), those who had lived in Mandurah for 11 years or more (79%), and those who lived to the north of the Estuary (76%). Above average proportions of respondents who did not think that such expenditure was warranted were evident among those who had lived in Mandurah for 5 years or less (35%), those whose lived to the west of the Estuary (33%) and those who permanent home was in the Perth metropolitan area (32%).

2.2 SUMMARY OF GROUP DISCUSSION SESSIONS

2.2.1 Introduction

The range of issues discussed by the various groups is discussed below. This summary of issues moves from the general to the particular but the order does not necessarily reflect the relative priority of an issue as many of the issues overlap.

2.2.2 Perceptions of the issues associated with living in the Mandurah area

Both the mosquito problem and the algae/weed growth problem were identified by various groups as being the most significant problems in the Mandurah area. The mosquito problem appeared to be a more universal, but seasonal problem than the weed growth problem which was seen as having localized, but significant effects.

All groups were quite unflattering in their opinions of the Mandurah Shire Council, believing that the Council acted only in the interests of the business community and, to a lesser extent, in the interests of the residential community in Mandurah itself. The groups considered the Council ignored the needs of residential areas outside Mandurah and of special interest groups such as the professional fishermen. Opposition to canal development by group members and related local issues such as the closure of Leighton Road seemed to underlie negative attitudes to the Mandurah Shire Council.

2.2.3 Perceptions of the cause of the algae/weed problem

Within all groups the view was expressed that the damming of the rivers upstream of the Inlet and Estuary was a contributing factor to the algae/weed problem. This view was expressed more categorically than any 'blame' on the fertilizer practices of farmers. The damming of the rivers was seen as preventing adequate flushing of the Estuary and thus contributing to the problem.

2.2.4 Perceptions of the effects of the algae/weed problem

The awful smell, adverse effects on recreational usage of the Estuary (especially fishing, prawning and crabbing) and the aesthetic unpleasantness were the main effects mentioned by the residents' discussion groups. More severe localized effects such as the tarnishing of metal and the belief that the smell made some people ill were also mentioned, along with the likely effects on tourism of the deterioration of the Mandurah area's prime environmental asset. Some groups also mentioned that the effects of the algae/weed were reflected in depressed land values and the inability to sell properties at realistic or expected prices.

The professional fishermen's group naturally identified effects which, although they were of direct and adverse economic consequence to it, related more to the excessive growth of Nodularia than the algae. Such effects included decreased availability of some species of fish and crustacea and operational effects such as weed getting tangled in nets and motors.

2.2.5 Perceptions of solutions to the algae/weed problem

With the exception of the professional fishermen's group, the members of the other four groups were generally strongly in favour of the proposed Dawesville Cut and were vocal in their support for this measure to be undertaken as soon as possible. There was some scepticism expressed that this solution would actually be implemented as some participants believed that the Government would baulk at this measure. While most participants were keen to see the Cut implemented as the only real solution to the algae/weed problem, many tempered their enthusiasm with cautions about ensuring that adequate studies were done beforehand to try and predict the success and effects of this option.

There was general support for initiatives to date (the harvesting programme and the fertilizer modification programme) but participants perceived these as treating the result of the problem and not really getting to the cause of it. Implicit in much of the discussion, and explicit in some instances, was the view that the general public was reliant on 'experts' and 'government' for the solution and that the public was somewhat removed and remote from the process of arriving at and implementing a decision. While most groups acknowledged that they generally received enough information about the studies and investigations, some feeling was expressed that the information released was repetitious and that the whole process was not moving quickly enough towards resolution. Most members of the discussion groups were not opposed to the idea of well-planned canal developments at the sides of the Dawesville Cut.

The professional fishermen's group was strongly against the proposed Dawesville Cut because, on the one hand, it considered that proper dredging of the existing Entrance Channel at Mandurah would provide adequate flushing, while on the other hand, it believed only adverse effects on professional fishing in the Estuary would result from the Cut, namely reduction in the species of available fish and crustaceans and changes in tidal levels and water depth which would affect operational aspects of fishing on the Estuary.

3 SURVEY METHODOLOGY

3.1 QUESTIONNAIRE DESIGN

The consultants developed an initial questionnaire covering the broad areas of the survey objectives. The initial questionnaire then was refined through discussions with officers of the Department of Conservation and Environment who have been working on the Peel/Harvey studies. A draft questionnaire was piloted by telephone interviews in the Mandurah area in mid-February 1985 and, as a result, minor modifications were made to the questionnaire subsequently used for the survey.

3.2 DEFINITION OF SURVEY SAMPLE

Budget constraints dictated that a survey sample of approximately 150 households was the maximum that could be undertaken. Statistical analysis of 1981 Census data on population size and the number of households in Mandurah indicated that a sample size of 150 households would give statistically sound results at the 95% confidence level.

The selection of the survey sample was influenced by the high proportion of holiday homes in the Mandurah area (49.7% of houses in the Shire of Mandurah at the 1981 Census were classed as holiday homes). It was decided to conduct 100 interviews by telephone on the assumption that most of these interviews would be achieved with permanent residents. The remaining 50 interviews were face-to-face interviews and were conducted in areas where it was known that there were concentrations of holiday homes, as well as in caravan parks and motels.

The telephone interviews were randomly spread throughout the areas covered by Telecom Australia exchanges at Mandurah, Mandurah North, Yunderup and Mandurah South.

The personal interviews were planned in clusters in the following areas:

- Coodanup - 10 interviews
- North Yunderup - 10 interviews
- Yunderup - 10 interviews
- Falcon to Dawesville (east of the Old Coast Road) - 20 interviews

Although these sampling techniques raised the possibility of the same people being interviewed twice, this situation did not occur.

The achievement rates were:

telephone interviews	99
personal interviews	56
Total interviews	155

3.3 CONDUCT OF THE INTERVIEW SURVEY

The fieldwork component of the interview survey was undertaken by Reark Research Pty Ltd from its Perth office. Experienced interviewers were used and detailed pre-survey briefing on general field procedures, and interpretation of the questionnaire and sampling procedures has been provided by Reark Research Pty Ltd.

No notification was provided prior to the survey in the Mandurah area. The interviewing was conducted over the weekend 1-4 March 1985.

4 ANALYSIS OF SURVEY FINDINGS

This chapter presents and analyses the survey findings in the order in which the questions appeared on the survey form (Appendix A). It should be noted that some percentages do not add up to 100 because of rounding. This chapter also presents the demographic characteristics of the survey respondents.

4.1 TYPE OF HOME AND HOME LOCATION OF RESPONDENTS

Of the 155 respondents, two-thirds lived in their permanent homes, just over one-quarter were responding from holiday homes and less than 10% from other venues, mainly caravan parks or motels (Table 4.1). Almost all of those interviewed in their permanent homes were interviewed by telephone, while just over two-thirds of those surveyed in personal interviews were staying in holiday homes.

Table 4.1 Type of home

Type of home	Total	Telephone interviews	Personal interviews
Permanent home	103 (66%)	96 (97%)	7 (12%)
Holiday home	40 (26%)	2 (2%)	38 (68%)
Other	12 (8%)	1 (1%)	11 (20%)
Total respondents	155 (100%)	99 (100%)	56 (100%)

Table 4.2 indicates the location of respondents in Mandurah as well as the location of their permanent homes. Of those interviewed in the town of Mandurah, 98% were in their permanent homes while only 1 per cent were in holiday homes or some other form of accommodation. The greater proportion of holiday homes in areas north and west of the Estuary was evident, with 65% of respondents interviewed in areas west of the Estuary (Falcon, Mannanup, Florida, Dawesville and Melros) being in holiday homes and 13% of those interviewed north of the Estuary (Coolanup, Yunderup and North Yunderup) being in holiday homes. In addition, 25% of those interviewed north of the Estuary were in other forms of accommodation, principally caravan parks.

Table 4.2 Home location of respondents

Type of home	Location of respondent in Mandurah				Location of permanent home			
	Total	Mandurah town	North of Estuary	West of Estuary	Total	Perth environs	Southern region	Elsewhere in WA
Permanent home	103 - (100%)	78 98% (76%)*	14 32% (14%)	11 35% (10%)	-	-	-	-
Holiday home	40 - (100%)	1 1% (2%)	19 43% (48%)	20 65% (50%)	39 - (100%)	35 80% (90%)	2 67% (5%)	2 67% (5%)
Other	12 - (100%)	1 1% (8%)	11 25% (92%)	-	11 - (100%)	9 20% (82%)	1 33% (9%)	1 33% (9%)
Total respondents	155 100% (100%)	80 100% (52%)	44 100% (28%)	31 100% (20%)	50 100% (100%)	44 100% (88%)	3 100% (6%)	3 100% (6%)

* Percentage of type of home in particular locations. These percentages add horizontally.

A large majority of respondents (85%) who did not live permanently in Mandurah had their permanent homes in the Perth metropolitan area and its environs (including the hills) while only small proportions (6%) had their permanent home either in the southern area of the State or elsewhere in Western Australia.

4.2 FREQUENCY OF VISITS TO THE MANDURAH AREA

In order to establish respondents' familiarity with the Mandurah area, those who were staying in a holiday home or other non-permanent accommodation were asked how many times they had visited the Mandurah area in the last 5 years (Table 4.3). Two-thirds of these respondents had visited the area more than ten times in the last 5 years and a further 12% had visited it between six and ten times. Approximately one-fifth of these respondents had visited the Mandurah area between two and five times while none of these respondents was surveyed on a first visit to Mandurah.

Table 4.3 Frequency of visits to Mandurah area by non-permanent residents

Frequency of visits	Total	Telephone interviews	Personal interviews
First time	-	-	-
2-5 times	10 (19%)	1 (33%)	9 (18%)
6-10 times	6 (12%)	-	6 (12%)
More than 10 times	35 (67%)	1 (33%)	34 (69%)
Don't know/can't say	1 (2%)	1 (33%)	-
Total	52 (100%)	3 (100%)	49 (100%)

Thus some 89% of all respondents were either permanent residents of the Mandurah area or had visited the area at least ten times in the last 5 years.

4.3 VIEWS ABOUT THE MANDURAH AREA

The first section of the questionnaire sought respondents' opinions about what they liked about living in the Mandurah area and whether any matters concerned them about the area.

4.3.1 Things liked about the Mandurah area

In response to the open-ended question 'And thinking about living or visiting in the Mandurah area, so far as you are concerned, is there anything that you particularly like about living there?', only 2% of respondents indicated that there was nothing they liked, while 4% indicated that they liked everything about the Mandurah area (Table 4.4). Cross tabulations showed that most of the small number of respondents who liked either nothing or everything about living in Mandurah had lived there for 11 years or more.

Table 4.4 Things liked about living in or visiting Mandurah

Things liked	Total		Telephone interviews		Personal interviews	
Nothing	7	(2%)	6	(3%)	1	(1%)
Everything	14	(4%)	12	(6%)	2	(2%)
Tranquil/peaceful/ relaxing/quiet	34	(11%)	16	(10%)	18	(16%)
Beaches/sea/ocean near by	33	(11%)	23	(12%)	10	(9%)
Fishing/crabbing/ prawning	28	(9%)	11	(6%)	17	(14%)
The waterways/close to water/Estuary	21	(7%)	14	(7%)	7	(6%)
Country/rural atmosphere	16	(5%)	10	(5%)	6	(5%)
Shopping/weekend shopping	15	(5%)	12	(6%)	3	(3%)
Casual/easy going life-style	12	(4%)	11	(6%)	1	(1%)
Other things liked	144	(48%)	90	(48%)	54	(46%)
Total responses	325	(100%)	205	(100%)	119	(100%)

For the remainder of respondents, three of the four most frequently mentioned aspects that people liked about living in or visiting Mandurah could all be considered to be related to the proximity of ocean or freshwater, namely the nearby beaches/sea/ocean (11%), the fishing/prawning/crabbing (9%) and the nearby waterways and Estuary (7%). Other 'life-style attributes' of the area were also frequently mentioned, in particular, the tranquil/peaceful-relaxing/quiet life-style (11%), the country/rural atmosphere (5%), the casual/easy-going way of life (4%), its holiday atmosphere (3%) and the waterfront life-style (3%). Shopping facilities (including weekend shopping) were mentioned by 5% of respondents and Mandurah's proximity to Perth by 2%, while 2% liked its climate and the friendly people.

When 'netted' into like groups, the importance of water and life-style related responses was particularly apparent:

- water/beaches/river/sea oriented reasons (32%)
- country/tranquil/casual life-style (26%)
- location/facilities (14%)
- pleasant environment/setting (13%).

Cross tabulations indicated that the water-related 'likes' were mentioned proportionally more frequently by newer permanent residents and visitors to Mandurah than by longer-term residents, while the casual life-style was marginally more frequently mentioned by longer-term residents.

Among the 'other things liked', which accounted for 48% of responses, were 'good place to retire', 'it has everything we want', friendly people', 'wildlife, ducks, birds', and 'close to Perth'.

4.3.2 Concerns about living in or visiting Mandurah

In response to the question 'Is there anything at all about living or visiting in the Mandurah area that causes you concern?', 84% of respondents indicated that there were things that concerned them, while only 16% indicated that there was nothing that concerned them (Table 4.5). Cross tabulations indicate that this high level of identification of concerns was generally consistent across the survey sample regardless of age, sex, or length or location of residence in the Mandurah area.

Table 4.5 Concerns about living in or visiting Mandurah

Things liked	Total		Telephone interviews		Personal interviews	
Respondents with concerns	130	(84%)	82	(83%)	48	(86%)
Respondents without concerns	25	(16%)	17	(17%)	8	(14%)
Total respondents	155	(100%)	99	(100%)	56	(100%)
Concerns mentioned:						
Mosquitoes	70	(26%)	45	(31%)	25	(21%)
Traffic problems/ bottlenecks	25	(9%)	9	(6%)	16	(13%)
Canal projects	23	(9%)	14	(10%)	9	(7%)
Algae/weed	15	(6%)	2	(1%)	13	(10%)
Dissatisfaction with Mandurah Shire Council	13	(5%)	13	(9%)	-	
Overdeveloped/too commercial	12	(4%)	2	(1%)	10	(8%)
Estuary/algae smells	12	(4%)	6	(4%)	6	(5%)
Over populated/holiday crowds	9	(3%)	5	(4%)	4	(3%)
Water pollution	9	(3%)	5	(4%)	4	(3%)
Other concerns	79	(31%)	42	(30%)	37	(30%)
Total concerns	267	(100%)	143	(100%)	124	(100%)

The most frequently mentioned unprompted concern was mosquitoes (26%) which appear to be of more concern than traffic problems or bottlenecks (9%), canal projects (9%), algae/weed (6%) or dissatisfaction with the Mandurah Shire Council (5%). Less frequently mentioned concerns included that Mandurah was becoming overdeveloped or too commercial (4%), algae or estuary smells (4%), holiday crowds (3%) and water pollution (3%).

