



Murray Irrigation

**Submission to the Review of the NSW Murray and
Lower Darling regulated rivers water sharing Plan**

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1. Submission Summary

Murray Irrigation Limited is climate change ready. We offer the most on-point and suitable product for a variable climate; our business and customers are adaptable and resilient enough to prosper in a changing environment. MIL's key driver is the optimal economic performance of the plan through its capacity to drought proof farmers in the region who mainly hold NSW GS entitlements, and to encourage water use up to the prescribed Sustainable Diversion Limit.

The Water Sharing Plan has had achieved a number of its stated aims, but also requires a holistic and stakeholder-based review to consider and adjust for any changes and lessons learned since its inception. We have taken the time below to highlight how much has changed in water and river management since The Lower Murray-Darling Water Management Area was constituted under the NSW State Water Act (2001) and the Water Sharing Plan for the New South Wales Murray and Lower Darling Regulated Rivers Water Sources was first gazetted in 2005. We would like to see that the revised WSP adapts to the variable climate we are experiencing; evolves where rules have achieved what they set out to do; and learns from the mistakes of managing water in a tightly held system.

In reference to the NSW Chief Scientist report Independent Review of 2023 Fish Deaths, clearly there are some issues related to operation of the regulating and storage works at Menindee that Professor Durrant-Whyte, Chief Scientist and Engineer is seeking to have reviewed. We want to emphasise that any changes to the Water Sharing Plan that seek to hold water in the large, flat and highly evaporative Menindee lakes for a longer period that would occur under the current operating rules, will adversely impact water security for NSW Murray users. In brief, any changes to release rules in the Darling system must consider impacts to all current dependents on both the Murray and Lower Darling rivers.

Climate, Environment and Social impacts

Since 2005, we have seen that not only severe droughts can be crippling for the environment, but the flows and lower water quality issues associated with 'wet years' can also cause significant harm to fish health, and the broader ecological wellbeing of river systems and floodplains.

The record-breaking drought of 2006/2007 caused the suspension of the Water Sharing Plan, and direct ministerial intervention was required to re-allocate available water resources for human needs. Severe droughts in 2008 and in 2018 and 2019, also resulted in 0% NSW Murray General Security (GS)

allocations. In addition, hypoxic events have occurred in a range of season types, during droughts, and even in quite wet years. Environmentally, these events unfold rapidly, kill fish and can severely damage whole river ecosystems and floodplain health.

The Chief scientists report¹ highlighted how complex the (Darling) system is and how devastating the consequences of certain events are on fish and river-health. We also know that the Upper Darling and tributaries really matter in terms of maintaining low flows for as long as possible during dry periods and maintaining the health of the Lower Darling.

Unlike 2004, there is now a very substantial Environmental water account held by state and Commonwealth agencies, with large allocations available in most years in both the Menindee storages, and the Murray storages that need to be released. The recognised significant and limiting *Delivery Constraints* in the Murray for delivering much needed water for both new horticultural demands, and in relation to delivering E-Water to any site downstream of the Barmah Millewa Forest appear difficult to resolve. These large volumes held raise questions regarding the continuing value of some rules-based flows (particularly the prescriptive Barmah-Millewa related release rules included within the current WSP).

Socially, our Mid Murray communities have experienced the continued trade out of entitlements from a well-established irrigation district, mainly because of Government funded 'buybacks', which have yet to demonstrate the environmental improvements sought, and have contributed to a series of adverse outcomes: stranded supply assets, poorer regional social values and higher unit infrastructure costs for the remaining irrigator-customers. In addition, the expansion of the 'market' in terms of geography, specifically the water trade downstream from the Mid Murray and Victorian Goulburn system into the Murray (below the Choke) in the summer, can create not only supply shortages through *the Choke*, but also adverse eco-system outcomes through the creation of prolonged and unseasonal high mid-summer lows. This has led to a series of quite restrictive limits being imposed on annual allocation trade.

¹ Independent review into the 2023 mass fish deaths in the Darling-Baaka river at Menindee. Findings and recommendations, 31 August 2023.

