BALLINA SHIRE - FLOODPLAIN RISK MANAGEMENT EXHIBITION OF STUDY and DRAFT DCP - JUNE 2012

The enormity of the floods that devastated our neighbours in Brisbane, southeast Queensland, and other parts of Australia early last year caused ruin beyond comprehension. Not only was there millions of dollars damage to homes, businesses and infrastructure, there was an immense human cost with families losing loved ones in the most traumatic of circumstances.

Floods are dangerous and often unpredictable and whilst they cannot be prevented, the Ballina Shire Council is working to ensure it can do everything possible to make sure communities are aware of the danger and are prepared for a flood emergency.

Much of the Ballina town and surrounding areas such as East Ballina, West Ballina, South Ballina, North Ballina, Ballina Island and Shaws Bay, are regarded as extremely vulnerable to flooding. Because of our proximity to the coast, high tides also pose a significant flood threat, particularly when combined with floodwater from heavy rain.

BALLINA FLOODPLAIN RISK MANAGEMENT STUDY

The Ballina Floodplain Risk Management Study is a document that looks at the impact of flooding on the Ballina Shire and how the Ballina Shire Council, emergency services and the community can better manage the risk of floods.

The Study also takes into account the impact of climate change on the Ballina Shire, where predictions relating to sea level rise will have a significant impact on flood events.

Whilst there has been minor and moderate flooding in and around Ballina in recent years, severe floods in the shire have not been experienced since the 1980s. Similarly parts of the Ballina Shire have changed significantly since the last major flood event in the 1980s. Sea level rise associated with climate change is also expected to result in more serious flooding in the future. This means it is important to plan for future possible events and for the community to be engaged in the planning.

This Floodplain Risk Management Study is designed to help the Council, emergency services such as the SES, and the community, understand the potential for flooding in the Ballina Shire. It is also designed to help the Ballina Shire Council minimise and manage the risk of floods.

Public comment on the Ballina Floodplain Risk Management Study is invited and welcomed. Submissions will be taken into account and used in the development and implementation of the Ballina Shire Council's Floodplain Risk Management Plan.

The Ballina Floodplain Risk Management Study has been developed by specialist consultants with input from Ballina Shire Council staff, the Office of Environment and Heritage, Councillors, and a community reference group involving rural landowners and representatives from the Ballina and Lennox Head Chambers of Commerce.

The information below is a brief outline of the Ballina Floodplain Risk Management Study. All residents of the Ballina Shire are encouraged to look at the Study which is on display at Council's Customer Service Centre and Council's Customer Access Points. It is also available for viewing or download on the Ballina Shire Council's website www.ballina.nsw.gov.au.

WHAT IS THE BALLINA FLOODPLAIN RISK MANAGEMENT STUDY

The Ballina Floodplain Risk Management Study is a report that looks at the existing flood issues in the Ballina Shire and identifies and evaluates options to manage flood risks. The Study takes into account the predicted impact of climate change. It focuses on three areas:

- Flood modification measures (floodway provisions)
- Emergency management, including evacuation times and routes and community awareness
- Modifications to property to reduce the impacts of flooding

THE BALLINA SHIRE – A LONG HISTORY OF FLOODING

The Ballina Shire is located in the Richmond River catchment in the Northern Rivers region of New South Wales. The Richmond River catchment is prone to flooding and has experienced many flood events. The first flood of the Richmond River that was recorded by European settlers occurred in 1846.

Major flood events affecting Ballina have been recorded in the 1950s, 1970s and 1980s. Whilst there have been flood events since the 1990s they have been regarded as relatively minor.

Because serious flooding in the Ballina area has not occurred since the 1980s, many residents have not experienced severe local flooding. Residents in parts of the Ballina Shire, including East Ballina, West Ballina, North Ballina, South Ballina, Ballina

Island and Shaws Bay, are recognised as being extremely vulnerable to the impacts of flooding.

The population of the Ballina Shire is also aging, and the region is a popular destination for tourists who are unfamiliar with the local flood risk.

FLOODPLAIN MANAGEMENT - A PRIORITY FOR THE NSW GOVERNMENT AND THE BALLINA SHIRE COUNCIL

The NSW Government has a Flood Prone Land Policy which aims to reduce the impact of flooding. This policy determines that the primary responsibility for floodplain risk management rests with local governments such as the Ballina Shire Council.

In order to provide guidance to councils, in 2005 the NSW Government revised its Floodplain Development Manual which relates to the management of development on flood-prone land.

The manual guides councils in the development and implementation of local floodplain risk management plans. If a council complies with the manual in relation to the management of flood liable land the Council may be afforded an exemption from liability in the result of a flood.

Whilst the management of flood prone land remains the responsibility of Local Government, the State Government subsidises flood mitigation works to alleviate existing problems and provides specialist technical advice to help councils in their floodplain management responsibilities. This involves the development and implementation of Floodplain Risk Management Plans.

The Ballina Shire Council began work on the development of its Floodplain Risk Management Plan in 2005 starting with the compilation of data on local floods. A Flood Study was also undertaken to define the nature and extent of the flood problem, taking into account the NSW Government's 2009 benchmarks for sea level rise.

This Floodplain Risk Management Study is the next step in the development of the Floodplain Risk Management Plan. It determines and assesses options to manage the risk of floods.

A BRIEF OVERVIEW OF THE BALLINA FLOODPLAIN RISK MANAGEMENT STUDY

The Ballina Floodplain Risk Management Study outlines the existing flood problem in the Ballina Shire and recommends floodplain management options.

Information included in the Ballina Floodplain Risk Management Study includes:

- Areas of the shire currently prone to flooding and areas likely to flood into the future
- Evacuation zones and routes
- Possible evacuation centres
- The impact of flooding on the Ballina Shire taking into account climate change and sea level rise
- The number of people, houses and businesses potentially affected by major floods in the future, including those buildings that will be inundated with water above floor level
- Warning systems
- The estimated cost of flooding (both now and into the future) as a result of climate change and sea level rise
- Potential changes to the Development Control Plan to manage development on the floodplain
- Voluntary house raising
- Flood modification measures i.e. man-made infrastructure that can change flood behaviour and improve the passage and movement of floodwaters.

HOW DOES THE BALLINA FLOODPLAIN RISK MANAGEMENT STUDY RELATE TO COUNCIL'S ENVIRONMENTAL PLANNING?

Council's planning framework is made of a number of instruments and policies. These include a Development Control Plan (DCP). Council has recently prepared a revision of the chapter in its DCP that deals with flooding. This revision has been informed by the outcomes of the Floodplain Risk Management Study and Plan process.

The proposed DCP amendment sets out land use planning controls to be implanted in response to the risk of flooding. For example, the DCP prescribes appropriate minimum floor levels and other building controls required to support public health and safety, and the protection of assets.

As the Floodplain Risk Management Study and the draft Development Control Plan are directly related, Council is placing both documents on exhibition at the same time.

WHERE CAN YOU GET A COPY OF THE BALLINA FLOODPLAIN RISK MANAGEMENT STUDY?

Copies of the Ballina Floodplain Risk Management Study are on display at the Ballina Council's Customer Service Centre and Council's Customer Access Points.

The Study can also be viewed or downloaded from the Ballina Shire Council's website www.ballina.nsw.gov.au.

NEED FURTHER INFORMATION OR HAVING TROUBLE UNDERSTANDING THE STUDY?

Some of the information in the Ballina Floodplain Risk Management Study is complex. If you need something clarified or would like something explained please call Council staff on 6686 4444, or come in to discuss the matter.

PUBLIC SUBMISSIONS

The closing date for public submissions and comment on the Ballina Floodplain Risk Management Study is Monday 9 July 2012.

The public response to the exhibition will be reported to Council. The Council will be asked to proceed, subject to the above public response, to the finalization of the Ballina Floodplain Risk Management Plan and adoption of DCP amendments.

Matthew Wood

From: Elle Hayter [rellydesigns@internode.on.net]
Sent: Sunday, 1 July 2012 6:45 PM
To: Ballina Shire Council
Cc: Don.Page@parliament.nsw.gov.au
Subject: Submission for Paul Bausmanis,Matthew Wood,Steve Barnier

Ref:

1. Ballina Floodplain Risk Management Study

2. Draft Ballina Shire Combined Development Plan Policy Statement II – Flood Risk Management – Amendment No 15.

Invitation from the public by Ballina Shire Council for Submissions on above Ballina Advocate 7th June 2012

Annex to the dozens of Submissions on floodplain issues over the years.

Attn: Paul Bausmanis

Matthew Wood

Steve Barnier (Letter dated 27th June 2012)

Submission from John Hayter

104 Old Bangalow Road

Tintenbar, NSW, 2478

29th June, 2012

Your claim on the above dated Ballina Council Advertisement of only 'minor or moderate flooding and nothing more severe in parts of the Ballina Shire since the 1980's' is further testimony to the little research carried out in regards to newly created flooding problems in the Tintenbar and Cumbalum valleys due to development.