Other less frequently mentioned concerns included such matters as the lack of a public hospital, the proposed closure of Leighton Road, irresponsible boat users, the lack of entertainment for young people, unemployment, over-fishing and flies.

When similar concerns were netted together, the following most frequently mentioned concerns emerged:

- mosquitoes/flies/ants (29%)
- pollution/algae/weeds/smells (17%)
- traffic/parking (12%)
- canal projects (10%)
- tourism/overdevelopment (10%)
- dissatisfaction with council (9%).

When cross-tabulated, mosquitoes were a more frequently mentioned concern by people who had lived in Mandurah for 10 years or less and by respondents who lived to the north of the Estuary (Coodanup and Yunderup areas).

Most respondents had either one or two concerns (36% and 34% respectively) while only 5% had five concerns. Table 4.6 shows the rank ordering of concerns of first, second and third most importance to respondents. Mosquitoes and traffic problems/bottlenecks were the two concerns of most importance to respondents. Algae/weed, estuary/weed smells and water pollution generally ranked as 'middle order concerns' nominated by only small proportions of respondents.

Table 4.6 Rank ordering of concerns

Concern	Most important		Second most important		Third most important	
	rank	%	rank	%	rank	%
Mosquitoes	1	36	2	9	1	6
Traffic problems/bottlenecks	2	10	1	10	2	3
Canal projects	3	9	4	7	3	2
Dissatisfaction with Mandurah Council	4	6	9	2	3	2
Algae/weed	5	4	7	3	2	3
Overdeveloped/too commercial	6	3	5	6	-	-
Estuary/algae smells	6	3	6	4	2	3
Overpopulated/holiday crowds	6	3	3	8	3	2
Water pollution	6	3	10	1	2	3

4.4 RECREATIONAL USE OF THE PEEL INLET AND HARVEY ESTUARY

All respondents were next asked a series of questions about their frequency of use of the Peel Inlet or Harvey Estuary in relation to the following recreational activities: swimming, boating, fishing, prawning/crabbing, water-skiing and less active outdoor recreation such as strolling and sunbathing.

Table 4.7 shows the frequency of involvement in recreational activities. Almost half the respondents (46%) never go swimming in the Inlet or Estuary and 8% hardly ever go compared with 28% who go swimming often and 19% who swim occasionally. Boating appeared to be a slightly more popular recreational use of the area with 36% going boating often and 26% occasionally compared with 8% who hardly ever went and 30% who never went. Fishing exhibited a similar frequency of use pattern of the Inlet and Estuary to boating, but prawning/crabbing appears to be the most frequent recreational use of the Inlet/Estuary area. Almost three quarters of respondents use the Inlet/Estuary for prawning/crabbing either often (43%) or occasionally (30%) while just over a quarter of respondents hardly ever or never go prawning/crabbing in the Inlet/Estuary.

Table 4.7 Frequency of use of Peel Inlet and Harvey Estuary for recreational activities

Frequency of involvement	Swimming		Boating		Fishing		Prawning/ crabbing		Water-skiing		Less active activities	
Often	43	(28%)	56	(36%)	53	(34%)	66	(43%)	3	(2%)	68	(44%)
	5*		3		4		2		6		1	
Occasional	29	(19%)	40	(26%)	44	(28%)	47	(30%)	10	(6%)	33	(21%)
	5		3		2		1		6		4	
Hardly ever	12	(8%)	12	(8%)	15	(10%)	13	(8%)	4	(3%)	14	(9%)
	3		3		1		3		4		2	
Never	71	(46%)	46	(30%)	43	(28%)	29	(19%)	136	(88%)	40	(26%)
	2		3		4		6		1		5	
No response/ don't know	-		1	(1%)	-		-		2	(1%)	-	
	-		-		-		-		-		-	
Total	155	(100%)	155	(100%)	155	(100%)	155	(100%)	155	(100%)	155	(100%)

* Rank ordering of frequency of activities.

Water-skiing does not appear to be a popular recreational use of the Inlet/Estuary area with over 90% of respondents hardly ever (3%) or never (88%) using the area for this purpose. Less active recreational activities, however, appear to be a popular recreational use of the Inlet/Estuary area, with 44% of respondents often and 21% occasionally using the area for these purposes, while just over a third hardly ever (9%) or never (26%) use the area for these purposes.

From cross-tabulations, the main characteristics of respondents who often/occasionally or never/hardly ever undertake particular recreational activities are summarized in Table 4.8.

Table 4.8 Main characteristics of respondents who often or never undertake particular recreational activities

Recreational activity	Respondents who 'often' or 'occasionally' partake in this activity	Respondents who 'never' or 'hardly ever' partake in this activity
Swimming	Younger/middle-aged people who had lived in Mandurah 10 years or less.	Older people who had lived in Mandurah (particularly west of the Estuary) for 10 years or more.
Boating	Young and middle aged men, particularly those who did not live permanently in Mandurah.	Women and elderly respondents, particularly those who live in Mandurah itself.
Fishing	Age appeared to be the only characteristic where the response patterns differed from the overall pattern with fishing being more popular with young people than with elderly respondents.	
Prawning/crabbing	Visitors, especially young to middle-aged males, who live or stay to the north and west of the Estuary.	Elderly women, especially those who have lived in the Mandurah town area for 6 years or more.
Water-skiing	Visitors to Mandurah.	Permanent residents.
Less active outdoor recreation	Usage pattern appears similar to overall pattern across all characteristics.	

4.5 IDENTIFICATION OF PROBLEMS WITH PEEL INLET OR HARVEY ESTUARY

All respondents were asked whether they thought there were any problems with the Peel Inlet or Harvey Estuary that might make people think they are not such good places to go for recreation. Over four-fifths (83%) of respondents thought that there were problems, while 14% thought that were not and 4% either did not know or gave no response. Categories of respondents that gave higher 'yes' answers to this question (that is, that there were problems) were:

- respondents interviewed in personal interviews (88%)
- males (86%)
- respondents aged between 30 and 59 years (88%)
- respondents who had lived in Mandurah for less than 5 years (85%)
- respondents who lived north of the Estuary (91%).

Respondents who did think that there were problems with the Inlet/Estuary were then asked what these problems were and were able to list up to five problems. The problems identified are shown in Table 4.9. The smell/terrible smell was the

most frequently identified problem (28%), followed by related problems such as algae (20%) and weeds/seaweed (15%). Mosquitoes accounted for 11% of responses followed by dirty/dirty water/water quality (5%), pollution of waterways (3%) and fishing/crabbing not as plentiful (3%). Other problems mentioned, which accounted for 15% of responses, included mud/silt, too much fertilizing, unpleasant appearance, too many boats and adverse publicity regarding algae.

Table 4.9 Problems with Peel Inlet or Harvey Estuary

Problems	Total		Telephone interviews		Personal interviews	
Smell/terrible smell	69	(28%)	44	(30%)	25	(26%)
Algae	49	(20%)	28	(19%)	21	(22%)
Weeds/seaweed	36	(15%)	23	(16%)	13	(14%)
Mosquitoes	26	(11%)	19	(13%)	7	(7%)
Dirty/dirty water/water quality	11	(5%)	5	(3%)	6	(6%)
Pollution of waterways	8	(3%)	5	(3%)	3	(3%)
Fishing/crabbing not as plentiful	7	(3%)	2	(2%)	5	(5%)
Other	37	(15%)	21	(14%)	16	(17%)
Total responses	243	(100%)	147	(100%)	96	(100%)

When similar problems were netted together, the following most frequently mentioned problems emerged:

- algae/weed/pollution related problems (89%)
- visual pollution/rubbish problems (6%)
- too many boats/tourists (5%).

When cross-tabulated, there was a consistency of response to all the main problems identified from all subgroups of respondents.

Most respondents identified either one or two problems (33% and 41% respectively) while only 5% mentioned four or more problems.

4.6 PROMPTED BELIEF REGARDING ALGAE AND WEED BEING A PROBLEM

Those respondents who had not thought that there were any problems with the Peel Inlet or Harvey Estuary or who had thought that there were problems but had not identified algae or weed growth (Section 4.5) were given the prompt that 'some people have suggested that the growth of algae and weeds in the Inlet and Estuary is a problem' and then asked if they thought this was a problem. Of the seventy-six respondents asked, 71% thought that the growth of algae and weed was a problem, 7% thought that it was not a problem and 22% gave no response or did not know (Table 4.10). (These latter two categories of respondents were asked no further questions in the survey except those concerned with demographic characteristics.)

The respondents who responded more positively to the suggestion that algae and weed growth was a problem were those:

- interviewed in personal interview (81%)
- aged 18 to 29 years (100%)
- who lived north of the Estuary (83%).

The proportions of 'no response/don't know' answers were similar across all subgroups.

Table 4.10 Prompted belief regarding algae and weed being a problem

Response	Total	Telephone interviews	Personal interviews
Yes	54 (71%)	33 (66%)	21 (81%)
No	5 (7%)	4 (8%)	1 (4%)
No response/don't know	17 (22%)	13 (26%)	4 (15%)
Total respondents	76 (100%)	50 (100%)	26 (100%)

Thus of the 155 respondents, a total of 133 (or 86%) indicated that they thought algae and weed growth was a problem in the Peel Inlet or Harvey Estuary and only 14% did not acknowledge or identify this problem (Table 4.11). Of the 133 respondents who did identify or acknowledge that there was a problem with weed growth, most (128 respondents) identified it without prompting; this is a clear indication of the extent of the perception of the problem by the general public in the Mandurah area.

Table 4.11 Respondent identification or acknowledgement of algae/weed growth as a problem

	Total		Telephone interviews		Personal interviews	
Respondents who identified (unprompted) algae/weed growth as a problem (Q. 8 and 9)	128	(83%)	79	(80%)	49	(88%)
Respondents who acknowledged (prompted) algae/weed growth as a problem (Q. 10)	5	(3%)	3	(3%)	2	(3%)
Subtotal	133	(86%)	82	(83%)	51	(91%)
Respondents who did not identify/acknowledge algae/ weed growth as a problem (Q. 8 and 10)	22	(14%)	17	(17%)	5	(9%)
Total	155	(100%)	99	(100%)	56	(100%)

4.7 TIME OF THE YEAR WHEN ALGAE AND WEED GROWTH IS A PROBLEM

Respondents who had identified or acknowledged that algae and weed growth was a problem were asked whether it is a problem at a particular time of the year or all the time (Table 4.12). Just over half the respondents (52%) thought that the algae and weed growth was a problem for part of the year, while approximately a quarter (24%) thought that the algae and weed growth was a problem all year round while another quarter of the respondents did not know or could not say when this growth was a problem.

Cross tabulations indicated that the following sub-groups of respondents were more likely to consider the algae and weed growth a problem all year round:

- male respondents (31%)
- those aged 18-29 years (33%) or over 60 years (32%)
- those who had lived in Mandurah for 11 years or more (32%)
- those whose permanent home was located in the area to the north of the Estuary (39%).

Table 4.12 Extent of time and particular months when algae and weed growth is a problem

Time of year when weed and algae growth is a problem	Total		Telephone interviews		Personal interviews	
Part of the year	69	(52%)	43	(52%)	26	(51%)
All year	32	(24%)	18	(22%)	14	(27%)
Don't know/can't say	32	(24%)	21	(26%)	11	(22%)
Total respondents	133	(100%)	82	(100%)	51	(100%)
Months:						
January	51	(22%)	32	(25%)	18	(17%)
February	53	(22%)	35	(25%)	18	(17%)
March	21	(9%)	7	(5%)	14	(14%)
April	8	(3%)	1	(1%)	7	(7%)
May	4	(2%)	2	(2%)	2	(2%)
June	1	(*)	1	(1%)	-	
July	1	(*)	1	(1%)	-	
August	2	(1%)	-		2	(2%)
September	4	(2%)	-		4	(4%)
October	10	(4%)	4	(3%)	6	(6%)
November	30	(13%)	19	(14%)	11	(11%)
December	44	(19%)	25	(19%)	19	(19%)
No response/don't know	6	(3%)	5	(4%)	1	(1%)
Total responses	235	(100%)	132	(100%)	102	(100%)

* Less than 1%.

Those respondents who thought the algae and weed growth problem occurred during part of the year were asked in which particular months this occurred (Table 4.12). The most frequently mentioned months were the late spring and summer months while the winter months were infrequently mentioned. In order of frequency, the months were ranked as follows:

- February 22% of responses
- January 22% of responses
- December 19% of responses
- November 13% of responses
- March 9% of responses
- October 4% of responses
- April 3% of responses
- May 2% of responses
- September 2% of responses
- August 1% of responses
- June less than 1% of responses
- July less than 1% of responses.

4.8 SERIOUSNESS OF THE ALGAE AND WEED PROBLEM

Respondents who had identified or acknowledged that algae and weed growth was a problem were next asked how serious they thought the problem was (Table 4.13). Almost two-thirds of respondents (62%) thought that the problem was very serious, while one-third thought that it was fairly serious and only 4% thought that it was not very serious.

Cross tabulations indicated that the following subgroups recorded a higher percentage response in the 'very serious' category:

- respondents interviewed in face-to-face interviews (and thus more likely to be visitors to the area) - 82%.
- respondents who lived north of the Estuary (Coodanup and Yunderup areas) - 80%.
- respondents whose permanent home was in the Perth metropolitan area - 80%.
- respondents who had lived in Mandurah for 11 years or more - 65%.

Table 4.13 Perception of the seriousness of the algae and weed problem

Perception of seriousness	Total	Telephone interviews	Personal interviews
Not very serious	5 (4%)	5 (6%)	-
Fairly serious	44 (33%)	36 (44%)	8 (16%)
Very serious	82 (62%)	40 (49%)	42 (82%)
No response/don't know	2 (2%)	1 (1%)	1 (1%)
Total responses	133 (100%)	82 (100%)	51 (100%)

The extent of public perception about the seriousness of the algae and weed growth problem is reinforced when the proportions of respondents who gave 'fairly serious' or 'very serious' as an answer are added together. This gives a total of 95% of respondents who had identified or acknowledged that this problem existed.

The small number of respondents who thought that the algae and weed growth was not very serious were all males who lived permanently in the Mandurah area.

