INTRODUCTION

This submission is presented in a two column format. The left hand column is the Royal Commission's Terms of Reference; the right hand column shows responses, comments and suggestions alongside the relevant term of reference.

EXECUTIVE SUMMARY

This submission is directed at three issues. The first is the complete rejection of Murray history. Why the Commonwealth Government would walk away from over 100 years of successful cooperative management of water resources and infrastructure development defies explanation.

The second is closely related and discusses the ineffective management structure. The Murray Darling Basin Authority membership appears to have (with one possible exception) no water resources experience, worse, no real authority or power, owns no water and thus has no influence over the representatives of the state water authorities.

The third issue is the serious flaw in the Basin Plan. There is little point in withdrawing productive resources and then sending two thirds to the sea. This defect is made worse by legislating that the Terminal Lakes be maintained at high levels and as "fresh water".

The link between this submission discussion and the Terms of Reference are shown in the following table.

Submission Topic	Relationship to Terms of Reference
Murray history	TOR 2
Murray management	TOR 2, 4, 7 & 8
Basin Plan flaws	TOR 3, 4, 5, 10 & 11

TOR Number	Description	Response
1	Whether the Water Resource Plans defined by the Act and Basin Plan (which are to include the long-term average sustainable diversion limits for each Basin water resource) will be delivered in full and in a form compliant and consistent with the Basin Plan by 30 June 2019.	
2	If any Water Resource Plans are unlikely to be delivered in full and in a form compliant and consistent with the Basin Plan, the reasons for this.	Like most Commonwealth legislation in the water area, the Murray Darling Basin Act and Plan chose to ignore over 100 years of River Murray co-operation. That long term cooperation respected State water authorities and their well honed skills and leadership. Their knowledge and their local river operations became the basis for on-going agreement on sharing within the River Murray Commission and allowed the development of new infrastructure (enlargement of Hume, Dartmouth etc) and changing distribution policies such as flood operations and environmental flows. The later incarnation of the RMC, the Murray Darling Basin Commission (MDBC) continued the cooperative theme. Prior to the Basin Plan, it had already initiated a "Cap on Diversions" which was successfully controlling and had started reducing state diversions. It is a pity that this agreed process was not allowed to run its course, as many of the current problems with the Plan have arisen from a clear lack of trust between states. Contrast this historic management and achievements with today's model where the CSIRO were allowed to propose blanket so-called "sustainable diversion limits", the environmental movement was given carte blanche to staff and manage their favourite sites and a new authority (Commonwealth Environmental Water Holder, CEWH) was then given control over 2800GL/annum, a resource conservatively valued at least $300M/annum. The diagram illustrating the governance of the MDBA. Attachment A has been taken from the MDBA's home page and illustrates: • Any advice from the "Basin Officials" (presumably the state water authorities) to the Commonwealth Minister must be "filtered through" the Authority, a non representative body with no ownerships and no power. Proof of this ineffectual

		management is: (1) the ABC exposure of inadequate monitoring of diversions in the upper Darling and (2) the ongoing reliance in attempting to justify the Authority's position, of too many generalised Media releases. • The Authority has near direct access to the Ministerial Council but not the Basin Officials. • Despite grandstanding and too many media releases, the Authority still has no status in the field and clearly no power. Ideally, the Basin Officials should return to being the members of the Authority, the part timers can remain but would preferably be asked to join a MDBA Technical Committee. The newly constituted Authority would report to the Ministerial Council. This would represent a return to the MDBC days where decisions are linked directly to the owners of the water and their related field and the local operators. If the current structure remains, the most likely outcome will be a great growth (and probably duplication of state based staff) of MDBA staff throughout the Basin. As you know, the MDBA is already opening offices throughout the region. While only embryonic at present, it is not inconceivable that in time, MDBA/Commonwealth staff will number 1000's and will be responsible for all operations but still based in Canberra. It seems unlikely that any party to the Basin Plan will meet the 30 June 2019 deadline as all groups now realise they were sold a pup.
3	Whether the Basin Plan in its current form, its implementation, and any proposed amendments to the Plan, are likely to achieve the objects and purposes of the Act and Plan as variously outlined in ss.3, 20, 23 and 28 of the Act, and the 'enhanced environmental outcomes' and additional 450 GL provided for in s. 86AA (2) and (3) of the Act, respectively.	There should be no talk of an extra 450GL/annum until the CEWH can show they are effectively managing the 2800GL/annum they currently receive. There is ample evidence that Murray floods are by far the most important environmental release but little evidence that any current environmental releases are carefully matched against these floods/freshes. This aspect of Murray flows and regulation can be best illustrated through long term annual average flows. Attachment A has been adapted from Table C1 in Volume 1 of the "Guide to the Plan" MDBA, 2009. The current proposal of recovering 2800Gl/annum is, of course, close to the earlier Table C1 scenario 1 in the "Guide" which aimed to recover