Since 2005, Murray Irrigation and its customers (and presumably other NSW Murray and Lower Darling Water Managers):

- Now understand irrigator behaviour a lot better, particularly regarding annual water use relative to announced allocation, and the utilisation of carry over. Irrigator use of allocation for any given allocated volume is now lower.
- Have a better understanding of the likely success of the current outdated Barmah-Millewa rules-base allocations in relation to the impacts on both the health of the Forest (and the adverse impacts on Murray General Security allocations in many dryer years) as the current rules deem that the account must be replenished.
- Have observed the continued growth in perennial horticulture – which threatens to reduce the viability of supply for the irrigation sector as a whole, in times of severe drought, as the increased area of crops now requiring a full allocation of water in all years combined with the large volumes of water now owned by Environmental agencies erodes the cushion otherwise available from broad acre irrigators who have traditionally been able to trade (out) water allocation in drought years. There is simply not enough water available to maintain all permanent plantings in the connected southern MDB in the event of a repeat of the 2007 drought.

Murray Irrigation Limited

As well as providing basic water supplies to customers to meet their stock and domestic needs, Murray Irrigation Limited wants to be able to offer quality irrigation water supply with a known and well-understood level of (water supply) security to our customers. Our system provides vital water supplies to more than 740,000 hectares of farmland in southern NSW. In addition, the residents of Berrigan, Finley, Wakool and Bunnaloo all rely on the irrigation system for their drinking water. Irrigation supplies also underpin the security of Deniliquin's town water supply. Deniliquin service providers and retailers directly support a regional population of 25,000.

Our water supply network (Figure 1) is the largest in the southern Murray Darling Basin and covers a large proportion of the NSW Murray Region. The Water Sharing rules within the plan, including water sharing rules for the water supplied into the Murray from the Darling-Baaka River System also influence the volume of available water for Murray users. In some seasons this supply from the Menindee Lakes, through the Lower Darling and into the Murray provides a critical component of water allocated in the three-state Murray System. The supplies and allocations from the greater

Murray system, including the Darling-Baaka are all connected, and require holistic management and consideration of all stakeholders.

