

Listening to communityhearing about Crooked River Estuary

Prepared for
Kiama Municipal Council to assist preparation of the
Crooked River Estuary Management Plan

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“The Crooked River (including its tributaries) would have been described in earlier times as a clean clear healthy coastal estuarine stream characterized by deep channels and holes that supported a diverse and rich marine ecosystem continually replenished by tidal flows.

The river provided a facility for a range of recreational pursuits including fishing, prawning, swimming, boating etc. This I can state from personal experience.

Good quality table fish in reliable quantities were almost always available.

Deep clear water channels and holes provided a facility for swimming even at low tide.....

Once it was possible to operate a small dingy with outboard motor for a considerable distance upstream of the main bridge. Canoeing was possible for a significant distance upstream and, again based on personal experience; it was possible to operate a small sailing dingy in what was essentially a bay upstream of the main bridge.”

(Submission extract: recollections over 40 years.)

1. INTRODUCTION

This report contains information offered to the Crooked River estuary management planning process by members of the local community and visitors to the estuary. The consultation process attracted a considerable amount of information. In the main it reflects a huge and generous commitment by the local community to maintenance of a waterway that has been described as the “heart of the Gerroa community” and “the reflection of all that is healthy or unhealthy in the overall catchment area”.

Although the ideas expressed about present and future management of the estuary vary and sometimes conflict, the consultation outcomes are striking because the submissions contain an almost universal expression of values and issues.

In this report “*Listening to community.....hearing about the Crooked River Estuary*” the information provided by the community and its visitors is arranged to reflect the various views on:

- § A vision for Crooked River Estuary.
- § Values attributed to the estuary and its catchment.
- § Recollections.
- § Current management issues.
- § Suggestions for future management actions and inclusions in the Estuary Management Plan.

Extracts from a number of submissions have been quoted throughout the report although the authors’ names are not included. Each will recognise their own words and each is thanked for a statement that captures the sentiments expressed in numerous ways by many people who recognise Crooked River estuary as their ‘special place’.

2. BACKGROUND

The Crooked River Estuary Management Committee is currently preparing a management plan for the Crooked River estuary in response to the requirements of NSW Government policy. The Committee aims to complete the draft plan by mid 2003 and place it on exhibition for public comment.

As part of the plan making process, an *Estuary and Catchment Data Compilation Study* was prepared in 1999, which provided a summary of available information and data on the Crooked River estuary and catchment.

In 2000, a *Gap Analysis Study* was compiled by the Committee, which summarised the available data that was identified in the *Data Compilation Study* and added new data available since 1999.

In the current information gathering phase of the estuary management planning process contemporary management issues are being identified in collaboration with the local community and visitors to the estuary. Three mechanisms have been used to gather information on the management issues: distribution of a brochure and media coverage inviting public input, a meeting of organisations that have management responsibilities associated with the estuary and a public meeting.

A flow chart summarising the issues identification process is attached as Appendix 1. A summary of the types of submissions and their origins is included as Appendix 2.

3. A VISION FOR CROOKED RIVER ESTUARY

“The Crooked River - the heart of the Gerroa Community – the reason for settlement – houses, van parks and fishing. We value its beauty, safety for families, fish and prawns it provides.”

“The Crooked River is the heart of Gerroa. It provides the very basis of the scenic beauty of the Village and has in the past provided for a wide range of leisure activities enjoyed by local residents and the many visitors to the area who bring the economic basis for a viable community.”

“Crooked River estuary and catchment provide long term and sustainable ecological services to the locality [including] water quality management and nutrient cycling..... is important for the nursery maintenance of various commercial fish stocks and recreational [opportunities].”

(Submission extracts)

The following vision statement has been compiled from information offered by attendees at the public meeting that was held in Gerroa on 15th March 2003. The meeting facilitator asked attendees how they would know, if asked in ten years time, that the estuary had achieved the outcomes currently desired for it by the community. The summarised information was provided by attendees as evidence that the Crooked River Estuary of the future is being well managed to achieve those outcomes. People said that the evidence that the estuary is being managed “well” in the future will be that.....

