

## **Submission by Chris and Catherine Magner to the review by Natural Resources Commission of the *Water Sharing Plan for the Richmond River Area Unregulated, Regulated and Alluvial Water Sources 2010*.**

We are land owners living and working on the banks of the Richmond River at Tatham, within the area covered by the *Water Sharing Plan for the Richmond River Area Unregulated, Regulated and Alluvial Water Sources 2010* (the Plan). We hold licences in the Coraki Area Water Source, for both surface water and groundwater. Of our surface water licences one states that the Extraction Zone is Richmond River Tidal Pool Management Zone and the other states that the Extraction Zone is Whole Water Source.

Chris has lived on this farm for all of his life- 65 years. Catherine has lived in this district for most of her life and on this farm for over 30 years.

We are making this submission because we believe there are several issues, both within the Plan and with the implementation of the Plan, which need correcting.

Issues that have become evident over time include salinity measurement in the tidal pool and access to salinity information, mapping problems in the Plan, "Policing" of the rules/compliance, changes in water use and irrigation methods, restrictive trading rules,+ lack of knowledge about the Plan and its history amongst employees of the various government departments and conflict between wording on licences and the words in the Plan.

### **Measurement of Salinity**

The Plan was developed over a period of several years and for the Tidal Zones the original proposal by the North Coast Interagency Regional Panel was to have pumping rules based on inflows to the Tidal Pool, as measured at Casino and Eltham. This was changed to salinity incursion into the tidal pool, this being done in recognition that there can be other water entering the tidal pool below the flow gauge points mentioned, from rainfall and other sources. Historically water users had no cease to pump rules in the tidal pool before the Plan. Water users self-regulated, many working in consultation with staff of Water Resources.

In the 1960's and 1970's a number of water users in the tidal pool obtained the use of salinity meters and began testing their water due to concerns about the suitability of the river water for irrigation in a drought period. They found that in areas below Coraki the water became unsuitable quite early in the drought event, above Coraki and below Wyrallah and Tatham bridges some salinity incursion occurred necessitating the cessation of irrigation for a few weeks before the drought broke, and above the bridges there was no significant salinity detected. This information was made available to the Interagency Panel. Salinity monitoring in the tidal pool has continued to be done by individual water users, by Rous Water (local water utility) and by staff of the local Broadwater Mill of the NSW Sugar Milling Co-Operative.

Previous to the Plan, in the rare times of low inflows to the tidal pool, irrigators self-regulated and ceased pumping when water became too salty to be safe for their crops or pastures. The Plan rules based on salinity were developed in close consultation with water users and considered historical information about salty seawater moving up the waterway from the estuary during dry times. In the Plan the measurement of salinity is given in Parts per Thousand (ppt). The scientists told us about the "salt wedge" which creeps up the rivers as inflows at the top of the tidal zones decrease. The Plan aimed to restrict the increase in salinity in the tidal pool from this salt wedge so as to maintain, as much as possible, the usability of the water for stock and domestic use in times of drought.

Before the Plan there was only one occasion when irrigators were stopped pumping by staff from the Grafton Office of Department of Land and Water Conservation. That occurred when the city of Lismore was running out of water in its Rocky Creek dam and emergency access to water from the tidal pool above Lismore was granted to the local water authority Rous Water. Had Lismore not been short of water the government department would not have intervened and irrigators would have continued their usual practice of restrictions and cessation according to water salinity in their area.

The Bungawalbin Creek waterway enters the river downstream of Coraki and has a much smaller tidal area in a narrower waterway with lower fresh water inflows than the Wyrallah and Coraki tidal pool. The salinity level in this waterway increases much more quickly than in the rest of the tidal pool of this river system but under the Plan operates under the same salinity rules as the Wyrallah and Coraki water sources.