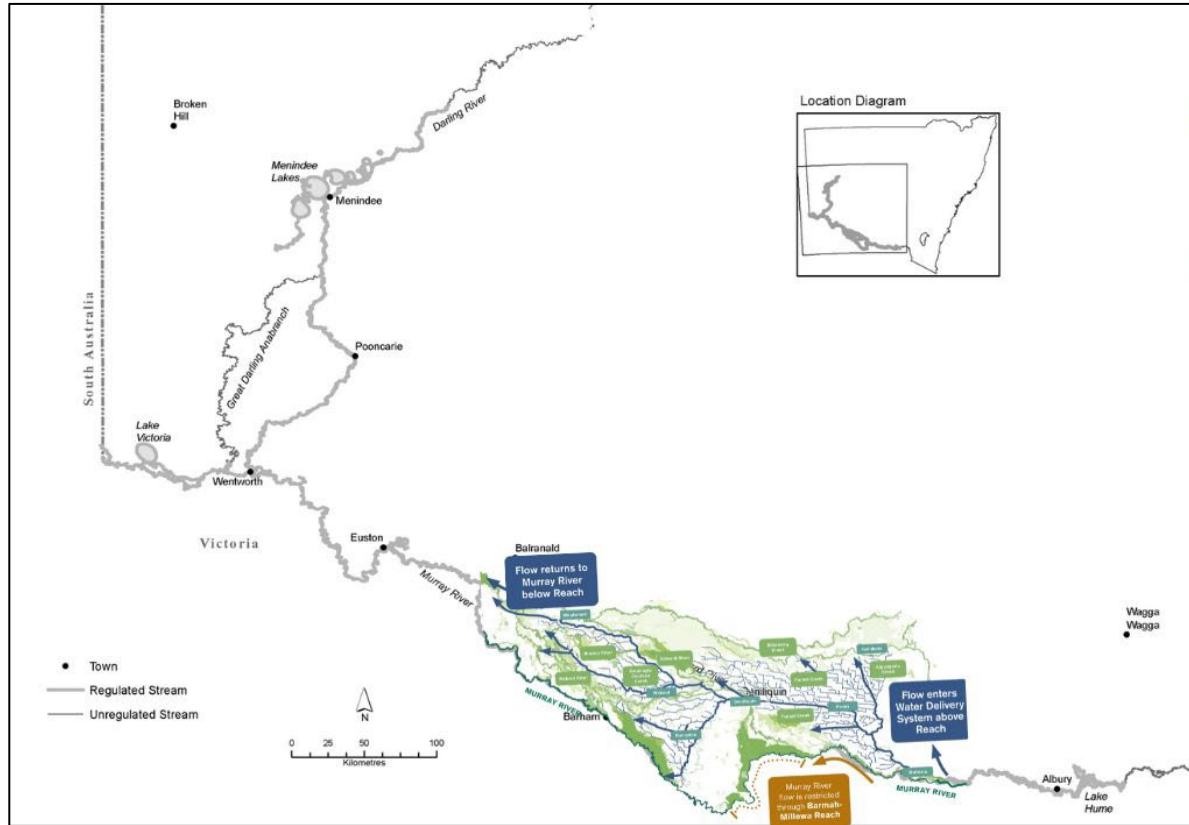


Figure 1. The operational and strategic importance of Murray Irrigation in the Water Sharing Plan footprint.

2 Response to Questions

2.1 To what extent do you think the plan has contributed to environmental outcomes?

A. Has contributed.

The majority of the rules and strategies within the current WSP (the plan) have been successful, particularly:

- I. The WSP Constraint Management Strategy. The strategic use of the Mulwala Canal to convey water around the Barmah Millewa Reach to reduce environmental degradation of this reach has been very successful. We request a revised WSP extends the potential to utilise the whole MIL water supply network for water movement (see C. Improvements).
- II. The Barmah-Millewa Release Rules. These rules have provided much needed base flows into key forest wetlands during the severe droughts early this century (2002 - 2007). However, we question whether these rules are still appropriate given the very high volumes of water now held by the states and Commonwealth for e-flows (see C. Improvements).
- III. NRAR compliance and regulation. Although not without its significant and questionable cost borne by the NSW Irrigator, we do commend the work and investment into regulation and compliance of water use by NRAR across NSW. It is important to note the highest levels of non-compliance investigated and identified were not in the NSW Murray and Lower Darling system. As the WSP demonstrates, the water in the southern MDB system is tightly held and there is no room for accepting any water lost to the system through theft.

B. Has not contributed.

- IV. The February-March 2023 mass fish deaths in the Darling-Baaka River at Menindee and were absolutely devastating. We support the NRC efforts to undertake initiatives that will help prevent any further environmental disasters. However, regarding the recommendations of the report, we are concerned that any change to water sharing in the Menindee Lakes may further erode the Murray GS entitlement share in the Basin in the inevitable return to dryer seasons. There is a much larger water footprint in Northern NSW and SE Queensland than that of the Lower Darling and NSW Murray that influenced the fish kill recorded at and near Menindee. Areas that are not part of this WSP (Upper Darling above Menindee in both Qld and northern NSW) that are released and monitored by NRAR and should (continue to) be closely monitored and reviewed. Further to this: The government should take great care in

considering changing the triggers for water releases from Menindee Lakes, particularly in periods of prolonged drought. This concern expressed is not just for Murray Irrigation farmers, but also for the certainty of maintaining refuges for wildlife in river-pools, lakes and billabongs that requires at least some replenishment.

Opportunities for environmental enhancement in the NSW Mid-Murray have been underutilised and need to be further developed. Murray Irrigation is leading the way in utilising its extensive supply network to work closely with the environmental water manager to achieve a range of improved environmental outcomes through its Restoring Murray Waterways program.