- § People will be confident that they can come here to admire the relaxing views and experience the beauty and tranquility of the estuary.
- § Natural vegetation will have been rehabilitated along the shoreline and human access to the shoreline will be managed to protect sensitive areas.
- § There will be abundant small fish, prawns and oysters – evidence of healthy and productive breeding cycles.
- § We will experience the tidal flows and variations and this will mean that we can see the fish again as they swim in schools through the river, instead of only seeing a silt covered, dirty river bottom.
- § Wildlife will have returned – ducks and other water and shoreline birds, fairy penguins, black swam and fish.
- § Remnant vegetation communities such as the Sydney estuarine swamp complex and littoral rainforest - fossil deposits – heritage sites such as middens – will all be protected for future generations.
- § Runoff from all parts of the catchment will be well managed and everyone will be connected to the sewer – we will be confident that it is safe to swim and eat the fish - there will be no chemical pollution, or excessive silt or rubbish washed into the river.
- § We will see lots of children and their families playing and relaxing in and beside the river.

- § We will be confident that the values of the estuary are being protected by improved planning and development control measures.
- § The whole community will recognise that the condition of the estuary reflects how well the entire Crooked River catchment is managed.

4. VALUES ATTRIBUTED TO THE ESTUARY AND ITS CATCHMENT

“The way it used to be – open and tidal – clean and safe for swimming”

“I value the beauty and natural state of the river, especially the clean water, no noisy power boats, the bush and parks adjacent to the river.”

“Our community takes particular pleasure in, (and therefore gains from) the beauty of this area.”

The Crooked River provides a safe, clean water environment for swimming and canoeing – a feature highly valued by my family. In addition, the visual beauty of the waterway with the backdrop of the mountain range is an attribute to be appreciated and preserved. Such factors are important contributors to the attraction of this area as a tourist destination.”

(Submission extract)

The values listed in this section are those specifically associated with the estuary in written and verbal submissions. They are consistent with the values that were expressed by community members at the public meeting.

The majority of value statements offered relate to four main themes:

- § The natural beauty and tranquility of the estuary.
- § Participation in recreational uses of the estuary.
- § Cleanliness and safety of the estuary for its many users.
- § Lack of overt commercialisation or large scale residential development.

4.1 The natural beauty and tranquility of the estuary

The natural appearance of the river and estuary environment was generally recognised as an integral part of the value and identity of the whole Gerroa locality. The variety of words used in submissions to make the values statements that relate to the natural beauty and tranquility of the estuary is described in the list shown below. The majority of submissions said that the people value the.....

Natural appearance of the shoreline.

Ecological significance (particularly marine).

Tranquillity of the shoreline.

Habitat for fish breeding.

Scenic beauty.	Diversity of marine life.
Natural vegetation.	Habitat for birds and bird breeding.
Picturesque (when water is flowing in estuary).	Birdlife - upper reaches of the river.
Bush land setting.	Wetland habitat for water birds.
Natural beauty.	Wildlife along the shore.
Pristine nature.	Habitat for frogs.
Peace and quiet.	Experiencing the natural tidal variations.
Relaxing and quiet.	All of the features of the natural river system.

4.2 Participation in recreational uses of the estuary

A similarly consistent set of activities were referred to as valuable assets related to recreational use of the estuary. Greater detail was offered in letters that describe the experience of being within the estuary; extracts from some of these letters are included in this section. The activities and opportunities referred to are listed below. Activities highly valued and previously enjoyed in this estuary include.....

Safe swimming (particularly for children)	Boating
Recreational fishing	Rowing
Prawning	Canoeing
Walking	Kayaking

A repeated theme of the submissions is that the estuary is highly valued, particularly as a suitable place for family holiday groups and for children to enjoy safe water-based recreational pursuits was. Numerous references were made to safe, clean places for swimming and to the value of opportunities for safe, self-directed discovery of the estuary's natural features by children and family groups. The tidal flow and its influence on the physical features of the estuary and the behaviour of the wildlife were repeatedly mentioned in relation to recreational activities and enjoyment of the waterway. The features of the estuary and its amenities (e.g. picnic areas, parks) were described as adding value particularly because they are conducive to socialising opportunities for children and their families. A number of submissions referred to the lack of noisy power boats as being an asset for the estuary.

