

Old Bar Precinct 2A

Report of Site Meeting Thursday September 16, 2004

In Attendance:

Bob Lauder : Riverside Developments (BL)
Grant Calvin : McGlashan & Crisp (GC)
Scott Carter : State Fisheries (SC)
Peter Adcock : Australian Wetlands Pty Ltd (PA)
Robert Baker : Greater Taree City Council (RB)

Purpose of the Meeting.

To investigate existing wetland and stream environments on the periphery of proposed development area Precinct 2A at Old Bar and formulate engineering principles for best managing, protecting and or enhancing the existing environment.

Areas of Discussion and Inspection.

- i) Inspection of completed Channel Works stages 1 & 2 off Ivy Cres, Sheppard Street Old Bar.
- ii) Inspection and discussion of the drainage structure off the Northern end of the proposed Development area of Precinct 2A. At a) the existing causeway, b) the northern extremity of the development area, c) adjacent the existing rural crossing on the north-western extremity of the development area and d) the site of the proposed western filter pond/system.
- iii) The existing constructed sediment control system at the northern end of Corkwood Street, Old Bar.
- iv) The existing constructed sediment control structure at the northern end of Waterman Street, Old Bar.
- v) Conclusion Drawn

I) The Existing Channel Works

BL, GC & PA inspected the existing works and discussed the problems encountered with the construction of channel works and the solutions found to give the best results in managing the erosion.

The cross section of the channel works was described to PA. The streambed has a one way cross fall with a subsoil or base flow system being installed in mid channel. This is designed to eliminate the propensity for cumbungi growth from at least half of the stream bed in order to preserve waterway area to contain high flows whilst providing a moist wet zone where cumbungi might establish primarily along the western bank for amphibious and aquatic life.

Extensive use of hay bales for construction of baffles was discontinued in the channel works after many undesirable erosion problems had been encountered. A series of timber and rock berms had been installed as series of riffles. These berms constructed

Adcock
Comment: Questionable – may be too dry between storms to support anything more than frogs

such that the toe of the upstream (US) berm is at the level of the top of the downstream berm (DS) is designed to slow the laminar flow along the stream bed and have been very effective in countering the erosion of the bed and banks of the channel. Gabion rock (basalt abt Ø150mm) has been used extensively and would be the preferred medium in future works.

SC joined the inspection at the sediment basin adjacent Ivy Cres. Discussion included the pros and cons of ongoing maintenance and harvesting of sediment out of such systems and BL described the shovel and bucket methods used at this site.

II a) Concrete Causeway

The group (joined by RB) moved to inspect the area around the existing concrete causeway. The causeway had been used by Craig Bellamy DIPNR to demark the limits the SEPP 14 mapping amendments proposed and endorsed by the Grafton office.

SC and PA agreed with Mr Bellamy's interpretation and described the existing creek zone above the causeway was common and not particularly significant whilst the area below the causeway was described as a salt marsh was particularly worthy of protection and significant in a number ways.

PA described the salt marsh as a system susceptible to small variations in level, salinity and vegetation. The salt marsh is an environment that is inundated by saline water during spring tides. Because of the level and plane salt water is left and evaporates creating a hyper-saline environment. This salinity precludes many vegetation types and provides potential habitat and feeding areas for marine animals.

SC concurred with PA's description. SC pointed out how the mangroves were moving into the salt marsh along the channels. Surmising that this was a sign that fresh water coming off the catchment had diluted the salinity of the salt marsh. The intrusion of juncus into the salt marsh was also an indication of this dilution of salinity.

GC Provided an overview of the development proposal including filling of land above the 1% flood level. BL expressed concerns regarding global warming and rising sea levels. GC Described the proposed filter system using leaky rock berms to be installed around the periphery of development area for sediment and nutrient control. See sketch below. How minimising of excavation is his preferred option and the wall might be built directly on the existing grass surface.

SC suggested that we should assess the capabilities of the topsoil if the topsoil stripping is to be avoided.

SC raised concerns with surcharge paths should the filter become blocked.

AP raised concerns about biological blockages of the rock stratum.

GC explained how lowering small sections of the wall can direct surcharges of the basin to prepared sites and how in the event of biological blockages the basin would simply act as a constructed wetland and not really significantly affect its capabilities.

