

RICHARD CRANDON CPEng. MIEAust.

55 BURNS POINT FERRY RD. BALLINA NSW 2480 CONSULTING ENGINEER

4th November

2019

General Manager Ballina Shire Council P.O. Box 450 Ballina NSW 2478

Ref:

Replacement Revetment Wall (Tasman)

Lot 10 DP 263861 135 Riverside Drive

West Ballina

Client:

J & G. Colefax

CERTIFICATE OF SUFFICIENCY OF DESIGN & COMPLIANCE

Dear Sir,

This is to confirm that I have designed, inspected and now certify as Works Completed for the abovementioned structure.

Work detailed & specified: -

- 1_s Soil Profile Classification Moderately Expansive (M)
- 2. Tasman Block Walling

Structural Details & Specifications shown on my Structural Plans 2019/62 have been designed and built in accordance with the relevant current SAA Codes & is structurally adequate to support all specified loads, normal loads of exposure & those implied in the working drawings relative to the abovementioned structure.

Yours faithfully,

RICHARD L. CRANDON, CPEng. MIEAust.

NPEReg. No. 272559

Mobile: 0411422222 Email: crandon612@gmail.com

8.2 <u>Building Information Certificate - 135 Riverside Drive, West Ballina</u>

16th December 2019

135 Riverside Drive, West Ballina

Councillor DAVIO WRIGHT (MAYOR)

We the undersigned, reside at 135 Riverside Drive, West Ballina. We have lodged a Development Application for a masonry revetment wall (600high) which has been constructed on our property backing into the canal.

This subject revetment wall was built on our property in conjunction with our approved pontoon - as a replacement of an existing timber wall (failed).

This revetment wall is necessary to maintain our beach profile. It is evident that the sands from our beach in the normal tidal zone were being eroded into the centre of the canal causing sand siltation under our pontoon and making the pontoon inoperative at low tide.

The revetment wall was design and certified by Consulting Engineer, Richard Crandon as an engineered solution to this erosion problem. See attached Engineering Design.

Council Staff believe these works as completed do not conform with the recently amended DCP 2012 which now includes all retaining walls must be contained within 2m from the insitu K&G wall.

It should be noted the subject & original walling is 4.4m from the K&G wall and was in place before this 2m offset amendment was implemented.

In summary we seek Council's review as to our situation considering this amended DCP 2012.

Also, we seek Council's instruction for another method of construction for us to maintain the profile of our beach - other than what we have built that would comply with DCP2012

Councillor, you are welcome to inspect this subject revetment walling before the January Meeting to gain a true prospective of our situation by contacting Graham directly on mobile 0412614201

Yours faithfully,

Graham Colefax

Ballina Shire Council **27/02/20**

RICHARD CRANDON CPEng. MIEAust.

55 BURNS POINT FERRY RD. BALLINA NSW 2480 CONSULTING ENGINEER

6TH August 2019

General Manager Ballina Shire Council P.O. Box 450 Ballina NSW 2478

Attention David Tyler Building Department

Ref:

Replacement Retaining Wall Lot 10 DP 263861 135 Riverside Drive

West Ballina

Dear David.

I refer to your letter dated 16th July 2019 to my clients, Mr.& Mrs. Colefax in which you have instructed them to relocate their recently construction retaining wall to comply with Council's Development Control Plan 2012.

I have now prepared for your information the correct schedule of events that has occurred in the replacement and reconstruction of this subject walling.

In late April 2019 Mr. Colefax requested me onsite to advise him as to the replacement of an existing timber wall approx.-15yo.which had deteriorated to the stage of detracting from the aesthetics of the canal.

I instructed Mr. Colefax to consider using a Tasman Walling system – no higher than the existing failed timber wall which was approximately 600 high.

I also instructed Mr. Colefax to reconstruct the new wall on the original alignment of the old wall. See photographs attached.

These works were completed in accordance with my instructions. My certifications are attached.

The aged pontoon – 20yo – had been recently been removed and taken off site. It is only fitting to upgrade the existing aged retaining walling to concur with the new proposed walkway & pontoon.