Ease of access to the shoreline was identified in a number of submissions as a value. One submission concluded that the area was valued as a recreational destination because disabled access was possible to many parts of the estuary area. Many others referred to the ease with which young children could be supervised but not unduly restricted in their water-play activities.

4.3 Cleanliness and safety of the estuary for its many users

Another common theme in the values statements was that estuary visitors and local residents value the cleanliness of the estuary waters. This value was often raised in association with concerns that the water is not currently considered to be 'clean' or 'healthy' as a result of prolonged closure of the estuary mouth. 'Stagnant' was a term that was commonly used to describe the current water quality.

4.4 Lack of overt commercialisation or large scale residential development

The 'village-type' atmosphere was identified in many submissions as a highly valued asset of the estuary. The other ways that this value was expressed are listed below. The submissions said that people value the.....

Lack of commercialisation.

No big housing estates.

No urban sprawl.

Rural amenity.

Lack of major development.

Not too many people.

Not too many houses.

Rural atmosphere.

5. RECOLLECTIONS

“The river [during 1946 -1949], I recall, was much deeper with no visible siltation. At our camp, fish made up a considerable part of one’s diet.”

“I reflect on my 10 years of both fishing and canoeing in that waterway with my family and friends. Firstly, in relation to recreational fishing, I have fished many of the coastal lakes and rivers in NSW and when compared to these waterways I am amazed with the size, quality and types of fish I have caught in this waterway. As well as the abundance of crustacean and biota such as yabbies, prawns and mud crabs on the mud flats and within the sea grass beds.

I consider this waterway is an important estuary for fish breeding and serves as a possible stop-over during fish movement along our coast. ...[My] observations ... reveal that from April through to September the Luderick numbers appear to increase in the waterway. Over the winter months large fish species, which are normally in roe also appear in the waterway. When the westerly winds arrive the fish seem to move into the upper reaches of the waterway.On one occasion whilst canoeing I observed large dark lines of approximately hundreds of fish (possibly more), consisting of blackfish and mullet, leading up into Blue Angle Creek and the top sections of the river over a number of days.....

In relation to other species, such as Flathead and Bream, similar seasonal trends [have been observed] in relation to movement throughout the waterway during the year. While in the summer months there are large numbers of juvenile fish providing an indication on the habitat value of the waterway in terms of being a safe, food-rich nursery.

Sometimes the beauty of this waterway can only be appreciated whilst canoeing, especially understanding its size and the abundance of birdlife that it attracts. Also the waterway appears to provide an important feeding and roosting habitat for large populations of birds. This particularly relates to the top sections of the waterway, where access can only be obtained by canoe. At night on the waterway another interesting observation is the large number of small bats that skim across the surface of the water and appear to be catching fish.”

(Submission extracts)

The submissions contained many recollections characterised by numerous references to having enjoyed decades of personal experiences with the Crooked River estuary. These statements were frequently expressed in lengthy, carefully worded letters; extracts from some of these letters have been included throughout sections of this report.

Overall the recollections focussed attention on changes in the physical condition of the estuary. The submissions observed that.....

- § The estuary used to be a beautiful area; artists used to sit and paint the water and its reflections.
- § The water used to be 12foot deep at the bridge.
- § There used to be clean waterwe could see the sandy bottom and the sea grasses – now nutrients have created muddy deposits and it they are harder to scour out than the sand.
- § We used to be able to collect oysters from the rocks.
- § Years ago we could go prawning in the estuary.
- § There used to be good fishing in the estuary.
- § We used to be able to go fishing and swimming and kayaking with the children up into the back waters.
- § We don't seem to get significant flows in the river anymore.
- § Now there is a reduction in the marine organisms and fish.
- § There has been a significant loss of mangroves on the river foreshore.
- § Siltation causing closure of estuary has been occurring more often than 30 years ago, [believes] its not all because of the drought.
- § Closure of the river has become more frequent in the past decade.
- § It is no longer possible to enjoy any real form of boating activity on the estuary for anything other than small canoes and surf skis and only for a limited range.
- § There are increased sediment and nutrient loads being transported to the river system due to the reduction in vegetation cover and increased run-off regimes.
- § Since 1986 there has been a significant decline in the quality of the river from the estuary to the railway line.
- § The tourist potential of the river has decreased.