In the early days of the development of the Plan there was consideration of the Bungawalbin Creek separate to the rest of the tidal pool management zone of the Coraki Area Water Source, with its own cease to pump rules but for some reason this was changed before the Plan was written so as to include the Bungawalbin Creek in with the Richmond River tidal pool management zone rules. This is despite the fact that it becomes unusable due to saline incursion much earlier than the rest of Coraki tidal zone and Wyrallah tidal zone. In fact it is our recollection that the decision to place a salinity gauge at Bungawalbin was made because of the need to manage Bungawalbin Creek water use separately to the rules set for the Coraki Source, due to the earlier incursion of salt into the Bungawalbin Creek tidal area. Salinity in the Bungawalbin can increase to the extent that water is unusable for stock water but could still legally be extracted for irrigation under the salinity rules of the Plan. This is not environmentally sound and could be addressed by separating the Bungawalbin into its own area with its own rules, using the salinity gauge at Bungawalbin.

Under the rule of the Plan licenced extractors are required to check that they are extracting in accordance with their licence conditions. For an irrigator with licence in a tidal pool area this means they must check the WaterNSW website for the salinity meter reading at Coraki each time they irrigate. The reporting of salinity on "Real-time water data" has been in uS/cm corrected to 25degrees Celsius, while the Plan rules are based on salinity measurement in ppt. We had tried to have this issue addressed earlier and received an email response from Peter Hackett of the Grafton WaterNSW office on 25<sup>th</sup> January 2019, which gave an approximate conversion but still confused the issue by calling the units millisiemens per centimetre when the values expressed in his conversion appear more like microsiemens per cm.

Lately for the first time since the beginning of reporting of salinity at the Bungawalbin and Coraki gauges, which did not commence until some years after the commencement of the Plan, the recent drought and resulting activation of licences has caused water users to need to continuously check the salinity level. They then needed to find a way to convert the reported units to the units stated in the Plan so as to be able to check how close to restrictions and cease to pump we were getting. There are several conversion tools available when one searches on the internet but as the reported salinity is not a direct salt measurement there is some doubt as to accuracy of these. When we brought this issue to the attention of Adrian Langdon of WaterNSW and he was able to eventually get a conversion onto "Real-time water data" it became evident that some of us had been using a different formula to the one "Real-time water data" uses. This whole situation led to much research on our part. We recognise the conversion of uS/cm at 25C multiplied by 0.64 and divided by 1000 to give ppt is used widely in NSW government entities, but we are yet to be convinced that this conversion used for "Real-time water data" is the best one to measure sea water salinity moving up the Richmond River. We are also unaware as to the effect of the "correction" to 25C on the ppt conversion.

Manly Hydraulic Laboratory, in its Water Quality Glossary, defines salinity as “The level of dissolved salts in a water body expressed in parts per thousand” and conductivity as “Concentration of major salts or major ions in solution”.

FONDRIEST Environmental Learning Centre, Ohio U.S.A. in its document “Conductivity, Salinity & Total Dissolved Solids- Environmental Measurement Systems” defines salinity as “an ambiguous term. As a basic definition, salinity is the total concentration of all dissolved salts in water (TDS)” and “salinity is a strong contributor to conductivity”. “More often salinity is not measured directly, but is instead derived from the conductivity measurement” and in another place in the same document “when calculating total dissolved solids from a conductivity measurement a TDS factor is used. This TDS constant is dependent on the type of solids dissolved in water and can be changed depending on the water source. Most conductivity meters..... will use a common approximation constant around 0.65” but further states that “when measuring mixed water or saline water with a conductivity value greater than 5000 uS/cm the TDS constant should be higher: around 0.735....Likewise fresh or nearly pure water should have a lower TDS constant closer to 0.47-0.50”. “Fresh water has a wide conductivity range due to geology effects. Freshwater that runs through granite bedrock will have a very low conductivity. Clay and limestone soils can contribute to higher conductivity values in freshwater”. So this tells us that the conversion factor should be variable- or that we need a meter that actually measures Parts per Thousand as is required in the Plan.

The easiest to understand explanation we have found about the measurement of salinity is from Dr Tim Apps, Apps Laboratories [REDACTED]. He states that “there is no exact relationship between conductivity as uS/cm and TDS as ppm (parts per million)” -or in the case of our Plan ppt.