4.9 PARTICULAR WAYS IN WHICH THE ALGAE AND WEED GROWTH AFFECTS RESPONDENTS

Respondents who had identified or acknowledged that algae and weed growth was a problem were next asked how, in particular, this problem affected them (Table 4.14). Approximately 15% of responses indicated that respondents were either not affected by the problem directly (11%) or were not resident all the time in the Mandurah area (3%).

Table 4.14 Main ways in which algae and weed growth affects respondents

Ways in which weed growth affects respondents	Total		Telephone interviews		Personal interviews	
Does not really affect me/does not affect directly	23	(11%)	16	(13%)	7	(9%)
Not here all the time/do not live in the area	6	(3%)	6	(5%)	-	
Smell/terrible stench/ unpleasant smell	47	(22%)	32	(25%)	15	(18%)
Affects crabbing/no crabs	24	(12%)	7	(6%)	17	(21%)
Affects fishing/no fish	22	(11%)	11	(9%)	11	(14%)
Affects the community in general/quality of life	12	(6%)	9	(7%)	3	(4%)
Affects boating/get tangled	10	(5%)	4	(3%)	6	(8%)
Polluted water/fishing areas polluted	9	(4%)	8	(6%)	1	(1%)
Affects swimming/water sports	9	(4%)	4	(3%)	5	(6%)
Affects prawning/no prawns	8	(4%)	4	(3%)	4	(5%)
Other ways	37	(18%)	26	(20%)	11	(14%)
Total responses	207	(100%)	127	(100%)	80	(100%)

Of the remaining respondents, the most frequently mentioned way (22%) in which the problem affected them was the smell/terrible stench of the algae and weed. The next most frequently mentioned effects related to effects on crabbing (12%) and on fishing (11%); however, effects on prawning seemed of much less importance (4%). Effects on the community in general/quality of life accounted for 6% of responses and effects on boating for 5% of responses.

Less frequently mentioned ways in which the algae and weed growth affected people were polluted water (4%) and effects on swimming and water sports (4%). All other effects, which accounted for 18% of responses, included tangled lines/nets, keeps tourists away, upsets the balance of nature, health hazard and breeding of mosquitoes.

Cross tabulations indicate that the smell/terrible stench associated with the algae and weed growth was mentioned more frequently by the following subgroups:

- respondents who had lived in Mandurah for 6-10 years (46%) or 11 years or more (45%).
- respondents who lived in the areas north of the Estuary (41%).
- respondents who lived permanently in Mandurah (41%).

Effects related to recreational uses of the Inlet and Estuary, such as fishing, crabbing, prawning, boating and swimming, appeared to be more frequently mentioned by respondents whose permanent home was not in the Mandurah area, that is, presumably people who visit the Mandurah area particularly for these recreational activities.

When like responses were netted together, the following pattern emerged:

- recreation-related effects (43%)
- smell-related effects (29%)
- pollution-related effects (10%)
- tourist/community use effects (8%)
- health-related effects (5%)

The relationship between the perception of the seriousness of the algae and weed growth and the ways in which respondents are affected by the problem is shown in Table 4.15.

Table 4.15 Relationship between perception of the seriousness of algae and weed problem and ways in which respondents are affected by the problem

Ways in which weed problem affects respondents	Seriousness of problem									
	Total		Not very serious		Fairly serious		Very serious		No response/ don't know	
Does not really affect me/does not affect directly	23	(11%)	-		12	(18%)	10	(8%)	1	(50%)
Not here all the time/do not live in the area	6	(3%)	-		3	(4%)	3	(2%)	-	
Subtotal	29	(14%)	-		15	(22%)	13	(10%)	1	(50%)
Smell/terrible stench/ unpleasant smell	47	(23%)	1	(17%)	16	(23%)	30	(23%)	-	
Affects crabbing/no crabs	24	(12%)	-		9	(14%)	15	(12%)	-	
Affects fishing/no fish	22	(11%)	-		9	(14%)	13	(10%)	-	
Affects the community in general/quality of life	12	(6%)	-		3	(4%)	9	(7%)	-	
Affects boating/get tangled	10	(5%)	1	(17%)	1	(1%)	8	(6%)	-	
Polluted water/fishing areas polluted	9	(4%)	-		5	(7%)	4	(3%)	-	
Affects swimming/water sports	9	(4%)	-		3	(4%)	6	(5%)	-	
Affects prawning/no prawns	8	(4%)	1	(17%)	1	(1%)	6	(5%)	-	
Other ways	37	(17%)	3	(50%)	7	(10%)	26	(29%)	1	(50%)
Total responses	207	(100%)	6	(100%)	69	(100%)	130	(100%)	2	(100%)

This table indicates that smaller proportions of respondents who thought the problem was very serious were unaffected by the problem or were not resident in the Mandurah area all the time. Generally, similar proportions of respondents who thought the problem was 'fairly serious' or 'very serious' identified the principal ways in which they were affected by the problem - the smell and effects on recreational uses. However, a larger proportion of respondents who thought the problem was 'very serious' identified a range of other ways in addition to the principal ways in which they were affected by the problem.

4.10 PERCEPTION OF WHETHER ANYTHING SHOULD BE DONE ABOUT THE ALGAE AND WEED PROBLEM

Respondents who had identified or acknowledged that algae and weed growth was a problem were next asked if they thought anything needs to be done about the algae and weed problem (Table 4.16). Respondents were almost unanimous (98%) in their belief that something should be done about the algae and weed problem. This belief was consistent across all subgroups.

Respondents who did not think that something should be done about the problem (2%) were not asked further questions except for those relating to demographic characteristics.

Table 4.16 Perception of whether anything should be done about the algae and weed problem

Whether something should be done	Total	Telephone interviews	Personal interviews
Yes	131 (98%)	81 (99%)	50 (93%)
No	2 (2%)	1 (1%)	1 (1%)
Total	133 (100%)	82 (100%)	51 (100%)

4.11 PERCEPTION OF WHO SHOULD BE RESPONSIBLE FOR DOING SOMETHING ABOUT THE ALGAE AND WEED PROBLEM

Respondents who thought that something should be done about the algae and weed problem were next asked who should be responsible for undertaking such action (Table 4.17). Multiple responses were accepted and respondents gave an average of 1.8 answers.

State Government was the most frequently mentioned authority (42%) which respondents thought should be responsible for taking some action, followed by local government (30%). Non-government bodies, namely private developers and farmers, accounted respectively for 7% of responses while other agencies including the Federal Government, individual State Government departments such as the Public Works Department or groupings of local Councils accounted for 11% of responses.

This perception of who should be responsible was generally consistent across all subgroups of respondents.

Table 4.17 Authorities which should be responsible for doing something about the algae and weed problem

Authorities	Total		Telephone interviews		Personal interviews	
State Government	97	(42%)	61	(46%)	36	(36%)
Local Government	72	(30%)	46	(35%)	26	(26%)
Private developers	16	(7%)	4	(3%)	12	(12%)
Farmers	16	(7%)	3	(2%)	13	(13%)
Someone else	26	(11%)	12	(9%)	14	(14%)
No response/don't know	6	(3%)	6	(5%)	-	
Total responses	233	(100%)	132	(100%)	101	(100%)

4.12 ACCEPTABILITY OF A LONG-TERM/LOW-COST SOLUTION

Respondents were next asked a series of questions about possible ways of reducing the algae and weed problem through improving water quality in the Inlet and Estuary. The first question concerned the acceptability of the existing programme to encourage farmers to change their methods of applying agricultural fertilizer - a low-cost/long-term contribution to improving water quality. (Table 4.18).

Table 4.18 Acceptability of low-cost/long-term solution

Degree of acceptability	Total		Telephone interviews		Personal interviews	
Very acceptable	23	(17%)	11	(14%)	12	(24%)
Quite acceptable	30	(23%)	15	(19%)	15	(30%)
Acceptable	47	(36%)	34	(42%)	13	(26%)
Subtotal	100	(76%)	60	(75%)	40	(80%)
Not very acceptable	14	(11%)	9	(11%)	5	(10%)
Not at all acceptable	7	(5%)	2	(2%)	5	(10%)
Subtotal	21	(16%)	11	(13%)	10	(20%)
Other	1	(1%)	1	(1%)	-	
No response/don't know	9	(7%)	9	(11%)	-	
Total respondents	131	(100%)	81	(100%)	50	(100%)

Almost three-quarters (71%) of respondents found that this solution was acceptable in varying degrees - 17% thought it very acceptable, 23% quite acceptable and 35% acceptable. Conversely 16% thought it was not acceptable - 11% thought it not very acceptable and 5% not acceptable at all, while 7% did not respond or did not know.

Subgroups, in particular, which exhibited high levels of acceptance of this solution were:

- female respondents (78%)
- respondents aged 18 - 29 years (89%)
- those who lived or were interviewed west of the Estuary (89%).

Subgroups of respondents which, in particular, found this solution to be unacceptable included:

- those who had lived in Mandurah for 6 - 10 years (20%)
- those who lived or were interviewed north of the Estuary (25%)
- those respondents whose permanent home was in the Perth metropolitan area (25%).

4.13 REASONS FOR ACCEPTABILITY OR NON-ACCEPTABILITY OF LOW-COST/LONG-TERM SOLUTION

Respondents were asked the reason for their answer about the acceptability or non-acceptability of the low-cost/long-term solution. The reasons in relation to 'acceptable' and 'non-acceptable' responses are shown in Table 4.19. The most frequently advanced reasons supporting the acceptability of the low-cost/long-term solution were that it will help the situation but not necessarily cure it (15%), fertilizer was either the main cause or one of the problems (14%), it is a good idea/makes sense (12%) and that it is a long-term process/a long-term solution (11%). Other 'acceptable' reasons given included that the low-cost/long-term solution was better than no action, that it might help, it seems to be working, and that it was acceptable if the farmers are not affected.

Respondents who considered that the long-term/low-cost solution was not acceptable gave, on average, at least two reasons why not. The most frequently advanced reasons why this solution was not acceptable was that it was too slow, not well organized or needs speeding up (14%), it was not the farmers' fault (11%), it was not the total answer (9%), and that the dams are also responsible (9%). Other 'non-acceptable' reasons given included that this solution was a waste of money, it doesn't have a flushing effect on the water, it has proved unsuccessful in Canada, and that birds were causing the problem.

Table 4.19 Reasons for acceptability or non-acceptability of low-cost/long-term solution

Reasons	Total		Telephone interviews		Personal interviews	
Acceptable:						
Will help the situation/ will help but won't cure	16	(15%)	14	(20%)	2	(5%)
Fertilizer is main cause/ one of the problems	15	(14%)	9	(13%)	6	(16%)
Good idea/makes sense	13	(12%)	10	(14%)	3	(8%)
Long-term process/ long-term solution	12	(11%)	8	(11%)	4	(11%)
Farmers should bear some responsibility	10	(9%)	8	(11%)	2	(5%)
Fertilizer should be controlled	9	(8%)	7	(10%)	2	(5%)
All other 'acceptable' reasons	33	(31%)	15	(21%)	18	(50%)
Total	108	(100%)	71	(100%)	37	(100%)
Non-acceptable:						
Too slow/not well organized/needs speeding up	6	(14%)	5	(17%)	1	(7%)
Not farmers' fault/problem not with farmers	5	(11%)	3	(10%)	2	(14%)
Not total answer	4	(9%)	1	(3%)	3	(22%)
Dams also responsible	4	(9%)	3	(10%)	1	(7%)
Not just fertilizer	3	(7%)	3	(10%)	-	
Does not cure/weeds still there	3	(7%)	3	(10%)	-	
All other 'unacceptable' reasons	19	(43%)	12	(40%)	7	(50%)
Total	44	(100%)	30	(100%)	14	(100%)

4.14 ACCEPTABILITY OF HIGH-COST/IMMEDIATE SOLUTION

Respondents were next given a brief description of a solution which would give an immediate improvement in water quality by cutting a channel from the ocean to the Estuary. Respondents were told that, in conjunction with the fertilizer strategy, this approach would probably eliminate the algae and weed problem. This approach would have an initial cost of $31 million and an annual

maintenance cost of $300,000. Respondents were asked how acceptable this high-cost/immediate solution was to them (Table 4.20).

Table 4.20 Acceptability of high-cost/immediate solution

Degree of acceptability	Total		Telephone interviews		Personal interviews	
Very acceptable	28	(21%)	18	(22%)	10	(20%)
Quite acceptable	17	(13%)	12	(15%)	5	(10%)
Acceptable	30	(23%)	17	(21%)	13	(26%)
Subtotal	75	(57%)	47	(58%)	28	(56%)
Not very acceptable	33	(25%)	18	(22%)	15	(30%)
Not acceptable at all	9	(7%)	5	(6%)	4	(8%)
Subtotal	42	(32%)	23	(28%)	19	(38%)
No response/don't know	14	(11%)	11	(14%)	3	(6%)
Total	131	(100%)	81	(100%)	50	(100%)

Over half the respondents indicated that this solution was acceptable in varying degrees to them - 21% thought it was very acceptable, 13% thought it quite acceptable and 23% considered it acceptable. Approximately one-third of respondents thought this solution was unacceptable: 25% thought it was not very acceptable while only 7% considered it not acceptable at all. Just over one-tenth of respondents gave no response to this question.

Subgroups in particular which exhibited high levels of acceptance of this solution were:

- those aged 18-29 years (67%) and 30-59 years (61%)
- those who had lived in Mandurah for 6 to 10 years (60%) or more than 11 years (65%)
- those respondents who lived north of the Estuary (70%).

Subgroups of respondents which, in particular, found this solution to be unacceptable included:

- those inteviewed in personal interviews (38%)
- those who had lived in Mandurah for less than 5 years (36%)
- those who lived west of the Estuary (47%)
- those whose permanent home was in Perth and environs (36%).

4.15 REASONS FOR ACCEPTABILITY OR NON-ACCEPTABILITY OF HIGH-COST/IMMEDIATE SOLUTION

Respondents were asked the reason for their answer about the acceptability or non-acceptability of the high-cost/immediate solution. The reasons given in relation to 'acceptable' and 'non-acceptable' responses are shown in Table 4.21.

