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Murray-Darling Basin Amendment Bill 2002

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I N F O R M A T I O N A N D R E S E A R C H S E R V I C E S

Bills Digest
No. 57 2002–03

Murray-Darling Basin Amendment Bill 2002

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Science, Technology, Environment and Resources Group
28 October 2002

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Murray-Darling Basin Amendment Bill 2002

Date Introduced: 19 September 2002

House: House of Representatives

Portfolio: Agriculture, Fisheries and Forestry

Commencement: The operational elements of the Bill (Schedule 1) commence on Proclamation

Purpose

To amend the *Murray-Darling Basin Act 1993* to approve and give effect to the Murray-Darling Basin Amending Agreement (the Amending Agreement) between the Commonwealth, New South Wales, Victoria and South Australia.

Background

Corporatisation

The Amending Agreement makes new arrangements for sharing water by the Snowy Mountains Scheme as a result of the corporatisation of the Snowy Mountains Hydroelectric Authority (SMHEA) and the release of water for environmental flows in the Snowy River, the Snowy Montane Rivers¹ and the Murray River. Among other things it implements the [Snowy Water Inquiry Outcomes Implementation Deed](#) signed by the Commonwealth, New South Wales and Victorian Governments on 3 June 2002.

In 1993, the Council of Australian Governments agreed to corporatise SMHEA and in 1997 the Commonwealth, New South Wales and Victorian Governments endorsed the Corporatisation Principles for SMHEA and corporatisation legislation, based upon these principles, was passed by all three Parliaments. The [1997 Bills Digest](#) on this legislation outlines some background on this.

Decreased flow to the Snowy from the Snowy Scheme

The issue of the lack of flow of the Snowy River as a result of the Snowy Mountains Scheme which diverted almost all the Snowy River water above the confluence with the Mowamba

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River came to the fore with the proposed Snowy Corporatisation. Once SMHEA was corporatised there would be no more opportunity at the political level to lobby for a significant increase in the flow of the upper Snowy.

Under the Snowy Mountains Scheme the Snowy River and its tributaries, the Guthega and the Eucumbene, were dammed and diverted to the Murray River and the Murrumbidgee River, via the Tumut River. 858 gigalitres (GL) of the Snowy's flow is pumped from Lake Jindabyne and diverted from Lake Eucumbene through tunnels to Island Bend and then across to Geehi Reservoir and to Murray 1 and 2 Power Stations before it enters the Murray. The Tantangara Dam stores waters of the upper Murrumbidgee and the Goodaradigbee Rivers and transfer these to Lake Eucumbene from where water can be diverted to the Tumut Pond Reservoir and then through Tumut 1,2 and 3 Power Stations to Blowering Reservoir on the Tumut River. 262 GL of the Snowy's flow is transferred by tunnel from Lake Eucumbene to the Tumut River, a tributary of the Murrumbidgee River. 287 GL of the Murray's flow is diverted from the Tooma Reservoir (on a tributary of the Murray) to the Tumut River. This results in an average of 571 GL per annum being transferred to the Murray River bringing its average annual catchment yield from the Snowy Scheme to 1196 GL/annum. An average of 550 GL/annum is transferred to the Murrumbidgee River bringing its average annual catchment yield from the Snowy Scheme to 1190 GL/annum.²

The flow of the upper Snowy River below Jindabyne Dam has been reduced to 9 GL per annum, less than 1% of average natural flows (anf), and the inflow from the Mowamba River downstream of the dam has been reduced to 22 GL per annum by the diversion of 38 GL per annum to Jindabyne Dam by the Mowamba Aqueduct³. This diversion also has a significant impact on the lower Snowy so that even after the input of flow from significant tributaries, such as the Delegate River which contributes 30% of the Snowy's anf, the mean annual flow at Jarrahmond, some 30 km from the Snowy's mouth, is now 53% of the average natural flow.⁴

There are a number of impacts on the Snowy River below Jindabyne as a result of the greatly reduced flow in the river which have been outlined in the past:

- Prior to the damming of the Snowy River strong seasonal flows of the river occurred as a result of winter rainfall and spring snowmelt. Average flow ranged from 200 megalitres (ML)/day at Jindabyne in late summer/and autumn up to 2200 ML/day during the spring thaw.⁵ Flow regulation has also greatly reduced frequency of large floods with most being these coming from tributary derived floods
- The river channel has narrowed, especially in the River down to Dalgety, due to pool infilling from lack of floods, vegetation invasion, formation of benches, berms and tributary mouth bars. The channel contour is now related to rare catastrophic flood events, rather than regular floods, with severe erosion resulting.⁶ The riverbed in the Orbost Flood Plain has risen by up to 2 meters due to sediment deposition since 1960
- The sedimentation of pools has adversely affected macroinvertebrates and fish. The loss of habitat and substrate along with reduced water movement, lowered oxygen

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content and rising water temperature has resulted in poor diversity and abundance of macroinvertebrates upon which fish feed. The higher water temperatures and lower oxygen content of the river water has also adversely affect native fish and trout. The loss of seasonal flow variability which used to provide spawning signals to trout and native galaxias has adversely affected the reproduction of these species and the loss of summer floods has reduced upstream migration of juvenile eels⁷

- The regulation of flow has allowed native and exotic vegetation (including willows and blackberries) to invade the riparian zone along much of the river's length and to establish on and stabilise sandbanks in the riparian zone
- The reduced flow rate in the lower Snowy has contributed to increased salinity of the river. There have been reduced occurrences of platypus and native fish species due to this and impacts from land use changes on the Orbost Flood Plain.⁸

Reports recommending an Increase in flow in the Snowy

In 1995 a scoping study on Snowy River flow regimes concluded that significant environmental improvements of the Snowy between Jindabyne Dam and the Delegate River junction are likely if larger releases of water (greater than 125% anf) were made from the Jindabyne Dam and the Mowamba aqueduct.⁹ The study indicated that water releases should mimic daily or weekly patterns of flows rather than a continuous release so that native fish species are favoured, rather than exotic fish.¹⁰

In 1996 the NSW Department of Land and Water Conservation prepared a table of the potential effects of additional flows into the Snowy on both the upper and lower Snowy River and the Murray, Murrumbidgee and Tumut Rivers (See Attachment 1).

The 1996 Snowy Genoa Catchment Management Committee Expert Panel Report recommended a number of actions to alleviate the environmental problems caused by low river flow in the Snowy River. These included a 200 megalitre (ML)/day minimum flow from Jindabyne Dam, monthly releases to mimic natural seasonal variability, and an annual flood of 12 000 ML/day between May and September to re-establish river channels. The total volume of flows recommended by the Panel, which varied from a high of 2400 ML/day during October and a low of 190 ML/day during March, would equate to approximately 28% anf.¹¹

Snowy Water inquiry

Prior to the proclamation of the Snowy Corporatisation legislation, Victoria and NSW held a joint independent public inquiry into environmental issues arising from the current pattern of river flows caused by the Snowy Scheme.

The Hon Robert Webster, former NSW National Party Minister, was appointed Commissioner of the Snowy Water Inquiry and he submitted his final report on 23 October 1998. He concluded:

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that the following key factors must be taken into account when determining a solution for the Snowy and associated rivers and streams:

- Significant environmental gain for the river systems must be achieved
- Significant reduction in water wastage in irrigation areas must be addressed
- The cost impact on agriculture must be minimal because of its significant economic contribution to the community (apart from the opportunity cost of potential growth of industry)
- The impact on the hydro-electricity generator must be manageable
- The capital cost on the Government must be reasonable in terms of return benefits to the environment and the community.¹²

Commissioner Webster nominated an option which increased stream flow into the Snowy River to 15% of its average natural flow, as his preferred option for implementation (Option D in the Report). This had an estimated cost of \$194 million.

In 1999 the incoming Victorian Labor Government had a policy of returning 28% of the Snowy's original flow. The Independent MLA, Mr Craig Ingram, Member for East Gippsland was one of three Independents on whose vote the minority Victorian Government depended, had strongly campaigned for the return of the 28% of Snowy flow. As a result negotiations between the New South Wales Government and the new Victorian Government over the quantum of the flow to be returned to the Snowy River began in late 1999.