In Dr Apps’ website explanations of salinity and its measurement he gives information as to the contribution of different types of salts to conductivity. The FONDRIEST document also discusses various influences on conductivity. This leads us to ask what would be the main contributors to the conductivity of the water being measured at Coraki and the conclusion is sodium chloride, or common salt, from the sea water being drawn up the river with the tides in times of low inflows to the top of the tidal pool, and in times of high inflows clay from the clay soils. Dr Apps further states “In water with a higher proportion of sodium chloride to get ppm just multiply the uS/cm reading by 0.5. For most other water for example in hydroponics solutions use a factor of 0.67 or 0.7 instead”. In the document “Measuring Salinity”, produced by South Australia Department of Environment, Water and Natural Resources it is stated that 1,000 uS/cm =approximately 550ppm (or .55ppt) depending on the types of salts present.

We recognise that Total Dissolved Solids, as measured by conductivity, is generally used in determining salinity of water and soil. However for the purposes of the Plan and the measurement of the effect of sea water moving up the river we believe that the appropriate element to be measuring is sodium chloride as it increases in the river. Indeed having taken part in the discussions to develop the rules for the tidal pool Chris believes that the intent was to measure sodium chloride from the sea water. NSW Industry & Investment Primefact 856 states that conductivity salinity meters measure “the electrical conductivity of water which is related to the total dissolved salts present. They do not provide information on the types or ratios of soluble salts present.”

We acknowledge that salinity calculations are done in other regions such as the Hunter River where saline water enters the system from upstream mines, groundwater and tides, but we believe that the salinity encroaching on our system in drought is somewhat different to the situation in the Hunter, which in large part comes from mine water during normal times. So we believe the conversion factor being used for the Richmond River may be inappropriate and should be closer to the conversion factor for sodium chloride found in information quoted above if it is not possible to have a gauge which measures parts per thousand as is required in the Plan.

### **Access to information**

The “Real-time water data” page of the WaterNSW website is often hard to access. For example on 10<sup>th</sup> February 2020 we tried on multiple occasions to access the site from 6.30am until 10pm and were only successful on one occasion, despite being able to access all other websites we tried that day. Given that irrigators are required by the rules of their licence to check each time they are to irrigate this is just not good enough.

This website reports the daily uS/cm conductivity reading on the Latest Values tab only as the 4.45am reading during daylight saving time and 5.45am in ordinary times. It requires the user to go to the Custom Outputs tab to see values for previous readings, but does not give any further daily readings for that day. It does not give real time readings and is a day behind in doing the conversion to ppt (after this started appearing on the page on 14<sup>th</sup> January 2020).

In the WSP it is stated “**Division 3, 59** (5) The salinity thresholds specified in Column 5 of Table B refer to the average low tide daily reading.” We believe that this means that the salinity levels used to determine flow classes and cease to pump thresholds should be an average of the two (often considerably different) daily low tide readings. If this is the case then how are we to determine this when we are not able to get the latest information? If we use the information available for the two low tides for the last full day previously reported on “Real-time water data” then we still have to try to do time consuming calculations once we get custom outputs and find when the low tides were and what the salinity readings were at the time. If we look at the document Water Sharing Rules Coraki Area Water Source by NSW Office of Water, September 2014 it states “salinity levels (as measured on the low tide at the reference point)”- so it isn’t considering that there are two low tides a day which is different to the Plan.

### **Compliance**

In the past there has been involvement of the water users groups in determining that cease to pump thresholds have been reached and in letting irrigators know that restrictions or cessations to pumping should commence. With the advent of the Plan this changed and each irrigator is expected to check what the position is each time they use their irrigation equipment.

With the website inaccessible at times and given that some irrigators do not use computers or mobile phones it is difficult to be sure if everyone knows when restrictions or pumping suspensions apply.

For those whose extraction is conditional on visible flow at the pump site on a flowing stream, or for non-flowing waterbodies such as lagoons and lakes, waterway depth indicators or height of the water in relation to some other fixed point, determining if extraction is possible at any given time can be complicated and difficult. Waterway depth indicators are not being maintained e.g on Barling Creek at Tomki. Sometimes the fixed points for determining ability to pump are on other peoples properties and inaccessible or are in the wrong place.