C. Improvements.

- V. Constraints Management - we ask that a revised or updated WSP that identifies utilising the MIL water supply network to reduce pressure on the Barmah-Millewa Reach would be a further step in the right direction for both e-water delivery and improved water sharing. Some current and developing MIL initiatives using a range of MIL escape structures, and into mid-Murray wetlands and creeks are already really helping in a very practical, effective and affordable way.
- VI. Barmah Millewa Release Rules - Given the huge amount of water now owned by the Commonwealth which is now achieving many of the environmental outcomes in relation to the BM forest it is timely to consider how benefits can be achieved more extensively than at this site only. We recommend increasing the BM payback trigger to commence once General Security allocations reach 70%. In return the environmental water manager should be granted greater flexibility to use this water on other environmental assets as long as the crediting of the “return flows” are not compromised or are prepared to be contributed by held environmental water.
- VII. Changes to Menindee Lakes operating Rules - If a response to the management of the 2023 mass fish deaths includes a recommendation to change to operating rules for Menindee - we urge the water manager to carefully consider any measure which maintains water levels for longer in the Menindee Lakes) without considering how the storage volume may be increased) and thus increasing evaporation tenfold (relative to evaporation from Hume or Dartmouth on the Murray and Mitta Mitta). We don't think a solution will be borne out of leaving the current lake water management structures in place, and simply changing the water release patterns

out of Menindee lakes. Other solutions to improving Lower Darling River health should be considered, including:

- I. Maintaining healthy inflows from the upper Darling: The Murray and Lower Darling WSP does not attempt to prescribe management rules for the Upper Darling and the multiple tributaries above Menindee - this should be the key focus of attention if improvements in the health of the whole Darling River.
 - II. encourage works that enable more volume to be stored in Menindee (for example an increase in height of the existing levees around both Menindee and Cawndilla).
- VIII. Consider a study of the allowances currently embedded in the WSP and the current practices of setting large volumes aside for 'run of river'. Is there a better way of doing this? Importantly, the large volume of water held by the EWH has diminished the requirement for many of the allowances. For example, the results of water sharing have not demonstrated the benefits in the current operating environment of the current quite prescriptive Barmah-Millewa allowance (the mechanism that preserves allocation for the BM forest); as prescribed in the *WSP - S.26-30 WSP, Division 1*.

2.2 To what extent do you think the plan has contributed to social outcomes?

A. Has contributed.

- I. In times where there have been good environmental and economic outcomes, there has been good social outcomes. The decision by NSW to enable maximum General Security and Supplementary water allocations to increase to 110% have been well received by the irrigation community, have provided confidence Governments are listening, and have not contributed to any increase in water use relative to the estimated Murray and Lower Darling River SDL's applied under the mandated Water Resource Plans (WRP's) which are the over-arching instrument governing water used under the Murray Darling Basin Plan.

B. Has not contributed.

- II. The WSP has not led to stronger regional communities. Our entire community is reliant of water for its prosperity, yet LGA's are remaining disadvantaged². The Central Darling is within the 20% most disadvantaged communities in Australia and Edward River, Hay, Balranald are in the 40% most disadvantaged LGA's in Australia (and has measured a steady decline since the WSP were first introduced in 2004). For example, Agriculture is the leading employment sector for Murray River Council accounting for 26% of total employment. The Wakool community has been significantly impacted as a result of the Millennium Drought, the Murray Darling Basin Plan and associated water reform processes. Between 2001 and 2016, the Wakool region population has reduced by 45.6% and farm employment has fallen by around 72%³. The socio-economic wealth decile for the Wakool Region had diminished considerably reducing the financial capacity of businesses to adapt to change. Although there have been government incentives to support recovery of Wakool, this is one clear example where changes to water policy have significantly and directly impacted small communities.
- III. The implications of overly conservative water storage policies under the current allocation framework (that in future may result in attempting to conserve water for 'higher priority' uses and the potential for consecutive 0% annual allocations to NSW Murray General Security Entitlement holders (or GSE)), will inevitably mean further dismantling of communities of irrigators, businesses, jobs, and processors in large areas of the NSW Murray Valley. This is on

² Edward River, Hay, Balranald are in the 40% most disadvantaged LGA's in Australia. 2021 Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), Australia.