3000GL/annum. The fatal flaw in the current arrangements is clear.
The increase in in-river Murray Darling surplus flows is but 800GL/annum with 2000GL/annum now destined to pass to the sea.
Attachment A also clearly shows that surplus Murray flows (at an average of about 15,000GL/annum) represent about five times the CEWH's Allocations and thus should be basis for all environmental water planning.

A further comment on flows to SA should be made.
The concept of generous environmental flows to South Australia is clearly not well understood. Another example may help. It has been drawn from two recent Annual Operating Plans:

- *River Murray System Annual Operating Plan for 2015-16*
- *Basin Annual Environmental Watering Priorities 2015-16*.

Neither Plan contains a "water balance table" which would clearly show the more easily understood "inflows and outflows" but the following table attempts this task for the MDBA's 2015/16 "Near Average" inflow case and the associated water use figures for New South Wales, Victoria and South Australia.

2015/16 Inflows ("Near Average")	(GL)	2015/16 Outflows ("Near Average")	(GL)
Murray inflows (including Snowy)	4450	Transmission losses to SA	-880GL
Menindee inflows	800	Lower Darling losses	-10
Victorian Tributaries	2600	Evaporation losses from major storages	-450
NSW Tributaries	1000	SA Dilution flow	-696
Water Available Valley Accounts	90	NSW usage	-1950
Available Active Storage : June 2015	3780	Vic usage	-1900
Estimated Active Storage May 2016	-3400	SA entitlement	-1154
Change in water in transit	-30	Unregulated flow to SA (System Spill)	-2400
Balancing item	+150		
Totals	**9440**	**Totals**	**-9440**

Under the old RMC and MDBC arrangements, the River Murray Waters Agreement's flows to SA had two components (highlighted above in yellow):

1. Entitlement 1154 GL/a
2. Dilution Flow 696 GL/a

In addition to these Statutory Flows, the benefits of being at the downstream end of the system will produce:

3. Unregulated flow to SA 2400 GL/a (shaded green)

		4. A share of the Transmission Loss to SA component, say 100GL/a Adding all four components gives a total of 4350 GL/a. Given that all these features have applied throughout the entire history of the RMA/MDBC, there is no argument to claim that SA has been poorly treated. With these almost guaranteed surplus flows (the advantage of being at the downstream end of a major river system), the overly generous provisions for level and outflow from the Terminal Lakes should be relaxed. This water balance analysis serves to show that the current biases in the Basin Plan should be corrected and replaced with a more hydrologically sound approach.
4	Whether the underlying assumptions in the original modelling used to develop the objects and purposes of the Act and the Basin Plan have been sufficiently adjusted for the impact of improved technologies.	Of all the important parts of the Australian economy, the farming sector has been and still is, by far the most adaptive. Irrigation farmers have already largely adapted to the forced reduced allocations with crop changes, improved practices and water trading. The recent articles from the Australian's rural writer (early 2018) set out these changes in glowing terms.
5	If the Basin Plan is unlikely to achieve any of the objects and purposes of the Act and Basin Plan and/or the 'enhanced environmental outcomes' and the additional 450 GL referred to above, what amendments should be made to the Basin Plan or Act to achieve those objects and purposes, the 'enhanced environmental outcomes' and the additional 450 GL?	Unfortunately, the Commonwealth Parliament's legislation contains two fatal flaws. The only environmental criteria incorporated in the Act ensure tight water levels in the South Australian Lakes Albert and Alexandria Terminal lakes as well as requiring flows to sea in nine years out of ten. The scientific evidence that Lakes Alexandria and Albert are no different to all the other Australian estuarine lakes has been well shown by Dr Jennifer Morrassy and others, is simply, overwhelming. Abandoning the Terminal lake requirements would free up at least 700GL/annum currently lost by evaporation (note that this figure is nearly double the 450GL/annum that worries the Royal Commission) and makes the subsequent adjustment of water allocations much easier. Sending nearly 2000GL/annum downstream to partly sustain two estuarine lakes as fresh water playgrounds by reducing productive uses seems a political overkill particularly when there are structural alternatives available including, of course, a new weir at Wellington. The weir at Wellington has already been well investigated

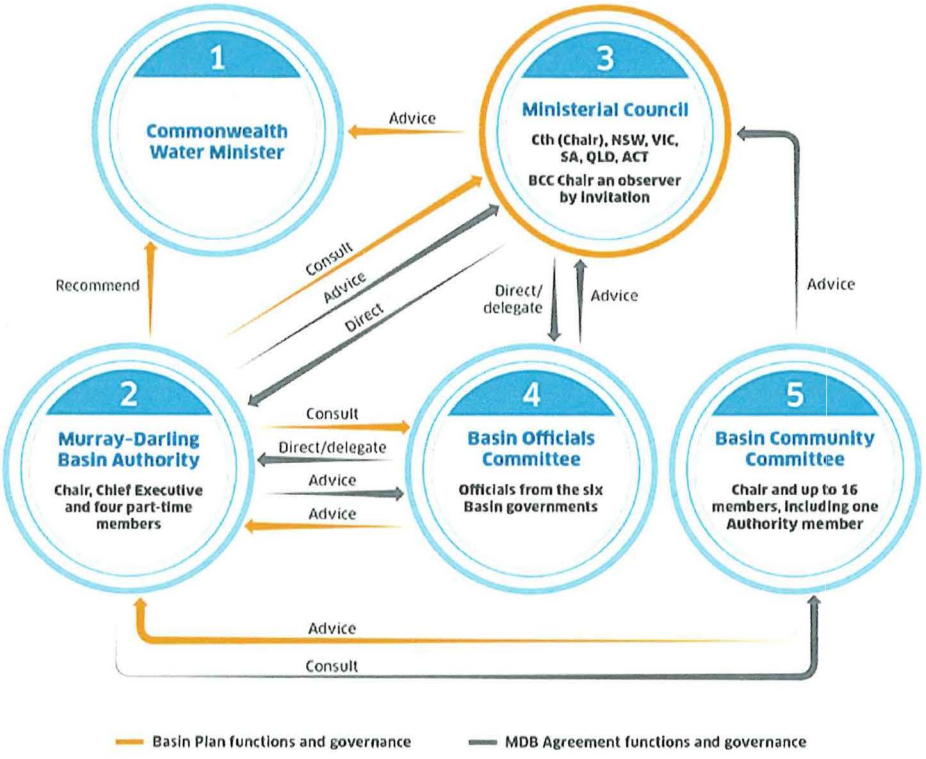
		and could be quickly introduced.
6	Any legislative or other impediments to achieving any of the objects and purposes of the Act and Basin Plan and/or the 'enhanced environmental outcomes' and additional 450 GL referred to above, and any recommendations for legislative or other change if needed.	
7	The likely impact of alleged illegal take or other forms of non-compliance on achieving any of the objects and purposes of the Act and Basin Plan, and the 'enhanced environmental outcomes' and the additional 450 GL, referred to above.	Governments of all persuasions may eventually realise that de-skilling of the public service comes with a cost. It does not require high technology to monitor either in the field (the preferred method) or remotely, diversions by irrigation areas or by private diverters. Such monitoring was successfully introduced in the early 1970's but deskilling has greatly reduced the necessary field staff particularly in NSW. The ABC's so-called exposure was clearly related to inadequate field monitoring. Oh for a return to competent and well staffed state authorities!! Why isn't this Royal Commission addressing this topic? The RMC offered a high level forum to agree standards of stream flow measurements, continuous monitoring and daily, monthly and annual reporting. These observations were forwarded to the RMC/MDBC who acted as an independent umpire to watch over daily diversions and monthly/annual shares.
8	In relation to any found instances of illegal take or work, whether appropriate enforcement proceedings have been taken in respect of such matters and if not, why	My local golf club in the heart of Sydney now has a new stormwater diversion licence from the NSW government because we are supposedly part of the Murray Darling Basin. This activity might suggest that some enforcement actions (no matter how irrelevant) are in hand. The Royal Commission should read this comment in conjunction with the submission's response to TOR 10.
9	Whether, in any event, the enforcement and compliance powers under the Act are adequate to prevent and address non-compliance with the Act and the Basin Plan, and any recommendations for legislative or other change if needed.	
10	Whether monitoring, metering and access to relevant information (such as usage data) is adequate to achieve the objects and purposes of the Act and Basin Plan and the 'enhanced	In the 100 years of River Murray history, the River Murray Commission and the later Murray Darling Basin Commission were regarded by State authorities as "honest brokers". The State Commissioners (who were of course, RMC Commissioners) and their field staff were responsible

