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**NON MARKET VALUATION OF PUBLIC LAND -
A STUDY AT ARAKOON STATE RECREATION AREA, NSW.**

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ABSTRACT

State Recreation Areas (SRAs) fulfil a special role in the New South Wales system of parks and reserves, by providing facilities for outdoor recreation in large regional parks in a natural setting.

Arakoon SRA is a 114 ha promontory with 5 kms of sea frontage on the Mid North Coast, equidistant from Sydney and Brisbane. Some 170 000 camping and day visitor groups enter the SRA per annum.

The SRA Trustees commissioned the author to canvass user needs and attitudes to assist planning long term management. Surveys undertaken resulted in interviewers obtaining information from 11% of the annual number of overnight visitors, and additionally 6% of households in the adjacent Kempsey Shire, which was expected to be the main source of day visitors to the SRA.

Further interview information enabled assessment by contingent valuation methodology of how visitors value their recreational visits to the area.

This paper reports the results of that assessment. The net recreational value of the SRA was \$552 000 per annum of which approximately 80% accrued to residents in the Kempsey Shire area.

Conclusions are drawn on the use of CV methodology to value recreation areas, and highlights some factors to consider when undertaking nonmarket valuations of natural areas.

Key Words; CVM, Recreation values of natural areas, Community surveys.

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1. PUBLIC LAND VALUATION

One major value of public land is its use for recreation. In the basic hypothesis for recreational land to remain public, is a belief that this ensures the overall net non-market return from that venue is maximised, principally because limitations on use, due to individual socio-economic status, are reduced.

To achieve this equity of opportunity to recreate, historically public recreation areas were largely expected to not charge an entry fee. A meaningful monetary value as a recreational venue could not be established in terms of market potential. Whilst there has been a trend in social policy changes towards user pays, many natural areas, and especially many coastal venues, cannot realistically be measured in simple market values.

However managers of a recreation venue need to establish some quantification of the values being obtained, and identify which sectors of the community receive these benefits to enable use comparisons to be made. If not, the area could be allocated insufficient funds to maintain the quality of the venue, be lost to public or private development, or an alternative land use could be implemented. (eg. national park, wilderness, etc).

The non monetary returns from public land have long been recognised. Unfortunately, the magnitude of this return has principally been measured by the ferocity of the public outcry when an alternative use is suggested. Attempts to measure "public outcry" can at best be a subjective valuation, open to considerable bias and interpretation flaws. The real value can often be substantially misrepresented depending on the agendas of individuals or the media, the comparative newsworthiness or political advantage to be gained from the "valuation exercise".

- ⊗ It is important that more disciplined valuation methodology be established to assist the decision makers compare values placed on resources both within the market place and those values nominated by high and lower profile groups in the community.

It is with that objective that NSW Department of Conservation and Land Management (CaLM) is undertaking research into non market values, to assist decision making in its stated mission of "maximising the sustainable use of land for the benefit of the people of NSW".

2. NSW STATE RECREATION AREAS

State Recreation Areas (SRA's) were established in NSW under an Act of Parliament in 1974.

Stated objectives at the time included fulfilling a void in the system of parks and reserves in the State, namely, to provide -

- * large regional parks in a rural or natural setting for the relaxation and outdoor recreation of NSW's predominantly urban populations and

* a recreational substitute for National Parks where primary emphasis is placed on nature conservation [Garrard 1984].

Arakoon SRA is one of 10 SRA's now established across New South Wales (under the overall control of the Department of Conservation and Land Management).

It is 114.5 hectares in size, and is located on a coastal headland 6 kilometres east of the village of South West Rocks, approximately halfway between Sydney and Brisbane on the NSW North Coast.

A principal recreational feature of Arakoon SRA is the 5.8 kms of coastline including the one kilometre beach at the eastern point of Trial Bay. This beach is unique, being one of the very few westerly facing beaches on the east coast of Australia. This very sheltered beach is also rated by the Surf Life Saving Association as safety risk 2 on a scale of 1-10, making it one of the safest swimming beaches on the NSW coast [Hogan 1994].

The SRA does have other small beaches, picnic sites in bush surrounding, and walking tracks which provide spectacular views as well as nature walks amongst a variety of fauna and flora.