“Many years ago, when we first bought land at Gerroa, I remember taking an exploratory walk over the Crooked River Bridge to Bayley's Island. We walked past the ruins of the old house and suddenly entered this magic land. I looked up and above me, seemingly an endless distance away, was the sky just visible above the enormous rainforest trees. I felt I had entered the realms of pre-historic animals. I had never seen such gigantic trees before. A few years later we took another trip to prove to ourselves that we had indeed entered this paradise only to find it no longer existed. Where immense trees once grew now there were grass and weeds and nowhere were the utopia we had once witnessed.”

(Submission extract)

6. CURRENT MANAGEMENT ISSUES

“People seem to think that bit of water [the closure of the estuary, sand deposits and the bridge] was all there was to talk about.....[what about the] housing, clearing of the land and chemical use[?] Where is all the run-off from this going to go to when it rains? Into the Crooked River?”

(Extract from statement submitted following the public meeting)

Being the lowest point in its catchment, the estuary and its tributaries collect negative impacts from surrounding land use areas which will show up in the Crooked River as: increased levels of pollutants, reduced water clarity, increased levels of sedimentation and reduced biodiversity.”

“It just isn’t Gerroa with the river closed.”

“Freedom of flow should be a paramount concern.....Any long term flooding could have a detrimental effect on adjacent farm lands and [the sewerage treatment plant] and operation of the scheme itself.”

“...significantly reduced tidal flows through the entrance when it is open. The reduced flows result from the river basin no longer having any substantial capacity due to it being largely full of sediment. With only minimal flows in terms of both volume and velocity sufficient energy is not generated to keep the entrance flushed.”

“Building of the road bridge was the start of the siltation – used coffer dams to put in the footings – clinker was never removed – prevents the river from flowing freely and the silt from being moved through to the sea.”

“Our current concern is the ongoing care and maintenance of the area for future generations. The only way that objective can be achieved is to ensure that the quality of development is closely monitored.....”

“Unfortunately when an area is scenically attractive it draws people to it. [to live and holiday close to it, or purchase land because of resale value].....The beauty therefore becomes inadvertently tainted and a plethora of pollutant problems arise resulting in some concern regarding its future. In effect we ‘love it to death’.”

(Submission extracts)

The wide range of issues identified in the submissions have been grouped under a number of categories and summarised under below. While the majority of the issues raised concerned the current condition of the estuarine section of Crooked River, there were also a large number of submissions that drew attention to the relationship between land use and management within the catchment and impacts that would be transferred downstream into the estuary area. Submissions that identified issues that are thought to be causing negative impacts on the estuary commonly referred to storm water run-off from existing and proposed urban developments in Gerringong, run-off from rural land management practices, tree clearing and wetland clearing and drainage. Many submissions claimed that the current high level of silt in the estuary had resulted from one, or all, of these activities.

6.1 Closure of the estuary

The submissions paid considerable attention to effects attributed to the current closure of the estuary. In particular, a reduction in depth and the appearance and smell of the water within the estuary were all identified as factors that are causing a high level of concern for residents and visitors, leading many people who sent in submissions to demand that the estuary be opened artificially as soon as possible. In many submissions, the current condition of the estuary was associated with:

- § Loss of recreational value.
- § Loss of tourist value.
- § Negative impacts on fish breeding that are compounded by the drought.
- § Potential for increased flooding of farmland and the caravan park.
- § Accumulating pollution loads in the waterway.
- § Loss of seagrass beds.
- § Decline in fish breeding.
- § Increased problems with mosquitoes and diseases transferred by insects.
- § Algal blooms and 'scum' on the water surface.
- § Odour problems.