Development Approval – DA 2018/773 was issued by Council and Aqua Pontoons P/L Currumbin were engaged to install the new pontoon & access way.

These works are now completed and approved by Council

2.

David, I know seek your comments on why this claim by Council has now been instigated by "a complaint" after Council had inspected and approved all the works in accordance with DA&CC 2018/773.

Also I wish to raise the enquiry as to these required works must comply with Council current Development Control Plan 2012. i.e. Chapter 2 - "General and Environmental Considerations". I believe Clause 3.23 Boat Ramps, Pontoons and Jetties relative to this situation are still in draft form awaiting approval by Council. I believe you are out of order by implying this condition,

Should you wish to discuss these matters raised in this letter, please do not hesitate in contacting me directly.

Yours faithfully,

RICHARD L. CRANDON, CPEng. MIEAust.

NPEReg. No. 272559

Addendum:

Works Certification

Photographs

Tasman Walling Specifications



PHOTO 1 REMOVAL OF ORIGINAL WALLING AND THE DIFFICULTY IN RETAINING EXISTING BEACH DURING CONSTRUCTION OF THE REPLACEMENT WALL

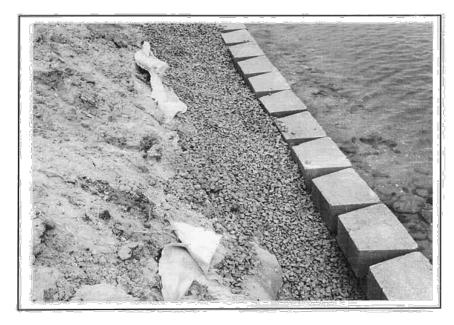


PHOTO 2 REPLACEMENT WALLING BACKFILLED WITH DRAINAGE MEDIUM IN PLACE - NOTE EXCESS EXCAVATED CUT MATERIAL ON BANK



PHOTO 3 GENERAL VIEW OF REPLACEMENT WALL—BACKFILLED—NOTE EXCESS CUT BEACH MATERIAL—TO BE PLACED ONTO AND RESTORE THE BEACH.



PHOTO 4 GENERAL VIEW OF REPLACEMENT WALL— BACKFILLED—NOTE EXCESS CUT MATERIAL—PLACED ONTO BEACH AREA IN FRONT OF THE WALL