It is also the site of Trial Bay Gaol, a historically important Ruins. Built completely with large granite blocks, it was used from 1886-1903 to house prisoners who principally worked on cutting granite from cliffs to make local harbour breakwaters. From 1915-1917 it was an internment centre for German immigrants. In 1920 all moveable items from the Gaol were stripped out and sold.

3. THE OVERALL STUDY

The management of Arakoon SRA is vested in a volunteer Trust Committee whose members are appointed through a community consultation process. The Department of Conservation and Land Management, who are responsible for overall Crown Land management, expect the Trust to operate to a Plan of Management which has the approval of the broad community. The implementation of this Plan should be undertaken so as to be self financing as far as is practical.

The author was requested by the Trustees to undertake a study with the following main objectives:-

1. To ascertain the broad demography of the SRA's users groups.
2. To ascertain community perceptions of current and optional management directions on which the SRA plan of management could then be based.
3. To investigate attitudes towards the financing of the operational costs of the SRA. Also to obtain an indication of the community's willingness to pay for the use and enjoyment of the attributes of the reserve. This could then be incorporated into the management plan.

The economic analysis to ascertain the value that user's obtain from their visits, part of objective 3, is the subject of this paper.

4. STUDY METHOD

Initially the study intended to simply canvass opinions by a sample survey of all users at the SRA. A pilot survey in the SRA found there were difficulties in getting day visitors (as opposed to overnight visitors) to agree to answer the questions. (As the study subsequently showed, the day visitors had varied, but distinct, visiting patterns, lasting between 3-5 hours. The likelihood of interviewers approaching a user and receiving a rebuttal "because they had just arrived" or "about to leave" was high.)

In addition, the Trustees believed that the attitudes and needs of distance tourists would differ from those of visitors resident in the adjacent local government area, Kempsey Shire.

As a result, two surveys were undertaken:-

- * An interview, on site, of visitors not normally resident in the Kempsey Council Area who were staying at least one night. Eighty one groups co-operated in this study representing approximately 11% of the total overnight visitors.
- * A door knock survey sampling 576 householders in the Kempsey Council Area (which included villages and townfolk) resulting in 571 completed interviews. This represents 6% of the householders in the Shire (Aus. Bureau Stats. 1991).

The willingness to pay question was one of 13 questions the respondents were asked to answer, others being details of group size, reasons for visiting, adequacy of facilities and other management information pertaining to the study objectives.

Respondents willingness to pay (WTP) to recreate at the venue is utilised to create a demand curve for all users. The contingent value, or net value of the SRA can then be estimated by the total consumer surplus, which is represented by the area under this demand curve (The methodology is well described in Sinden & Worrell 1979, Common 1988, Mitchell & Carson 1989).

Some of the criticism of the contingent valuation methodology has been aspects such as lack of information, theoretical scenario and biased bidding. This study, intentionally and because of surrounding circumstance, avoided some of those issues:

- a. The background information clearly stated that the SRA had to be self financing and part of the survey was investigation of "user pay" alternatives.
- b. Prior to the survey, a proposal had actually been made to the Trustees that an entrance fee (such as the entrance/parking fee levied at other SRA's, and some National Parks) should be levied to help improve

facilities, especially sewage treatment. The Trustees had not made a final decision at the time of the survey.

This suggestion was very controversial and lobby groups had been active for and against the proposal, including statements by State and Federal political parties. Coincidentally information from the Resource Assessment Commission Coastal Inquiry was released which intimated that entrance charges to coastal venues was an option planners should consider to harness user pay principles.

- c. The Trustees announced in the press, radio, and at sporting and service club functions, that the survey was being undertaken and the results would form a major input of the community consultation that Trustees would act upon.
- d. The willingness to pay question asked was:-

For a minute, consider all the scenic, swimming and enjoyable aspects that bring you to Arakoon and Trial Bay.

Now consider:-

If it cost your group \$3 each time would you still use the area?

If it cost your group \$5 each time would you still use the area?

If it cost your group \$7 each time would you still use the area?

If it cost your group \$10 each time would you still use the area?

What is the maximum amount you feel would be worth paying per visit?

or

What is the maximum unlimited visits would be worth to you per year?

The initial bid was set at \$3 as Arakoon staff considered this was the minimum amount that would justify expenditure on its collection. However the question did allow a lower amount to be stated (as many did) and was open ended as to the maximum amount.