³ Wakool region community adaptation strategy.

top of the impacts of any further environmental water recovery through the now-confirmed Commonwealth 'buy-backs' resulting from recent Commonwealth legislative changes.

- IV. Year-on-year 0% allocations. It is inevitable that dry years will return and that there could be 0% General Security Entitlement (GSE) allocations for NSW Murray water users year-on-year. Since the plans commencement in 2004, and even since the most recent revision in 2016, we have experienced two events of 0% allocation more than two years in a row. When there are 0% allocations, many irrigators get more value selling their small amounts of available water (carry over held) than growing and selling any crop locally, thus everyone in the irrigated agricultural supply chain, and in our community, suffers.

What this has meant in reality is that in periods of low water availability, after the water available is sold to a user in another region, usually to maintain tree-crops, there is even less money in our communities and a reduced need for direct and indirect agricultural services. Water holders will sell their available water in dry seasons instead of irrigating a small area, thus further adversely impacting local community - as they depend on farming activity (entire chain of inputs and outputs to farming).

The social web of our towns is constructed to support active industries and farmers - whether it be the fertiliser supplier, the irrigation system service provider, or the small cafe or the tyre service centre. We also note that it was State and Federal governments that originally established irrigation regions throughout inland Australia to drought-proof and create “food-bowls” for Australia- this vision remains valid today and should never be compromised.

- V. Importantly, in a changing climate, water managers should not develop policies that enables a small cohort of irrigators to achieve the maximum possible return per/ML at the expense of whole irrigation communities. It is important to also encourage more adaptive irrigated industries that are better suited to utilising irrigation water in wetter years and can reduce the area that *must* be irrigated in droughts. This sort of adaptive irrigation farming that is better synchronised to the Australian climate of (floods and droughts) must continue to be encouraged through an adaptive and thoughtful water sharing policy.

- VI. The behavioural impact of 0% or very low annual allocation, particularly after a second year of zero starts to impact on the water user thinking and their behaviour. We have observed farmers being so significantly impacted by the impacts of drought, they are more inclined to reduce irrigated crop areas and carry water over, even when the likelihood of “losing” water to spills is quite high. The result of this behaviour is simply less water being used year on throughout the Southern Murray Darling Basin. Recognising the NSW commitment in WRP’s to honour Sustainable Diversion Limits (or SDL’s) , this pattern or repeated underuse relative to volumes allocated does provide opportunities to offer higher allocations to irrigators in wetter seasons when water is plentiful whilst meeting cumulative SDL commitments within the NSW Murray and Lower Darling.

C. Improvements

- VII. When revising the WSP, we encourage the NSW NRC not to consider each WSP area in isolation, but also to consider water sharing rules in adjacent areas. Obviously in the Murray, and indeed the connected MDB there are multiple states and the MDBA’s actions to consider when developing WSP rules and determining positive measures that can assist delivering improved environmental outcomes.

2.3 To what extent do you think the plan has contributed to economic outcomes?

A. Has contributed.

- I. Utilising water sharing tools in a variable climate. MIL commend NSW for utilising the water sharing tools in the WSP in recent seasons by increasing NSW Murray General Security allocations and supplementary water access to 110% (from 100%). It was a successful initiative that increased confidence in water managers capacity to be adaptable and has proven to not threaten the defined Murray Sustainable Diversion Limit (in fact it appears underuse continues in almost all valleys throughout the connected southern MDB). We suggest that NSW may consider extending these measures further by developing a 'wet year allocation policy' that affords more benefits to both irrigators and the environment by maximising opportunities in wetter years. (See C Improvements).

B. Has not contributed.

- II. Low use relative to the Sustainable Diversion Limit are causing lower production from available water, and economic (and social) harm. This appears to be related to the gruelling irrigator experiences of 21st century droughts.
- III. Using the movement of water to 'higher value uses' as a performance indicator.