PHOTO 5 GENERAL VIEW OF FINISHED WALLING AND BEACH RESTORATION

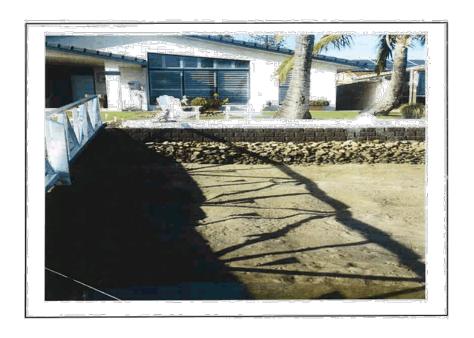


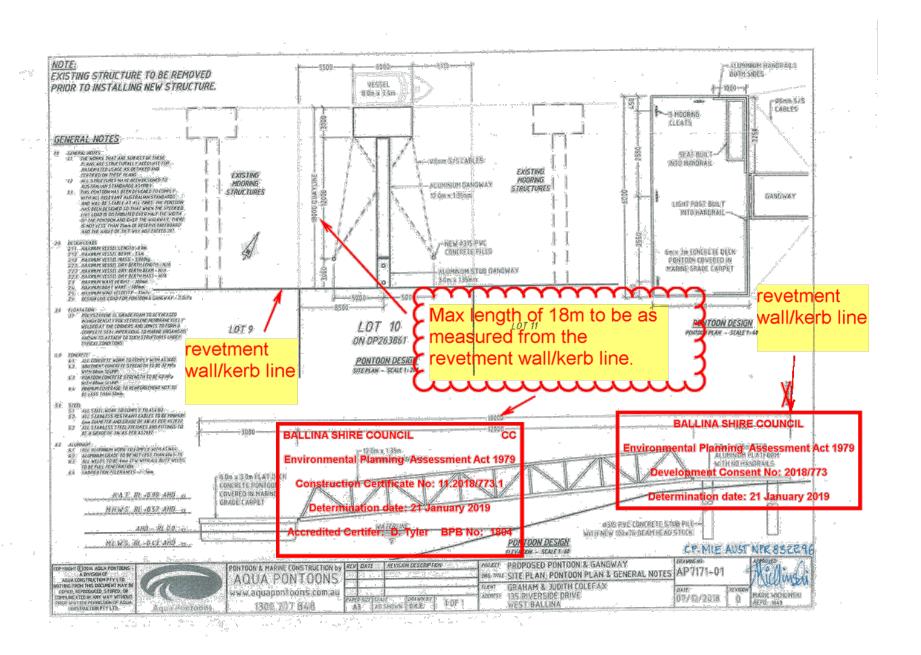
PHOTO 6 GENERAL VIEW OF FINISHED WALLING AND BEACH RESTORATION

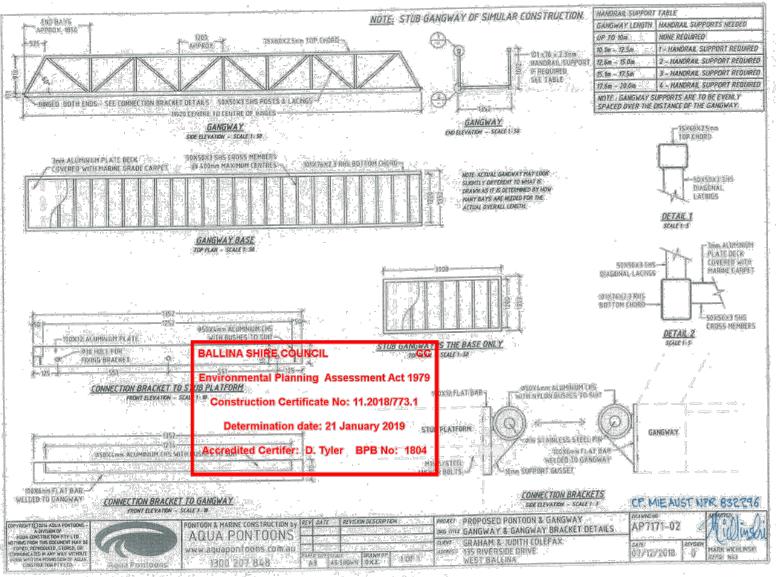


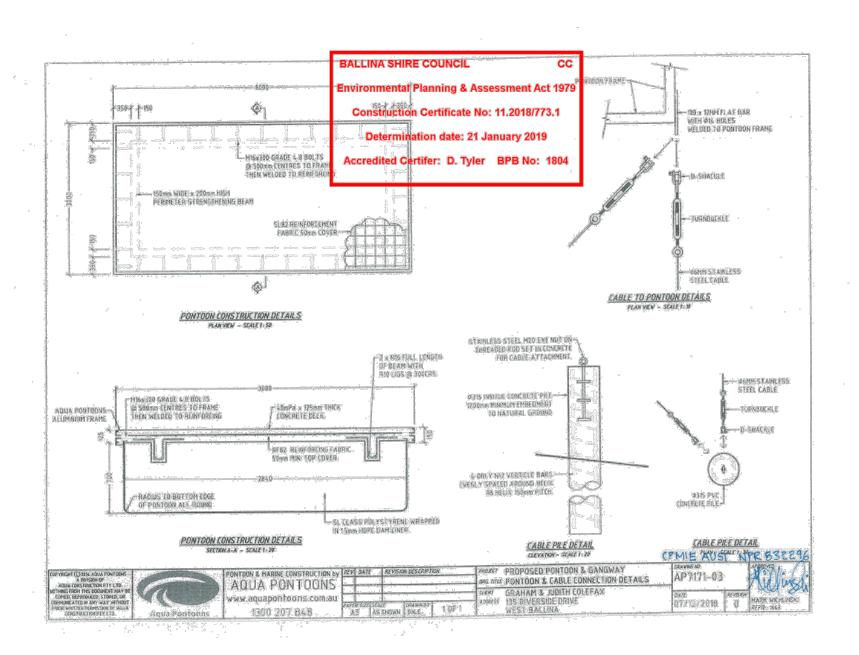
PHOTO 7 GENERAL VIEW OF COMPLETED WORKS.