It would be helpful for those who are able to access “Real-time water data” if note was made on the relevant page, for their stream level or salinity reading, stating clearly when triggers for flow classes, cessation or recommencement of pumping have been reached. This should also be communicated to licence holders by phone call, text and/ or email. Surely it wouldn’t be too hard to request licence holders provide their phone numbers and email addresses when the next Water NSW accounts are sent out. This is of particular relevance now that WaterNSW is fully responsible for dealing with those of us in the unregulated sector in regard to licencing, river operations and billing.

Also it is hard to know now if an irrigator is pumping contrary to restrictions because there is no set times for restricted hours under the plan whereas before the plan irrigators in areas now covered by

the plan would implement restrictions on the basis of certain hours or days being used to pump, managed voluntarily by a local water users group but there is no provision in the Plan for such groups to have a roll, and they would not now know the rules that apply to each licence. Reports to NRAR are not immediately investigated and delays can result in detriment to other water users and the environment. There do not seem to be many feet on the ground as far as NRAR compliance staff. As neighbours or members of the public do not know the classes that apply to extractors licences or indeed if they have a licence and therefore do not know if someone is pumping water legally or not, this can contribute to deteriorating social outcomes and poor relationships between extractors and others.

### **Changes to industry and irrigation systems**

Since the Plan was written there have been many changes to agriculture in the region. There does not seem to have been consideration to the possibility of such changes when the Plan was written. Forestry was for a time increasing but this has now greatly declined, the dairy industry has decreased in total numbers but increased in intensity, the Tea Tree industry is greatly expanding, the rice industry is in its infancy and has potential to further develop, etc. Sizes and types of irrigation equipment have changed. The size and capacity of irrigation pumps now being used by some is much bigger than the biggest that were being used when the Plan was developed. While there were some large pumps in use prior to the development of the Plan they were few in number and in fact some had been decommissioned by the time the Plan was written. Some of these newer pumps have the ability to have a much greater influence on the status of any waterway in times of low inflows. For example small streams could be quickly placed into a condition that requires cessation of pumping when one irrigator with a large capacity pump uses water that previously would have taken much longer to pump out of the stream with a smaller pump. This devalues the water share of other licence holders on the stream, who are quickly left with no water to pump and can contribute to deterioration in relationships between extractors and others. This situation has occurred because there is nothing in the Plan to stop it and WaterNSW officers have issued approvals to increase pump size, apparently without consideration of the resilience of the waterway which has no Regulated inflows or of the effect on other water users and environment in the same stream.

### **Water storage**

High flow conversion is not permitted in the Wyrallah and Coraki Source areas. As the flood plain is the area of the river with the most water going past in times of high rainfall, it would seem that this rule needs looking at when the plan is reviewed -with consideration being given to allowing high flow conversion in these lower river areas. As the total allocation for the whole of the catchment only averages 3% of the average inflows the logic of extracting water from the streams on the flood plain at times of extreme high flows and storing that water for later use, at a conversion rate of something higher than the rate allowed in other areas above the flood plain in our Plan (which is 5X), needs to be seriously investigated.

On the flood plain we have been told we are not permitted to capture any water that rises up out of a stream i.e. "flood plain harvesting". We are only allowed to utilise the 10% harvestable right to fill any farm dams. This is another issue which needs consideration when our plan is reviewed due to the high volumes of water in flood times. If some of these flows could be harvested and stored for future use it would be an advantage to down-stream areas and communities by reducing flood heights and therefore reducing damage. It would also be an avenue for some without reliable access to water to obtain such access by storing water that would have normally continued to contribute to flooding downstream. While only some would be in a position to take advantage of such a change to the water harvesting rules it would benefit many more than the water users harvesting the water.

Also on the issue of storing water on farm a point of concern to some members of the public and other irrigators is the increasing practice of some irrigators to install flood irrigation systems with very high volume pumps and very large tailings drains to catch excess irrigation run off. This is being seen as a de facto off stream storage which has not previously been permitted. These drains, if empty when a rainfall event occurs, become a farm dam and there is concern that it is not only an inefficient use of water in the first place to have such big volumes of run off but the drains/dams may contravene harvestable right capacities.

It would seem that the whole water storage issue needs review for the whole of the coastal strip.