On this matter I draw your attention to June 2005 flooding, where livestock drowned on my Tintenbar property for the first time ever.

The extent of this flood, which you have wrongly interpreted as 'nothing severe' was fully detailed at that time, including a photograph in a Northern Star article of 2nd July 2005 (attached).

1

This came about after major landfill placement for the Deadmans Creek Road floodplain development at Cumbalum, as well as the nearby original Ballina Bypass test pad, choked off the valley.

Successive landfills for the Ballina Bypass and other floodplain projects have since ruthlessly added permanent misery to farming ventures on the upper end of the Koellner/Cumbalum bridge, from where floodwaters are now continually bottlenecked and transformed from 'minor' status to 'disaster' in as far as the Tintenbar valley is concerned.

This flooding then combines with the impact of waters pushed in from the Sandy Flat valley as a result of yet further landfill placement for the Ballina Bypass and other major floodplain disturbances in that area.

Again it was clearly evident in the two-fold flooding events of this month, where my farm and other parts of the Tintenbar valley were transformed into a state of decay and rendered useless for the remainder of winter.

This scenario is obvious for all to witness along with the adjacent Old Bangalow Road, built to carry only horse and carriage, now pounded and sunk into oblivion from years of neglect and numerous Pacific Highway traffic diversions due to the notorious Tintenbar Hill crashes and Ballina Bypass construction.

The fact that Tintenbar valley and Emigrant Creek is expected to cope with an unmercifully accelerated flood impact from total urbanization of the entire district and now with the Tintenbar/Ewingsdale Highway duplication, defies all logic.

Yet warnings on this flooding, now blamed on climate change, were put forward by farmers prior to any development and howled down at flood study meetings.

The only thing gleaned from any Emigrant Creek floodplain observation is that an array of natural seaward channels (including Fishery Creek) are discriminately and detrimentally blocked or curtailed to favour developers while original floodwaters are forced into much lengthier routes to the sea.

In view of Mr Barnier's letter citing the devastation of Brisbane flooding, from what I gather, Ballina is following in the very same footsteps.

John Hayter

Tintenbar

THE BIG WET...

Earthworks made flo worse, farmers claim

Ballina council accused over poor planning at Cumbalum

By LEONIE BRANN

JOHN HAYTER thinks earthworks approved by Ballina Shire Council are responsible for exacerbating flooding in the Cumbalum area, costing damage to farms and the prolonged closure of the Pacific Highway.

The Tintenbar farmer said preliminary earthworks at Deadmans Creek Road had stopped the flow of floodwaters.

He said the earthworks for the initial stages of the Cumbalum Way, an access road to the Ballina Heights estate in Deadmans Creek Road, had dammed the floodwaters forcing the tide back up the valley rather than out through Emigrant Creek towards the ocean.

The farmer, who has grazed cattle off Old Bungalow Road for more than 30 years, said he also believed preliminary work by the Roads and Traffic Authority for the Ballina bypass, beside Deadmans Creek Road, had changed the way floodwaters were dispersed, causing water to be trapped where it would normally run off.

"I think planners should be putting in more studies in stead of just filling in the land and not planning for ways to deal with flooding," he said.

Mr Hayter said flooding was

FLOOD ANGER: Farmers Ken Kachner, left, and John Hayter near the embankment beside Deadmans Creek Road, which they say contributed to the flooding of the Pacific Highway at Cumbalum.

Picture: WARREN GRUBER

The General Manager
Ballina Shire Council
POBox 450
Ballina NSW 2478

Atten: Paul Busmanis

Beddoes Family
POBox 706
Ballina
6/7/12

Dear Sir

Re: Ballina Floodplain Management Study

As discussed during the meetings the big things that this D.C.P (Draft) does not show is what's going to happen further down the water flow area.

We have a proposed idea to send water through sandy flat to the N/R. Firstly why are we sending water where it does not go? Next what happens when it gets to the N/R?. The water will build up and spread around surrounding land i.e; not land that should be effected by this water. Also how much salt water will be sent across land that is not presently effected?

Secondly the cycleway. Yes great idea however, what happens to the water after we put this infrastructure in?

Why did we allow the current subdivision to place an extra meter of height onto the water pipe levee? Who pays? Again I believe it's the rate payers.

Deadmans Creek Road is a blockage and once again if I remember correctly that when the subdivision (Ballina Heights) was started, the road was raised to the existing level!! Also we have now filled in 2/3 thirds of a flood plain and it does not take much rain to now flood the old highway. There has been some small floods which has cut the old highway in recent times, so what hope do we have to use this as an evacuation road?

Report state a small number of people will be effected by the need to change water courses. Why should a few people be effected so that those people who make the profits and contributed to the problems can walk away "scott-free". Are the tax payers of Ballina aware of why we have some of thoses problems? And has the council now become aware of the problems associated with building of end crossing flood plains and changed their development codes to ensure that problems do not occur further down the track?

The whole picture needs to be viewed rather than the short term gains!!

Yours faithfully

Beddoes Family

TEKCADL INVESTMENTS Pty Ltd
ABN 14 008 450 931

Bangalow Road
PO Box 5073
BALLINA NSW 2478
Phone 02 66864892
Mobile 0437 730554

8th July 2012

Ballina Floodplain Risk Management Study

Re: Submission

At a previous flood study meeting, my question to Councils consultants about the possibility of Fishery Creek being a clear channel as it was in 1913 when it was used by the milk barge met with disdain.

During the past 100 years Fishery Creek has been totally neglected and at the present time you would be unable to negotiate it with a small boat.

Over a period of 30 years I have been involved in a number of major irrigation projects where clean channels move water effectively and in my opinion it would apply to Fishery Creek.
It is our belief that a clear channel would disperse the water quickly although your Consultants contend that Fishery Creek cleared would be of no **advantage** during flood times.

EXAMPLE: We had a similar problem on a much smaller scale on our own property recently when 200mm of rain fell in 24 hours causing flooding to a depth of 600mm. An area where the drain is kept clear, 90% of the water dispersed in 24 hours. For the purpose of draining another portion of our property a council approved replacement channel was constructed in a new development which subsequently flooded an area of our land that had not flooded to that height for the previous 35 years and because it was not kept clear water remained for a period of 4 days. I noted that after Council cleared the drain the water receded. This obviously points out that if you have a clear channel it will certainly disperse water quickly.

It is my opinion therefore, that the same principles would apply to Fishery Creek.

We realize that this would be of no benefit to Ballina in the event of a major flood but it would certainly **advantage** Ballina if excess water in Fishery Creek flowed freely to disperse water quickly.

In the event of any possible investigation for clearing Fishery Creek or constructing a new channel Don Cook has agreed to gift the land required for the construction with any spoil to be deposited on his property for use at his discretion.

Yours faithfully

J. Woods

Terry Woods

Attachments: Map of Fishery Creek in 1912, as a clear waterway.

[Vol. 2460 — Folio 241]

Robert Trimble of ... is now the proprietor of an Estate in Fee Simple, subject nevertheless to the reservations and conditions, if any, contained in the Grants hereinafter referred to, and also subject to such encumbrances, liens, and interests as are notified hereon, in this piece of land situated in the Municipality of Ballina, Parish of Ballina, and County of Rous containing Thirty eight acres one rood or thereabouts, as shown on the Plan hereon, and therein edged red, being part of ... [illegible] ... of the Department of Lands

In witness whereof, I have hereunto signed my name and affixed my Seal, this ... day of August one thousand nine hundred and thirteen

Signed the 27 day of August 1913

in the presence of [signature]

[signature]

Deputy Registrar-General.

NOTIFICATION REFERRED TO.

Amongst ... [illegible]

[signature]

Deputy Registrar General

Under ... [illegible] ... 1905 ... [illegible]

[signature]

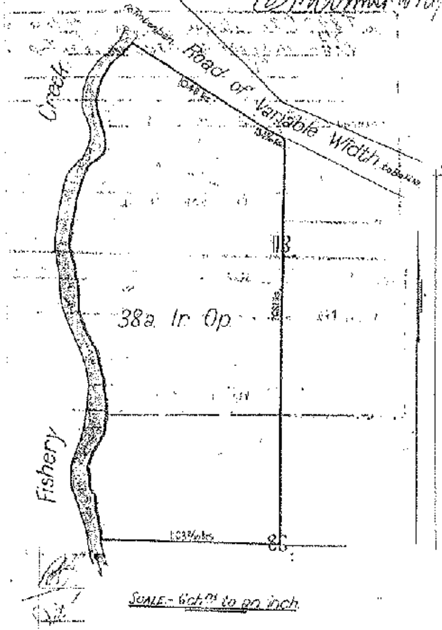
Deputy Registrar General

No. ... MORTGAGE dated 19th ... 1913 from the said Robert Trimble to ...