PHOTO 8 GENERAL VIEW OF COMPLETED WORKS







BALLINA SHIRE COUNCIL

CHIEF ENGINEER'S REPORT "A" CLASSIFICATION - 26/8/1999

A2. BALLINA QUAYS - STRUCTURES WITHIN THE CANAL - File - S01-02025001 Report by Deputy Chief Engineer

<u>Introduction</u>

This report deals with the unauthorised construction of retaining wall type structures on the beach profile of the Ballina Quays canals. This matter was previously reported to Council in May 1995 and it was resolved that a three (3) year monitoring period be undertaken to assess the effect on the hydraulics of the canal system. Mr Craig Witt of WBM Oceanics Australia prepared a report for Council in May 1995 dealing with the canal hydraulics, and has now prepared a further report dated June 1999.

Background

March 1995

It was reported to Council that 9 property sites within Ballina Quays had constructed retaining walls (and placed fill) on the beach profile. The walls had been placed some three to five metres from the kerb line which forms a boundary between the landside and the waterway.

Council had advised the owners of its intention to serve Orders for removal of the structures, and that submission could be made to the General Manager. A further report and the submissions would then be presented to Council.

A report was presented to Council which included a report from Mr Craig Witt of WBM Oceanics Australia (copy attached). In summary, it stated that "hard" structures built within the beach profile have potential to impact on sediment movement which in turn may affect extent of erosion, stability of structures, navigation and maintenance requirements. Furthermore, the extent of these impacts is dependent upon the location, nature and size of the structures. Council resolved to take no action against the existing structures and to monitor the canal system over the next three (3) years. During this period, applications for new structures would be refused.

November 1998

An inspection along the kerb line at Ballina Quays canals indicated a further 13 property sites had retaining wall structures built on the beach profile since March 1995 (plan attached). These sites had walls placed some two to three metres from the kerb line. Applications for construction of the walls have not been received by Council.

February 1999

Mr Craig Witt from WBM Oceanics Australia inspected Ballina Quays. It was further evident that property owners had undertaken excavation / filling works to maintain navigation and replenish beach slopes.

Comments

Mr Craig Witt from WBM Oceanics Australia has prepared a report (copy attached) which deals with the canal system generally. In summary:

This is Page 3 of 4 of the Chief Engineer's Report "A" CLASSIFICATION - 26/8/1999

BALLINA SHIRE COUNCIL

CHIEF ENGINEER'S REPORT "A" CLASSIFICATION - 26/8/1999

- The beach profile will tend to erode from a design slope of 1:7 to a flattened slope of at least 1:10 largely due to the sand particle size which exists in the canal system.
- The sand movement is generally from the upper beach, leaving a scarp up to 0.5 metres, down to the deeper navigational channel.
- The pontoons in more exposed locations can act as floating breakwaters, thereby exacerbating sand deposition near pontoons.
- The existing retaining walls do not appear to be causing major problems as longshore sand movement does not appear to be significant.

*** It is therefore **RECOMMENDED** that:

- 1. With respect to the retaining wall structures:
 - 1.1 Vertical retaining walls be permitted within the beach profile of the Ballina Quays canal system such that the face of the retaining wall be positioned parallel and a standard distance of 2.0 metres from the kerb line. This will ultimately provide a uniform profile along the canal.
 - 1.2 The wall is to be designed such that an erosion scarp of 0.75 metres can be withstood by the wall.
 - 1.3 The wall is to be constructed of durable facing and that geotextile fabric will encapsulate any backfill material.
 - 1.4 The owners of the 22 unauthorised retaining walls be advised that existing walls may remain, but that any reconstruction will comply with the above.
- 2. With respect to pontoon structures:
 - 2.1 The maximum allowable distance of 18 metres from the kerb line be adopted as the optimum location of pontoon structures in order to maximise draft and minimise effects of sand movement.
- 3. With respect to boatramps:
 - 3.1 In addition to the existing design requirements, boatramps are also to be designed such that an erosion scarp of 0.75 metres can be withstood by the boatramp, subject to location and potential for erosion.
- 4. With respect to sand movement and maintenance of the canals' sand profile;
 - 4.1 The canals continue to be monitored.
 - 4.2 Any future large scale maintenance of the canals be separately considered by Council with particular regard to funding.