### **Mapping**

There are several issues which will require addressing in regard to mapping in the Plan. Firstly, as mentioned previously, Bungawalbin Creek has been included in the Coraki Area. There is recognition in the Plan and the Background document that this creek has its own catchment and is very different in its salinity regime. To have the same triggers for Bungawalbin as for the other areas of the tidal pool fails to take into account the rapid salination it suffers in dry times.

Some licence holders have found that streams on their properties have been included in the wrong catchment areas and this can have implications for trading and pumping rules.

One person we know has a situation where he believes he should be able to move licenced volume from one part of his property to another but the streams have been mapped as flowing to different sources between which there is no trading allowed, when they in fact both flow to the same source.

In Schedule 1A Access Licence 30AL305155 is stated to be in the Bangalow Area Water Source and it is not. It is actually in the Coraki Area non tidal, some 40-50 kilometres away. Therefore this licence cannot be traded within its correct catchment. Such poor mapping on behalf of government department employees is indicative of greater problems in the system.

While the tidal areas of both the Coraki and Wyrallah Areas are controlled for flow class and cease to pump purposes by the common salinity trigger measured at Coraki there is no trading allowed between these areas. This does not make sense as they are part of the one tidal pool and water moves freely from one arm of the river to the other. The National Water Initiative, to which water sharing plans are supposed to comply, states that there should be free trade between interconnecting streams.

Wide consultation with water users will be required to rectify such problems in the Plan.

### **Conflict between wording on licences and websites and the WSP**

Clarification is needed in cases where the Plan does not mention or is contrary to something written on a licence. For example in our own case we have an access right document that says "whole of source". When we tried to have volume from this licence moved from the tidal pool to a non-tidal area in the same source we were told by Murwillumbah licencing staff that there was no such thing as whole of source mentioned in the plan so we were not able to move the entitlement. This is contrary to the advice we were given by the Grafton office staff when the licence title document was first issued and we rang them to get clarification of the term "whole of source". We believe that there are other licences which have the term "whole of source" on their title document. It is essential that this term be recognised in the Plan as Title deeds were issued before the Plan was implemented. The volume of entitlement under such licences needs to be recognised as tradable and a determination of the total of such volume needs to be made.

Under the Plan Clause 75 (2) (g), Clause 76 (2) (l) and Clause 78 (2) (g) and others it is also stated that this dealing would only be allowed if it did not result in an increase in the total “share components of all access licences that existed in the Coraki Non Tidal Management Zone at the date of commencement of the Plan”. Murwillumbah staff also told us that they could not find a figure for this total entitlements at the beginning of the Plan.

The rules summary found online “Water Sharing Rules Coraki Area Water Source”- NSW Office of Water, September 2014 -to which we have been referred at various times by Grafton and Murwillumbah staff, states that “Holders of an access licence who have been accredited under the Efficient Water Use Accreditation Scheme, are not subject to the pumping restrictions”. On the copy of the Plan accessed online in December 2019 in Division 3 at Clause 60 on page 54 subclause (22) it states “Access licence holders may be accredited under the Efficient Water Use Accreditation Scheme in the following water sources: (a) Gradys Creek Water Source, (b) Bangalow Area Water Source, (c) Kyogle Area Water Source, or (d) Terania Creek Water Source”. Note there is no mention here of the Coraki Area Water Source and I have not yet been able to find mention in the Plan of the scheme being applicable to the Coraki Area. Enquiries by us to relevant departmental staff have not been able to inform us about how to become accredited under this scheme. Why is there apparently a loop hole that allows circumvention of the rules in some areas but no information about how to use the loop hole?

### **Trading**

In the Plan there is a figure given for the total allocation of water (Share Component) in each source. For the Coraki Area Water Source and the Wyrallah Area Water Source there is no break up between the tidal and non-tidal zones. This has an effect on trading – as can be seen from the example of our own experience as quoted above, when departmental staff handling the proposed trade want to know but can’t find a starting figure for the part of the water source concerned. Also we do not know if the figure given includes the “history of use” volumes which were allocated in the tidal pool in recognition of previous unlicensed legal extraction under the Water Act 1912, or volume offered but not taken up when the “history of use” allocations were made or any volume surrendered after the history of use allocation. This total share component needs to be accurately stated because it has an effect on the ability to trade.