	environmental outcomes' and additional 450 GL referred to above.	for providing daily and then annual data from State operated gauging stations and all diversions, including private diverters. Who amongst the current members of the Authority take responsibility for such reporting today? The answer is as you already know, "is nobody", because no Authority member (with one possible exception who manages a large irrigation area) controls any field staff, nor do they have any background in water resource management and administration. The earlier RMC and MDBC record keeping and annual reports provided documentary evidence of Murray flows at key stations, tributary credits and debits to the States and allowed annual water balances to then clearly illustrate easily understood inflows and outflows diagrams. The Royal Commission should ask the MDBA and the CEWH when this reporting procedure will be re-in-stated. Attachment B to this submission is a copy from the RMC Annual Report of 1976/77 which shows from page 10, a summary of the major flows to and diversions from the system for the 1976/77 calendar year. It clearly shows the sources of inflow and the various outflows. How easy is this to understand? Search if you must but other than the initial Murray Darling Basin Plan, such analyses appear to have been abandoned. Even by 1997/98, annual inflows and outflows were no longer thought to be relevant.
11	Whether water that is purchased by the Commonwealth for the purposes of achieving the objects and purposes of the Act and Basin Plan and/or the 'enhanced environmental outcomes' and the additional 450 GL referred to above will be adequately protected from take for irrigation under water resource plans, and any recommendations for legislative or other change if needed.	Of all those involved in the serious adjustments to water allocations required as part of the Plan, chasing this 450Gl/annum when management of the 2800GL/annum is still embryonic, seems a silly outcome.
12	Whether the Basin Plan in its current form, its implementation, and any proposed amendments to the Plan, are adequate to achieve the objects and purposes of the Act and Basin Plan, the 'enhanced environmental outcomes' and the additional 450 GL referred to	

	above, taking into account likely, future climate change.	
13	Any other related matters.	