This is Page 4 of 4 of the Chief Engineer's Report "A" CLASSIFICATION - 26/8/1999

BALLINA QUAYS STRUCTURES/PROFILES

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BALLINA QUAYS STRUCTURES/PROFILES

BACKGROUND

The Ballina Quays canals were initially constructed with a typical beach profile as shown in Figure 1. This profile extended down at a slope of 1 in 7 from a level of 1.4m AHD at the property kerb wall to RL -0.9mAHD. Below this a slope of 1 in 4 was adopted to the canal invert of -4.5mAHD.

A large number of floating pontoons have been installed with dredging/ excavation carried out which undercut the canal profile to allow each pontoon to float at low tide. The excess sand has been used to dress up the beaches and repair scour/ slumping of the upper profile.

A number of residents have constructed structures on the beaches adjoining the standard kerb wall using various materials and methods, each above the design profile and mostly isolated and independent of each other. Some structures are intended to increase the useable living space of the particular allotment while others are intended as retaining walls to hold sand on the upper beach.

As a result of concern by Council, WBM Oceanics Australia inspected the beaches/ structures in May 1995 and provided preliminary advice on the potential impacts of those structures. In response, Council resolved to monitor the situation over the next three (3) years to assess their effects on the hydraulics of the canal system. Any new applications for retaining wall type structures within the beach profile were to be refused until the end of this 3 year period.

This monitoring period has elapsed and Council has requested the situation be reviewed and appropriate recommendations made.

PRESENT REVIEW

The present review has incorporated the following:

- examination of available Council survey cross-sections and information on structures;
- inspection of the site to identify any impacts from past works; and
- further consideration of the processes and future requirements.

A site inspection was carried out on 1 February 1999. It is evident from the inspection and examination of Council's structure surveys that further wall construction and excavation/filling works have been carried out in recent years/ months. The unknown timing and extent of excavation/filling works makes it difficult to accurately assess the survey cross-sections. Nevertheless, the following observations can be made:

the initial constructed profile slope of 1 in 7 appears to be too steep for the grain size of sediment on the beaches. Persistent small wave chop on the more 'exposed' beaches, boat wash and the mobilising of sediments by stingrays (which appears to be extensive) have lead to a flattening of the intertidal beach slope to about 1 in 10 with erosion from

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C. WBM

the upper part of the profile and deposition in the lower part. Figure 1 illustrates a typical undisturbed cross section at Lot 20 Riverside Drive (as surveyed by Council 2/2/99).

- the extent and speed of change is dependent on the location with a small erosion scarp (approx. 0.5m high) evident on the upper beaches in some more exposed locations as a result of the flattening of the slope.
- the majority of the deposition occurs in the outer lower part of the profile and can lead to navigation problems for larger draft vessels.
- it is evident from the surveys that along the general alignment of the pontoons (outer limit
 18m from kerb), there is little or no deposition relative to the initial design profile.
 However as sketched on Figure 1, it is possible that on the initial design profile the
 pontoons may have hit bottom during low spring tides, particularly those not constructed
 the maximum distance offshore.
- the pontoons in more exposed locations also appear to act as floating breakwaters with deposition occurring in the calmer lee of the structures forming small tombolos which exacerbate the problem. This as well as a desire for deeper water adjacent to the pontoons is likely to have lead to the need for dredging/ excavation around the pontoons.
- the existing walls which have been built on the beaches are generally constructed out of different material and along different alignments although most are between 2 and 4 metres seaward of the standard kerb. The structural integrity of the walls also varies.
- concrete boat ramps have generally been constructed at a slope of 1 in 7 across the beaches from the upper kerb. The flattening of the slope with erosion of the upper profile has in some instances left the boat ramps elevated above the beach.
- longshore transport does not appear to be a major concern as no evidence exists of major sand build up or erosion adjacent to the structures built out onto the beaches. As such, these structures do not appear to be causing any major problems.