Produced ... August 1913 ... at ... o'clock ... and entered ... at ... o'clock in the afternoon

[signature]

REGISTRAR GENERAL.



5 Lewis Place
Ballina N.S.W. 2478
0427788264

9TH July 2012

General Manager.
Ballina Shire Council
PO Box 450
Ballina N.S.W. 2478

Dear Sir,

RE: BALLINA FLOODPLAIN MANAGEMENT STUDY

I thank council for the opportunity to comment on the Ballina Floodplain risk management study and draft DCP public exhibition.

Council is right to point out the devastation suffered to our close neighbours from severe floods over the last couple of years and the fact Ballina has escaped relatively free since the floods of 1974 and 1976.

It was the severity of the 1970s floods that convinced me to be proactive in regards to the management of the floodplain in and around Ballina hence my participation in the Ballina Council floodplains study as well as the R.T.A. Ballina by-pass flood focus group.

I have made numerous submissions to council as well as representing land owners at council meetings voicing our concerns that the floodplain was being eroded away and restricted and in some cases completely blocked by development. At these council meetings councillors had agreed with the two main areas of our concerns.

McLeay culvert

The first area of concern was the old Pacific Highway Emigrant Creek to Teven Road having no floodways and was acting as a levee bank to the lower Emigrant Creek floodplain. Council negotiated with the R.T.A. resulting in a 56 metre floodway under the new Ballina By-pass. These culverts are known as McLeay culverts. We thank council negotiating the culverts and the 56 metre floodway however there is no access for the floodway into the nearby Emigrant Creek from the culverts. This will restrict the performance of the floodway in time of flood. In the mean time water is held in a pond between and under the culverts resulting in poor quality water overflowing directly into Emigrant Creek each time it rains. The sugar industry was critised for the same thing happening behind floodgates in their drains. The sugar industry overcame this problem by inserting slush flaps in their floodgates so their drains could by flushed regularly.

I request council approach the R.T.A. to have a clear floodway into Emigrant Creek with a drain and slush floodgate in the floodway that will not only give better flow in time of flood but also resolve the environmental problem of dead water polluting Emigrant Creek.

GALLONS ROAD BICYCLE TRACK

Our second area of concern that council agreed that needed attention was the old water main come bicycle track between Gallons Hill and Cumbalum Ridge (photo attached). This 2 metre high levee bank completely cuts the 800 metre wide floodplain between Gallons Hill and Cumbalum Ridge including Roberts Creek stopping the upper Emigrant Creek floodplain from flowing into North Creek.

We request council reinstate this floodplain by putting culverts under the bicycle track.

TEVEN ROAD FLOODWAY

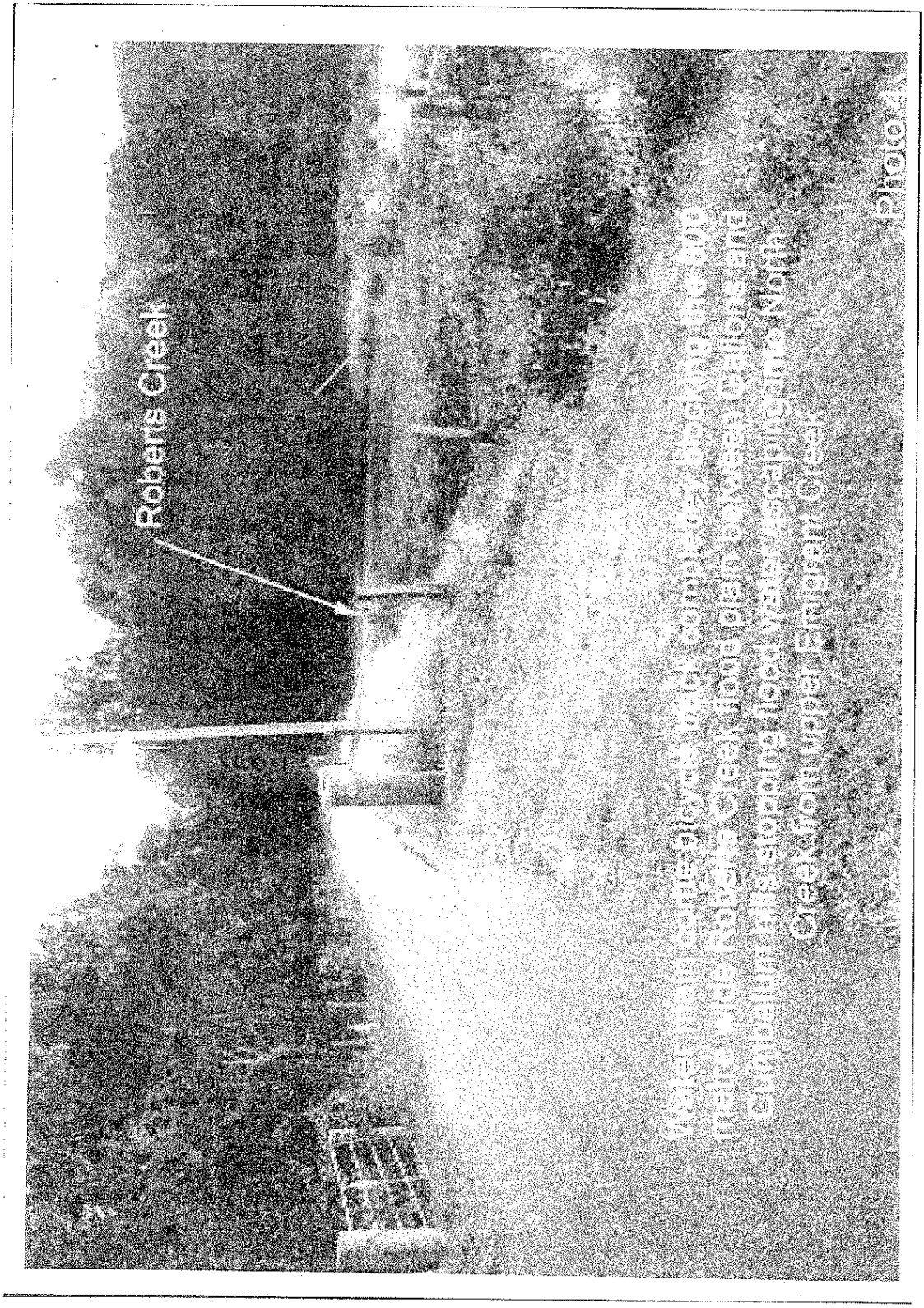
In all councils flood modelling a floodway at 0 AHD was required just east of Teven Road to take floodwater from around Go Grow directly into Emigrant Creek. I request council to construct this floodway as planned and not give way to development to change this crucial floodway.

SUMMARY

I believe the main focus should be on flood prevention or reducing the impact of a flood by allowing flood water to escape down the natural flood plain. This will save some evacuations however if evacuation is required it should be to localised two storey public buildings and not to the highland until safe, as some of the escape routes can be a death trap as floodwaters are so unpredictable.

Yours sincerely,

Col Dorey


Roberts Creek

R Thornton
PO Box 1150
BALLINA NSW 2478

9 July 2012

Dear Sir/Madam

RE : Comments re Ballina Floodplain Risk Management Study

I am of the opinion that the option to increase the height of flood affected areas is:

- Unachievable;
- Environmentally damaging, and
- Will have a negative impact on agricultural productivity.

I am further of the opinion that a system of levee banks is a much better option.

I am of the opinion that the intention to raise the level of all urban flood affected land to a flood free level, incorporating climate change is not the best option for the Town of Ballina.

To undertake such a task would require a considerable amount of time and fill material.

The time required to fill the entire area would be so great, that a number of floods could pass through the town by the time such an action could be completed.

I question how all those buildings erected as slab on ground are to be raised.

I question the manner in which the area will be raised.

If the roads are raised first, this would see the roads act as levee banks protecting the building sites still be raised. This action would also create the problem of preventing rain water from draining away from the sites, as the stormwater system will not be working due to the increase in water level which may cause internal flooding.

If the roads are to be raised after all the building sites serviced by those roads are raised, thereby making the success of such an action dependent on the raising of the last property, which will take an incredible amount of time.

I question where the fill material for the raising of all urban flood affected areas will come from, as this action will require an incredible amount of fill. This action will result in an enormous hole in the ground somewhere, more than likely on the sandy flood plains behind Lennox Head (the site of current sand fill quarries).

The quarrying of all this material, transportation to Ballina and placement will result in the generation of an enormous amount of carbon, at a time when the desire is to reduce the amount of carbon being generated.