Suggestions were made to cut a channel through the sand bar at the mouth of the estuary to allow tidal flow. Others asked for dredging of channels upstream of the sand bar that is currently closing the river and also for deepening of strategic areas between the footbridge and the road bridge to reinstate the recreational use of these areas. One submission suggested construction of rock walls to ensure that the estuary be permanently open.

In contrast to these suggestions, an observation was offered to the public meeting about the estuary's response to past interventions that involved removal of sediment from the waterway. The observation was that considerable amounts of money had been spent to remove sediment, only to find that the sediment had once again built up in a short timeframe.

Others acknowledged that the estuary could be subject to a natural cycle of opening and closing but these people suggested that the estuary mouth be artificially opened when closure conditions presented a danger to people or property and otherwise that it be left to ‘natural forces’ to determine the state of the river mouth. Other submissions proposed that information be gathered to gain a better understanding of the siltation situation and its causes, and that this information be the basis of any future management of the estuary mouth conditions.

A common perception that was expressed in many submissions and at the public meeting was that the build up of silt, and inability of the waterway to experience regular tidal flushing, is caused by the presence of rocks that were placed and left in the waterway to enable bridge construction. Comments such as the two shown below were common explanations:

§ “It has only been silting up since the bridge was built”.

§ “Building of the bridge was the beginning of the sickness in the river.”

6.2 Water quality

Concern was expressed about the quality of the water within the estuary. It is assumed that there would currently be health risks associated with consuming any fish caught within the river and with swimming in the waterway. Concern was expressed that visitors appear to be unaware of the ‘health risks’ associated with swimming or eating fish caught in the estuary and that signage should be installed to warn them.

Other concerns about water quality were raised; many people commented that these are exacerbated by the current closure of the river. These concerns included:

§ Storm water run off from urban and rural areas.

§ Raw sewerage is assumed to be entering the river in some locations within the upper catchment.

§ Discharges from illegal septic systems.

§ Rubbish washed into the river via water courses, this rubbish becomes caught in the reeds along the river shore.

The presence of the recently constructed sewerage treatment works on Baylely Island appears to be causing a high level of concern for many of the people who made submissions and who attended the public meeting. A number of people have suggested that there is need for increased public awareness about the conditions of approval and operation for the sewerage treatment works. The concerns related to fear about overflows and discharges in times of flooding of the Sewerage Treatment facilities and pumping stations; and about leachates moving through ground water from the previous night soil depot and tip. Submissions requested information about water quality monitoring associated with the operation of the sewerage treatment plant.

The existing and developing urban areas within Gerringong were also the focus of many concerns. It was observed that a storm water drain from Gerroa emptied into the ‘prime’ swimming area. Suggestions were made about installation of rubbish traps in tributary streams. It was acknowledged by some that the introduction of the sewer to the local residential area had reduced the potential for pollution from septic systems but that, at the same time, it created potential for urban expansion. Activities associated with tourism and holiday makers were also identified as pollution sources for the estuary area.

Concerns were raised about pollution originating from land use practices on adjacent farmland. Activities in the Willowvale area were identified in a number of submissions as a cause for particular concern. Waste water discharges and run-off from vineyards were singled out for specific comment about chemical discharge into the estuary. It was assumed that this type of horticulture involves heavy use of chemicals that would be washed into tributary streams and into the river and estuary. Similar concerns were expressed about dairy waste, insecticides, pesticides and regular fertilizer applications to grazing areas within the catchment.

Siltation was attributed to both recent and past clearing of natural vegetation within the catchment; some submissions particularly highlighted water quality decline and fish kills that were referred to as having occurred soon after clearing of scrub from extensive wetland areas within the catchment.