MANAGEMENT CONSIDERATIONS

The main considerations for future management are related primarily to the equilibrium profile for the beach sediments being at a flatter slope (approx 1 in 10) than the initial design slope (1 in 7). The consequences of this include:

- the tendency for an erosion scarp of the order of 0.5m along the upper beach profile;
- potential erosion or undermining adjacent to the upper sections of boat ramps which could lead to structural problems and/ or the need for side protection such as rubble; and
- shoaling of the lower profile causing navigation problems and possibly adding to existing floatation problems for pontoons.

It is evident that it is generally not feasible to maintain a permanent 'steep' slope with sand on the upper beach profile and deep water in the channel unless the grain size of the sediment is substantially coarser than that presently on the beaches. The importation of coarser sand (and removal of existing sand) is not considered to be a practical or economically viable option. Accordingly, future management options relate primarily to:

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BALLINA QUAYS STRUCTURES/PROFILES

- ongoing maintenance dredging/ excavation as in the past to remove sand from the lower accreted profile and place it on the upper eroded profile. This is not a permanent solution and is likely to be required on a regular basis (eg. yearly). This approach is often adopted in canal estates. Boat ramps constructed at a slope of 1 in 7 would need to be able to accommodate some intermittent erosion of the upper profile.
- accept the flatter stable profile (approximately 1 in 10) with some sand being excavated and carted away from the lower profile to improve navigation. This is likely to leave a permanent erosion scarp of the order of 0.5m to 1.0m at the top of the beach which could be formalised with the construction of a small reverment wall. Boat ramps constructed at 1 in 7 from the kerb may need to incorporate some side protection to accommodate the permanent erosion and possible undermining at the top of the profile.
- as above without material being excavated from the lower profile and accept navigation difficulties. This would result in a smaller erosion scarp of the order of 0.5m at the top of the beach.

The construction of a small revetment wall along the upper beach profile up to about 2m seaward of the existing kerb would generally help formalise any intermittent or permanent erosion scarp in this zone and not cause any major problems as it would only be reached by high-spring tides. Any such wall should be properly designed and constructed to withstand some scour of the beach in front of it. It would also be preferable (but not essential) for the walls to be continuous and along a predetermined consistent alignment.

Boat ramps constructed at a slope of 1 in 7 from the kerb should be designed to accommodate either intermittent or permanent erosion of the upper beach depending on the management strategy adopted. While consideration could be given to adopting the flatter (1 in 10) slope for boat ramps, this would necessitate a cutting through the existing kerb and/or through any new revenment wall. Furthermore, if the option of ongoing reshaping of the profile is adopted, sand placed periodically at the top of the beach will cover the ramp making it in effective. Accordingly, boat ramps at a flatter slope are not likely to be a viable option.