Senator the Hon Nick Minchin, then Minister for Industry, Science and Resources, stated that the next step following the Snowy Water Inquiry was for the NSW and Victorian Governments to reach a consensus position on environmental flows.¹³ The States would have to then gain the Commonwealth Government's agreement to their proposed outcome before it could be adopted. The proposition would then be taken to the Murray-Darling Basin Ministerial Council so that the implications for the Murray-Darling Basin (including those of South Australia) could be taken into account.

Snowy Environmental Impact Statement

On 20 December 1999, Senator the Hon Robert Hill, Minister the Environment and Heritage, ordered an Environmental Impact Statement (EIS) on the implementation of the Snowy Mountain Hydro-Electric Authority corporatisation plan. The draft EIS, carried out under the provisions of the *Environment Protection (Impact of Proposals) Act 1974*, was released for a public comment in June 2000.

During early 2000 the South Australian Government consistently opposed any but minimal return of flows to the Snowy. In a submission to the Snowy Corporatisation EIS, the South Australian Government stated that any water savings by irrigators must not be diverted from the Murray River to the Snowy. The then South Australian Premier, the Hon John Olsen,

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warned that SA would veto any agreement that would have a detrimental effect on the Murray.¹⁴

Senator Hill, in releasing the assessment report of the EIS on 12 November 2000, indicated that two associated issues required further consideration: the incidental consequences upon the long term health of the Murray of the diversion of up to 295 GL of water for environmental flows to the Snowy River, and whether the proposed water licence designed to maximise the energy output of the Snowy Hydro was sufficiently flexible to allow the best water management decision in relation to both the economic and ecological sustainability of the Murray.¹⁵

NSW and Victorian Government Proposed Agreement

On 6 October 2000 the NSW and Victorian Government announced that they had reached an agreement on increased flows for the Snowy River. This agreement contained a target flow rate of 21% and to be returned to the Snowy over the next 10 years with funding of \$300 million (\$150 m by each Government) provided by NSW and Victoria. A proposed Commonwealth, NSW and Victorian government enterprise would invest in capital projects to save water by pipelines, engineering works, and improved maintenance of the irrigation system. After 10 years the remaining 7% to reach the 28% Snowy River flow target were expected to be achieved through development of new infrastructure projects involving the private sector. Snowy Hydro Ltd would build the necessary outlets at dam walls to enable increased flows. The NSW and Victorian Governments advised the Prime Minister of their agreement and invited him to contribute to this proposal. They recognised that the Commonwealth was still in the process of completing its EIS process on the Snowy corporatisation.

Senator Minchin said he was very pleased the proposed outcome acknowledged the wide range of stakeholder interests involved and the need to balance competing environmental needs in the Snowy River catchment and in the Murray-Darling Basin. He highlighted the proposed use of new water savings measures to provide increased environmental flows in both the Snowy River and the River Murray. He welcomed the proposal for increased environmental flows in the montane rivers, including the Upper Murrumbidgee River. He said:

The Commonwealth's EIS has been necessary to allay the concerns of irrigator and environmental interests throughout the Murray-Darling Basin about the long term security of water from the Snowy Mountains Scheme and to ensure that stakeholder interests in the Murray-Darling Basin and South Australia are fully protected.¹⁶

In response to the announcement of the Snowy agreement, a spokesman for Premier Olsen said that South Australia was now confident that no agreement would be ratified without an assurance that the Murray would not suffer. He said:

Our subsequent argument is that a percentage of the savings they're talking about making should be tunnelled down the Murray.¹⁷

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Commonwealth Decision and Heads of Agreement

On 6 December 2000 Federal Cabinet agreed in-principle to the proposed New South Wales and Victoria proposal on environmental flows arising from the corporatisation of the Snowy Hydro Scheme. It committed \$75 million for water savings works in the Murray Darling Basin to provide 70GL of environmental flows to the Murray River. Senator Minchin said:

Under the Heads of Government Agreement reached with New South Wales and Victoria, the three governments will provide a total \$375 million over the next ten years to implement water efficiency projects and carry out riverine works which will benefit the environmental condition of affected rivers....Most importantly, the three Governments have committed that these outcomes will have no adverse effects on irrigators in the Murray-Darling Basin or South Australia's water rights and can help to promote a water trading market. This outcome is vital to the security of irrigators and other water users in the Basin and will help to improve water quality for South Australia.¹⁸

Senator Nick Bolkus, Shadow Minister for the Environment, welcomed the Commonwealth decision to restore environmental flows to the Snowy River. He said:

This represents a significant win for the environment and the health of our major river systems. It is encouraging to see that the Federal Government has finally accepted that it is not a case of one river pitted against another. This debate should never have been presented as a trade off between the Snowy and the Murray, it is about long term strategic planning to save our inland river systems and the communities which rely on them.¹⁹

The Heads of Agreement listed the environmental objectives as follows:

The environmental objectives for the Snowy River and the Snowy upper montane rivers are to improve the habitat for a diverse range of plant and animal species by a combination of:

- improving the temperature regime of river water
- achieving channel maintenance and flushing flows within rivers
- restoring connectivity within rivers for migratory species and for dispersion
- improving triggers for fish spawning, and
- improving the aesthetics of currently degraded riverine environments.

These objectives are complemented by an objective to maintain and improve environmental flows for the River Murray.²⁰

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Clause 2.2 of this Agreement stated that:

The three Governments agree that flows in the Snowy River below Jindabyne will *not* be increased and dedicated environmental flows allocated to the River Murray will *not* be implemented *unless* they are first offset by water acquired through:

- primarily undertaking water saving, environmental improvement and regional development projects in diversions from the River Murray and in the Murrumbidgee and Goulburn-Murray river systems; and
- if necessary, purchasing water entitlements and water rights from holders in a manner which promotes the water trading market.²¹

Agreement on Corporatisation of the Snowy

The issue of water purchasing for environmental flows concerned the South Australian Government. In January 2001, the Water resources Minister, Mark Brindal, stated that:

Now if they buy water, South Australia will really go down to the wire on it. If they try and achieve it by water sales there will be blood on the carpet.²²

South Australia had other concerns about the Heads of Agreement and delayed signing the document.

South Australian Premier, John Olsen, wrote to the Prime Minister in August 2001. He expressed concerns that the proposed Snowy Water Inquiry Outcomes Implementation Deed would:

effectively prevent any significant actions by the three Governments over the next 10 to 15 years to improve the health of the Murray. Until the flow targets for the Snowy have been achieved, this deed effectively precludes any significant focus on improved environmental flows in the Murray.²³

The South Australian Government decided to agree to the corporatisation of the SMHEA²⁴ after the Murray-Darling Basin Ministerial Council agreed to a seven year program on environmental flows in the Murray and to develop a Community engagement strategy to consider substantially increased environmental flows. The Council directed the Murray-Darling Basin Commission:

to identify and address key issues such as equity, property rights and water trade through the development of a business case for the recovery of 350 GL, 750 GL and 1500 GL to the River Murray.²⁵

On 3 June 2002, representatives of the Commonwealth, the New South Wales, South Australia and Victorian Governments signed the Murray-Darling Basin Amending Agreement. On the same day the Commonwealth, New South Wales and Victoria also signed the Snowy Water Inquiry Outcomes Implementation Deed. South Australia also signed the Intergovernmental Agreement, along with New South Wales and Victoria,

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allowing it to join the Joint Government Enterprise, when it chooses. On 28 June 2002 Snowy Mountains Hydro-electric Authority was corporatised as Snowy Hydro Limited and set in train the timetable for implementing environmental flows to the Snowy River, the Snowy Montane Rivers and to the River Murray.²⁶

The New South Wales Premier, Bob Carr, and the Victorian Premier, Steve Bracks, closed the Mowamba Aqueduct on 28 August 2002, starting the process of diverting water back to the Snowy River.