Table 4.21 Reasons for acceptability or non-acceptability of high-cost/immediate solution

Reasons	Total		Telephone interviews		Personal interviews	
Acceptable:						
Only solution to flush out river estuary	17	(19%)	16	(27%)	1	(4%)
Good idea/good for the future	13	(15%)	7	(12%)	6	(21%)
Better water flow would make water cleaner	12	(14%)	10	(17%)	2	(7%)
If it works/if it does some good	10	(11%)	6	(10%)	4	(14%)
Worth a try/something must be done	9	(10%)	9	(15%)	-	
Would bring more tourists	6	(7%)	3	(5%)	3	(11%)
All other 'acceptable' reasons	21	(24%)	9	(14%)	12	(43%)
Total	88	(100%)	60	(100%)	28	(100%)
Non-acceptable:						
Too costly/cost to taxpayers	24	(38%)	13	(30%)	11	(55%)
Doubtful whether it will work	14	(22%)	11	(25%)	3	(15%)
May form a sand bar	4	(6%)	4	(9%)	-	
Should maintain existing channel	3	(5%)	2	(5%)	1	(5%)
Needs to be further up	3	(5%)	2	(5%)	1	(5%)
Should not interfere with nature	3	(5%)	3	(7%)	-	
All other 'unacceptable' reasons	12	(19%)	8	(19%)	4	(20%)
Total	63	(100%)	43	(100%)	20	(100%)

The most frequently advanced reasons supporting the acceptability of the high-cost/immediate solution were that respondents considered it the only solution to flush out the river estuary (19%), it is a good idea/good for the future (15%), and the better water flow would make water cleaner (14%), it was worth a try/something must be done (10%) and that it would bring more tourists (7%). Other 'acceptable' reasons given were that the problem needs immediate action, it would create employment, this solution would be acceptable after research and environmental studies, and its acceptability would depend on who is paying for it.

Respondents who considered that the high-cost/immediate solution was not acceptable gave, on average, 1.5 reasons why not. The most frequently advanced reason why this solution was not acceptable was that it was too costly (38%) - this was proportionally the clearest statement either in favour or against either solution. Another main reason given why this solution was not considered acceptable was that respondents were doubtful whether it would work (22%). Other less frequently advanced reasons included that this solution may form a sand bar (6%), the existing channel should be maintained (5%), the Cut should be further up (5%) and there should not be interference with nature (5%). Other 'unacceptable' reasons advanced included that the Cut may cause other problems, there is not enough knowledge of alternatives, the groynes should face the right way, and that not a lot is known about this solution.

4.16 PREFERENCE FOR ALTERNATIVE SOLUTIONS

Having been questioned about the acceptability of two individual solutions to the algae and weed growth problem, respondents were then asked if they had to choose between the two ideas which one they would choose (Table 4.22). Almost half the respondents to this question (48%) indicated a preference for the high-cost/immediate solution compared with the 36% of respondents which preferred the low-cost/long-term solution. Approximately one-tenth of respondents (9%) did not express a preference for either solution and a further 7% did not give an answer or did not know.

Table 4.22 Preference for alternative solutions

Solution	Total	Telephone interviews	Personal interviews
Low-cost/long-term	43 (36%)	24 (34%)	19 (40%)
High-cost/immediate	56 (48%)	35 (50%)	21 (44%)
Neither	11 (9%)	5 (7%)	6 (12%)
No response/don't know	8 (7%)	6 (9%)	2 (4%)
Total repondents	118 (100%)	70 (100%)	48 (100%)

Subgroups of respondents which, in particular, expressed a preference for the high-cost/immediate solution were:

- those interviewed by telephone; that is, those more likely to live permanently in Mandurah (50%)

- female respondents (50%)
- respondents aged 18-29 years (65%) and those over 60 years (55 per cent)
- respondents who had lived in Mandurah for 6-10 years (50%) or more than 11 years (57%)
- respondents who lived north of the Estuary (55%)
- respondents who lived permanently in Mandurah (50%).

Subgroups of respondents which, in particular, expressed a preference for the long-term/low-cost solution were:

- those interviewed personally, that is, those less likely to live permanently in Mandurah (40%)
- female respondents (44%)
- respondents aged 30-59 years (40%)
- those who had lived in Mandurah for less than 5 years (43%)
- those who lived west of the Estuary (42%)
- those whose permanent home was in the Perth metropolitan area (42%).

Male respondents who did not live permanently in the Mandurah area accounted for larger than average proportions of respondents who did not express a preference for either solution.

4.17 REASONS FOR PREFERRING THE LOW-COST/LONG-TERM SOLUTION

Respondents who indicated a preference for either solution were then asked their reasons for their choice. Table 4.23 shows the reasons advanced by respondents who preferred the low-cost/long-term solution while Table 4.24 shows the reasons given by those who preferred the high-cost/immediate solution.

The lower cost of the fertilizer programme was the most frequently mentioned reason (41%) by those respondents who preferred the low-cost/long-term solution. Other less frequently mentioned reasons were the belief that cutting the channel may not work (10%) and that a cheaper method (than cutting the channel) should be tried first (8%). Other reasons mentioned by only several respondents included that the fertilizer programme would be beneficial over the long term, that it was a more feasible solution, and that there should not be interference with nature.

The preference for the low-cost/long-term solution based on its lower cost was advanced, in particular, by:

- female respondents (25%)
- those who lived west of the Estuary (25%)
- those whose permanent home is in the Perth metropolitan area (24%).

Table 4.23 Reasons for preferring low-cost/long-term solution

Reasons	Total		Telephone interviews		Personal interviews	
Lower cost	21	(41%)	11	(34%)	10	(50%)
Cutting channel may not work	5	(10%)	4	(13%)	1	(5%)
Try cheaper method first	4	(8%)	3	(10%)	1	(5%)
Beneficial over long period	2	(4%)	2	(7%)	-	
More feasible solution	2	(4%)	2	(7%)	-	
Should not interfere with nature	2	(4%)	2	(7%)	-	
Main problem is fertilizer	2	(4%)	1	(3%)	1	(5%)
Residents will have to pay	2	(4%)	-	-	2	(10%)
All other reasons	10	(19%)	5	(16%)	5	(25%)
Don't know/no response	1	(2%)	1	(3%)	-	
Total responses	51	(100%)	31	(100%)	20	(100%)

Table 4.24 Reasons for preferring high-cost/immediate solution

Reasons	Total		Telephone interviews		Personal interviews	
Rapid/immediate solution	29	(44%)	16	(37%)	13	(56%)
Most direct/effective method	11	(16%)	9	(21%)	2	(9%)
Needs immediate attention to boost tourism	4	(6%)	2	(5%)	2	(9%)
Would totally eradicate problem	3	(5%)	2	(5%)	1	(4%)
Fertilizer alternative not complete solution	3	(5%)	3	(7%)	-	
Both strategies needed	3	(5%)	3	(7%)	-	
All other reasons	12	(17%)	7	(16%)	5	(22%)
Don't know/no response	1	(2%)	1	(2%)	-	
Total responses	66	(100%)	43	(100%)	23	(100%)

The belief that cutting the channel to the ocean would provide a rapid/immediate solution to the problems associated with the growth of weed and algae in the Estuary was the main reason (44%) advanced by those respondents who preferred the high-cost/immediate solution. The next most frequently mentioned reason was that this solution was perceived as the most direct/effective method (16%). Other reasons advanced included immediate attention needed to boost tourism (6%), the belief that this solution would totally eradicate the problem (5%), fertilizer alternative was not a complete solution (5%) and that both strategies are needed (5%).

The preference for the high-cost/immediate solution based on the perception that it would solve the problem quickly was advanced, in particular, by:

- female respondents (29%)
- respondents aged 18-29 years (35%)
- respondents who had lived in Mandurah for 11 years or more (32%)
- respondents who lived north of the Estuary (29%).

4.18 PERCEPTION OF WHETHER $31 MILLION EXPENDITURE IS WARRANTED

The last question in the survey (apart from those related to demographic characteristics of respondents) was concerned with finding out whether respondents thought that spending $31 million to improve water quality in the Estuary was warranted relative to other things that the State Government has to spend money on (Table 4.25).

Two-thirds of respondents (66%) thought that such expenditure was warranted while 28% did not and 6% either did not know or did not answer. This belief that the $31 million expenditure was warranted was particularly evident among respondents aged 60 years or more (73%), those who had lived in Mandurah for 11 years or more (79%) and those who live to the north of the Estuary (76%).

Above average proportions of respondents who did not think that such expenditure was warranted were evident among those who had lived in Mandurah for 5 years or less (35%), those who lived west of the Estuary (33%) and those whose permanent home was in the Perth metropolitan area (32%).

Table 4.25 Perception of whether $31 million expenditure is warranted to improve water quality in the Estuary

Response	Total	Telephone interviews	Personal interviews
Yes	77 (66%)	46 (66%)	31 (66%)
No	33 (28%)	18 (26%)	15 (32%)
No response/don't know	7 (6%)	8 (8%)	1 (2%)
Total responses	117 (100%)	70 (100%)	47 (100%)

The relationship between respondents' choice of a preferred solution and whether they thought expenditure of $31 million was warranted is shown in Table 4.26.

Two-thirds of respondents who thought that the expenditure of $31 million was warranted had selected the high-cost/immediate solution while one-fifth (25%) selected the low-cost/long-term solution. There was a higher level of consistency between the respondents who had selected the low-cost/long-term solution and those who thought that expenditure of $31 million was not warranted (75%) whereas only 9% who had thought that the expenditure of $31 million was not warranted had expressed a preference for the high-cost/immediate solution.

Table 4.26 Relationship between preferred solution and whether $31 million expenditure is warranted

Solution	Whether $31m expenditure warranted			
	Yes	No	Don't know	Total responses
Low-cost/long-term	16 21% (37%)*	25 76% (58%)	2 33% (5%)	43 37% (100%)
High-cost/immediate	51 66% (91%)	3 9% (5%)	2 33% (4%)	56 48% (100%)
Neither	6 8% (55%)	4 12% (36%)	1 17% (9%)	11 10% (100%)
Don't know/no response	4 5% (66%)	1 3% (17%)	1 17% (17%)	6 5% (100%)
Total responses	77 100% (66%)	33 100% (28%)	6 100% (6%)	116 100% (100%)

*Percentages in brackets show the percentage of respondents who preferred one solution - who thought that $31 million expenditure was warranted.

4.19 DEMOGRAPHIC CHARACTERISTICS

The questionnaire was conducted with several questions designed to provide some background demographic data about the survey respondents.

4.19.1 Occupation of respondents

Table 4.27 shows the occupational groups of survey respondents. A total of 44% were in the workforce while 55% were not in the workforce because of unemployment, retirement, private income, full-time studies or home duties.

One-fifth of respondents (21%) could be classified as being in lower white collar occupations including small business owner/manager, clerk, secretary, salesperson, teacher or nurse. Skilled tradespersons accounted for 12% of respondents, while semi-skilled and unskilled workers accounted for 5% and 4% of the workforce respectively.

Of the respondents not in the workforce, 17% were pensioners while a further 15% were retired/widowed/divorced and living on a private income. Housewives accounted for 17% of respondents while only 3% were unemployed and 1% were engaged in full-time study.

Larger proportions of males than females were evident in the workforce, principally in the skilled and unskilled categories, and white collar categories, while larger proportions of females were evident in the categories not in the workforce mainly because of the inclusion of housewives in this category.

Table 4.27 Occupational groups of survey respondents

Occupational group	Total	Telephone interview	Personal interview	1981 Census Mandurah
In workforce				
Unskilled worker	6 (4%)	5 (5%)	1 (2%)	
Semi-skilled tradesperson/worker	8 (5%)	5 (5%)	3 (5%)	
Skilled tradesperson	18 (12%)	11 (11%)	7 (12%)	
Lower white collar	33 (21%)	15 (15%)	18 (32%)	
Middle white collar	2 (1%)	-	2 (4%)	
Upper white collar	1 (1%)	1 (1%)	-	
Subtotal	68 (44%)	37 (37%)	31 (55%)	46%
Not in workforce				
Unemployed	4 (3%)	4 (4%)	-	4%
Pensioner	27 (17%)	26 (27%)	1 (2%)	
Retired/widowed/divorced*	23 (15%)	14 (14%)	9 (16%)	
Full-time student	1 (1%)	-	1 (2%)	
Housewife	30 (19%)	16 (16%)	14 (25%)	
Subtotal	85 (55%)	60 (61%)	25 (45%)	50%
No response/don't know	2 (1%)	2 (2%)	-	
Total respondents	155 (100%)	99 (100%)	56 (100%)	100%

* Live on private income.

While the occupational groups used in this survey are not directly comparable with the occuaptional breakdown used in the Census, comparison with 1981 Census data for the Shire of Mandurah indicates that the main sub-groups are generally consistent with the 1981 proportions in the workforce, not in the workforce and unemployed.

4.19.2 Age of respondents

Table 4.28 shows the age distribution of survey respondents compared with the age distribution of the Mandurah population (aged 18 and over) as recorded by the Census in 1981.

This distribution shows that the sample survey was somewhat under-representative of the 18-29 age group and slightly over representative of the 30-59 age group. The proportion in the sample survey in the 60 plus age group was generally consistent with the proportion in the population as a whole in 1981.

Table 4.28 Age of respondents

Age of respondent	Total	Telephone interview	Personal interview	1981 Census Mandurah 18 and over
18-19 years	1 (1%)	-	1 (2%)	3%
20-29 years	17 (11%)	11 (11%)	6 (11%)	17%
30-39 years	26 (17%)	15 (15%)	11 (20%)	17%
40-49 years	28 (18%)	16 (16%)	12 (21%)	11%
50-59 years	29 (19%)	13 (13%)	16 (28%)	16%
60-69 years	31 (20%)	24 (25%)	7 (13%)	20%
70 plus years	21 (13%)	18 (18%)	3 (5%)	16%
No response/don't know	2 (1%)	2 (2%)	-	-
Total respondents	155 (100%)	99 (100%)	56 (100%)	100%

4.19.3 Sex of respondents

Table 4.29 shows the sex of survey respondents compared with figures for the Shire of Mandurah at the 1981 Census. This breakdown shows that males were oversampled marginally in the sample survey, particularly in the respondents interviewed in the face-to-face interviews.

Table 4.29 Sex of respondents

Sex of respondent	Total	Telephone interview	Personal interview	1981 Census Mandurah
Male	85 (55%)	52 (53%)	33 (59%)	50%
Female	70 (45%)	47 (47%)	23 (41%)	50%
Total respondents	155 (100%)	99 (100%)	56 (100%)	100%

4.19.4 Locality of home/holiday home

Respondents were asked the locality (and postcode) in which they were living or holidaying. As the postcode proved to be of little use in differentiating the localities of respondents, the responses were categorized on the basis of whether they were in:

- Mandurah town
- north of the Estuary including Coodanup and Yunderup
- west of the Estuary including Falcon, Novara, Warnanup, and Dawesville.