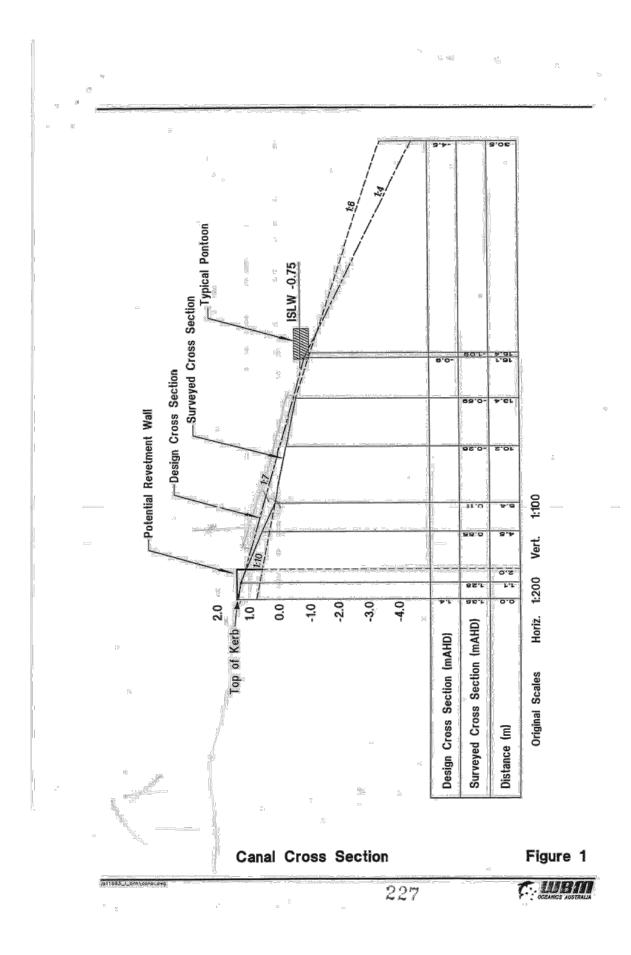
With respect to pontoons, it is possible that even on the initial design profile they may hit bottom during low spring tides and experience adjacent navigable depth limitations, particularly for larger draft vessels. This would certainly be the case for any pontoons which do not extend to the outer quay line limit of 18m from the kerb. Enquiries to the NSW Waterways Authority indicate that there is no specific requirement for a minimum depth of water at a structure. This is a matter for the owner/ user to accept the useability of the structure. There is however requirements for minimum navigable widths which is presumably the basis for the 18m outer quay line limit for the pontoons.

On the basis of the above, it would appear that if a pontoon does not extend to the outer 18m quay line, the owner/ user should accept that there will be potential navigable depth limitations at low spring tides. It would seem unreasonable to expect that regular maintenance dredging should be carried out to provide sufficient depth of water at such structures.

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BALLINA SHIRE COUNCIL

MINUTES OF THE ORDINARY MEETING OF COUNCIL - 26/8/1999

CHIEF ENGINEER'S REPORT

"A" CLASSIFICATION

1999/2000 CAPITAL WORKS PROGRAM

17459 RESOLVED on the motion of Crs Wright and Felsch that the proposed revision of the 1999/2000 Works Program be adopted subject to a reduction in the program to exclude unbudgetted borrowings.

BALLINA QUAYS - STRUCTURES WITHIN THE CANAL - File S1-20-250-1

- 17460 RESOLVED on the motion of Crs Felsch and Brennan that:
 - 1. With respect to the retaining wall structures:
 - 1.1 Vertical retaining walls be permitted within the beach profile of the Ballina Quays canal system such that the face of the retaining wall be positioned parallel and a standard distance of 2.0 metres from the kerb line. This will ultimately provide a uniform profile along the canal.
 - 1.2 The wall is to be designed such that an erosion scarp of 0.75 metres can be withstood by the wall.
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 - With respect to boatramps:
 - 3.1 In addition to the existing design requirements, boatramps are also to be designed such that an erosion scarp of 0.75 metres can be withstood by the boatramp, subject to location and potential for erosion.
 - With respect to sand movement and maintenance of the canals' sand profile:
 - 4.1 The canals continue to be monitored.