Public Comments on Return of Water to the Snowy

Snowy River Alliance spokesperson, Jo Garland was concerned that the money could run out before the 21% target was reached. She said:

The States say they're not sure the \$300 million will fund the 212 GL and when the money runs out, that's it. If they buy water they should buy high security water so it's available every year.²⁷

Australian Conservation Foundation President, Peter Garrett said:

It's been a long time between drinks for the Snowy and today we're paying back some of the water. I know much of Australia's been in drought recently but the Snowy River has effectively been in drought for the past 35 years.²⁸

However, the Victorian Farmers Federation President, Paul Weller said that water was being taken from the Murray-Darling Basin to boost flows in the Snowy, resulting in less for farms along the Murray River.²⁹

Approval of all Parliaments required

Similar legislation which incorporate the Amending Agreement will also be introduced into the New South Wales, South Australian and Victorian Parliaments and need to pass all Parliaments before Schedule 1 of this legislation can be proclaimed and the Amended Murray-Darling Basin Agreement come into effect.

Brief outline of How Bill will Change the Provision of Water to the Murray

The Snowy Hydro Corporatisation means that the Snowy Mountains Agreement is no longer in force as the functions of the Snowy Mountains Hydro-electric Authority were transferred to Snowy Hydro Ltd on 28 June 2002. Under the **amended clause 132** of the Murray-Darling Basin Agreement, the Murray-Darling Basin Commission will determine the allocation of Snowy Scheme water, as set out in **new Schedule G**. Reference is made, in **new Schedule G** (Effect of the Snowy Scheme) to the [Snowy Water Licence](#) that sets out the requirements for Snowy Hydro Ltd in terms of water provision from the Snowy Scheme.

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Under the Snowy Mountains Agreement, the Murray-Darling Basin Commission had a minimum guaranteed quantity of water (1062 GL per year) which could be called on if required in dry periods. This figure has been placed in the Snowy Water Licence as part of the "Required Annual Release" of the Snowy-Murray Development.

Only the Snowy River environmental flows are included in the actual calculations of the water in Schedule G because they are water that will be lost to the Murray-Darling Basin system (**clauses 6-12 of Schedule G**).

Water for environmental flows under this Agreement is to be obtained from water savings and if that is not possible from the purchase of water entitlements on the water market.

Timetable for implementation of environmental flows - Clause 7 of the Snowy Water Inquiry Outcomes Implementation Deed outlines a timetable and the targets for the increased flows that will go to the Snowy River, the Snowy Montane Rivers and to the River Murray in four stages, as follows.³⁰

Stage of Implementation	Environmental Flows to Rivers - Target at end of Stage
<p>Stage One lasts for 12 months from the Snowy Hydro Corporatisation Date.</p>	<p>Snowy River During that time the flow of the Mowamba Aqueduct will be returned to the Snowy River, up to a maximum of 38 GL per Water Year. (Note that this happened on 28 August 2002 with the closure of the Mowamba Aqueduct.)</p>
<p>Stage Two lasts from the first anniversary date of corporatisation to the seventh anniversary.</p>	<p>Snowy River During this time the Snowy River will receive a target average flow of 142 GL per Water Year or 15% will be achieved.</p> <p>Snowy Montane Rivers will receive a target average flow equivalent to 100 Gigawatt hours (GWh) per annum of foregone electricity generation.</p> <ul style="list-style-type: none"> • Murrumbidgee River will receive 27 GL/annum. or 30% of its average natural flow (anf) at the end of the seven years. • Goodradigbee River will receive 12 GL/annum or 78% anf at the end of seven years. • Snowy River Gungarlin will receive 6 GL/annum or 2.7% anf at the end of seven years. • Snowy River Perisher/Rams Flat will receive 25 GL/annum or 17% anf at the end of seven years. <p style="text-align: center;">Warning:</p> <p><i>This Digest was prepared for debate. It reflects the legislation as introduced and does not canvass subsequent amendments.</i></p> <p><i>This Digest does not have any official legal status. Other sources should be consulted to determine the subsequent official status of the Bill.</i></p>