Adcock

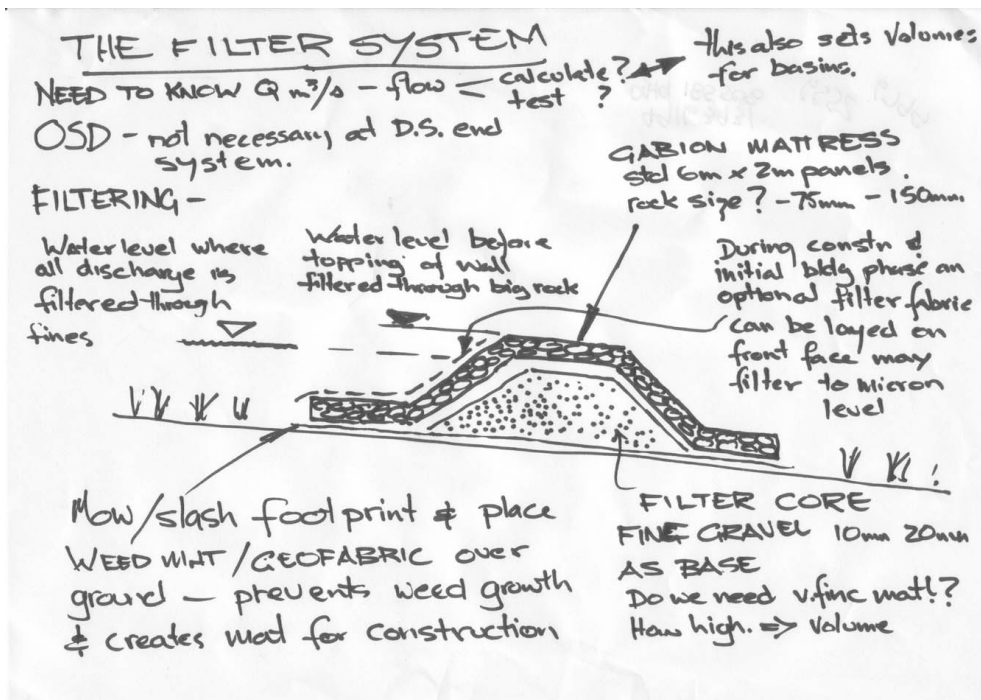
Comment: PA indicated a risk of this only – it appeared that mangroves are colonising the channel where fresh water is concentrated. There is no evidence of freshwater dilution in the channel at this stage.

Adcock

Comment: It is important to understand that the proposed rock filter will act primarily as a physical screen of coarse sediments and organic matter. There will be very little biological activity that can maintained within the rocks – particularly in the short term – as the rocks are will be dry, providing few opportunities for beneficial bacteria populations to be maintained. As the filter blocks over time a natural wetland will be created behind the filter, which we consider to be desirable.

Adcock

Comment: Blockages will not be biological – inorganic/coarse sediments



PA & SC both raised concerns about the increased fresh water that would be flowing over the salt marsh. Commenting that it would even be preferable to pipe the runoff through the salt marsh directly into the channel in order to protect the salinity of the salt marsh. Filtering the fresh water over a wide area, usually the preferred option, would definitely be detrimental to the salt marsh environment.

SC suggested that it would be preferable to discharge the fresh water into the streamlines higher up the catchment in order to preserve the status quo of the salinity of the salt marsh.

GC put forward a possible engineering solution where the filling could be graded away from the salt marsh directing all runoff from the proposed lots south toward the road network and utilise the road drainage network to the proposed filter system US of the causeway. SC & PA concurred with this solution.

GC also indicated that a swale had been proposed adjacent the footpath/cycleway along the creek / wetland boundary and how it may be used to direct further runoff back to the filtering system. This was also considered appropriate though GC indicated that there may be some problems in levels /grades in order to effectively achieve this.

PA considered that if the runoff could be brought as far south as possible using these swales this would be a preferred outcome. SC concurred.

II b) Northern Extremity of Development

The group moved out onto the salt marsh and inspected areas that appear to be scalded and the existing channel.

After some discussion it was considered that the scalded areas may be a result of the closure of the Old Bar entrance of the Manning River. This closure would mean the heights of the spring tides and the salinity of the waters would be greatly reduced.

PA indicated that this was an indicator of the susceptibility of the salt marsh environment to level changes.

The distinctly different vegetation on the banks of the existing channel in relation to the salt marsh flats was noted. Mangroves and *juncus* growth along the channel banks were described as a sign of reduced salinity. *Juncus Acutis* an introduced species was noted along the banks.

SC suggested that a do nothing approach would probably be the most desirable outcome for this area particularly if the fresh water runoff could be directed elsewhere. SC considered that the apparent degradation of the salt marsh would in effect work itself out when the River entrance was re-established.

