Lake Cathie Progress Association Inc.

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20th October 2009

Port Macquarie Hastings Council
PO Box 84
PORT MACQUARIE NSW 2444

Attention Mr Matt Rogers c.c. Mr Gordon Cameron

Dear Matt and Gordon

COUPLED MANAGEMENT STRATEGY
LAKE CATHIE ESTUARY & COAST

Following in depth research done by our executive and others we believe the current management strategies should be reviewed and rolled into one integrated management plan for the entire system.

Our reasons are based on the findings of the many studies done on the estuary and its direct connection to the outcomes for the entrance and coastal zone. We believe the following strongly supports our request.

LAKE INNES

The following data (extracts from previous studies) is significant and undoubtedly supports the positive effect isolation of Lake Innes would have on the estuary, ocean entrance and beyond:

The isolation of Lake Innes from tidal flows would improve ocean entrance stability *(The Lake Innes-Lake Cathie Catchment Study- Colin Creighton 1983)*

The isolation of Lake Innes will increase the number of entrance openings from average one per year to three *(Webb, McKeown Lake Cathie/Lake Innes Estuary Management Plan 1994) and (Umwelt A Tale of two lakes 2003)*

A possible increase in benthic faunal communities and in sea grass and mangrove communities in response to more stable water quality and to greater tidal range *(Webb, McKeown Lake Cathie/Lake Innes Estuary Management Plan 1994)*

The need to dredge to remove excess sand build up to the lower estuary would be less frequent *(Webb, McKeown Lake Cathie/Lake Innes Estuary Management Plan 1994) and (Webb, McKeown Lake Cathie/Lake Innes Estuary Management Study1995)*

More frequent lake openings would occur as Cathie Creek would rise much more quickly. *Webb, McKeown Lake Cathie/Lake Innes Estuary Management Study1995)*

More frequent openings would result in a narrower flood channel and reduce the erosion to the Southern headland. *(Webb, McKeown Lake Cathie/Lake Innes Estuary Management Study1995)*

COWARRA CREEK

Redirection of the outflow from Cowarra Creek (currently heavily silted up and requiring dredging) will increase the scouring effects on the estuary channels and entrance area:

Given that the catchment area of Cowarra Creek is approximately 50% of that of Lake Innes, Cowarra Creek *(Umwelt A tale of Two Lakes 2003)*

If Lake Innes was closed with a 1.0 m AHD barrier, flows from Cowarra Creek would be directed downstream to Cathie lagoon and then out to sea if the entrance was open, or would contribute to the volume of water stored in Cathie lagoon and Lake Cathie if the entrance was closed. *(Umwelt A tale of Two Lakes 2003)*

ESTUARY CHANNELS

We have written to Council separately requesting a Bathymetry (Depth) Survey of the estuary channels be include in the scenarios for Hydrodynamic Modelling

One would expect after the very heavy rain from February to April this year, when over 1.8 metres of rainfall was recorded, that the system should have had a significant amount of the sand flushed out to sea. However this just did not happen due to the shallow nature of the channels.

A previous Bathymetry survey (***Colin Creighton 1983)*** is available for comparison for comparison and others may also be in existence. Copy of the Creighton Survey is attached.

GHD 2004 work also included Bathymetry work. It is believed Umwelt modeling 2003 may include similar modeling.

POTENTIAL FOR FURTHER FISH KILLS

The shallow water and coming summer heat could lead to more fish kills as occurred in January 2009.