5. RESPONSE ANALYSIS

5.1 Householders in Kempsey Shire.

Of the households surveyed in Kempsey Council Area, 20% indicated that they had not visited the SRA in the past two years and were not asked the question regarding WTP.

It was assumed that these households would not have a recreational value from Arakoon and were not included in the analysis. This supposition may

reduce the estimate of net value, as in 47% of those households there was only a single older member resident, and the lack of visits may have been through lack of current opportunity rather than unwillingness to visit.

However excluding these households does refine the value obtained, as had those households expressed a willingness to pay, it would be interpreted as an option value, as compared to the use value being studied.

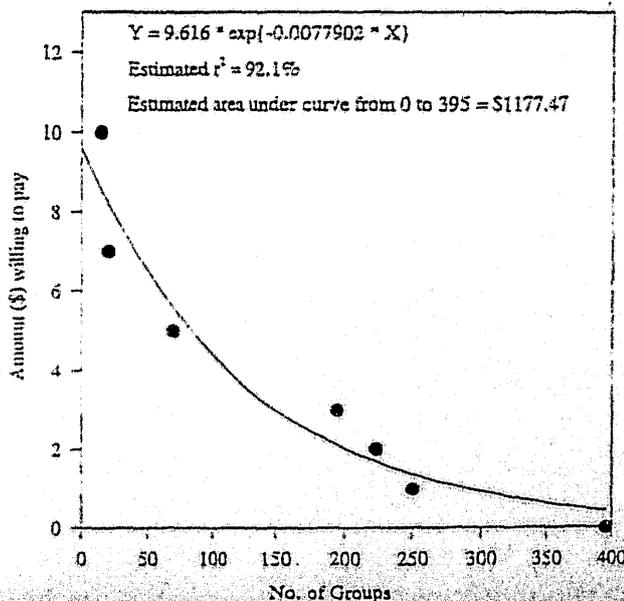
The responses to the question are summarised in Table 1. One respondent indicated a willingness to pay \$20 per visit. Because this was an isolated instance, the statistic was included with those bidding \$10.

<i>Had not visited area 101(excluded)</i>	
<i>Not willing to Pay</i>	<i>145</i>
<i>Willing to pay \$1</i>	<i>250</i>
<i>Willing to pay \$2</i>	<i>223</i>
<i>Willing to pay \$3</i>	<i>194</i>
<i>Willing to pay \$5</i>	<i>69</i>
<i>Willing to pay \$7</i>	<i>20</i>
<i>Willing to pay \$10</i>	<i>14</i>
<i>Total Responses</i>	<i>395</i>

TABLE 1. Kempsey Residents Willingness to Pay per Visit to Arakooo.

5.1.1. Kempsey Resident's Consumer Surplus

This was calculated by using regression analysis to develop a demand curve and measuring the area under the curve as representing consumer surplus. (Sinden & Worrell 1979). The derived curve and equation are illustrated in Fig 1.



The analysis indicated an average consumer surplus of \$2.98 per visit. The survey indicated that on average, the Kempsey Shire residents visit the SRA 16.5 times per annum, suggesting a value per household of \$50 per annum. Using the 1991 census data, this represents a Recreational Value to the 8430 Kempsey households of \$421 000 per annum.

5.2. Other Visitors Valuation

5.2.1. Campers

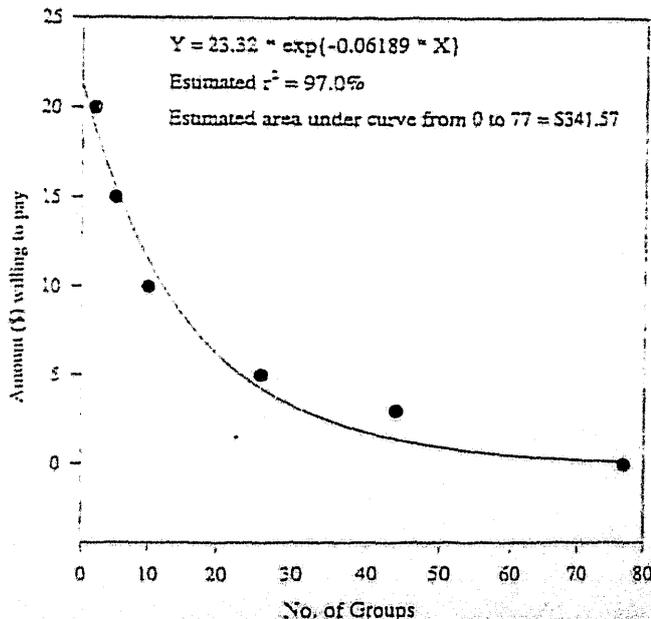
The survey canvassed the opinions of 81 family groups who were camping within Arakoon SRA. The willingness to pay could be analysed for seventy eight of the groups. The question was based on the additional amount the campers would be willing to pay per day of their visit. (They already pay a camping fee between \$8 and \$20 per group). The results are shown in Table 2.