The establishment of such a quarry, wherever it is established, will result in the loss of valuable agricultural land, as this kind of fill can only be achieved from land capable of agricultural production.

The alternative to filling the whole site is the establishment of a system of levee banks, this would still require the quarrying of a considerable amount of material, but only a minute amount of that required for filling the entire area. This fill could be a mixture of sand and rock, which would have less of an impact on agricultural land.

The construction of levee banks would require less fill material resulting in the production of less carbon than that produced for raising the level of the entire site.

The creation of a levee system could see the level increased progressively if required, initially in accordance with current modelling, and later should the modelling result in an estimated level below actuality. Something that cannot be achieved by the current proposal of raising the level of the land.

The levee would require the installation of a number of flood gates where it would be required to cross waterways and the provision of flood flaps to stormwater outlets. It would also require the provision of pumps at all stormwater outlets, to pump water out once the water level passes the level of the stormwater outlets.

Yours sincerely

R. Thornton

Bob Thornton

Ballina District Citizens and Rate Payers Association Inc.
A 'Non – Profit' Public Organisation Inc. 9891926

The Chairman,
Ballina Shire Council,
Cnr Cherry and Tamar Streets,
Ballina 2478.

6 July 2012

Dear Sir,

In relation to Ballina Floodplain Risk Management Study that is on display 9 July 12.

In relation to Flood Plain – From East of Fishery Creek, South to River St at Barlows Road, East to Bridge over Canal at River Street, North along Canal to River Oaks Floodway junction, West back to Emigrant Creek North, along River Oaks Floodway to narrow Tidal Channel from Emigrant Creek in north to Fishery Creek, (2 metre width)

On 25 January 2012, whilst Ballina Council Meeting was in progress it was pointed out to Council whilst heavy rain was falling (35 to 36mm in day) that :- Taking into consideration that the Flood Waters was over half way back across the Foot Path outside the front door of Council Chambers (cnr Cherry & Tamar St), at 12. 45 pm ; Why has there been no progress that Council has achieved with the installation of Tidal Flood Gates on the drain Pipes at Electricity depot back entrance in Canal Road, – Where the back-up Canal Water comes into the drain pipes coming back to the Centre of Ballina Township here at Bus Terminal and associated low lying areas of Ballina CBD ?, as well as outside 158 – 164 Tamar street and it did back-up right across the centre of the Tamar Street to about 15 to 18 cms in depth (at high tide) on middle of roadway ; Which was the case on 25 January 2012 :

It was pointed out to the Chairman, that this question was asked in 2009, 2 years and 4 Months ago and at regular intervals about 3 times a year since;

Tidal Flooding at Electricity Sub-Station Rear Gates in Canal Road :
These dilapidated broken drainage pipes do have to be looked at urgently, where the Canal Water comes back into these drain pipes coming back to Centre of Ballina Township, here at Bus Terminal and associated low areas of Ballina CBD ;

As the height of the Canal Banks are at the lowest point from boat launching pad just North, to about 120 to 150 metres North along Canal from opposite the Seventh Day Adventist Church, to opposite 55 Canal Road, where the Bank takes on a distinct higher appearance.
This low section of the Canal Bank has profoundly subsided and sunk down wards a lot by over half a metre over the last ten years.

Actually the whole section from there going south, to the back of Scout Hall back up to high point of bank about 150 metres north of Seventh Day Adventist Church should all be the one height to create a tidal flood levee bank, above high tide ((from opposite No 55 Canal Road)), And even back to Canal Bridge in River St, and right away back to the entrance of Canal to the Richmond River. So therefore there will have to have a built up levee bank along the Eastern side of Canal around Canal Road with Tidal Flood Gates installed at Drains that flow into Canal ;

The Ocean Swell was between 1. 8 metre and up to 2. 1 Metre Swell as the Tidal Flood gauge that is under southern end of R.S.L. indicated that was at that height ;

At Emigrant Creek North where the By-Pass goes over Emigrant Creek twice in a short distance, which is about ½ to ¾ Kilometre north-east of the Double Bridges at Emigrant Creek and Teven Creek Junction : All this Flood Water would spread out and flow South and East on southern side of the Pacific Highway going north, and it would also spread over the Highway from the southern-eastern Elbow in Emigrant Creek North, as it rises in flood height :

Ballina District Citizens and Rate Payers Association Inc.
A 'Non – Profit' Public Organisation Inc. 9891926

At Emigrant Creek North where the By- Pass wall crosses Creek going north towards second crossing, and on the Eastern side By- Pass there is an island of land surrounded by Emigrant Creek, on southern eastern side where there is an elbow in the creek, and on southern tip of this elbow is where there is the Tidal Drain, that goes down to join onto northern approach to Fishery Creek (this tidal drain is about 2 metres wide) :

This then brings the Water to North Creek Canal, ((that will eventually have to be dredged to cater for the extra Flood Water flows, and also a lot of Fishermen cannot launch their boats at the launching pad at back of Bowling Club as the Canal is not deep enough)).
Fishery Creek has to be thoroughly inspected with the view that it may have to be Dredged in some places.

On 25 January 2012; Looking back on it in reflection : Upon returning to my Residence, situated at 156 Tamar Street, Ballina, at about 3. 30 pm : The back – up water across in front of Residences at 158 to 164- 66 Tamar street ; That is across western side of Tweed Street and the Canal Road; was at about three- quarters of metre to 1 metre in height and at about 8. 45 pm to 9.20 pm there was at least 1.5 to 1.6 metre ((over the top of kerb and guttering)) of Water across the centre of Tamar Street, as I witnessed two vehicles going towards Canal : Tide reached its peak at about 9.12 to 9.16 pm on 25 January 2012 ; It was a real lake all day, from before daylight 25 January 2012 : and it did not all clear away until about 7.30 am on 26 January 2012 ; (when low tide went out and the Ocean Swell had abated, to about 0.5 metre at R.S.L. Club Gauge ; as I went down and read it :

This tidal back- up or wash water comes from a blind gully off- shot of the Canal just south and east of the Scout Hall in Canal Road : This Water comes into a pipe that is under Bagot Street at the northern end of the street : Apparently this is the end of a pipe line where the water comes into to run down to Tamar Street ; As to path or place of layout of the pipe line is known to Council where they do have the initial plans of the route that it takes : From the Canal through a ¾ metre wide cement drain pipe that has been put into an old gully (years ago) goes east under Bagot Street, and comes around down under- side of Houses then an open drain for 150 metres (approx. which is a Health Hazard)) then into pipes under or around 'The Grange' Housing units in Canal Road to Tamar Street, opposite 160 Tamar Street. (seems to be lowest point) There has to be Tidal Flood Gate at Canal, installed on the end of this set of pipes.

In conclusion : These issues have to be seriously and fully looked into and rectified, as they have been completely forgotten about by Ballina Council over last 15 Years.

This Rate Payers Association would like to have an active representative on this Flood Plain Study Committee to take effect as to when it meets next.

Yours Sincerely

Ralph Moss

President 6686 2560

156 Tamar Street, Ballina 2478

Ballina District Citizens and Rate Payers Association.

10.7.12

Ballina Environment Society Inc
PO Box 166 Ballina
NSW 2478 Australia
<bes66@westnet.com.au>

Ballina Environment Society

SUBMISSION ON BEHALF OF THE BALLINA ENVIRONMENT SOCIETY
THE BALLINA SHIRE FLOODPLAIN RISK MANAGEMENT STUDY AND DRAFT AMENDMENT 15 TO THE DEVELOPMENT CONTROL PLAN, POLICY STATEMENT 11 - FLOOD RISK MANAGEMENT PUBLIC EXHIBITION.

Dear Councillors,

We thank the council for the opportunity to make a submission on the Ballina Shire Floodplain Risk Management Study and Draft Amendment to the Development Control Plan, Policy Statement 11 - Flood Risk Management. The following submission refers only to the draft amendment.

The proposed amendments appear to be a generally balanced approach to flood risk in the Shire. The specific inclusion of the principles of Ecologically Sustainable Development in the development assessment process, and referring to a specific regulatory definition of that, is welcomed.

In several paragraphs the draft proposal mentions environmental considerations then goes on to refer only to physical and aesthetic aspects of the potential impact of flooding on ecological values. Any paragraphs that discuss matters of environmental consideration ought to include reference to the potential pollution that can accompany inundation and flood flows from developed land. In terms of the relationship between development and flooding, it is pollution rather than physical risks and the aesthetic impacts of development design that poses the most significant risk to biodiversity and ecological values. As has been seen in recent flooding events in the Richmond River basin, and elsewhere, pollution can have severe impacts on individual biota and species populations.