Lake system has high risk of stratification. *(Webb & McKeown 1994)*

KENWOOD CAUSEWAY

All studies done to date have recommended widening of this ill conceived piece of engineering. Some examples from the studies include:

Similar modelling was undertaken for Kenwood Drive Bridge. Webb McKeown (1994) compared the impact of Kenwood Drive Bridge on tidal and flood flows with that of a bridge with an opening four times as wide as that of Kenwood Drive Bridge. Webb McKeown's modelling indicated that widening of the bridge would increase the volume of water exchanged each tide from approximately 4700 m3 (i.e. approximately 5% of the total volume of Lake Cathie) to approximately 15,000 m3 (i.e. approximately 15% of the total volume of Lake Cathie). They concluded that although the modeled four fold increase in the width of Kenwood Drive Bridge would increase the tidal movement in and out of Lake Cathie by a factor of three, that the total volume of tidal exchange remained low and would require dredging of the channel into Lake Cathie and dredging of Lake Cathie itself to produce a higher volume of flow and to increase the tidal prism. *(Umwelt A tale of Two Lakes 2003)*

The Kenwood Drive Bridge has shown to restrict both tidal and flood flows which has effectively isolated Lake Cathie from the lagoonal system. Prior to the construction of this bridge water flows from the Cathie lake were not impeded. The construction of this bridge has adversely affected the ocean entrance stability by reducing the tidal prism.
Both approaches of the bridge were washed out in the flood event of 1978. Data available reveals that flood event was not considered an extreme event.
(The Lake Innes-Lake Cathie Catchment Study- Colin Creighton 1983)

Recommendations

The bridge should be extended to at least three times its present configuration
(Webb, McKeown Lake Cathie/Lake Innes Estuary Management Study1995)
(Umwelt A Tale of two lakes 2003) and (The Lake Innes-Lake Cathie Catchment Study- Colin Creighton 1983)

Much more is included in the many studies done to date and is too voluminous to include here but all agree the opening should be widened.

OCEAN DRIVE BRIDGE

The following is an extract from The Creighton Study 1983

Design Criteria for Future Replacement of Main Ocean Drive Bridge

Observation of bathymetry, shoaling patterns and tidal flows suggests that the main bridge constricts flow, thereby acting as a reduced-length training wall. This constriction, in close proximity to the ocean entrance, but not contiguous with the ocean entrance has led to the extensive shoals downstream of the bridge. These shoals have an adverse affect on entrance stability, providing both a localised source of sediments and a reduction in current velocities. Economic considerations would prohibit any major alteration to the present bridge configuration. Any future proposal for bridge replacement should incorporate factors relevant to entrance stability during the design phase.

ENTRANCE AREA EAST OF OCEAN DRIVE BRIDGE

The current Estuary Management Policy includes dredging of the shoaling as follows:

Maintenance dredging of the lower estuary be carried out every 5 years subject to annual review of sand build up. ***(DNR DECC & W 1994)***

Natural transport of sand out of the estuary has virtually stopped due to man made interferences to the estuary system.

See attached page re normal estuarine sand transportation regimes. ***(Source NSW DN.R.)***

COMMUNITY INTERESTS

Aside from the technical input from the many studies the community interests must be included in this document – a brief summary:

The immediate problem for our Lake Cathie community - and the wider community for whom the lake is a valued public asset - is that Port Macquarie Hastings Council is not coupling its present options for stabilizing the entrance and beaches with the future health of the estuary.

Support for this concept was demonstrated in the Lake Cathie Progress Association's Community Survey (2009) where 100% of respondents want a combined management strategy for the estuary and coastal issues.

IN CONCLUSION

As stated at the start of this letter all the studies done to date confirm the absolute connection of the waterway from Lake Innes to the entrance and coastal zone.

We request the concept for a combined management plan be put to the Coasts & Estuary Committee for consideration.

COUNCIL DECISION ON THIS REQUEST

We would like an assurance that whatever action Council decides to adopt it will be based on finding the best solutions to the problems and will not be based on Council's current financial position. The implementation of the most effective solutions for long term results is essential.