GC suggested that some of the dead trees may be installed into the channels to provide snags as habitat for the fish using the channels. This was considered a good suggestion

BL described the Aboriginal finds adjacent and how his firm was committed to preserving the sites.

PA suggested that the footpath / cycleway would provide a good education / information dissemination area where interpretive signage could inform the public of aboriginal heritage of the area, the importance of protecting the salt marsh estuarine environment and information of birds flora and fauna that may be found in the vicinity.

RB suggests a good vegetated buffer (local species that persuade users not to enter) should be provided between the cycleway. If possible an advanced landscape plan may provide opportunity to establish prior to hand over. There may be opportunity for restoration funding?

II c) Existing Rural Crossing North West cnr of Development

The existing rural crossing in the NW corner of the property was inspected.

PA suggested that the vegetation changes noticeable at the crossing would probably be a result of the installation of the crossing.

BL considered that it would be preferable to maintain the crossing in the long term as fire fighting access across the creek. SC suggested that with some minor rehabilitation this would be ok.

Adcock

Comment: do not agree – cattle should be removed from the salt marsh which is not degraded

RB suggested that “Fish Passage - Engineering Guidelines” might provide some examples for any works that may be required.

SC & PA considered that exclusion of domestic cattle from the wetlands area would be a desirable outcome. BL suggested that this would be possible but felt that fencing costs and implications with existing rural uses should be investigated.

RB suggests any design would need to have Life Cycle Costing (LCC) about 50years.

II d) Proposed Site of Basin

The site of a western basin was investigated by the Group

GC described how the proposed rock filter bund would probably be installed basically around the existing clearing. The basis for the filter would be to distribute the discharge along a wide front without concentrating it in any particular area. Additional geofabric filter material might be required in the construction, initial build phase to filter clay solids from the water.

PA considered that this would be a good zone for such filtering system. SC concurred. PA pointed out that harvesting of the sediment and plant matter would be needed in any constructed wetland.

Adcock

Comment: there is no need to harvest plant matter from wetlands

GC described how he is having trouble getting flow data for this type of structure. AP suggested the Australian Wetlands may be able to provide some form of engineering flow calculations and failing this a mock up test may be required.

RB discussed Councils approach to their role in ongoing maintenance and upkeep of the filter / nutrient stripping basins. In particular the design should consider ongoing access and maintenance for their work crews. He suggested that we should incorporate lots of plantings early in the development.

GC suggested that one already built might be considered as a model.

III) Sed Basin at end Corkwood Street

The group inspected the existing sed basin off the northern end of corkwood Street.

PA pointed out that many would consider it was untidy but how this was probably because it was working very well capturing sediment and filtering runoff from the urban catchment.

BL described the apron of the piped system the baffle wall and how he used a bobcat or small excavator to remove the sediment build up. He described how the system had been cleared a number of times during the construction and building phases of the development but how with the establishment of lawns the need to clear it was less and less.

RB described how machine and truck access were of concern to Council when they took over the maintenance of these systems.

BL described how the intrusion of salt soon after construction had caused a problem killing the vegetation in the basin. He described the installation of the flood-gate system demonstrated its use.

GC described how the sealed weir that was part of the system would eventually become an integral part of the footpath / cycleway network for trails from to the river to the village.

The changes in vegetation at the discharge point were observed and noted.

IV) Sed Basin at end Waterman Street

The group inspected the existing sed basin off the northern end of Waterman Street.

BL described how the basin had recently been cleared with a substantial amount of silt being removed. Noting that the willow trees had also been removed after previous advice from SC. It was BL's intention to bring the floor up with gabion rock and remove and replace the filter rock around the outlet basin as it had stated to block up.

GC advised that the imported material should bring the base level up so that the basin is not over deep.

V) Conclusions Drawn

- a) The salt marsh is worthy of preservation and protection.
- b) Engineering solutions should consider directing runoff to points upstream and away from the existing salt marsh areas.
- c) Footpath / cycleway and swale to be used to assist in guiding fresh water away from salt marsh areas and provide a buffer for the wetlands.
- d) The proposed filtering system should work though the need for the entire wall to be constructed similarly may not be necessary. Checks on flow rates required.
- e) The two sites – in the SE corner adjacent the creek and on the triangular clearing on the NW corner are suitable sites for the sediment control / filtering systems.
- f) Allowance should be made for clearing and maintenance of the basin. The existing end of pipe baffle system off Corkwood St to be used as the model.
- g) The assistance of all parties in this the early stages of design was a great assistance in preparation of the design plans.

Adcock

Comment: rocks may be alternated with earth sections