'Part 2. Vision, objectives, strategies and performance indicators. 9. Economic

Objective (5) The performance indicators used to measure the success of the strategies for the targeted economic objectives in subclause (2) are the changes or trends in economic benefits during the term of this Plan as assessed using one or more of the following—

(A) the economic benefits of water extraction and use, including the movement of water to higher value uses.

Of course, all irrigators are constantly seeking to improve their returns per ML of water applied. However, for many this encouragement by water managers has been seen as the push for movement by irrigation water users from diverse annual irrigated crops (irrigated wheat, rice, cotton, corn, pasture) to less diverse high value crops which have a fixed annual demand for water (almonds, grapes, citrus). To the extent this aim and policies within any revised Water Sharing Plans pushes more water into permanent irrigated crops with little flexibility in annual demand, **we strongly object the**

continued and simplistic encouragement of moving from ‘lower value’ to ‘higher value’ irrigated crops at almost any cost (under the guise of enabling communities to economically adapt). Such measures have the potential to conflict with the development of valley-wide resilience as we move into a period with a dryer climate and more variable rainfall and often much lower run off. We strongly encourage a WSP that actively encourages a “diversity” of irrigated agricultural types that are fit-for-purpose relative to the river flows and the security of water entitlements available.

For example, under a 'dry future climate' scenario (within the context of the current allocation framework):

- **High value per/ML crops (almonds, stone fruit, grapes)** have little or no flexibility in regard to annual water demand, (although some of these crops are undoubtedly effective in terms of raw \$/ML generated in *most* years). The risk to these crops from having very low volumes of available water in a reduced pool during a prolonged drought would be catastrophic for those engaged in these industries. High value permanent tree crops incur a significant upfront investment per Ha to develop and require at least a decade of year-on-year water certainty to provide a financial return. There is very little scope for these crops to survive without water for a single season such as a repeat of 2006/7 or 2007/8.
- **Lower value per ML applied crops (rice/cereal/pasture)** have a much greater deal of flexibility in their water demand and as such should form a large component of typical NSW Murray Valley water demand. The risk of having no water (0% allocation) in *some seasons* is painful for broadacre irrigators of annual crops (the dominant group of users within Murray Irrigation’s area of operations) in the short term, but these users can quickly recover when seasons improve. This recovery and resilience can be enhanced through the considered and adaptive introduction of an extension of the recent initiative by NSW to increase maximum available allocations in wetter seasons and relates to our proposed “wet year allocation policy”.

Our industries will not continue to survive on 0% or even regular low allocations, and nor will a large new area of high value horticultural crops, because the allocation framework is too rigid and not well designed for a more ‘highly variable future, (larger) changes in seasonal rainfall and unpredictable’ which is what the current CSIRO modelling tells us we should expect in the future.

Specifically, if there is a rapid and reactive response and changed water conservation policies as a result of the modelled dry future, that further prioritises water conservation for 'high value crops' by simply putting more water each year into reserves to maintain insurance for 'high value' crops, it will result in even less water being allocated to NSW Murray General Security Entitlements, and a resultant reduction in irrigated crop production. This will reduce water availability for the growers of annual crops in all seasons; reducing the extent of irrigated agriculture and forcing broadacre irrigators to seek new employment. This will further damage the regional landscape, population-mix and the dependent economy throughout a large area of the NSW Murray Valley.

As an 'irrigation' water service provider, Murray Irrigation is aware that in successive dry years, fixed water infrastructure bills payable by irrigators using very little water may go unpaid, infrastructure will not be utilised (and may become stranded) and there will be potentially devastating circumstances for our local community.