Not Willing to Pay	34
Willing to Pay \$3	44
Willing to pay \$5	26
Willing to Pay \$10	10
Willing to Pay \$15	5
Total Responses	78

Table 2. Camper's Willingness to Pay extra per day of Visit.

Consumer Surplus

Using regression analysis the total willingness to pay for the sample was calculated. (Fig 2)



The results show for camping groups, a consumer surplus of \$ 4.83 per day spent camping or caravanning in the SRA. The Trustees recorded sites occupied for 7386 days in the year, suggesting a total non-market Recreational Value for overnight visitors of \$36 000 (in addition to camping fees charged).

5.2.2. Day Visitors - Non Kempsey Shire.

A vehicle counter is located at the entrance to Arakoon SRA, so the total number of visitor groups can be estimated. Allowing for staff and trade vehicles, visitors from Kempsey households and overnight campers, it is estimated additionally, 26 000 other groups on day visits enter Arakoon SRA per annum.

It was not practical to obtain a representative sample of these groups as they represent only 10 % of the annual visitors, and on some days an even smaller proportion. A pilot survey indicated that on some occasions the numbers representing this group were very few, and in the course of identifying these groups there was potential to cause inconvenience and antagonism amongst other users of the SRA.

Survey data showed that day visitors, but not Kempsey residents, constitute the majority of the individuals who visit the Trial Bay Gaol, part of the Arakoon Recreation Area (which collects \$155 000 in entrance fees per annum).

For this analysis it was assumed these day visitors would get a similar nonmarket recreational value per visit as the Kempsey residents, in addition to the value they obtained from visiting the Gaol. A conservative figure of \$2.50 per group has been utilised. The recreational value obtained by these non Kempsey day visitors was estimated to add a further \$65 000 per annum to the total value.

5.3 Net Recreational Value of Arakoon SRA.

The recreational value of Arakoon per annum, in 1994 figures, as indicated by the above consumer surpluses, is estimated to be;

	NET VALUE (\$ per Annum)
Campers	36 000
Kempsey Residents	421 000
Other Visitors	<u>65 000</u>
	\$522 000

To put this in context, and to enable comparative study, the recreational value was recalculated to pertain to some physical attributes of the SRA.

* A value of \$ 90 000 per kilometre per annum if the coastline of 5.87km had an evenly distributed value.

* If the main beach provided all the recreational value, the value of Trial Bay would be \$52 000 per 100 metres per annum.

* An overall value of \$4 500 per hectare per annum for the SRA.

There are few research results on nonmarket valuation of beach venues available and only one other known analysis of a State Recreation Area. Some comparison may be made to;

* a NSW North Coast study which indicated an average value of the lower North Coast of \$51 000 per 100 meters per annum (Pitt 1992)

* A estimate of \$3 750 per hectare per annum as the enjoyment benefit obtained at an inland water storage venue, Glenbawn State Recreation Area.(Garrard 1982)

* An estimated \$15 000 per hectare (of ocean and island) as the annual recreational value of Julian Rocks Aquatic Reserve, NSW north Coast.(McNamara 1993)

To assist in management decisions and to obtain some measure of the value in relation to market values of land, the current willingness to pay can be expressed as a total net value.

Whilst individuals and organisations show preferences for particular discount rates, and some may consider users would build in an inflation figure if asked about visits in future years, Treasury has a current guideline of 7% discount rate to be used in estimating the value of future benefits.