6.3 Other issues

The range of additional issues raised by submissions is indicated below:

- § A general lack of public awareness about the nature and extent of the Crooked River catchment and the interconnections between it and the condition of the estuary.
- § Concern about vehicular access, particularly 4wheel drives, to the beach and across the sand bar that constitutes the closure of the river mouth.
- § Dumping of garden waste and lawn clippings.
- § The natural vegetation along the shoreline has been damaged or lost.
- § There are sufficient weeds in the forests around the lower estuary to reduce the capacity of these forests to regenerate.
- § The reeds opposite Rowlins Road appear to have been poisoned.
- § The river banks are being choked with weeds and algae growth, particularly along Blue Angle Creek.
- § Bushfire protection.
- § Sand mining.
- § The recent proposal to develop a resort in the upper reaches of Blue Angle Creek.
- § The significance of connectivity between Foy's Swamp and Coomondery Swamp –an integral part of the Crooked River system.
- § Future use of land zoned light industrial.
- § Request to have rubbish removed from public parks associated with heavy park visitation in holiday periods.
- § Concern about safety hazards to children associated with sharp oyster shells on rocks within the estuary.
- § A suggestion to dam Crooked River to provide water in drought times.
- § Concern about parking of boats and heavy vehicles on front lawns.
- § Concern about disturbance to dogs caused by fireworks around the estuary area.
- § Access issues concerning three sets of stairs that appear not to assist pedestrian access to the river banks.
- § Comment about a need for safe footpaths leading to the road bridge.

7. SUGGESTIONS ABOUT FUTURE MANAGEMENT

“People do not know enough about the way the estuary and the catchment operate. They don’t understand the extent of the river.”

“As the second largest waterway in the Kiama Municipality, and the biggest whose catchment is wholly within our control, Crooked River holds special significance.”

“We need more rain to swell the flow and there is much concern at Gerroa to have the river open and flowing to the sea and not cut off by the now wide belt of sand.”

“The river currently is akin to a stagnant pond and is being choked by weed and algae growth, the previous amenities are therefore lost to both locals and visitors, there should be regular openings to the sea particularly in drought periods when the river cannot flush naturally.”

(Submission extracts)

The submissions also contained numerous suggestions for future management of the estuary and catchment area. In many instances the suggestions made contradicted those in other submissions. Some suggestions also included clear specifications for the approach and inclusions in the Estuary Management Plan. The detailed suggestions made in lengthy letters will be included in the Estuary Management Committee’s consideration of future management for the estuary. The suggestions offered have been loosely grouped into themes and listed in summary form below.

Awareness

- § We need more information circulated in the community to encourage a coexistence with the estuary rather than disturb nature.
- § Would it be possible to introduce small boat trips to assist people to explore the river?

River mouth management

- § Develop a policy about opening the river mouth and include local community collaboration on policy development.
- § Open the river mouth now.
- § Keep the river mouth open at all times; or, periodically; or, when it has been closed for three full moons.
- § Dredge the river mouth to allow passage of small boats.
- § And, in contrast, leave it closed and let take its course.

Water quality health hazards

- § Develop signage that advises visitors in periods when the water is unfit for swimming, catching fish and other primary contact activities.
- § Prevent effluent flowing to the river from commercial enterprises.
- § Develop a register of chemicals and volumes used on each property.
- § Improve water quality by addressing the tidal flows issue.
- § Install storm water outlet controls to reduce nutrient, sediment and trash entering the river from residential properties.

Sewerage treatment works

- § Increase public awareness about the conditions of operation, accountabilities and contingencies associated with the sewerage treatment works especially related to: flood contingencies, water quality monitoring, overflows, impact of heavy rains, as well as the benefits of having the area connected to the sewer.
- § Use local newspapers to maintain a high level of awareness amongst the local community about the performance of the sewerage treatment works.

Vegetation

- § Re-vegetate of farm land upstream of the estuary to prevent further siltation.
- § Re-vegetation of selected upper reach areas that were previously cleared, possibly in conjunction with construction of water quality control features to limit future sedimentation and nutrient loads.
- § Rehabilitate Foys Swamp and remove artificial drainage.
- § Re-vegetation of the shoreline.
- § Remove weeds from the banks and stabilize the banks using endemic species.
- § Undertake tree planting from the footbridge to the river mouth.
- § Screen the estuary from the surrounding residential development by planted buffers.
- § And, in contrast, removal of all she-oaks along the estuary near the footbridge and no more planting to take place because the trees obstruct the residents' and visitors' views and are ugly.
- § Clear the river banks so the river can flow without obstruction – this was said also to increase opportunity for the river to be enjoyed and admired.
- § Clear debris from creeks flowing into the estuary so the water can flow freely.
- § Cut lawns near the footbridge to enable the area to be used for picnics.