The Plan needs to make clear what happens to surrendered licenced volume. Is it held by the government for reallocation? Or does it reduce the total share component by the amount surrendered? We believe that any surrendered volume should be available for reallocation within the total available share component as there was an assessment of the source for capacity to be allocated during the “history of use” recognition process.

The National Water Initiative says that there should be free trade allowed between interconnecting streams but the trading rules of the Plan do not allow this.

The tidal zones of both Coraki area and Wyrallah area are connected, they are part of the one tidal pool, yet there is no trading allowed between the two areas. This is contrary to the National Water Initiative, restrictive and illogical and possibly contrary to Federal law.

### **To address the points raised in the letter dated 15<sup>th</sup> May 2020, requesting submissions:**

*1 To what extent do you feel the Plan has contributed to environmental outcomes?*

The health of waterways is of critical importance to all water users as well as to the natural environment and this was already recognised and actioned by water users before the Plan.

Prior to the Plan being implemented the local Water Users groups were very active in helping extraction licence holders to manage their particular waterways according to the rules of their licences and according to the condition of their waterways, in conjunction with the relevant government department of the time. Within the Plan there is no place for the Water Users groups and the part they played in managing extraction from waterways and protecting the environment.

Major factors which effect the environmental values of water sources in the area of this plan include siltation, movement of sand downstream, saline incursion up waterways during times of drought and low inflows to the tidal areas of streams, inundation of low lying land during high rainfall events.

The Plan does not address movement of sand or siltation.

In our own area of the Richmond River there is undermining of the river banks by carp, causing trees and other vegetation on the banks to collapse into the river taking soil with them, making the waterway shallower and narrower.

The Plan does attempt to maintain the health of waterways by its extraction rules, preventing the over extraction of water.

Saline incursion upstream is something which the plan attempts to address with rules for extraction linked to salinity levels in the Tidal Pool. However it fails here in that the salinity measurements stated in the Plan are different to the units measured at the gauge at Coraki, and by including the Bungawalbin area as part of the Coraki Area Tidal Pool.

The salinity units of measurement in the Plan are different to those measured by the gauges which have been installed. Having been involved when the rules were determined and knowing that the intent was to measure incursion of common sea salt up the river in times of low inflows (the salt wedge) we do not believe that the currently installed gauges are measuring the correct thing.

There is no allowance for mitigation of land inundation by harvesting runoff water to prevent flooding downstream. This allows some land to suffer from vegetation death and this can lead to "black water" events and death also of aquatic life, which is a poor environmental outcome.

We do not believe that the implementation of the Plan has had an overall beneficial effect on the environment.

## *2 To what extent do you feel that the Plan has contributed to social outcomes?*

There are some aspects of the Plan, as mentioned in earlier sections of this submission, which can lead to poorer social outcomes. This is largely because of responsibility for implementing the rules for water use is now solely the licence holders, whereas before the Plan it was more a group effort, involving water users groups and government departments as well. This helped to strengthen social connections between water users, neighbours, and government department staff, and the public had more faith that water was used according to the rules. We do not believe that this is any longer the case.

## *3 To what extent do you feel the Plan has contributed to economic outcomes?*

Restrictive trading rules are detrimental to economic outcomes.

As mentioned in the earlier part of this submission we had tried to move some licenced entitlement from our property to another which we lease, but were unable to do so. This occurred during



drought when there was great demand for the hay we produce on the leased paddock. So not only did the inability to irrigate cause us great economic loss but it also stopped other people being able to get local reasonably priced hay.

Restrictive trading can cause devaluation of land if it is not possible to obtain or increase approval to extract water for use on a specific property.

#### *4 To what extent do you feel the Plan has contributed to meeting its objectives?*

The objectives of the Plan are listed in Part 2, clause 10 of the Plan.

*(a) "protect, preserve, maintain and enhance the important river flow dependent and high priority groundwater dependent ecosystems of these water sources"*

We are uncertain of any benefits gained for these ecosystems since implementation of the Plan.

*(b) "protect, preserve, maintain and enhance the Aboriginal, cultural and heritage values of these water sources"*

We do not know if there has been any investigation into or documentation of any significant Aboriginal, cultural or heritage items which could be protected, preserved and maintained by the rules in the Plan.