Just over half of the respondents were living or holidaying in Mandurah Town while 28% were drawn from areas north of the Estuary and 20% from areas west of the Estuary. Telephone interviews were concentrated (81%) in the Mandurah town area while personal interviews were conducted in the areas both north (66%) and west of the Estuary (34%).

Table 4.30 Locality of home/holiday home

Locality of home/ holiday home	Total	Telephone interviews	Personal interviews
Mandurah Town	80 (52%)	80 (81%)	-
North of Estuary	44 (28%)	7 (7%)	37 (66%)
West of Estuary	31 (20%)	12 (12%)	19 (34%)
Total respondents	155 (100%)	99 (100%)	56 (100%)

4.19.5 Tenure of permanently occupied homes

Table 4.31 shows the tenure of permanently occupied houses compared with tenure data from the 1981 Census for Mandurah. This data indicated that the survey sample contained a slightly higher proportion of respondents who owned or were paying off their homes compared with the 1981 Census and a slightly lower level of respondents in rented homes. Higher levels of home ownership were evident among respondents who had lived in Mandurah for 6-10 years (88%) or more than 11 years (92%).

Table 4.31 Ownership of homes

Ownership of home	Total	Telephone interview	Personal interview	1981 Census Mandurah
Owned/paying off	85 (82%)	79 (82%)	6 (86%)	73%
Rented	13 (13%)	13 (14%)	-	22%
No response/don't know	5 (5%)	4 (4%)	1 (14%)	5%
Total respondents	103 (100%)	96 (100%)	7 (100%)	100%

4.19.6 Duration of residence in Mandurah district

Table 4.32 shows the duration of residence in the Mandurah district of respondents who indicated that they were interviewed in their permanent home. Approximately one-third of respondents had lived in the Mandurah district for up to 5 years (32%) or for 6-10 years (31%). Just of a quarter of respondents (26%) had lived in the district for 11-20 years and 10% had lived there for more than 21 years.

There was no obvious relationship between length of residence and age of respondent as almost half of the respondents aged 60 years or more had lived in the Mandurah district for 1 year or less. Larger proportions of respondents indicated that they had lived in the area to the west of the Estuary for 5 years or

less (55%) than did respondents in Mandurah Town (28%) or the area to the north of the Estuary (36%).

Data from the 1981 Census indicated that 53% of the 1981 population of Mandurah did not live in the Shire of Mandurah at the 1976 Census, indicating a large intercensal migration to the area.

Table 4.32 Duration of residence in Mandurah district

Duration of residence in Mandurah district	Total		Telephone interviews		Personal interviews	
0-5 years	33	(32%)	31	(32%)	2	(29%)
6-10 years	32	(31%)	31	(32%)	1	(14%)
11-20 years	27	(26%)	24	(25%)	3	(43%)
21 years plus	10	(10%)	9	(10%)	1	(14%)
No response/don't know	1	(1%)	1	(1%)	-	
Total respondents	103	(100%)	96	(100%)	7	(100%)

4.19.7 Location of previous residence of permanent residents

Table 4.33 shows the location of the previous residence of permanent residents. Most respondents had previously lived away from Mandurah principally in either Perth and the hills (38%) or elsewhere in Western Australia (38%) compared with only 9% who had lived either within a few streets (3%) or somewhere else in the Mandurah area (6%) and 7% who had lived in the nearby Pinjarra, Rockingham or Kwinana areas. Only 7% of respondents who were permanent residents of Mandurah had previously lived outside Western Australia.

Table 4.33 Location of previous residence

Location of previous residence	Total		Telephone interviews		Personal interviews	
Within a few streets	3	(3%)	2	(2%)	1	(14%)
Somewhere else in the Mandurah area	6	(5%)	6	(6%)	-	
Pinjarra/Rockingham/ Kwinana	7	(7%)	7	(7%)	-	
Perth and hills	39	(38%)	37	(39%)	2	(29%)
Elsewhere in Western Australia	39	(38%)	35	(37%)	4	(57%)
Outside Western Australia	7	(7%)	7	(7%)	-	
No response/don't know	2	(2%)	2	(2%)	-	
Total respondents	103	(100%)	96	(100%)	7	(100%)

4.19.8 Tenure of holiday home

Table 4.34 shows the tenure of holiday homes occupied by survey respondents. Two-thirds of these respondents were the owner or buyer of the holiday home in which they were interviewed while 18% were renting and 18% were staying with friends or relations. With the exception of one respondent, all holiday homes were located either north or west of the Estuary.

Table 4.34 Tenure of holiday home

Tenure or holiday home	Total	Telephone interviews	Personal interviews
Owner or buyer of this home	26 (65%)	1 (50%)	25 (66%)
Renting the holiday home	7 (18%)	-	7 (18%)
Staying with friends or relatives	7 (17%)	1 (50%)	6 (16%)
Total respondents	40 (100%)	2 (100%)	38 (100%)

4.19.9 Location of permanent home

Table 4.35 shows the location of the permanent homes of people interviewed in holiday homes. For the large majority of respondents (88%), their permanent homes were located in the Perth metropolitan area, while approximately 10% were located in either the southern region of the State or elsewhere in Western Australia.

Most holiday home owners or occupiers (78%) interviewed fell into the 30-59 year age group with smaller percentages in the 18-29 year age group (18%) or the over 60 year age group (4%).

Table 4.35 Location of permanent home of people interviewed in holiday homes

Location of permanent home	Total	Telephone interviews	Personal interviews
Perth and environs	35 (88%)	1 (50%)	34 (89%)
Southern region	2 (5%)	1 (50%)	1 (3%)
Elsewhere in Western Australia	2 (5%)	-	2 (5%)
No response/don't know	1 (2%)	-	1 (3%)
Total respondents	40 (100%)	2 (100%)	38 (100%)

5 GROUP SESSION ORGANIZATION

5.1 SELECTION OF GROUPS

Group discussion sessions are a well established means of obtaining a spread of views and experiences likely to be characteristic of the particular population groups of which the participants are members. Five discussion groups were proposed to be held in the Mandurah area with representatives of the following organizations or groups:

- Falcon Progress Association
- Residents of John Street, Coodanup
- Peel Preservation Group
- Peel Harvey Professional Fishermen's Association
- Southern Estuary Progress Association

5.2 GROUP SESSION ORGANIZATION

Contact names and phone numbers were provided by officers of the Department of Conservation and Environment who have been involved in the Peel/Harvey Estuary Studies and thus have knowledge of, and communication with, local interest groups. Representatives of the selected community interest groups were invited to attend a group discussion session with up to eight other members of the group.

The discussion sessions were held at venues convenient to the interest group - either in a member's home or at a local community hall. The sessions commenced with invitees completing a short questionnaire (Appendix B) and, after a brief outline of the purpose of the survey, the discussion was led through a range of issues covering the general areas addressed in the household survey, namely, use of the Estuary, perceptions of issues or problems associated with the Inlet/Estuary, perceptions of the causes of these problems, and methods of remedying the problems. Other issues which particularly related to the composition of the discussion group were also discussed, for example, the presence or absence of certain types of fish were discussed by the fishermen's group. The discussions were taped (with the agreement of all participants) to facilitate later analysis of the main themes of discussion.

6 FALCON PROGRESS ASSOCIATION

6.1 COMPOSITION OF THE GROUP

This discussion session, held at the Falcon Community Hall, was attended by three members of the Falcon Progress Association. These people, two of whom were retired and one unemployed, had lived in the Mandurah area for 10, 7 and 2 years respectively. One attendee was aged between 60 and 69 years while the other two were in the 70 and over age group. One attendee had lived in the Perth metropolitan area prior to shifting to Mandurah, while the other two had lived elsewhere in Western Australia. The recreational uses for which these attendees used the Peel Inlet and Harvey Estuary included crabbing, fishing, prawning and 'looking at it'.

6.2 PERCEPTIONS OF ISSUES ASSOCIATED WITH LIVING IN THE MANDURAH AREA

The issues associated with proposed canal developments were considered by this group to be the most important issue associated with living in the Mandurah area at present. Mosquitoes 'which just about carry you away' were also considered to be another significant issue. One member of the group was under the impression that there was a breed of mosquito in the Mandurah area which did not need water for breeding but bred in foliage. In terms of individual people, the group considered that mosquitoes were a worse problem than the weed growth in the Estuary because more people are directly affected by mosquitoes:

> From a personal point of view, for any person, I don't care who it is, I'd say the mosquitoes would be, in most cases, the biggest problem. As far as the Estuary is concerned, the algae is definitely a very big problem but that is man-made in as much that we interfered with nature right from the start and what we've got to do now is work out some man-made method by which we can get rid of the problem we've got.

One view of the cause of the algae problem advanced by a member of the group was that damming of rivers flowing into the Inlet/Estuary had contributed to the problem along with the cutting of the sand bar at the Channel entrance. Asked if they had to choose between solutions to the mosquitoes and the weed growth problem, this group would opt for a solution to the mosquito problem.

Opposition to canal development from this group stemmed from the perception of the development of open areas used for recreation with no equivalent replacement offered and the additional pressure that would be placed on the entrance to the Channel by the additional boats owned by people who would live in the canal developments. There was little support exhibited by this group for the Mandurah Shire Council: 'They do exactly what they like, they don't take any notice of anyone...they just ignore us.'

Another issue of local concern was the proposed closure of Leighton Road.

6.3 EFFECTS OF THE ALGAE PROBLEM

The smell was considered to be the main way in which the weed growth affected people who did not directly use the Estuary itself. The smell, in some areas and at some times, was thought to be so bad that 'it can make you ill' and 'turn the

silver black' in areas such as Novara. People who used the Estuary directly for boating or scoop netting could be affected by tangled weed in engines and nets plus the unpleasantness of having to walk out in the weed.

Members of this group did not think that the weed growth affected land values but thought that the smell, when it is particularly bad, drives holiday makers away from the area. The smell was described as 'poisonous' and 'like rotten eggs' and in its concentrated form 'puts people in hospital'. Members did not think that the smell had got worse over the last couple of years but were not sure whether this was attributable to the dredging or the climatic conditions during the last year.

6.4 PERCEPTIONS OF SOLUTIONS TO THE ALGAE PROBLEM

The 'Dawesville Cut' was seen as possibly being effective in cleaning out that section of the Estuary but doubt was expressed whether the rise and fall of the tide would be sufficient to clean out the whole Estuary. The group's view was that this approach should be tried with the possible addition of 'non-return gates' on the cut so that when the tide came in, it was forced to go right round to the Entrance Channel and flush out that way. The continuing maintenance requirement for the Cut was recognized by the group: 'It will be an all time job keeping it dredged.'

The group considered that there was local support for the Cut because 'they want to see the Estuary cleaned up.'

The harvesting of the weed was seen to be useful so long as the harvested weed was taken away and not left in heaps on the banks. Harvesting was seen as a costly exercise which was not curing the problem.

The State Government was identified as the appropriate body to be responsible for financing and implementing a solution to the weed growth problem. Local government was thought to have some responsibility but not the money necessary to underwrite a solution. The groups members thought that not enough information was available to the public in writing or through personal contact about the proposed solutions. The members acknowledged that considerable study was necessary before expenditure of approximately $31 million should be made on the Dawesville Cut.

> Things have got to be really studied on it to see what effects it is going to have ....$31 million is, let's face it, $31 per head for every man, woman and child in the State.

In terms of whether implementing the Cut was the best use of $31 million in the Mandurah area, group members thought that it was, but noted that other people did not, especially those who do not live permanently in the Mandurah area.

> If that $31 million is going to be an answer, or a fair part of the answer to the question, then I don't think anyone would begrudge it at all because that waterway is very important. It's a beautiful stretch of water and it should be cleaned up.

In relation to when this group would like to see a solution to the weed growth problem the answers included 'as soon as possible' and 'yesterday'.

Group members were not opposed in principle to the idea of development occurring in the vicinity of the Dawesville Cut, provided 'they don't let some developer turn around and want to put canals on the side of the Cut.'

7 JOHN STREET RESIDENTS

7.1 COMPOSITION OF THE GROUP

This discussion group was attended by five residents of John Street, Coodanup, who have been particularly active in seeking some improvement to the weed growth situation because the Coodanup area in particular is adversely affected by it. These attendees had lived in the Mandurah area (either permanently or on a holiday basis) for between 15 and 25 years and, with one exception in the 50-59 year age group, fell into the 60-69 years age group. Three of the attendees gave their occupation as home duties, one was a gardener/maintenance man and one was retired. With one exception, all had lived in the Perth metropolitan area before shifting to their present home. Recreational activities for which these residents used the Inlet or Estuary included boating, fishing, walking, meditating and general enjoyment.

7.2 PERCEPTIONS OF THE WEED GROWTH PROBLEM

This group considered that the weed growth problem was the most significant issue in the Mandurah area.

> The weed is the main problem. It affects us in every way. It's filthy to look at, it's horrible to even try and walk in and the smell is something terrible. It makes people sick, it's that bad. Well, that spoils the whole thing for anybody. You can't have your friends down because they came down and say Oh pooh, what a stinking area. Who would live here? We're only complaining because it's impossible to live decently [because of the weed growth].

Apart from the nasty smell and the appearance of the weed, other adverse effects which this group raised were that the smell caused silverware and copper plumbing to go black or blue: 'We had some plumbing done two days ago, bright copper pipe it was. In one day, it had turned blue, navy blue.'

This effect was noticeable both inside the house and outside in relation to metals such as silver, gold, brass and copper. Paint could also be turned black by the weed smell.

> I painted the ceiling of my new room with an oil-based paint - it must have had a metallic base in it. We went home for a week, came back and it was all mottled grey ... I had to repaint the whole room, and it wasn't just a small room. It was 30 feet by 30 feet and it all had to be painted out again and I painted it out with acrylic because the people told me if I used acrylic it won't stain.

The group expressed some doubts about the possible effect of the smell on their health over the long term: 'It does make you feel a little bit sick, if you're breathing it all night. So what the long-term effects on your general health and lungs is, is a question mark.' 'It has been known to make people sick and put elderly people in hospital.'

Residents said that they generally did not have prior warning of when the smell would be particularly bad but indicated that it was generally associated with a change in the weather or a wind developing which carries the smell across from the weed rotting in the Estuary:

> Sometimes in the evening you think 'The Estuary has belched'. All of a sudden you've got a window open and you'll have to jump up and shut it. It just seems to belch.