Specifically in respect of 2.8.2 Performance Criteria:

At paragraph ii - The costs of damage needs to includes recognition of the harm to ecological values that can occur, and the flow on effects such as injury to activities dependent of natural resources and human health. It is envisaged that damages would include the cost of restoration and recovery and the loss of ecological services and resources where a developer or occupant was aware of the flood risk and ought reasonably to have been aware of the environment risk posed by the proposed (or approved) activities to be undertaken in consideration of that flood risk.

At paragraph vi - While the environmental impact of car parks are mentioned, it is clear in the detail that this refers to the aesthetic values of the surrounding environment that the car park may influence. It is important that specific reference is also made to the potential for environmental pollution that may be caused by inundation of car parks and the subsequent

outflow of flood waters into the surrounding environment that would be highly likely to contain pollutants such as fuel, oils and other hazardous materials.

Pollution impact generally
While the above is in specific reference to particular aspects of the DCP draft amendment, it would be appropriate to include a general reference in the amended policy to consideration of the pollution impact of the potential leakage of harmful substances into the natural environment as a result of inundation of developed land, most importantly industrial sites where hazardous materials are likely to be stored. It is important that proponents of development in flood prone areas are aware that they may be held liable for injury (economic and physical) as a result of the escape of materials that pose a risk to the natural environment, biodiversity and human health. It may also be appropriate to provide some reference to the level of liability that can be attributed to council and councillors where certain development has been allowed in flood prone areas and subsequent to flooding there has been harm as a result of the release of hazardous substances.

I thank the Council for your time and attention and hope that this submission will assist in the development of a comprehensive floodplain risk management strategy that protects the safety of both the Ballina Shire community and natural environment.
If you have any question in regard to this submission please contact me on 0422970871

Regards
Serge Killingbeck
Per Ballina Environment Society

Newton Denny Chapelle

SURVEYORS PLANNERS ENGINEERS

Date: 6th July 2012
Our Ref: 12/9000

General Manager
Ballina Shire Council
PO Box 450
BALLINA NSW 2478

Attn: Matthew Wood

Dear Sir,

Re: Submission on Draft Ballina Floodplain Risk Management Study
Draft DCP Policy Statement 11 – Flood Risk Management (Amendment 15)

As a local Town Planning and Civil Engineering firm frequently undertaking works within the Ballina Shire Local Government Area, Newton Denny Chapelle are pleased to provide the following submission relating to the Draft DCP Policy Statement 11 - Flood Risk Management currently being exhibited.

The document provides a method of categorising development types and locations to allow recommendations to be made to address in detail, the flooding restrictions and requirements placed upon developments within the flood plain.

A number of matters have been considered by Newton Denny Chapelle as requiring further deliberation to ensure impractical restrictions are not placed upon future development by the proposed flooding controls.

1) **Complexity of DCP Structure and Content**

Newton Denny Chapelle appreciates that Council is seeking to provide a DCP framework tailored to accommodate the specific flood risks for different development types in various locations within the flood plain. This has unfortunately resulted in a document which is quite complex and can be difficult to interpret.

In the absence of a broader restructuring of the document, it is suggested that a series of user friendly fact sheets would be helpful, particularly for the 'layman'. These could be used to outline what the requirements are for relatively straightforward development scenarios such as building a dwelling on land which has already been filled.

A more fundamental comment is that the minimum fill contour levels shown in Schedules E and F are not able to be clearly interpreted (i.e. if the flood height applies to upstream or downstream of the contour) with the colour gradations being practically indistinguishable on the maps provided.

2) **Figure 1**

Figure 1 of the Draft DCP illustrates four "Flood Risk Precincts" as well as two categories of land modelled as being "filled in the Integrated Flood Model" – with those areas coloured "green" not having development consent for filling and those areas coloured "black" either rezoned or with fill consent in place.

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The draft DCP does not appear to provide clear guidance as to the applicable planning and design controls to be applied to development on lands coloured green or black in Figure 1. It is suggested that there needs to be a clear reference to those areas throughout the document.

3) Section 2.8

Section 2.8 of the Draft document nominates the Flood Planning Levels (FPLs) and the relevant storm event which governs the required levels. Maps have been provided within Schedules E and F of the document which provide the 2050 and 2100 flood levels for the 100 year ARI, however the 20 year, 50 year and PMF recurrence intervals are not provided. The FPL1 and FPL2 maps are seen as requiring inclusion as they have been referenced within Schedule D – Prescriptive Measures.

Note 3 of Table 2.2 indicates that where levels are unable to be obtained from Council, they *"will be required to be determined by the proponent in accordance with Clause 3"*. Clause 3 suggests that flood studies will be required for developments both large and small, in areas where existing studies are unavailable.

The wording of the clauses and notes leaves little to no flexibility for smaller developments to avoid having to undertake the same costly flood modelling as large scale commercial developments.

It is sought that provisions in the wording such that individual developments for single or dual occupancy residential purposes or where developments will result in an area of impact below a nominal 500m^2, will allow these developments to avoid complex and costly flood modelling.

4) Section 2.9

Section 2.9 part (i) requires flood prone land where buildings are proposed to be erected to be filled wholly or partially. Clause 2.9 (vi) goes on to state that *"filling in Extreme and High Flood Risk Precincts will not normally be permitted, but in those cases where it is, the extent of fill will need to be reduced to the minimum possible extent and the fill must satisfy the requirements of Section 2.10"*. Section 2.11 of the DCP specifies that development in Extreme or High risk areas requires a flood report from a suitably qualified flood engineer regarding a range of matters including the off-site flood impacts (including cumulative impacts), calculations relating to the volume and conveyance of flood water and demonstration that *"the volume of flood storage will not be decreased"*.

The majority of the rural areas of the Richmond River Floodplain have been mapped as being either Extreme or High Flood Risk. The above combination of clauses provides little certainty to rural landholders as to whether or not they will be able to fill to provide a building pad for a dwelling or expand an existing building pad to accommodate a larger dwelling / rural dual occupancy or the like. Furthermore it is noted that, given the flat topography of the floodplain, for many allotments there is no opportunity available to offset the impact of the filling on flood storage capacity.

It is suggested that the DCP needs to enable legitimate rural land uses (such as dwelling houses on allotments where a dwelling entitlement has been recognised) without the need for complex and costly flood analysis to occur.

5) **Section 2.10**

Part [iii] of Section 2.10 states that in filling of a site to facilitate drainage, "Council may require these associated works to be undertaken [filling and/or raising public infrastructure including roadways] in full or part conjunction with the development if practical and critical to the acceptability of the development."

It is noted that as the raising of public infrastructure is *"integral to Council's strategy to address sea level rise"*, and that *"Council will normally be responsible for the raising of public infrastructure"*, the conditioning of these works upon a development should be considered as 'works in kind'. It is suggested that the full or partial offsetting of any developer contributions payable should be taken into account within this section of the document.

6) **Schedule B**

Some land uses are duplicated within Schedule B land use categories. For example Seniors Housing is contained within both the "Sensitive Uses and Facilities" and "Residential" categories. The schedule needs to be reviewed to ensure that such duplication is avoided.

7) **Basement Parking**

Schedule D Car Parking Item 4 states "*Basement carparking will only be permitted in the Ballina Town Centre precinct in accordance with Combined DCP Chapter 2 Ballina Town Centre*". It is unclear whether basement parking will also be permissible in other areas outside of the Ballina CBD provided suitable flood protection measures are provided as for the Ballina CBD basement parking.

8) **Non-Filling Outcomes**

The majority of the rural areas of the Richmond River Floodplain have been mapped as being either Extreme or High Flood Risk with filling solutions with the Draft DCP stating "*"filling in Extreme and High Flood Risk Precincts will not normally be permitted"* as discussed in [4] above.

Greater emphasis should be placed on seeking alternative non-fill solutions such as providing levee style protection particularly on large sites.

We kindly ask that Ballina Shire Council hold a meeting to discuss and explain the process of assessing development as well as clarifying options open to development outside of filling lands under the proposed Draft document. This will allow Newton Denny Chapelle and other local organisations an opportunity to ensure we are up to speed with all of the latest information and procedures so that we can prepare information and provide informed advices for potential development users that will satisfactorily address the requirements of Council staff in these matters.

Should you have any questions please do not hesitate to contact me on (02) 6622 1011.

Yours sincerely,
NEWTON DENNY CHAPELLE

BENJAMIN PARRY
Civil Engineer.

12/22250

Newton Denny Chapelle
SURVEYORS PLANNERS ENGINEERS

RECEIVED
11 JUL 2012
RECORDS

Date: 9 July 2012
Our Ref: 11/257

General Manager
Ballina Shire Council
PO Box 450
BALLINA NSW 2478

Attention: Mr Matthew Wood
Manager Strategic Planning

Dear Sir,

Re: **Submission to Draft Ballina Shire Combined Development Control Plan – Policy Statement No. 11 – Flood Risk Management.**

Newton Denny Chapelle (NDC) have been engaged by Woolworths Ltd to lodge a submission relating to the Draft DCP Policy Statement No. 11 which is currently on exhibition for public comment.