*(c) "protect basic landholder rights"*

The Plan does generally set out rules for licenced water extraction that preserve enough water in water sources to allow landholders to have access to their basic landholder rights of water for stock and domestic use. However because the Plan does not prevent the issuing of approvals for higher capacity pumps there are some cases, and the possibility for more, where licenced use can cause a water source to be depleted to the point where basic landholder access to stock and domestic water is at risk. This may be transient or longer term.

Also the inclusion of the Bungawalbin Creek in the Coraki Area Water Source, with rules for licenced extraction aligned with the salinity gauge at Coraki, means that there is the possibility that licenced extraction could cause earlier salination of the creek to the point where it becomes unsuitable for use under basic landholder rights. This could be caused when legally extracting further up the creek causes the water closer to the junction of the creek with the river to be too salty for use as the "salt wedge" is drawn up the waterway.

*(d) "manage these water sources to ensure equitable sharing between users"*

As above the Plan may allow the some users to be disadvantaged.

*(e) "provide opportunities for market based trading of access licences and water allocations within sustainability and system constraints"*

The words on title deeds for water access rights sometimes don't align with the words of the Plan. Therefore the Plan causes the erosion of the ability to trade. Wrongly mapped streams cause erosion of the ability to trade.

The rules of the Plan do not allow free trading between interconnecting streams e.g. the Wyrallah tidal pool and Coraki tidal pool cannot trade yet they are connected and are both governed by the salinity gauge at Coraki for restrictions and cease to pump.

The validity of the Plan could be brought into question because of the breaking up of catchment into small trading areas with restrictive trading rules, which is contrary to the National Water Initiative. This also devalues water for trading purposes.

*(f) "provide water allocation account management rules which allow sufficient flexibility to encourage responsible use of available water"*

From our experience most people with licences in the unregulated system do not realise that they have an "account" to be managed. In this high rainfall coastal strip most licence holders do not use any water until we experience a prolonged dry period. Very few would regularly use all their licenced volume. Most are not registered with iWAS for reporting purposes but use log books and if making use of the two part tariff system they report use annually by filling in a form. The ability to use twice the annual licenced volume, but not exceed three years allocation on a rolling average is generally clearly understood, however the reference to "water allocation that can be carried over" as stated in Part 9, Division 1, clause 52 (4) of the Plan is confusing to all unregulated users. It has never, until this year, been raised by any regulatory authority, but this year many users received a letter recently from WaterNSW stating that they would lose any carryover water in their account at the end of the water year. We have an understanding of carryover water in the regulated system but had never had the term applied in the unregulated before.

*(g) "contribute to the maintenance of water quality"*

Rules in the Plan under which water can be extracted are effective in preserving water quality in many cases.

However the salinity incursion to the tidal pool in times of low flow is not effectively managed by the Plan due to lack of correct measurement by the Coraki gauge, lack of easy access to Coraki gauge readings for many and inclusion of Bungawalbin Creek under the rules of the Coraki source. The time of poorest water quality in the our area of the Richmond River is in times of high flows/floods, due to sand, silt, debris and decaying plant material. This causes deoxygenation of the water and makes the surface water unusable for stock and domestic purposes and also results in deaths of aquatic life. The Plan does not address this.

*(h) "provide recognition of the connectivity between surface water and groundwater"*

Yes the Plan does this by the rules which prevent drilling of bores near waterways.

*(i) "adaptively manage these water sources"*

We don't have enough information to know if this is achieved

*(j) "contribute to the environmental and other public benefit outcomes identified under the Water Access Entitlements and Planning Framework in the Intergovernmental Agreement on a National Water Initiative"*

We believe this is catered for in the Plan.

In conclusion we wish to say that we realise this is a long submission, especially as it comes from individuals rather than an organisation. We have tried to cover all relevant issues to the best of our

ability and this did require some detailed information, especially on the issue of salinity. We come from a background of many years of involvement in irrigation and water use politics and were extensively involved in the stakeholder consultation process prior to the development of the Plan.

Chris Magner and Catherine Magner.

[REDACTED]

[REDACTED]