Fishery

- § The estuary provides significant catches of prawns in the spring and early summer. Prawning should be restricted to the use of hand dip nets – drag netting of such a small estuary, and the possibility of staking drag nets across the outlet during tidal flow makes this form of prawn harvesting inappropriate.
- § Increased temperatures of the estuary means that it contains mud crabs and other northern species not common in other south coast waterways. The presence of these species should be quantified properly as indicators of continuing environmental health.
- § Fishing by professional anglers should be banned in the estuary.

Future development and access

- § Limit development; or, no more development.

- § Prevent restructuring of water courses.
- § Commit resources to monitoring compliance with development approvals.
- § Monitoring of future human development of the estuary area.
- § No subdivision of the rural area to create further urban estates.
- § No high-rise or intensified urban development.
- § Restriction of 4-wheel drive access to the beach area.
- § Close Miller Street and the southern end of Rowlins Road (marked as roads on the map but now part of the estuary).
- § Concern that livestock have access to the remaining riparian and wetland areas around the waterway...develop measures that ensure that these areas are protected and rehabilitated.
- § Provide access to the shoreline in a balanced way (not overly restrictive).
- § Consider developing a linked walking and bike riding trail along the coastline, connecting it and its catchment to the Minnamurra River and its catchment.
- § Provide board walks with railings and signage to give easier access to the shoreline and to avoid human access causing damage the river banks.
- § The walk way under the bridge appears less stable – a suggestion was made that this walkway be the flood level that triggers opening of the estuary.
- § Designate areas for restricted access to protect sensitive areas, reduce bank erosion and other damage to the shoreline habitat.
- § Tourism offers a chance for developing employment in the area. Developers of tourism ventures should be required to improve the local environment as a fee from their use of its existing values.

Heritage

- § Include cultural heritage areas in the estuary management plan.
- § Develop strategies to protect the fossil deposits, middens, threatened species and their habitat.
- § Identify and protect key natural heritage areas within the catchment.