Council will be aware that Woolworths Ltd has recently submitted a Development Application for the redevelopment of the "Little Woolies" in River Street, Ballina. The design process for the proposed redevelopment of the site has highlighted to the project team a number of concerns with the flood planning requirements contained within both the existing and proposed Flood Planning DCPs for the Ballina Town Centre.

Of general concern to our client is the requirement that flood prone land needs to be filled in order to achieve flood immunity. More specifically, our client is concerned about the impact of this requirement on the viability and functionality of retail developments within the Ballina Town Centre. The reasons for these concerns are outlined below:

- Retail development, by its very nature, has a relatively high client turnover and customers accessing retail premises have particular regard to ease of access. Pedestrian accessibility to retail development generally, and supermarkets in particular, is most conveniently achieved at ground level. Access to "raised level" supermarkets by way of ramping and the like is recognised as reducing the trade/operational efficiencies.
- The Ballina Town Centre is competing with the significant retail attractions contained at the Kerr Street Retail Precinct. Each development within this Precinct has been designed on a single level – facilitating ease of movement between car parking area, footpaths and retail premises. Development within the Town Centre needs to ensure that it can, as far as possible, match the ease and convenience of the retail attractions within Kerr Street.
- The existing built form fronting River Street is generally provided "at grade" or with minimal increase in floor level (say 300mm). Were the proposed supermarket development to be developed in accordance with the fill requirements specified in the draft DCP, the proposed building will be in excess of 800mm above the adjoining development and will relate poorly to adjacent development.

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- Given the fragmented land ownership pattern within the Ballina Town Centre, redevelopment is likely to occur incrementally over many years. Each development will be required to fill to the applicable level in place at the time that the redevelopment is approved. The likely built form outcome resulting from this is a series of relatively small redevelopments, with little integration with respect to pedestrian and disabled access. Furthermore, the relationship of the buildings to the public footpath network will be dominated by a series of ramps, rather than an active street frontage normally associated with a vibrant Town Centre.
- It is recognised that Council has approved commercial developments in Tamar Street with compliant fill levels and as such a precedent could be said to have been established. Our client, however, submits accessibility requirements for commercial offices compared to retail tenancies differ significantly. Retail development by its very nature has generally a higher turnover and therefore customers accessing retail premises have regard to ease of access. This position differs significantly for commercial offices where the customer frequency is less.
- The development plans for the River Street supermarket redevelopment illustrate that the risks associated with the potential inundation of the supermarket can be effectively managed by appropriate construction techniques and the implementation of an emergency management procedure for installing the temporary flood levee system at the building entrances. If a flood warning is not issued and there is insufficient time to install the flood levees, then Woolworths will indemnify the authorities against any potential physical losses. Furthermore, constructing the building at a level lower than that prescribed by Council will not impact the flood immunity of access roads required for evacuation.

In conclusion, Council is urged to explore alternate solutions to the mandatory of filling of land to achieve flood immunity – particularly within the Ballina Town Centre. Many other local government authorities enable a range of "built form" and operational solutions to manage development within floodplains. Given the importance of the Ballina Town Centre to the retail hierarchy of the Shire, it is suggested that Council needs to consider a range of creative solutions to managing this issue and not continue to rely on the filling of land to achieve flood immunity.

Should you have any questions, please do not hesitate contacting Damian Chapelle of this office.

Yours sincerely,
NEWTON DENNY CHAPELLE

Dai Chapelle.

DAMIAN CHAPELLE
Town Planner, BTP CPP.

From: Duncan Thomson [DThomson@geolink.net.au]
Sent: Friday, 13 July 2012 4:09 PM
To: Matthew Wood
Subject: draft DCP policy statement 11 - flood risk management - comments

Hi Matt

Sorry for the delay in providing comment on this document. The key challenge I foresee is the practical implementation of the raising of public infrastructure. The note provided at the end of section 2.10 (p13) states that "the raising of public infrastructure is integral to Council's strategy to address sea level rise issues associated with ensuring the acceptable amenity and functioning of both existing and future development". I agree that the filling and raising of individual lots will not be sufficient to ensure the ongoing functionality of the low-lying areas of Ballina. If streets remain at their current level with the existing stormwater system, there will be an increase in the frequency and duration of inundation due to either high tides and/or stormwater runoff. This will probably be acceptable and workable for a number of years (or decades?) depending on the rate of sea level rise. However, a time will come when the frequency and duration of inundation of streets will become 'unacceptable'.

The obvious solution is to raise streets and other public infrastructure. However, it won't be possible to raise a street until all properties fronting that street have been filled. It is unrealistic to assume that all houses/buildings will be knocked down and replaced (and therefore filled in accordance with the DCP) in the next 20, 30 or even 50 years. In particular, there are older houses with heritage value that are likely to be progressively renovated but may never be totally replaced. Having said that, higher sea levels will also lead to higher groundwater levels, so it is likely that low-lying properties will become increasingly soggy which may prompt property owners to proactively fill their land even if they aren't forced to by Council policy. It will also be tricky to raise streets in a piecemeal fashion because this is likely to mean that existing overland flow paths for stormwater will be compromised and localised flooding issues will materialise.

I don't necessarily disagree with the proposed DCP, but it is important that we consider the practicality of implementation. While there doesn't appear to be a silver bullet, some potential ideas that might help are:

- Floodgates / one-way valves at the end of stormwater pipes to prevent high tides pushing back up the network. These would need to be low headloss devices to ensure that they didn't exacerbate stormwater flooding during storms.
- To enable the raising of streets prior to all adjacent properties being filled, it might be possible to design a stormwater system that prevents runoff from the street flowing into the low-lying properties. Roofwater from the low-lying properties could drain to the street and infiltration beds could be provided either on these properties or immediately outside to allow surface runoff from within the property to drain away. Rising groundwater levels will still be a problem for these low-lying properties. My thoughts are that a practical solution can be found, but it will require innovative thinking about stormwater drainage. One advantage Ballina has is relatively wide streets in many areas, so it may be possible to utilise more of the road reserve to accommodate stormwater infrastructure.
- Continue to encourage rainwater tanks because these help to reduce stormwater runoff.
- Greater utilisation of infiltration areas (in road verges and open space areas) to reduce the reliance on piped drainage systems.
- It is likely that pumps will need to form part of the solution to the stormwater drainage challenge.
- The sewer system may need to move towards a pressurised system rather than gravity.

Hope this helps. Happy to clarify any of the above if necessary.

Cheers
Duncan

Duncan Thomson
Environmental Engineer

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quality solutions sustainable future

1

S J CONNELLY CPP PTY LTD

18 July 2012
Our Ref: SJC1038-119

The General Manager
Ballina Shire Council
PO Box 450
Ballina NSW 2478

Dear Sir,

Re: Development Control Plan Policy Statement No. 11
Exhibition concerning Flood Risk Management

Thank you for the opportunity to make a submission in relation to Council's Draft Development Control Plan. I apologise for the lateness of my submission, I have 3 major points and a number of detailed comments to make.

Firstly, this DCP, whilst acknowledging the large impacts that climate change will have in Ballina and particularly Ballina Town Centre, does nothing to address the impacts of climate change in an overall policy sense. Council is expecting Ballina Island to flood to a level of over 1 m; high tides to regularly (most days) enter the streets and in very high tide events some streets will become impassable. I respectfully submit that such a drastic level of climate change impact needs to be addressed as an overall policy position before proceeding to look at incremental achievement of habitable floor levels only.

My second main point relates to the complexity of this document. I believe it is far too difficult to understand. I am a town planning practitioner with over 33 years experience and I am not able to fully comprehend this DCP and its implementation requirements.

My third main point concerns the DCP's requirement for "mandatory filling of land" to achieve flood immunity, particularly within the Ballina Town Centre. Many other local government authorities enable a range of "built form" and operational solutions to manage development within flood plains. It is suggested that Council needs to consider a range of creative solutions to manage this issue and not continue to rely only on the filling of land to achieve flood immunity.

Further to these 3 points I submit the following more detailed comments:

1. Retail development by its very nature has a relatively high client turnover and customers accessing retail premises have particular regard to ease of access. Pedestrian accessibility to retail development generally is most conveniently achieved at ground level. Access to "raised level" retail by way of ramping as required under the DCP adversely impacts on trade/ operational efficiencies.