ATTACHMENT A

MURRAY DARLING BASIN AUTHORITY GOVERNANCE



CORE FUNCTIONS

1. The decision maker on the Basin Plan and chairs Ministerial Council
2. Responsible for developing, implementing, evaluating and reviewing the Basin Plan

   Manages the River Murray system on behalf of joint governments
3. Policy and decision-making roles on state water shares and funding of joint programs as per the MDB Agreement
4. Makes decisions consistent with the delegations from the Ministerial Council and advises on the Basin Plan
5. Provides advice to the Authority and Ministerial Council on Basin community issues

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ATTACHMENT B

MURRAY DARLING LONG TERM FLOW AVERAGES

Units: GL/a

Scenario	Inflows	Catchment Interceptions	Watercourse Diversions	Total System Diversions	Water used for environment and losses	Outflows to Downstream Model
Historic	31,781	2735	10,942	13,677	13,996	5,105
2800 Gl return**	31781	2,732	8,142	10,874	14801	7,060
2018 Changes from Current	0	-3	-2,800		+805	+1,955

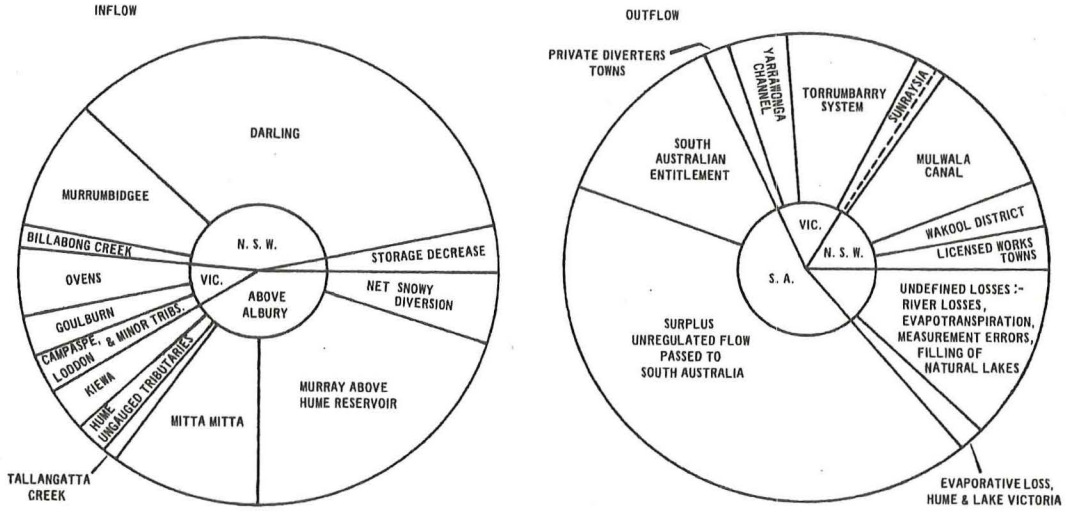
**adapted from, Surface Water, Sustainable Diversion Limit (SDL) Scenario 1, Table C1 from the MDBA's "Guide Overview", 2010 which used 3000GL/annum as the return figure. Such tables were included in the Guide as Tables C1 in Volume 1. The current proposal of recovering 2800Gl/annum is, of course, close to the earlier Table C1 scenario 1 in the Guide which aimed to recover 3000GL/a.

ATTACHMENT C:

TYPICAL RIVER MURRAY SYSTEM INFLOW/OUTFLOW DIAGRAM

River Murray System – Water Resources and Usage for the Year 1976 – 77

The following diagrams are prepared from data presented in Appendixes VI and VII. They enable a visual comparison to be made of the relative quantities of water supplied from the various resources of the River Murray System and provide an indication of the proportion of total flow used during the year.



Total Inflows for 1976 – 77 = 12 190 000Ml

The total inflow for 1976 – 77 of 12 190 000Ml was less than half of the inflow in 1975 – 76 of 27 000 000Ml. Inflows in the upper Murray in July, August and September were well below median, there were good inflows in October, and from November to June inflows were near median. There were flood inflows from the Darling for much of the year. Diversions accounted for 38 per cent of total outflow. This year the net Snowy diversion was 5.0 per cent of total inflows.

River Murray Inflows and Outflows 1976/77.

Taken from Page 10 from the River Murray Commission Annual Report for 1976/77.