The slime caused by the rotting weed was also a problem, but the group acknowledged that removal of slime and weed from the banks was fairly well organized. However, the harvesting of the weed was not seen as being a significant contribution to the solution of the problem.

> I can't see what they're doing is any benefit because they're just not gaining on it. It's too slow a process to rectify it because the problem is too big. The problem is galloping faster than they can catch it up.

The group was of the opinion that the quantity and quality of fish and prawns available in the Estuary had declined markedly over the last 5-10 years because of the decrease in water quality: 'You used to be able to take a wheelbarrow in and fill it (with fish or prawns). They used to virtually jump in.'

The deterioration of the nearby beach was also a matter of concern to these residents who had bought their homes originally because of the proximity to a nice white sandy beach and clear, safe shallow water with plenty of fish: 'It's just like walking in a sewer.'

The Coodanup residents felt that they got a double dose of the weed smell because of the local accumulation of weed as well as prevailing winds bringing it across from the western edge of the Estuary. While they acknowledged that the weed growth problem was having an effect on the tourism potential of Mandurah, they felt that there was not a reciprocal interest from Mandurah interests and the Shire Council in particular about the significant localized effects of the weed problem: 'All they're pushing is Mandurah's tourism but they haven't got any chance of getting tourists down here with this problem.' 'Tourism, not that we want it, is when there is something out there [in the Estuary] for people to catch. 'What are they promoting tourism for? They're only going to get them once [with the Estuary in its present condition].'

These residents also were definite in their view that the weed growth problem had adversely affected land values. Some members of the group had houses or land for sale which they said they could not sell because of the weed problem: 'You'd be mighty lucky to be able to sell now.'

> We nearly sold ours until a doctor came down and got a whiff of that lot. Actually there were two tractors working [harvesting the weed] that day he came down and was just about ready to sign the paper and that was the end of that story.

The residents felt that the once-prized water aspect value of land in the vicinity of John Street had been seriously eroded because of the weed problem and its associated smell.

They also considered that the overall character of the area had changed and, with that, their attitudes to it.

> Many of the things that attracted us to this area in the beginning are now gone.

I've thought to myself 'I would feel like a prisoner trapped here' when the weed smell was bad. I've never really had that understanding because we've been able to escape back to Fremantle, though we don't like living in Fremantle.

7.3 PERCEPTIONS OF SOLUTIONS TO THE PROBLEM

The group did not think that enough was being done to solve the weed growth problem. They thought that 'lots more of everything' should be done, including the Dawesville Cut, to remedy this long-standing problem:

> It's about time that something got started properly. I know it's a slow process but they've got to do something shortly because they're just getting nowhere. They've wasted millions of dollars on seminars, people going up the Estuary, Members of Parliament ... drinking beer on taxpayers' money.
>
> We're sick and tired of this cosmetic clean-up and repetition of people coming down and finding out what we think about it. They go away, they just write it down but they don't do anything else. It's been going on for years.
>
> They've been pouring money down the drain.

The group acknowledged that there were indications of moves towards a solution but expressed scepticism about whether anything would really be done. As well, concern was expressed whether the Dawesville Cut, if it were implemented, would work. The view was clearly expressed that, in addition to the Dawesville Cut and the continuance of the fertilizer programme, the sand bar at Mandurah should be kept open and made wider so that there is an inflow of water from the ocean.

At present it was considered that more fish and prawns could be caught in the clearer, salt water at the mouth of the Estuary than in areas such as around Coodanup and Yunderup. The perceived effect of the damming of rivers upstream on the water quality was also expressed:

> Before they put all those dams across the river, this water was crystal clear years ago before they started damming all the rivers. When they dammed the rivers they stopped the flow naturally, well that's when the pollution started. Mind you, the superphosphate, I will agree, from the farms has helped it.
>
> Years and years ago before they dammed the rivers, this water used to be absolutely beautiful.

The group indicated that they would be quite happy to see $31 million spent on the Dawesville Cut ahead of other actions in the Mandurah area. They also said that they had been waiting 10 years for a solution and could not wait another 5 years: 'Speed is the essence of the contract, please,...we mightn't be here in another 5 years.'

7.4 AVAILABILITY OF INFORMATION FROM GOVERNMENT

The group considered that they received enough information on the dimensions of the problem and, in fact, were presented with the same information time after time. They wanted action quickly not repetitions of information. The problem had been evident for up to 30 years but the group felt that 'experts' had been reluctant to listen to 'ordinary people'.

7.5 PERCEPTIONS OF OTHER ISSUES/PROBLEMS IN THE MANDURAH AREA

There was strong agreement among group members that mosquitoes are a major problem in the Mandurah area.

> If the 'fogger man' (to spray mosquitoes) didn't come around, you just couldn't live here. You'd virtually be a prisoner in your home so he, I imagine, would have a permanent job, the same as the people cleaning up the Estuary.

However, although the group acknowledged that both the weed growth and mosquitoes are significant problems, they considered that the weed growth is a more serious long-term problem than the mosquitoes which are a seasonal problem. In relation to the spraying of mosquitoes, the group suggested that this may be having some effect on bird life in the area.

> Have you noticed that all the birds have gone too? We haven't got a swallow, we haven't got a wren, we haven't got a robin red breast but when we were first down here, we used to have them. We get relief for one problem and we lose something else.

This group expressed considerable dissatisfaction with the Mandurah Shire Council because of a perception that it only served the interests of people and businesses in Mandurah itself: 'I don't know why we pay rates. We get absolutely nothing.'

While not expressing opposition to canal developments, the group noted that these developments are likely to put additional pressure on a waterway system that they consider to be already stressed.

8 PEEL PRESERVATION GROUP

8.1 COMPOSITION OF THE GROUP

Only two members of the Peel Preservation Group attended the discussion session. This married couple, who had lived in the Mandurah area for 11 years were both retired and used the Estuary area for fishing, crabbing, prawning, boating and bushwalking. However, it was the opinion of one of the members that prawning was almost impossible now because of the weed growth.

8.2 PERCEPTION OF THE WEED GROWTH

The couple noted that the weed problem affected different areas to differing extents so that for some people in the Mandurah area, the mosquitoes (particularly in summer) would be a worse problem than that the effects of the weed.

> The algae problem is a funny one. It can be an extremely bad year, right in the middle of the Estuary, Coodanup and around those areas but there are lots of places right around on the water and the channel entrance where people hardly know that algae is a problem.

However, they did note that the algae did cause significant problems including awful smells, black water caused by the harvesting machines, and weed build-up along the shore which made prawning difficult and interfered with fishing nets.

> My favourite occupation of scooping crabs is more or less gone now due to the weed. You've got to have the net out or go out in the deep drop netting to get crabs now. You can't just go down and wander around and scoop.

One beneficial result of the weed growth noted by this couple was its use as a garden fertilizer, particularly for vegetables.

The aesthetic impact of the weed growth was described in the following terms:

> There are so many times when you can go down there and the smell is so strong and the water is so black and horrible looking from the machines cleaning up the weed that it's rapidly becoming a rather unpleasant environment.

8.3 PERCEPTIONS OF A SOLUTION

This couple had differing views about whether something should be done about the weed problem. The woman thought that:

> it should be left alone for ten years and let nature right itself. But people are not prepared to wait for nature to do that...Provided the fertilizers are cut down from the farms I think it could do it.'

The man had a different view which acknowledged the positive effect that the fertilizer programme is having on the amount of superphosate being put on at present, but saw the need for the Dawesville Cut:

> If it [the Cut] goes the way that it could go and, that is, instead of having one channel we've got two, and the present channel is obviously not doing a very good job in some ways, it would seem that another short channel like that one could have quite a few aspects that would be beneficial. One, on a social aspect, it would be much easier to get a boat into the ocean. We haven't got any launching ramps this side of Mandurah...and I don't think that the change to a more marine environment would do the Estuary all that much harm...

This attendee indicated that there might be a significant biological change to the Estuary associated with the cut but hoped that the change would be for the good.

While this couple acknowledged that there were many worthwhile things on which $31 million could be spent, they considered that spending this money on the Peel and Harvey system would be money 'well and truly spent'. 'This could be one of the biggest natural tourist attractions in the State if it were looked after.'

This couple noted that the Peel Preservation Group's interest is based on the overall quality and condition of the Peel Inlet and Harvey Estuary rather than any sectional interest.

The couple was not averse to the possibility of development (even canal developments) occurring around the Dawesville Cut provided it was properly planned and that the overall benefits accrued to the public. However, the possibility of development pressures related to the Cut being experienced in the Point Grey area was raised, together with the implications that housing development there could have on the Estuary. A query was also raised in relation to the possible flooding and tidal effects likely to be associated with the Cut.

9 PEEL INLET PROFESSIONAL FISHERMEN'S ASSOCIATION

9.1 COMPOSITION OF THE GROUP

Eight members of the Peel Inlet Professional Fishermen's Association attended this discussion session which was held at the home in Coodanup of one member. The participants were all long-term residents of the Mandurah area with their length of residence varying between 16 and 44 years with the average length of residence being 33 years. With one exception, all had lived in the Mandurah area all their lives. There was an even distribution of ages - three in the 20-29 year age group, three in the 30-39 year age group and two in the 40-49 year age group. In addition to their professional fishing activities on the Estuary, members of this group used the Estuary for crabbing, prawning, swimming, amateur fishing, boating and sailing.

9.2 EFFECT OF THE WEED GROWTH PROBLEM

The Nodularia beds were considered by the fishermen to be a more severe problem than the weed growth, although the weed growth itself is also a significant problem. It was noted that if there were no weed, there would be no fish. The weed makes fishing more difficult but was not thought to have affected the actual catching of fish.

> The Nodularia, which it is in a heavy bloom, is bad for the fishermen. Last year, it never ever got heavy enough to worry us, it never stopped production at all last year, but prior to that for a few years, it was very heavy and it stopped the fishing production. But after January...as soon as we get the first good 'nobbly' build-up from the ocean, the Nodularia will go in two or three days, it's just dead, gone. That's why we maintain if we can get the flow of water from this end, the Mandurah channel, we can solve the problem without going to that extent [the Dawesville Cut].

However, the fishermen noted that: 'As far as we're concerned, a bit of Nodularia is a good thing.' 'Whenever we're looking for fish we'll always go and patrol the edge of the Nodularia because that's where they'll be...the attraction is there.'

The fishermen discussed in considerable detail the various sorts of weeds which they had been aware of growing in the Estuary over the last few decades and the effects that these had had on fishing.

9.3 PERCEPTION OF THE CAUSES OF THE WEED GROWTH PROBLEM

Members of the Fishermen's group, together with participants in other groups expressed the opinion that the main cause of problems in the Estuary was the dams upstream on the rivers.

> Obviously the main problem we've got is the dams, I think. We're not getting the flow of fresh water down to flush the Estuary out...so we have to counteract that with something else.

Suggestions which were advanced by members of this group to stop the Nodularia included the dumping of tonnes of salt in the Estuary.

9.4 PERCEPTION OF THE PROPOSED DAWESVILLE CUT

This group of fishermen expressed strong opposition to the proposed Cut at Dawesville. This opposition was based on the belief that the Cut would affect the types of fish and crustacea living in the Estuary and thus adversely affect the fishermen's livelihood and the feeling that not enough was known about the possible effects of the Cut.

Other considerations such as interference with nature were also mentioned:

> I don't think it should go ahead because you're interfering with nature anyway and you shouldn't have to do that. The Estuary has been quite good up until the last few years...it can be solved without going to the drastic measures of putting in a Cut.

The fishermen indicated that if the Cut reduces the weed growth, this will affect species such as king prawns which like 'that mucky, weedy water' and are 'very important to our livelihood'. The example was cited of the loss of the Murray prawns upon which twenty boats had been dependent and now these boats are back in the Estuary which puts extra pressure on the fishermen who normally fish there. Fifteen boats are currently working king prawns so if this species was lost, that would mean that these fifteen boats would then be back fishing the Estuary.

In addition, the fishermen consider that:

> If the cut goes ahead, the king prawns are a working proposition now but, even supposing it didn't reduce the numbers, the fact that two cuts with half going out each cut, that's going to make them unworkable. They'd be down below a workable margin. That's providing they use the new Cut and if you've got a tide there, I see no reason why they won't go out there.
>
> It could change the whole set-up of the cycle of the fish and the prawns coming and going. With the extra salt water, they might not breed in the Estuary.

The Fishermen's Association official view is that:

> We're against the Cut. Our idea is that the bar should be dredged open, the whole river cleaned out to allow the flow of water there and, as a secondary measure, if that does not accomplish the job, is the pipeline up the top end. Something that you can pump in and when the Nodularia bloom is finished, you can turn if off again. If it fails, all you do is turn off. If this cutting fails, we've got one hell of a problem on our hands.
>
> Why the hell can't we have something done about the bar here?
>
> They reckon about $7 million to clean this end of it up but we can't get that done when they're talking about spending $30 million down there (Dawesville).
>
> That Estuary cleans itself up. You get weeds coming and going. If they kept that bar open and the top of the river open and let the right amount of water flow in that Estuary will clean itself up naturally. For the last two hundred years that Estuary has cleaned itself up. You get bad times, you get good times but overall it will clean itself up.

The fishermen were quite vocal about the need for proper dredging of the main Mandurah channel near Styick's channel and removal of the dredged sand so that it does not fill up the channel and the Estuary.

When asked if they were getting a fair hearing of their views on the Dawesville Cut, the fishermen indicated that they had put in written representations to the Department of Conservation and Environment but were not sure what effect, if any, this had had.

While it was peripheral to their area of concern about the Cut, the fishermen acknowledged that there could be substantial economic benefits to developers with the possibility of another township springing up around the Cut.

The extent of feeling against the Dawesville Cut expressed by the fishermen was such that there is concern that they will be forced out of the industry:

> I think if they go ahead with the Cut, we'll be put in a situation where we will have to take out a writ against it for damages...for loss of industry, loss of income. This Estuary with a bigger rise and fall of tide would be unworkable for our type of fishing. We'd be put out of business.

The fishermen indicated that they do not want to have leave the industry because, in most cases, they are not trained to do any other work.

The view underlying this concern is that, with perceived increased tidal ranges in the Estuary because of the Cut, fishing boats may get stuck on sand banks (from which the boats do most of their work) and be there until the next high tide and lose that 'shot' of fish because the fishermen would not be able to get ice out to their boats.

Other concerns about the Cut related to tide the movement:

> With the weed problem we have here, any more increase in movement of tide is going to mean an increase in movement of weed which to our nets is disastrous, so we're going to lose a lot of [fishing] areas because of tide movement.