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GENERAL MANAGER

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ATTACHMENT E

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BALLINA QUAYS

STRUCTURES CONSTRUCTED PRE- 10 JANUARY 1995

TOTAL: 9

CIT.	
R.J. ADAMS & J.E. HERBERT	
Lot 15 – 125 Riverside Drive,	Timber retaining wall ≈ 3.0 m from
West Ballina	kerb and gutter
B.R. COLLIER	
Lot 150 – 134 Kalinga Street,	Rock retaining wall ≈ 4.0 m from kerb
West Ballina	and gutter
M.E. BARRY & C.E. BARRY	
Lot 151 – 136 Kalinga Street,	Rock retaining wall ≈ 8.0 m from kerb
West Ballina	and gutter
W.J. GALLAGHER & J.M. GALLAGHER	
Lot 159 – 11 Burns Point Ferry Road,	Timber retaining wall ≈ 5.0 m from
West Ballina	kerb and gutter
J.F. HAUENSTEIN & A.E. HAUENSTEIN	
Lot 160 – 13 Burns Point Ferry Road	Timber retaining wall ≈ 5.0 m from
West Ballina	kerb and gutter
B.G. FAHEY & B.F. FAHEY	
Lot 165 - 23 Burns Point Ferry Road, -	Filled to = 3.0 m from kerb and gutter
West Ballina	
BODY CORPORATE SP 51759	
Lot 72=Dolphin Drive (SP 51759)	Timber retaining wall ≈ 4.0 m from
West Ballina	kerb and gutter
B.J. MARTIN	
Lot 73 – 14 Dolphin Drive,	Timber retaining wall ≈ 4.0 m from
West Ballina	kerb and gutter
E.C. MACGREGOR	
Lot 45 – 38 Quays Drive,	Concrete retaining wall ≈ 4.0 m from
West Ballina	kerb and gutter
	Button

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BALLINA QUAYS

STRUCTURES CONSTRUCTED SINCE 10 JANUARY 1995

INSPECTION DATE: 24 NOVEMBER, 1998

TOTAL: 13

J.A. BUCKLEY & C.M. BUCKLEY	
Lot 4 – 53 Burns Point Ferry Road,	Soil Fill bordered by bricks ≈ 2.0 m
West Ballina	from kerb and gutter
B.G. PILGRIM & J.A. PILGRIM	
Lot 8 - 61 Burns Point Ferry Road, -	Soil Fill bordered by bricks ≈ 2.0 m
West Ballina	from kerb and gutter
J.T. ROACH & M.J. ROACH	
Lot 9 - 63 Burns Point Ferry Road,	Soil Fill bordered by bricks ≈ 2.0 m
West Ballina	from kerb and gutter
G.R. & H. ARNDELL	
Lot 13 – 3 Marina Place,	Soil Fill bordered by bricks ≈ 2.0 m
West Ballina	from kerb and gutter
C.C. McFARLANE & S.M. McFARLANE	Tom Note and Suite
Lot 14 – 5 Marina Place,	Soil Fill bordered by bricks ≈ 2.0 m
West Ballina	from kerb and gutter
M. DEBOND & J.DEBOND	Trom very and Samer
Lot 15 – 7 Marina Place,	Soil Fill only 2.0 from leads and
West Ballina	Soil Fill only ≈ 2.0 m from kerb and
J.W.LARSSON & D.J. LARSSON	gutter
	Sail Pill bandon dhay timban alanan
Lot 17 – 11 Marina Place, West Ballina	Soil Fill bordered by timber sleepers
	≈ 2.0 m from kerb and gutter
F. STOFFELS & E.R. STOFFELS	
Lot 18 – 13 Marina Place,	Rock retaining wall out to ≈ 7.0 m from
West Ballina	kerb and gutter
J.F. PLATT-HEPWORTH	
Lot 176 – 45 Burns Point Ferry Road,	Soil Fill bordered by stone $\approx 2.0 \text{ m}$
West Ballina	from kerb and gutter
R.K. BEAUCHAMP & V. BEAUCHAMP	Soil Filled old broken up concrete
Lot 173 - 39 Burns Point Ferry Road,	retaining wall ≈ 2.0 m from kerb and
West Ballina	gutter
B.W. BALZER & L.D. BALZER	
Lot 4- 147 Riverside Drive,	Timber Sleepers & Pavers ≈ 3.0 m
West Ballina	from kerb and gutter
W.K. JAMES & S.D. JAMES	Soil Fill bordered by
Lot 117 - 75 Dolphin Drive	Timber Sleepers
West Ballina	About 2.5m from kerb and gutter
J.D. WILLOUGHBY & J.WILLOUGHBY	Soil Fill bordered by
Lot 116 - 75 Dolphin Drive	Timber Sleepers
West Ballina	About 2.5m from kerb and gutter

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