C. Improvements:

- IV. There are opportunities to increase allocations and irrigated production in wet years. Given the projection that the climate will be even more variable in the future, we ask that there is an opportunity created for further expansion of the recent policies which have enabled allocation of more water during periods of high rainfall and high stream flows (without jeopardising environmental flows). The GSE water product can be boom or bust for our irrigators, and we want to give our customers the best opportunity we can and feel able to use water (and prevent holding on to excessive volumes of carryover). Further to this, we would like to see an increase in the maximum GSE to 140%, supplementary allocations to a maximum of 200% and a revision of the UCF formula (see below) to support access to these higher allocation volumes in wetter years. In return, the environmental water manager should be afforded more benefits through these higher allocations (they now own a significant portion of Murray and Lower Darling R GS and Supplementary entitlements) and more flexibility to opportunistically better utilise unregulated events – particularly enabling flows to mitigate hypoxic blackwater.
- V. The “Uncontrolled Flows” (or UCF) formula needs revising. This formula prescribing access and accounting for uncontrolled flow events matters to Murray irrigators and its declaration needs to be understood in the context of river operations today. We are keen to discuss and to optimise the use and accounting for the diversion of UCF. Although the scenario for UCF

events are not frequent, the times that UCF is available can make a significant difference to the viability of the farm business, particularly in a low allocation year or season.

- VI. The transfer of water to other crops i.e., the geographical barriers that limit water movements and the rules around them, should be tested by the NRC to determine that they are based on a genuine environmental, or physical river capacity constraints, or based on other limits which deliver an unnecessary market advantage to a particular group.

2.4 To what extent do you think the plan has contributed to cultural outcomes?

If improvements in the health of the Lower Darling River are a priority, the Upper Darling above Menindee should continue to be a key focus of attention.

2.5 To what extent do you think the plan has contributed to meeting its objectives?

A. Has contributed.

- I. The plan has met many of the objectives outlined within the 2004 Plan (and subsequently updated Plan), but as outlined in the previous questions, there are still many improvements possible.

B. Improvements.

- II. We emphasise our previous improvements to help objectives in the plan relating to:
 - Storing more water in Menindee to give greater opportunities to conserve and release water
 - Revising the Barmah Millewa account rules
 - Encourage win-win initiatives to deliver both consumptive and environmental water that benefit our communities and environment and;
 - Implementing a wet year allocation policy to afford greater opportunities to irrigators and environmental water managers during wetter periods

2.6 What changes do you think are needed to the water sharing plan to improve outcomes?

In addition to the improvements we have highlighted previously:

- III. We encourage the NSW Government to work with communities to achieve proposed and prospective Sustainable Diversion Limit Adjustment Mechanism (SDLAM) projects. The delivery of the savings and improvements outlined in the *Menindee project* and other related initiatives (within the suite of approved SDL offset initiatives) will have a direct influence on this WSP and the better management of water in this system.
- IV. Support initiatives proposed under the company's "wet year allocation policy" that will afford more benefits to both irrigators and the environment under wetter climatic periods. We encourage the NRC to visit our region and see first-hand our "Restoring Murray Waterways" project that we are collaborating with the state and commonwealth environmental water managers on.
- V. Consider if further enhancement of allocations in wetter years can assist irrigators further, without threatening the NSW commitment to providing successful E flows and to maintain Murray SDL's

Specifically to the Lower Darling, we suggest investigating:

- I. A bank between Menindee and Lake Cawndilla (A circa 106GL SDLAM measure, now shelved) is an obvious water saving measure, but we acknowledge that it now appears unworkable from a Aboriginal cultural perspective. A higher bank (i.e. lifting the current bank) surrounding both the two deeper main lakes (~ + 1.2m to Cawndilla and Menindee Lakes) and a resultant longer and greater surcharge capacity from Menindee weir would help locals, farmers and e-water users to conserve and have more water available for longer in the Lower Darling. Additionally, the creation of this extra reserve volume may also assist in relieving pressures on demanding an increase in passing flows from the Lower Darling.
- II. A review of options (which includes all stakeholders) to improve the effective operation of Menindee Lakes, and the flows into and from the Lower Darling will assist in developing any changes needed to a more resilient and sustainable WSP. Stakeholders from the Upper Darling, the Lower Darling and the Murray must be included.