The fishermen's current concern is also based on their belief that their concerns, in the past, about the likely adverse effects of canal developments on the Murray River and on the Murray prawns were dismissed, and that, to date, there has been no study on what has caused the loss of the Murray prawns in the Estuary:

> We had to accept that there were no prawns. We'd lost part of our income and nothing was done about it. If they go ahead with the cut, we're not prepared to sit back this time, and after it's all over and done with, say 'Well look, we've lost something' because we don't want to lose anymore - we've lost too much.

This strong feeling is also based on the fact that the Estuary fishermen's licences limit them to fishing in the Estuary thus they cannot readily change to ocean fishing. To enter ocean fishing, Estuary fishermen would have to buy out an existing licensed boat but would be curtailed by perceived difficulties in selling their existing boats. The number of fishermen on the Estuary has dropped to some extent but is maintained through the system of transferring licences from father to son via a 'trainee licence'.

The fishermen were adamant that the damming of the rivers upstream was one of the main causes of the weed growth problem.

> You won't get a fisherman on the Estuary to believe that [the dams are not a cause of the problem] because we've been here and seen what sort of flushing we used to get.

Concern was expressed by the fishermen about the ability to keep the Cut open and sand free when it was considered that there were difficulties keeping the existing Entrance Channel open. Scepticism was expressed that considerably smaller loads of sand were going past the location of the Dawesville Cut than those which get trapped behind Halls Head.

9.5 CHANGES TO THE FISHING INDUSTRY

Over the last ten years the main changes in the fishing industry on the Estuary noted by the fishermen, in addition to changes in techniques and improvements to equipment, were the loss of whiting and the turn to supplying the craybait demand with mullet or yellow-eyed mullet. The fishermen considered that they were working to the maximum allowed by prevailing technology given the supply of fish in the Estuary. The changes in the fishing industry were illustrated by the following comment: 'One time it used to take you a week to go round the Estuary. Now you can do the whole Estuary in a morning.'

9.6 ATTITUDES TO OTHER LOCAL ISSUES

As with other discussion groups, the fishermen's group did not express very positive opinions about the Mandurah Shire Council: 'We have no councillors representing us, don't worry about that. They represent the business men of Mandurah, that's all the councillors represent.'

or about the local Parliamentarian: 'As for our local parliamentary bloke, well I sure can't get to the bugger. He's never there or so his secretary says.'

10 SOUTHERN ESTUARY PROGRESS ASSOCIATION

10.1 COMPOSITION OF THE GROUP

Eight members of the Southern Estuary Progress Association attended this group discussion session held at the Southern Estuary Community Hall. The length of time that these participants had lived in the Mandurah area ranged from 4-58 years, with several of the shorter-term residents also having associations with the area going back for up to 50 years. Five of the participants had previously lived in the Perth and hills area, one elsewhere in Western Australia and two outside Western Australia.

Four of the group members were retired, three were engaged in home duties and one was a shop assistant. Age groups represented were four people in the 60-69 year age group, two in the 50-59 year age group, one the 40-49 year age group and one in the 30-39 year age group. Recreational activities for which group members used the Peel Inlet or Harvey Estuary included fishing, crabbing, sailing, boating, prawning, bird watching, water-skiing, canoeing and 'just looking at it'.

10.2 PERCEPTION OF EFFECTS OF WEED GROWTH PROBLEM

Residents in the Dawesville area appeared not to be regularly subjected to the smell associated with the weed as residents in areas further north but, on occasional days, the smell was considered to be particularly bad: 'Some days it just smells like straight sewage.' 'We have had it very bad on some occasions, but it comes and goes. This year has been much better.'

Aspects of the smell associated with the weed which were experienced by members of this group were that the smell was absorbed by washing and that the smell took several days to get out of houses if the smell was particularly bad. It was thought that people unconsciously altered their actions to accommodate the smell by, for example, not doing their washing on days when the smell was bad.

Residents, it was thought, got used to the smell whereas visitors experiencing if for the first time or only occasionally found it abominable:

> We have friends in Perth but, with the stench and the mosquitoes being so bad, they haven't been down once this year and they used to always come down.
>
> To an outsider, to come into Mandurah, the smell is worse than what we're used to.

Members also noted that the smell could be very localized with it being pungent at the waters edge but hardly noticeable about 400 metres up the hill. However the strength of the smell was repeatedly remarked upon: 'If you do get it, it doesn't matter what you do, close doors or whatever, it's there.'

The effect of the smell was also evident in depressed land values according to this group. Other effects were that prospective visitors felt they had to check whether the smell was noticeable before they came down from Perth to visit. One member of the group blamed the gas associated with the decomposing weed for his inability to grow tomatoes in the Dawesville area.

This group thought that the media coverage of the problem had made it worse than it actually was and this discouraged people from visiting or buying in the area.

Mosquitoes were also acknowledged as a major problem by this group but varied from season to season:

> I think you'd find generally that they come and go - for an hour in the morning and an hour in the evening, you'll have them but then sometimes they've not around. The Shire is doing a lot now to control them through fogging.

10.3 PERCEPTIONS OF SOLUTIONS TO THE WEED GROWTH PROBLEM

One member's view was that the problem was caused by lack of water and that the only way to overcome this was to cut through to the ocean as the dams on the rivers upstream were restricting the supply of water to the Estuary. Other members of the group also supported the idea of the Dawesville cut provided it was properly planned:

> The only way to get rid of the Nodularia is with an exchange of water. The Dawesville Cut seems to be the only way we're going to achieve that.
>
> I think the average person you talk to is in favour of it [the Dawesville Cut].
>
> Although it's expensive, it's the only way to do it.
>
> I don't see any alternative. I think it's either go ahead or go backwards and let the Estuary die.

In terms of the localized area, members of the group were keen to know if it would affect their local hall which was located immediately south of the proposed easement. They also noted that there would have to be some rearrangement of roads to provide access to the Estuary in the Dawesville area. Members of the group did not seem particularly concerned about the possibility that the Cut could result in additional residential development as they noted that there had long been an expectation that Dawesville would be 'the next place to go' after Mandurah, and it had been classed as the 'Dalkeith area' of Mandurah (before Halls Heads was developed). However they did acknowledge that there would be some people who would not like the idea of further change even though Dawesville had changed markedly over the last thirty years.

Group members were ambivalent about the thought of increased tourists because of the unsavoury effects of tourists at present - litter in parking lots, vandalism, increased traffic and no contributions to the upkeep of facilities.

There was some scepticism expressed in the group about when the Cut might actually be implemented and the amount of information available to the public:

> It's very difficult for us to make judgements at this time because there's a hell of a lot of political manoeuvring going on at the local level and at the State Government level in the sense that everybody is going through the motions conducting the feasibility studies...but there hasn't been a spade lifted up on the area of the Cut and it won't be until that time, until someone says 'Right, there's the money, go to it' that anyone will really know if they're serious or not.

Group members also expressed some concern about the possible effects of the Cut on the Estuary, for example, scouring from the inflow of ocean water. However, they felt that they had to rely on the views of experts to ensure that the Cut was the right thing and that it would not have adverse effects:

> We just hope that they're scientific enough and they're thoughtful enough to do the right thing so that when $31 million is spent we don't end up with a mess, a white elephant.

The group members thought that they were getting sufficient information but that they have to 'sift through it' to see what is really proposed.

There was a strong expression from the group that they were not prepared to wait much longer for a solution to the weed problem:

> The study's supposed to end in March, I think, so we'd like to see tenders out by, say, July the first.
>
> Some of use here are getting towards the tail end of life so we'd to see some action before we go.

This group did not favour the idea of possible canal developments associated with the Cut principally because they thought there was insufficient land to accommodate them: 'There's not that much land there to do it, I mean it's only three quarters of a mile through to the ocean.'

10.4 PERCEPTION OF OTHER ISSUES IN THE MANDURAH AREA

Together with other discussion groups, members of this group did not hold the Mandurah Shire Council in very high regard: 'From what I've seen of it [the Council], they are utterly and totally useless...They seem to jump before they even think.'

Some members of the group qualified their dissatisfaction with the Council noting that 'they are only human' and that 'there is so much going on in the Mandurah area, it's difficult to keep up with it.'

Reark Research Pty. Ltd.
4/9 Hampden Road
Nedlands, W.A., 6009
Tel: (09) 386 8629

MANDURAH ATTITUDE STUDY

(PERSONAL INTERVIEWS)

Ref: CM-211-10R
March, 1985

Start Time .....

INTRODUCTION:

Good (...) my name is (...) from Reark Research, the market research survey company. At the moment we are conducting a survey for a State Government Department about issues in the Mandurah area ... May I speak with the male/female head of the household please?
(EQUAL NUMBERS MALE/FEMALE)

(REINTRODUCE IF NECESSARY)

All answers given will be in the strictest confidence.

Q.1 Is this ... *(READ OUT)* (11)

(GO TO Q.3) — Your permanent home 1
A holiday home 2
Something else *(SPECIFY)* 3

Q.2 In the past five years, about how many times have you visited the Mandurah area? (12)

(TERMINATE) — First visit 1
2 - 5 times 2
6 - 10 times 3
More than 10 times 4
Don't Know/Can't say 5

Q.3 And thinking about living or visiting in the Mandurah area, so far as you are concerned, is there anything that you particularly like about living there? *(PROBE FULLY)* (13-15)

Q.4 And is there anything at all about living or visiting in the Mandurah area that causes you concern? (16)

Yes 1
No ..... 2 — *(GO TO Q.7)*
Don't Know/ Can't Say 3

Q.5a) What is it that causes you concern?

b) Anything else?
(PROBE FULLY, ACCEPT UP TO FIVE ISSUES. RECORD BELOW)

Q.6a) Which of the items or matters you have just mentioned is of most importance or concern to you?
(WRITE IN 1 AGAINST ISSUE)

b) Which is of the next most importance or concern to you?
(WRITE IN 2 AGAINST ISSUE)

c) And of third most importance or concern?
(WRITE IN 3 AGAINST ISSUE)

	Q.5	Q.6 RANKING
ISSUE/MATTER 1: ----------	(17-19)	(32)
ISSUE/MATTER 2: ----------	(20-22)	(33)
ISSUE/MATTER 3: ----------	(23-25)	(34)
ISSUE/MATTER 4: ----------	(26-28)	(35)
ISSUE/MATTER 5: ----------	(29-31)	(36)

I would now like to ask you some questions about the Peel Inlet and Harvey Estuary .....

Q.7 I am going to read you a list of recreational activities or pastimes. For each one could you please tell me whether you or your family are often, occasionally, hardly ever or never involved in each activity or pastime in the Peel Inlet or Harvey Estuary

FIRST (.....) NOW (.....)
*(READ OUT EACH ACTIVITY. ROTATE ORDER OF ASKING AND MARK *)*

	OFTEN	OCCAS-IONALLY	HARDLY EVER	NEVER	D.K./ C.S. (37)
Swimming	1	2	3	4	5
Boating	1	2	3	4	5 (38)
Fishing	1	2	3	4	5 (39)
Prawning/ Crabbing	1	2	3	4	5 (40)
Water-skiing .	1	2	3	4	5 (41)
Less active outdoor recreation such as strolling, sunbaking ...	1	2	3	4	5 (42)

Q.8 Do you think there are any problems with Peel Inlet or Harvey Estuary that might make people feel they are not such good places to go for recreation? (43)

- Yes 1
- No ..... 2 *(GO TO Q.10)*
- Don't Know Can't Say 3

Q.9 What are the problems? *(PROBE FULLY. ACCEPT UP TO FIVE PROBLEMS)* (44-46)

PROBLEM 1: _____

_____

PROBLEM 2: _____ (47-49)

_____

PROBLEM 3: _____ (50-52)

_____

PROBLEM 4: _____ (53-55)

_____

PROBLEM 5: _____ (56-58)

_____

(CHECK IF ALGAE/WEED GROWTH MENTIONED GO TO Q.11a) IF NOT MENTIONED ASK Q.10.

Q.10 Some people have suggested that the growth of algae and weeds in the Inlet and Estuary is a problem. Do you think this a problem? (59)

- Yes ..... 1 *(GO TO Q.11b)*
- No ..... 2 *(GO TO Q.23)*
- Don't Know/ Can't Say 3

Q.11a) You mentioned that algae and weed growth is a problem. Is it a problem at a particular time of year or all the time? (60)

- Part of the year .. 1
- All year ..... 2 *(GO TO Q.12)*
- Don't Know/ Can't Say 3

b) Which particular months? *(ACCEPT MULTIPLES)* (61-62)

- January 1
- February 2
- March 3
- April 4
- May 5
- June 6
- July 7
- August 8
- September 9
- October 10
- November 11
- December 12
- (Don't Know/ Can't Say) 13

Q.12 How serious do you think the algae and weed problem is ....? Is it *(READ OUT)* (63)

- Not very serious .. 1
- Fairly serious 2
- Very serious 3
- (Don't Know/ Can't Say)..... 4

Q.13 How in particular does this problem affect you? *(PROBE FULLY)* (64-66)

_____

_____

_____

_____

Q.14 Do you think anything needs to be done about the algae and weed problem? *(GO TO Q.23)*

(67)

Yes	1
No	2
Don't Know/ Can't Say	3

Q.15 Who do you think should be responsible for doing something about the algae and weed problem?

(ACCEPT MULTIPLES)

(68)

State Government	1
Local Government	2
Private Developers	3
Farmers	4
(Someone else) ---------- *(SPECIFY)*	5
Don't Know/ Can't Say	6

I would now like to ask you a few questions regarding possible ways of reducing the algae and weed problem through improving water quality in the Estuary.

Q.16 One way of improving water quality is to encourage farmers to change their methods of applying agricultural fertilizer upstream. This is already happening and is a low cost, long term solution which can only make the algae and weed problem less serious ... not cure it. How acceptable is this idea to you? Is it ... *(READ OUT)*
(REPEAT QUESTION IF NECESSARY)

(69)

Very acceptable	1
Quite acceptable	2
Acceptable	3
Not very acceptable	4
Not acceptable at all	5
(Something else) ---------- *(SPECIFY)*	6
(GO TO Q.18) Don't Know/Can't Say	7

Q.17 Why do you say that?
(PROBE FULLY)

(70-72)

Q.18 Another solution which would give an immediate improvement in water quality would be to cut a channel from the ocean to the Estuary. In conjunction with the fertilizer strategy, this would probably eliminate the algae and weed problem. There would be an initial cost of $25 million and an annual maintenance cost of about $300,000. How acceptable is this idea to you? Is it ...
(READ OUT)
(REPEAT QUESTION IF NECESSARY)

(73)

Very acceptable	1
Quite acceptable	2
Acceptable	3
Not very acceptable	4
Not at all acceptable	5
(Something else) ---------- *(SPECIFY)*	6
(GO TO Q.28) Don't Know/Can't Say	7

Q.19 Why do you say that?
(PROBE FULLY)

(74-76)

Q.20 If you had to choose between the two ideas which one would you choose?