Yours truly

Jack Jones
Secretary

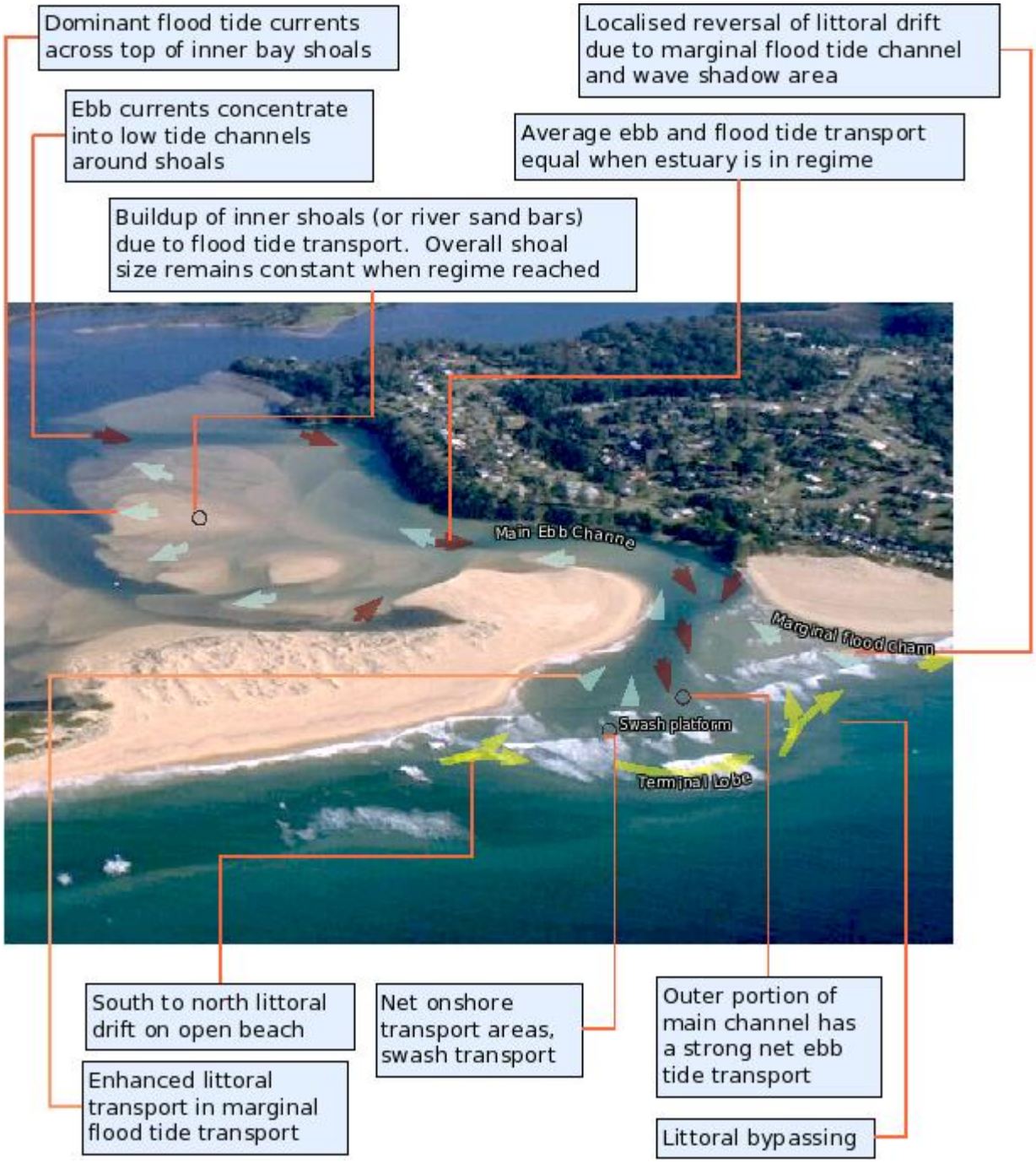
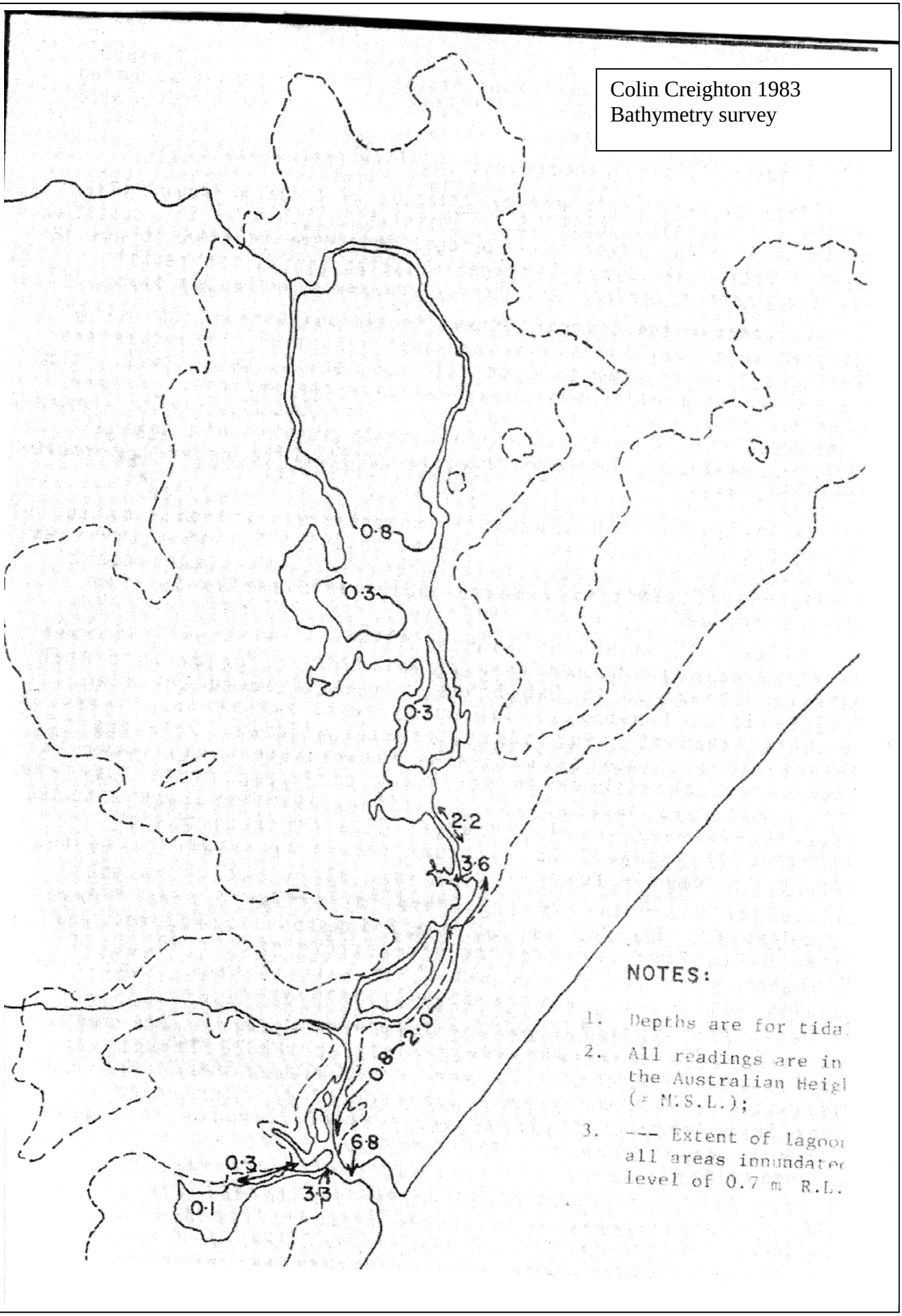


Figure 26 Sediment Pathways at a heavily shoaled Entrance


Colin Creighton 1983
Bathymetry survey
0·8
0·3
0·3
2·2
3·6
0·8–2·0
6·8
0·3
3·3
0·1
NOTES:
1. Depths are for tida
2. All readings are in
the Australian Heig
(≈ M.S.L.);
3. --- Extent of lagoo
all areas innundate
level of 0.7 m R.L.