2. Given the fragmented land ownership within the Ballina Town Centre, redevelopment is likely to occur incrementally over many years. Under the DCP, each development will be required to fill to the applicable level in place at the time that the redevelopment is approved. The likely built form

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outcome resulting from this is a series of relatively small redevelopments, with little integration with respect to pedestrian and disabled access. Furthermore, the relationship of the buildings to the public footpath network will be dominated by a series of ramps rather than an active street frontage needed in a vibrant Town Centre.

3. The minimum fill contour levels shown in Schedules E and F are not able to be clearly interpreted (i.e. if the flood height applies to upstream or downstream of the contour), the colour gradations being practically indistinguishable on the maps provided.

4. Figure 1 of the Draft DCP illustrates four "Flood Risk Precincts" as well as two other categories of "green" and "black". The draft DCP does not appear to provide clear guidance as to the applicable planning and design controls to be applied to development on lands coloured green or black.

5. Section 2.8 of the Draft document nominates the Flood Planning Levels (FPLs) and the relevant storm event which govern the required levels. Maps have been provided within Schedules E and F of the document which provide the 2050 and 2100 flood levels for the 100 year ARI. However, the 20 year, 50 year and PMF recurrence intervals are not provided. The FPL1 and FPL2 maps are seen as requiring inclusion as they have been referenced within Schedule D – Prescriptive Measures.

6. Note 3 of Table 2.2 indicates that where levels are unable to be obtained from Council, they "will be required to be determined by the proponent in accordance with Clause 3." Clause 3 suggests that flood studies will be required for developments both large and small, in areas where existing studies are unavailable.

7. The majority of the rural areas of the Richmond River Floodplain have been mapped as being either Extreme or High Flood Risk. The DCP provides little certainty to rural landholders as to whether or not they will be able to fill to provide a building pad for a dwelling or expand an existing building pad to accommodate a larger dwelling / rural dual occupancy or the like. Furthermore many allotments have no opportunity available to offset the impact of the filling on flood storage capacity. The DCP needs to enable legitimate rural land uses (such as dwelling houses on allotments where a dwelling entitlement has been recognised) without the need for complex and costly flood analysis to occur.

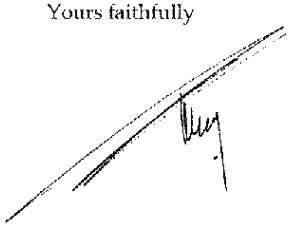
8. Part (iii) of Section 2.10 states that in filling of a site to facilitate drainage, "Council may require these associated works to be undertaken (filling and/or raising public infrastructure including roadways) in full or part conjunction with the development if practical and critical to the acceptability of the development." It is noted that as the raising of public infrastructure is "*integral to Councils strategy to address sea level rise; and that 'Council will normally be responsible for the raising of public infrastructure*". I submit that conditioning of these works upon a development should be considered as 'works in kind' offsetting against of any developer contributions payable.

9. Some land uses are duplicated within Schedule B land use categories. For example Seniors Housing is contained within both the "Sensitive Uses and Facilities" and "Residential" categories.

10. Schedule D Car Parking Item 4 states "Basement car parking will only be permitted in the Ballina Town Centre precinct in accordance with Combined DCP Chapter 2 Ballina Town Centre." It is unclear whether basement parking will also be permissible in other areas outside of the Ballina CBD provided suitable flood protection measures are provided as for the Ballina CBD basement parking.

11. More definitions need to be added to the DCP. For example the terms "non habitable floor" and "practical" are used quite a lot, but not defined.

Yours faithfully



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Civil, Structural & Environmental Engineers - Project Managers - Town Planners - Surveyors
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WE Payne BE, MIE Aust ET Elford L & E S D TJ Cromack B.Tech (Eng), TMIE Aust PM Snellgrove BTP CPP

5009 Highway flooding_BFRMS exhibition response_final

31 July 2012

General Manager
Ballina Shire Council
PO Box 450
BALLINA NSW 2478

Dear Sir/Madam

re: Ballina Floodplain Risk Management Study Nov 2011 (BFRMS)
Submission to public exhibition

Ardill Payne & Partners offer the following comments on the abovementioned Study:

Introduction

This submission deals with two aspects of the Study on exhibition. Firstly, it's relevance to, and potential impact on, residents of Ballina Heights Estate (BHE), and secondly, the inconsistencies and errors within the document that call its overall value into question. Please note that only those parts of the study relevant to BHE and surrounding areas have been examined.

The study does not quantify the data on which it is based so the cause of inconsistencies in the results must be guessed at.

1 Ballina Heights Estate

1.1 Background

Ballina Heights Estate (BHE) developers were required to construct access roads within the development (Deadmans Creek Rd and superseded Cumbalum Way) to a minimum elevation of 1.6m to satisfy Council that an acceptable level of flood immunity for BHE resident's access to and from Ballina was provided.

Changes made as part of the Ballina Bypass works and proposals contained in the Ballina Floodplain Risk Management Study, Nov 2011 (BFRMS) have the potential to significantly reduce that level of flood immunity.

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Council have previously been requested to quantify the Ballina Bypass impacts on the level of flood immunity, particularly in regard to the highway diversion between Deadmans Creek Rd (DCR) and the Ballina Heights Drive (BHD) roundabout which was constructed at the low level of RL1.3m (see attached APP dated 20/08/10). This section of relocated highway, now part of Tamarind Drive, is referred to as the Diversion in this document. Council forwarded APP's letter to Ballina Bypass Alliance (BBA) for their response. The response from BBA was that "*flood immunity of the Diversion upon opening will be in the order of a 5 year ARI rain event, which is considered consistent with the flood immunity of the existing Pacific Highway*" (see attached BBA letter dated 15/09/10). No modelling was provided to justify this assessment but it was pointed out that their modelling showed that upstream of the Bypass increases in 100ARI flood levels were restricted to 50mm maximum as required by BBA Conditions of Approval. The deduction we draw from this is that the BBA cannot raise the Diversion any further as it will cause the upstream flood levels to exceed this 50mm incremental increase impact.

Subsequent approaches to Council resulted in advice that the flood model was being revised and the level of flood immunity would be answered then. APP continually requested info from BSC on the flood levels for lower (<10 year ARI events) for the Diversion as a follow up of our 2010 meeting with BBA and BSC. Council advised that they were always waiting for WBM to revise the flood model to address this. The revision (BFRMS) has been completed and is now on public exhibition.

1.2 BFRMS use in quantifying flood immunity for BHE access

As advised by BBA the level of flood immunity of the Diversion "*will be in the order of 5 year ARI*". Although BFRMS mentions that it modeled 5 and 10 year ARI events it gives no results for anything less than 20 ARI despite APP's requests and BSC/BBA undertakings from our meeting of 7 April 2011. In addition it does not use scenarios specific to the BHE site or the Emigrant Creek catchment. The report states that flooding in the BHE area is dominated by Emigrant Creek rather than tidal surge or the Richmond River scale events. The study used a 12 hour storm duration for all local catchment events including Emigrant, Maguires and North Creeks. However, critical storm duration for Emigrant Creek is likely to be significantly shorter and more intense. If this is the case the modeling used in this study is likely to overestimate the level of flood immunity.

Therefore the BFRMS provides no assistance in quantifying BHE flood immunity.

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1.3 BFRMS use in assessing adoption of RL 1.3m for Diversion minimum level

Under all scenarios and events BFRMS results, as presented in Volume 2, indicate that flood levels at the Ballina Heights Drive roundabout are between 150 and 200mm higher than at the Deadmans Creek Road intersection. Current climate results can be interpolated from Drawings B17316-FRMS-L-003, 004 & 005. This would suggest that the Diversion should have graded up by this amount (150 to 200mm) to give the diversion a comparable flood immunity with the Deadmans Creek Rd intersection. Otherwise the BHE access immunity is significantly reduced by the removal of Deadmans Creek Rd as described below.

The study has been modeled with Deadmans Creek Rd removed so BHE residents (and Zone C flood evacuees) will be required to travel along the Diversion to the Ballina Heights Drive roundabout. Presently, residents approaching from Ballina turn into BHE at Deadmans Creek Road, which is approximately 500m south (downstream) of the point where the Pacific Highway is first cut in flood events (see Ballina_Heights_100yr_local_Existing.avi from 2008 study). If Deadmans Creek Rd is removed residents will have to travel 1000m further north (upstream) along the Diversion which will have no increase in the road level.

Note: Figure D-8 indicates that the Pacific Highway south of Deadmans Creek Rd closes one hour after the highway north of Deadmans Creek Rd. Figure D-8 also says that Deadmans Creek Rd closes at the same time as the highway north. However, Deadmans Creek Rd at that point is at RL 1.6m, much higher than the point to the south which closes the highway an hour later. It seems impossible for the flood study observations to be correct from the most fundamental of hydraulic characteristics unless the flood modeled is pushing upstream. This may be the case for large (1% events) but certainly not the case for minor events. The water level being higher at the BHD roundabout is supported by anecdotal information from residents in BHE which is that the area around the BHD roundabout is inundated well before areas to the south of DCR. In fact, access to Ballina along Tamarind Drive south of DCR is reported to have remained open for the duration of minor events which have closed Tamarind Drive around the roundabout.