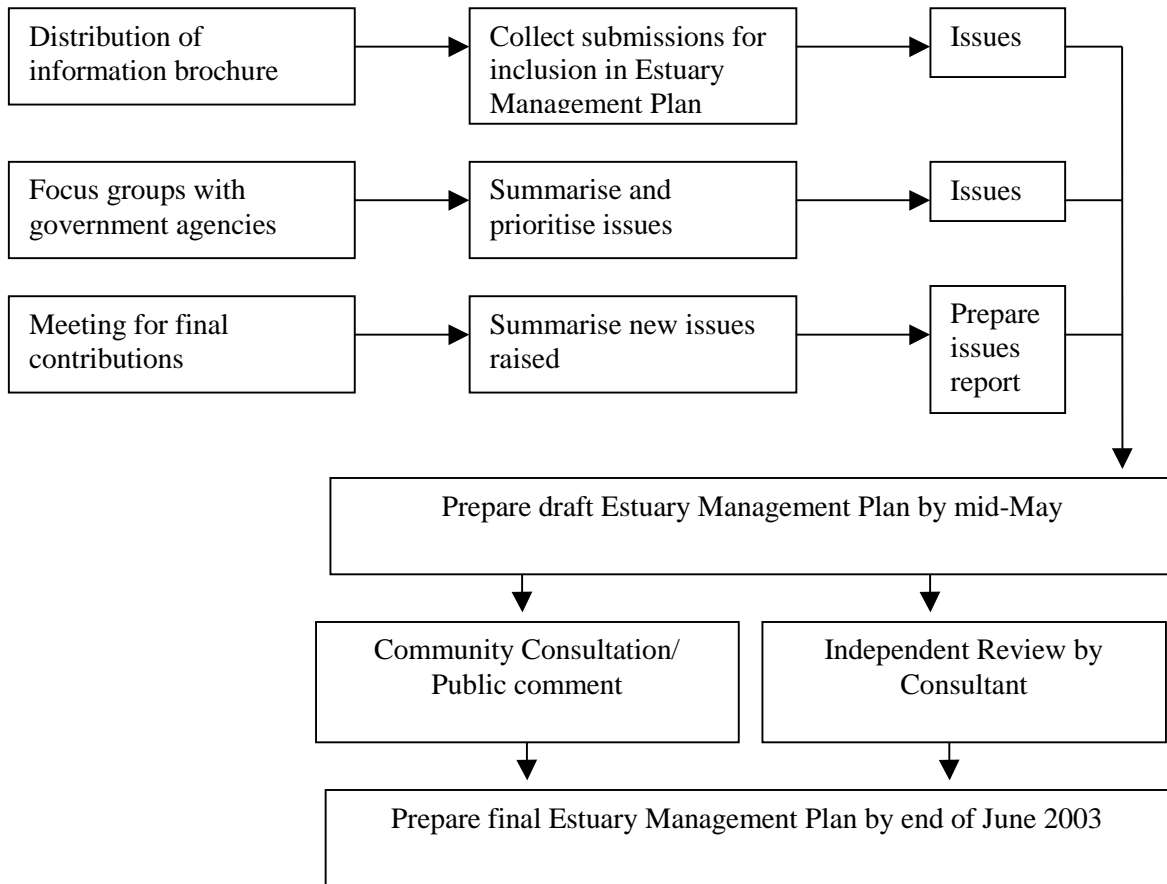
Estuary Management Plan

The following are typical of the suggestions made for various approaches and inclusions in the estuary management plan:

- § Integration of the Estuary management Plan into the Council's environmental management plan.
- § Recommendations about changes in land use for the estuary area and catchment where these changes will assist the objectives of estuary management.
- § Long term monitoring strategies.
- § Links and/or references to development controls.
- § Methods for implementation and timing.
- § Inclusions that accommodate climate change and sea level rise.
- § Comparisons between rural and urban (existing and future) impacts.

- § In terms of objectives for management of the waterway, which take into account the values the community has placed on the waterway, one submission recommend that Council consider encapsulating in the Crooked River planning process the ‘Water Quality and River Flow Interim Environmental Objectives for the Illawarra Catchments 1999’. The submission noted that a number of residents had contributed to the development of these objectives.
- § Commitment by State Government agencies that they will make future decisions consistent with the plan.
- § Link the estuary management plan to council’s Stormwater Management Plan.
- § Consider the recommendations of the Healthy Rivers Commission Coastal Lakes Inquiry, many of which are relevant to this estuary.

Appendix 1- Issues identification process used for the Crooked River Estuary Management plan.



Appendix 2 - Participation summary

Submissions received

A total of 96 written or verbal submissions were received. Table 1 contains a breakdown of the types of responses. Where more than one type contact was made, the primary source of information used in this summary is listed and the secondary contact is shown in brackets.

<i>Type of response</i>	<i>Number of responses</i>
Telephone call	26 (1)
Completed brochure	50
Facsimile	1
Letter	12
Discussion during a visit to Council	2(1)
Return of completed agenda form following public meeting	5
Total submissions	96

Table 1: type of response

The origins of the submissions are summarised as permanent residents, temporary residents, business or visitors based on the information provided. One submission was anonymous and four completed forms were returned after the public meeting that lacked residency information.

Table 2: Origin of response

<i>Origin of response</i>	<i>Number of respondents</i>
Permanent residents	49
Temporary residents	38
Visitors	1
Business	2
Anonymous	6
Total	96

Public meeting

A total of 72 people registered their attendance by providing contact details at the public meeting held in Gerroa Neighbourhood Centre on 15th March 2003, although a head count of those in the room indicated that attendance was more likely to be 90 people.