(IF NECESSARY SAY) The low cost long term way of encouraging farmers to change their methods of fertilizer application or the way involving cutting the channel at a cost of $25 million which would result in immediate improvements?

(77)

Low cost/long term	1
$25m/immediate improvement	2
(GO TO Q.22) (Neither)	3
Don't Know/Can't Say	4

Q.21 Why did you choose that way?
(PROBE FULLY)

(78-80)

Q.22 Thinking about the various things the State Government has to spend money on ... do you think that spending $25 million to improve water quality in the Estuary is warranted?

CARD 2 (11)

Yes	1
No	2
Don't Know/ Can't Say	3

And now a few details about yourself and family to help us analyse the results of the survey.

Q.23 What is your current occupation? (12)

(WRITE IN CARD CODE) -------

Q.24 And what age group do you fall into ... Is it ... ? (READ OUT) (13)

18 - 19 years ..	1
20 - 29 years ..	2
30 - 39 years ..	3
40 - 49 years ..	4
50 - 59 years ..	5
60 - 69 years ..	6
70 plus years ..	7

Q.25 Sex: (RECORD AUTOMATICALLY) (14)

Male	1
Female	2

Q.26a) And what is the suburb or locality where you are living or holidaying?

(WRITE IN)

b) And its post code?

(15-18)

CHECK Q.1 IF PERMANENT HOME I.E. CODE 1 CIRCLED ASK Q.27 - 29 INCLUSIVE. IF HOLIDAY HOME OR SOMETHING ELSE I.E. CODES 2 OR 3 CIRCLED, ASK Q.30 - 31) (19)

Q.27 Is this dwelling owned or being bought or is it rented from someone else?

Owned/Paying Off	1
Rented	2

Q.28 How long have you lived in the Mandurah district? (20)

0 - 5 years	1
6 - 10 years	2
11 - 20 years	3
21 plus years	4
Don't Know/Can't Say	5

Q.29 Before moving to your present home, where did you live? Was it ... (READ OUT) (21)

Within a few streets	1
Somewhere else in the Mandurah area	2
Pinjarra/Rockingham/ Kwinana	3
Perth and hills	4
Elsewhere in W.A.	5
Outside W.A.	6
(Don't Know/Can't Say) ...	7

Q.30 Are you ... (READ OUT) (22)

The owner or buyer of this holiday home	1
Renting the holiday home .	2
Staying with friends or relatives	3
(Something else)	
---------- (SPECIFY)	4
(Don't Know/Can't Say) ...	5

Q.31a) And in what suburb or locality is your permanent home?

(WRITE IN)

b) And its post code? (23-26)

NAME: ----------

ADDRESS: ----------

TELEPHONE NO.: ----------

INTERVIEWER NAME: ----------

INTERVIEWER NUMBER:

(27-30)

INTERVIEWER DECLARATION:

I have checked this interview. It is a true, and to the best of my knowledge, an accurate recording, and has been completed in accordance with my Interviewer Guidelines.

SIGNED: ----------

TIME FINISH: ----------

INTERVIEW LENGTH: ---------- (Minutes)

479 Hamoden Road
Nedlands, W.A., 6009
Tel: (09) 386 8629

(TELEPHONE INTERVIEWS)

March, 1988

Start Time .....

INTRODUCTION:

Good (...) my name is (...) from Reark Research, the market research survey company. At the moment we are conducting a survey for a State Government Department about issues in the Mandurah area ... May I speak with the male/female head of the household please?
(EQUAL NUMBERS MALE/FEMALE)

(REINTRODUCE IF NECESSARY)

All answers given will be in the strictest confidence.

Q.1 Is this ... *(READ OUT)* *(11)*

(GO TO Q.3)—Your permanent home	1
A holiday home	2
Something else *(SPECIFY)*	
----------	3

Q.2 In the past five years, about how many times have you visited the Mandurah area? *(12)*

(TERMINATE)—First visit	1
2 - 5 times	2
6 - 10 times	3
More than 10 times	4
Don't Know/Can't say	5

Q.3 And thinking about living or visiting in the Mandurah area, so far as you are concerned, is there anything that you particularly like about living there? *(13-15)*
(PROBE FULLY)

Q.4 And is there anything at all about living or visiting in the Mandurah area that causes you concern? *(16)*

Yes	1
No	2
Don't Know/ Can't Say	3

(GO TO Q.7)

Q.5a) What is it that causes you concern?

b) Anything else?
(PROBE FULLY, ACCEPT UP TO FIVE ISSUES. RECORD BELOW)

Q.6a) Which of the items or matters you have just mentioned is of most importance or concern to you?
(WRITE IN 1 AGAINST ISSUE)

b) Which is of the next most importance or concern to you?
(WRITE IN 2 AGAINST ISSUE)

c) And of third most importance or concern?
(WRITE IN 3 AGAINST ISSUE)

	Q.5	Q.6 RANKING
ISSUE/MATTER 1: ----------	*(17-19)*	*(32)*
ISSUE/MATTER 2: ----------	*(20-22)*	*(33)*
ISSUE/MATTER 3: ----------	*(23-25)*	*(34)*
ISSUE/MATTER 4: ----------	*(26-28)*	*(35)*
ISSUE/MATTER 5: ----------	*(29-31)*	*(36)*

I would now like to ask you some questions about the Peel Inlet and Harvey Estuary .....

Q.7 I am going to read you a list of recreational activities or pastimes. For each one could you please tell me whether you or your family are often, occasionally, hardly ever or never involved in each activity or pastime in the Peel Inlet or Harvey Estuary

FIRST (.....) NOW (.....)
*(READ OUT EACH ACTIVITY. ROTATE ORDER OF ASKING AND MARK *)*

	OFTEN	OCCAS-IONALLY	HARDLY EVER	NEVER	D.K./ C.S.	
Swimming	1	2	3	4	5	(37)
Boating	1	2	3	4	5	(38)
Fishing	1	2	3	4	5	(39)
Prawning/ Crabbing	1	2	3	4	5	(40)
Water-skiing .	1	2	3	4	5	(41)
Less active outdoor recreation such as strolling, sunbaking ...	1	2	3	4	5	(42)

Q.8 Do you think there are any problems with Peel Inlet or Harvey Estuary that might make people feel they are not such good places to go for recreation? *(GO TO Q.10)*

(43)
Yes 1
No 2
Don't Know
Can't Say 3

Q.9 **What are the problems?**
(PROBE FULLY. ACCEPT UP TO FIVE PROBLEMS)

(44-46)
PROBLEM 1: _____
_____

(47-49)
PROBLEM 2: _____
_____

(50-52)
PROBLEM 3: _____
_____

(53-55)
PROBLEM 4: _____
_____

(56-58)
PROBLEM 5: _____
_____

(CHECK IF ALGAE/WEED GROWTH MENTIONED GO TO Q.11a) IF NOT MENTIONED ASK Q.10.

Q.10 Some people have suggested that the growth of algae and weeds in the Inlet and Estuary is a problem. Do you think this a problem? *(GO TO Q.11b)* *(GO TO Q.23)*

(59)
Yes 1
No 2
Don't Know/
Can't Say 3

Q.11a) You mentioned that algae and weed growth is a problem. Is it a problem at a particular time of year or all the time? *(GO TO Q.12)*

(60)
Part of the year .. 1
All year 2
Don't Know/
Can't Say 3

b) Which particular months? *(ACCEPT MULTIPLES)*

(61-62)
January 1
February 2
March 3
April 4
May 5
June 6
July 7
August 8
September 9
October 10
November 11
December 12
(Don't Know/
Can't Say)..... 13

Q.12 How serious do you think the algae and weed problem is ....? Is it *(READ OUT)*

(63)
Not very serious .. 1
Fairly serious 2
Very serious 3
(Don't Know/
Can't Say)..... 4

Q.13 How in particular does this problem affect you? *(PROBE FULLY)* (64-66)

_____
_____
_____
_____

Q.14 Do you think anything needs to be done about the algae and weed problem? *(GO TO Q.23)*

(67)

Yes	1
No	2
Don't Know/ Can't Say	3

Q.15 Who do you think should be responsible for doing something about the algae and weed problem?

(ACCEPT MULTIPLES)

(68)

State Government	1
Local Government	2
Private Developers	3
Farmers	4
(Someone else) ---------- *(SPECIFY)*	5
Don't Know/ Can't Say	6

I would now like to ask you a few questions regarding possible ways of reducing the algae and weed problem through improving water quality in the Estuary.

Q.16 One way of improving water quality is to encourage farmers to change their methods of applying agricultural fertilizer upstream. This is already happening and is a low cost, long term solution which can only make the algae and weed problem less serious ... not cure it. How acceptable is this idea to you? Is it ... *(READ OUT)*
(REPEAT QUESTION IF NECESSARY)

(69)

Very acceptable	1
Quite acceptable	2
Acceptable	3
Not very acceptable	4
Not acceptable at all	5
(Something else) ---------- *(SPECIFY)*	6
(GO TO Q.18) Don't Know/Can't Say	7

Q.17 Why do you say that? *(PROBE FULLY)*

(70-72)

Q.18 Another solution which would give an immediate improvement in water quality would be to cut a channel from the ocean to the Estuary. In conjunction with the fertilizer strategy, this would probably eliminate the algae and weed problem. There would be an initial cost of $25 million and an annual maintenance cost of about $300,000. How acceptable is this idea to you? Is it ... *(READ OUT)*
(REPEAT QUESTION IF NECESSARY)

(73)

Very acceptable	1
Quite acceptable	2
Acceptable	3
Not very acceptable	4
Not at all acceptable	5
(Something else) ---------- *(SPECIFY)*	6
(GO TO Q.28) Don't Know/Can't Say	7

Q.19 Why do you say that? *(PROBE FULLY)*

(74-76)

Q.20 If you had to choose between the two ideas which one would you choose?

(IF NECESSARY SAY) The low cost long term way of encouraging farmers to change their methods of fertilizer application or the way involving cutting the channel at a cost of $25 million which would result in immediate improvements?

(77)

Low cost/long term	1
$25m/immediate improvement	2
(Neither)	3
Don't Know/Can't Say	4

(GO TO Q.22)

Q.21 Why did you choose that way? *(PROBE FULLY)*

(78-80)

Q.22 Thinking about the various things the State Government has to spend money on ... do you think that spending $25 million to improve water quality in the Estuary is warranted?

CARD 2 (11)

Yes 1
No 2
Don't Know/ Can't Say 3

And now a few details about yourself and family to help us analyse the results of the survey.

Q.23 What is your current occupation? (12)

(WRITE IN CARD CODE) -------

Q.24 And what age group do you fall into ... Is it ... ? (READ OUT) (13)

18 - 19 years .. 1
20 - 29 years .. 2
30 - 39 years .. 3
40 - 49 years .. 4
50 - 59 years .. 5
60 - 69 years .. 6
70 plus years .. 7

Q.25 Sex: (RECORD AUTOMATICALLY) (14)

Male 1
Female 2

Q.26a) And what is the suburb or locality where you are living or holidaying?

(WRITE IN)

b) And its post code?

(15-18)

CHECK Q.1 IF PERMANENT HOME I.E. CODE 1 CIRCLED ASK Q.27 - 29 INCLUSIVE. IF HOLIDAY HOME OR SOMETHING ELSE I.E. CODES 2 OR 3 CIRCLED, ASK Q.30 - 31) (19)

Q.27 Is this dwelling owned or being bought or is it rented from someone else?

Owned/Paying Off 1
Rented 2

Q.28 How long have you lived in the Mandurah district? (20)

0 - 5 years 1
6 - 10 years 2
11 - 20 years 3
21 plus years 4
Don't Know/Can't Say 5

Q.29 Before moving to your present home, where did you live? Was it ... (READ OUT) (21)

Within a few streets 1
Somewhere else in the Mandurah area 2
Pinjarra/Rockingham/ Kwinana 3
Perth and hills 4
Elsewhere in W.A. 5
Outside W.A. 6
(Don't Know/Can't Say) ... 7

Q.30 Are you ... (READ OUT) (22)

The owner or buyer of this holiday home 1
Renting the holiday home . 2
Staying with friends or relatives 3
(Something else) .....
--- (SPECIFY) 4
(Don't Know/Can't Say) ... 5

Q.31a) And in what suburb or locality is your permanent home?

(WRITE IN)

b) And its post code? (23-26)

NAME: ---

ADDRESS: ---

TELEPHONE NO.: ---

INTERVIEWER NAME: ---

INTERVIEWER NUMBER: | | | | | (27-30)

INTERVIEWER DECLARATION:

I have checked this interview. It is a true, and to the best of my knowledge, an accurate recording, and has been completed in accordance with my Interviewer Guidelines.

SIGNED: ---

TIME FINISH: ---

INTERVIEW LENGTH: --- (Minutes)

APPENDIX B PEEL INLET/HARVEY ESTUARY ATTITUDINAL SURVEY

GROUP DISCUSSION QUESTIONNAIRE

1. How long have you lived in the Mandurah or Peel/Harvey area?

   ..... years

   ..... months

2. Before moving to your present home, where did you live?
   (please tick)

   - within a few streets
   - somewhere else in the Mandurah area
   - Pinjarra/Rockingham/Kwinana
   - Perth and hills
   - elsewhere in WA
   - outside WA

3. What is your current occupation?

   .....

4. What age group do you fall into?
   (please tick)

   under 20
   20-29 years
   30-39 years
   40-49 years
   50-59 years
   60-69 years
   70 plus years

5. For what recreational activities or pastimes do you use the Peel Inlet or Harvey Estuary?
   (list up to 5)

   .
   .
   .
   .
   .

APPENDIX C ACKNOWLEDGEMENTS AND STUDY TEAM

ACKNOWLEDGEMENTS

Kinhill Stearns would like to acknowledge the assistance and co-operation of the following people:

- Dr Peter Birch)
- Mr Peter Skitmore) Department of Conservation and Environment
- Dr Ernest Hodgkin)

STUDY TEAM

Kinhill Stearns - Survey design, organization and analysis

- Ron Black
- Helen Weston

Reark Research Pty Ltd - Survey fieldwork and processing

- Veronica Rickard