The requirement to travel further north along the Diversion (upstream) with no increase in road level suggests a significant reduction in BHE access flood immunity as a result of BBA works and BFRMS recommended actions.

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2 BFRMS Inconsistencies

2.1 Deadmans Creek Rd

- Deadmans Creek Rd is used as the evacuation route for Zone C, but Section 8.6 says that the model has been based on the Deadmans Creek Rd embankment being removed. So how can a low level or non-existent road be used for evacuation?
- Section 7.6.1 and Figure D-3 relate to increasing the height of Deadmans Creek Rd, which has been removed from the model, to increase evacuation times.
- Section 8.6 says that the upstream impact on flood levels of removing Deadmans Creek Rd is 100 to 200mm and refers readers to Figure 8-5, but Figure 8-5 indicates an impact of less than 30mm.
- The last paragraph in Section 8.6 recommends monitoring Emigrant Creek levels to determine an appropriate treatment for Deadmans Creek Rd. Calibrating the model to Emigrant Creek is a good idea and will support the comments made in 1.2 above. However this recommendation suggests that WBM do not have confidence in the model in regard to Deadmans Creek Rd, and therefore BHE.
- As described in 1.3 above Figure D-8 indicates that Deadmans Creek Rd at RL 1.6m closes at the same time (40 hours) as the old Pacific Highway at RL 1.3m and before downstream parts of the Pacific Highway at RL 1.3m. There is an inconsistency between A3.7 and Section 8.6. Which is correct?

2.2 Diversion (Tamarind Drive)

- Drawings show the Diversion at RL 1.3m as flood free while surrounding land is inundated by flood levels of up to RL 4m (2.7m deep across road).
- The Diversion is shown in the velocity x depth drawings as flood free with the flood passing underneath in areas where the diversion has no culverts.
- Both of the above points call into question how accurately Ballina Bypass infrastructure has been modeled as per A3.7.

3 Conclusion

The BFRMS does not provide the information required to quantify the impact of Ballina Bypass works, or recommendations contained in the BFRMS, on the level of flood immunity currently enjoyed by residents of Ballina Heights Estate. That is, it cannot be used to say that an existing X year ARI immunity will be reduced to Y years.

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It does however contain enough information to indicate that should the recommended lowering/removal of Deadmans Creek Rd proceed (and the modelling is based on this) then the level of BHE access immunity to flooding will be significantly reduced. Therefore in the absence of additional modelling the Diversion (Tamarind Drive) must be raised by a minimum of 200mm to maintain the existing BHE flood immunity.

We appreciate the opportunity to comment on this Study.

Yours faithfully

WE Payne
ARDILL PAYNE & PARTNERS

Encl: APP letter dated 20/08/10
BBA letter dated 15/09/10

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20 August 2010

The General Manager
Ballina Shire Council
PO Box 450
BALLINA NSW 2478

ATTENTION: John Truman

Dear Sir

RE: Cumbalum Way and Pacific Highway Design Levels

During detailed design for the new Cumbalum Way alignment we obtained the attached crown levels for the new Pacific Highway alignment to Ballina from Ballina Heights from the Ballina Bypass Alliance (BBA).

As can be seen from the levels provided there are parts of the new alignment which are well below the minimum RL 1.6 we have been using for previous designs into Ballina from Ballina Heights.

The developers are obviously concerned abut the access limitation such levels impose during flood events on BHE and CURA residents.

We request therefore that we jointly take up this issues with the BBA and have the flood immunity level for the current levels determined.

It could be the current levels are not finished levels. However, based on much earlier studies I envisage the levels currently provided will limit access to flood events of less than a 10% probability of exceedance (1:10 year flood). We suggest that this is an unacceptable level and that minimum levels be set @ RL 1.6.

Yours faithfully

W E Payne
ARDILL PAYNE & PARTNERS

cc. BHE Developers
Stephen Barnier
Rod Willis

encl. dwg – 5009 SK194

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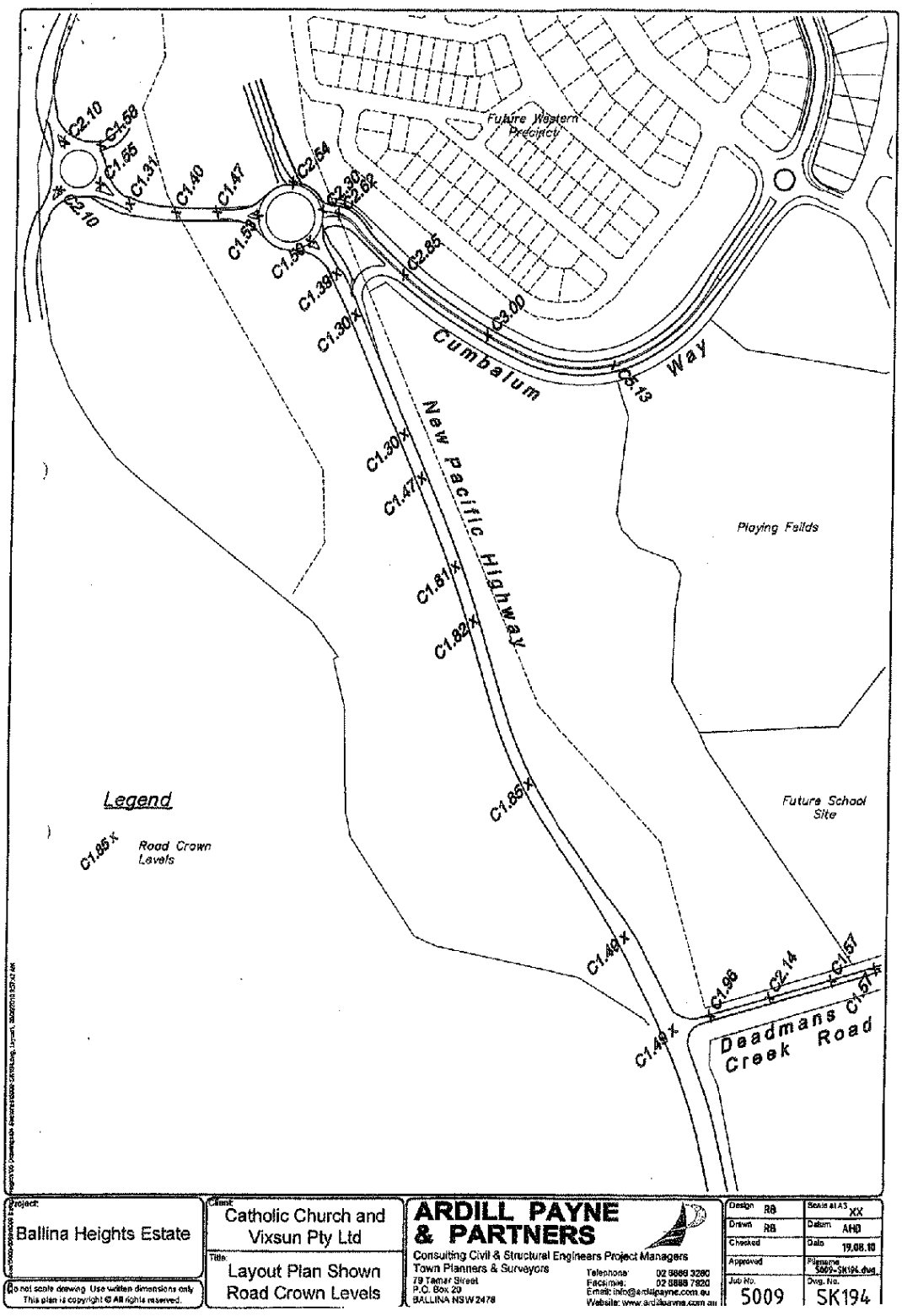
Future Western Precinct
Cumbalum Way
New Pacific Highway
Playing Fields
Future School Site
Deadmans Creek Road
Legend
Road Crown Levels
C1.85
C2.10
C1.58
C1.55
C1.31
C1.40
C1.47
C2.54
C2.30
C2.62
C1.59
C1.38
C1.30
C2.85
C3.00
C2.13
C1.47
C1.61
C1.82
C1.49
C1.96
C2.14
C1.57
C1.51
Project: Ballina Heights Estate
Client: Catholic Church and Vixsun Pty Ltd
Title: Layout Plan Shown Road Crown Levels
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Datum AHD
Date 19.08.10
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Job No. 5009
Dwg. No. SK194