	<p>River Murray will receive a target allocation of 70 GL per Water Year. Note that this will stay at this level unless it is agreed to be increased after the tenth anniversary of corporatisation. It should also be noted that the increased environmental flows, terms of flow and reliability, during this time is to be allocated between the Snowy River and the River Murray on a 2 GL to 1 GL basis each Water Year until the River Murray Annual Allocation is 70 GL per annum.³¹ (This is important to concerns that environmental flows to the River Murray should proceed at the same time as the flows to the Snowy River).</p>
<p>Stage Three lasts from the seventh anniversary of corporatisation to the tenth anniversary.</p>	<p>Snowy River will receive a target average annual flow of 212 GL per Water Year or 21% anf.</p> <p>Snowy Montane Rivers will receive up to volume equivalent 150GWh per annum of foregone electricity generation. This will stay at this level after this date.</p> <ul style="list-style-type: none"> • Murrumbidgee River will receive 27 GL/annum, or 30% of its average natural flow (anf) at the end of the seven years. • Goodradigbee River will receive 12 GL/annum or 78% anf at the end of seven years. • Geehi River will receive 20GL/annum or 19% anf at the end of seven years. • Snowy River Gungarlin will receive 29 GL/annum or 13% anf at the end of seven years. • Snowy River Perisher/Rams Flat will receive 30 GL/annum or 20% anf at the end of seven years.
<p>Stage Four lasts from the tenth anniversary of corporatisation.</p>	<p>Snowy River The Snowy River may receive increased flows up to 294 GL per annum (28% anf) in accordance with clause 5 of Annexure One of the Deed. Specifically that the States agree to share the cost of compensation payable to the holder of the Snowy Water Licence (Snowy Hydro Ltd) for Net Foregone Revenue for such increased flows.</p>

The Deed also refers to a "Joint Government Enterprise" that will be established by the end of 2002 to fund water savings and purchase water entitlements to achieve the above targets and to commission the necessary environmental and riverine works. Note that the

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\$375 million over the ten years will be supplied at the rate of \$15 million per annum by both New South Wales and Victoria and \$7.5 million per annum by the Commonwealth.

Table One, in **clause 13 of Schedule G**, ensures that Victoria (and South Australia during periods of special accounting) get their required share of Snowy Scheme water irrespective of what New South Wales does. Existing clause 122 of the Murray-Darling Basin Agreement states that where the Murray-Darling Basin Commission feels that the water reserves allocated to either New South Wales or Victoria will fall below 1 250 GL in the following May then it is required to declare a period of special accounting between that state and South Australia. During this period the aim is to ensure that South Australia gets one third of the available water.

Clause 15 of Schedule G refers to "Translation Factors" that are needed since water saving projects will be located at varying distances downstream of the Hume Dam and for accounting purposes they must be all converted to equivalent water as in Hume Dam. This means that the further a water saving project is downstream of the Hume Dam the less relative amount of water will be translated back to the Hume Dam and available for environmental flows in the River Murray.

One of the requirements of the Translation Factors is that there will be no significant adverse impact on the level of reliability on water entitlements to water diverted from the River Murray System, the Murrumbidgee River System and the Goulburn River System. It should be noted that some of the water saving projects may only yield their savings in one year out of three or four.

Reliability of water entitlements vary between the three States of the Murray River. At present all of South Australian and Victorian water licence holders have high security entitlements. South Australia licence holders have always received their full entitlements and Victorian entitlement holders have a reliability whereby they expect to receive 100% of the full water volume entitlements in 96% of the years. At present Victorian entitlement holders are receiving 100% of the entitlements. However in New South Wales, most of the water licences are General Security licences, which receive 100% of their entitlements in 60% of the years. In low water years they have received as little as 7% of their entitlement and at present they are receiving 12% of their entitlement. There are 200 GL of high security entitlements in New South Wales with a reliability similar to that of South Australia. These high security entitlement holders are all town water supplies and those horticultural operators in the downstream areas.

Under **clause 18 of Schedule G**, the water transferred for environmental flows will be subtracted from the Cap³² on Murray-Darling Basin allocation of either New South Wales or Victoria, depending where the water came from.

The Murray-Darling Basin Council is required, under **clause 20 of Schedule G**, to develop a Strategy for River Murray environmental flows by the end of the second year of corporatisation.

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A Contracting Government³³ is to notify the Murray-Darling Basin Commission of any water savings or water purchases for environmental flows under **clause 24 of Schedule G**.