The Total Net Recreational Value of Arakoon SRA can be expressed as:-

\$ 5.5 million	- based on 20 year benefit discounted at 7%
\$ 7.5 million	- based on a 50 year benefit discounted at 7%
\$ 16 million	- a 30 year non discounted estimate

6. DISCUSSION

6.1. Much controversy regarding contingent valuation techniques centres on:-

- * whether the individual has adequate information to decide on a value,
- * whether the answer given represents a mythical figure unrelated to ability to pay,
- * whether the scenario presented is something the respondent can accept might really happen and effect them as individuals, and
- * whether there is an embedding effect.

Most of these criticisms suggest the CVM might inflate the estimate of value. In this study such problems were minimised, through the realism of the scenario and the likelihood of the users "willingness to pay" being tested by an actual entrance fee. The net effect may have resulted in a conservative value being set.

In this study, the CVM method has been utilised to identify the recreational value of the SRA. It has not attempted to encapsulate all the potential intrinsic values, such as option, existence, bequest and heritage values (as defined in Common 1988), all of which it is acknowledged do exist for Arakoon SRA. It is important if the CVM is to be used in assessing values that the scenarios set and the questions asked are constructed so that type of value being estimated is unambiguous.

6.2. Another interesting facet of the study was that with Kempsey residents the value per visit was related to the number of visits per annum, the more visits per annum the lower was the willingness to pay per visit. A similar relationship existed in that the willingness of campers to pay was related to the number of days in the visit.

The indication was that the individual respondents were obtaining an annual recreational value closer to the mean than the spread of the values per individual visit would suggest.

6.3. The exception to this relationship which the research uncovered, was that there were elements amongst the respondents who it might be said considered they had an "ownership value" to recreational use of the SRA.

Amongst the camping visitors there appeared to be some links between an unwillingness to pay for use of the area and the number of years of repeat visits. On investigation, it appeared the booking system for prime sites at prime periods was such that it enabled groups to prebook the same site year after year (up to 34 years in one instance).

Similarly with day visitors, it appeared that there was a trend that those living in close proximity and visiting frequently expressed a lower overall value in terms of CVM analysis.

* Could it be that group of campers consider the value of their "de facto resort timeshare" is expressed in their camping equipment and these day visitors value the SRA as part of their own property?

Is their value an additional value which would be indicated by a hedonic valuation?

Or,

* Have these people who have been able to use the facilities so many times, for so long, actually lost much of the value of recreating at the particular venue and visit out of routine or habit?

Alternatively, because these users appear to consider they have a right to freely use the area, would a willingness to accept (an amount not to visit) analysis capture a quantifiable "ownership value", additional to the WTP recreational value?

It could be that the scenario presented was so real those respondents dishonestly stated whether they would continue to visit as a "lobbying manoeuvre" to protect their current "free ownership".

Clearly areas of non market valuation requiring more fundamental research.

7. CONCLUSION

Whilst contingent valuation has been the subject of some criticism, this study indicates that for certain types of public land, the method can be used to estimate recreational non market values. Unfortunately to date much of the literature is devoted to discussion of the merits and difficulty in accepting contingent valuation and WTP methodology. Much less literature describes practical research using the method, which is how the refinement of economic analysis will occur.

This project indicates that values of recreation areas can be estimated and that research can be planned to calculate recreational value as distinct from other values. Where a study creates a scenario where the respondent is confronted with a barrier situation, the CVM analysis could be less controversial than if a study attempts to compare a current scenario with a scenario where the venue or public asset "disappears", and existence and bequest values are additionally expressed.

To make a simple comparison between a contingent valuation of recreation and an alternative actual market value such as a development proposition may be debateable at this time. However the recreational value does give a base to indicate relative values between public venues and can be of great assistance in deciding priorities for maintenance and development expenditure in limited budgets.

Apart from the benefits visitors to Arakoon SRA pay for, there is an additional nonmarket recreational value estimated to be over \$550 000 per annum. The analysis suggests that 80% of this value accrues to residents in the adjacent Kempsey local government area, the remainder to distance tourists.

Arakoon SRA Trustees obtain funds in payment for services which help to maintain the facilities and natural surrounds. However there is justification for additional expenditure at this public venue if it is required to maintain the benefits of nonmarket recreational value which has been quantified in this research.

ACKNOWLEDGMENTS

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