Main Provisions

Schedule 1 - Amendments to the *Murray-Darling Basin Act 1993* relating to the impact of the changes to the Snowy Scheme on the Murray-Darling Basin Agreement

Items 1-3 Inserts new definitions of the Murray-Darling Basin Agreement to take into consideration the Amending Agreement and the Original Agreement which replace the present Agreement.

Item 5 inserts a **new section 5A** which states that the Amending Agreement is approved.

Item 7 inserts **Schedule 2 - Amending Agreement** at the end of the *Murray-Darling Basin Act 1993* that specifically amends clauses of the Murray-Darling Basin Agreement and adds a another Schedule to that Agreement, **Schedule G**.

The following outlines the principal amendments to Murray-Darling Basin Agreement (referred to here as the Original Agreement).

Clause 2 inserts a definition of "natural flow" so that an estimate can be made of the original flow of a river at a particular point before the Snowy Scheme was built. This is essential to estimating the inclusion of necessary environmental flows for water accounting purposes.

Clause 3 amends clause 46 of the Original Agreement so that the Murray-Darling Commission must be informed by the relevant Government that is proposing any water saving or water purchase for environmental flows or which affect the reliability of supply of water for environmental flows.

Clauses 4-8 relate to water accounting procedures included in **new Schedule G**. They require that environmental flows to the Snowy River, the Snowy Montane Rivers and the River Murray are included in the calculations of water allocations between New South Wales and Victoria.

Clause 9 deletes original clause 107, which is superseded by the **amended clause 106**.

Clause 10 deletes original clause 112 which is superseded by **amended clause 103(1)**.

Clause 11 deletes original subclause 122(3) which refers to the Murray-Darling Basin Commission declaring a period of restriction for the purposes of the Snowy Mountains Agreement. This is superseded by change to the Snowy Scheme and the **amended clause 132**.

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Clause 13 inserts **new clause 132** which provides that the Murray-Darling Basin Commission will decide the allocation of water to New South Wales and Victoria from the Snowy Scheme according to **Schedule G** instead of a combination of the Agreement and the Snowy Mountains Agreement.

Clause 14 inserts a **Schedule G** which is the fundamental purpose of this Agreement.

Schedule G Effect of Snowy Scheme The clauses of this Schedule have been discussed earlier.

Concluding Comments

The diversion of waters from one river to another can cause unintended and adverse consequences, as happened when the Snowy Scheme was first built. It is possible that problems in the Murray-Darling System may arise from the diversion back to the Snowy River. This is why there are requirements placed in this legislation to ensure that water quality and other environmental benefits are not adversely affected by flow regime changes or that the security of and seasonal availability of water entitlements in the Murray-Darling System should not be adversely affected.

There are always environmental, economic and social trade-offs in water allocation decision making and therefore there is no one best solution. That is the reason that environmental flows are to be apportioned on a two for one gegalitre basis between the Snowy and the Murray Rivers so that the needs of the Murray will be met at the same time as those of the Snowy. Both river systems are in need of greater environmental flows.

The flows being returned to the Snowy River are targeted to reach 21% anf (212 GL per annum) in ten years time under the Snowy Water Inquiry Outcomes Implementation Deed. However it is uncertain if and when the Snowy River flow will reach the 28% anf (294 GL per annum) that has been suggested as being required to restore the river to full health because:

- the environmental flow strategy proposed for development by the Murray-Darling Basin Ministerial Council in the Murray River may place the emphasis on future additional water savings in the Murray-Darling Basin for environmental flows to be earmarked for the Murray to meet its needs (between 350 GL/annum and 1500 GL/annum) once the 212 GL per annum flow regime of the Snowy is reached
- Snowy Hydro will have to be paid compensation by New South Wales and Victoria for net revenue forgone because of the loss of power generation capacity by the increased flows to the Snowy River, and

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- the water savings in the southern Murray-Darling Basin for the extra 7% average natural flow will be undertaken by public/private partnerships where the water savings are shared between the private sector partners and the Government.

Endnotes

- 1 This means all rivers within the Snowy Catchment Area including the Upper Murrumbidgee River immediately below the Tantangara Dam but excluding the Snowy River, the Mowamba River and Cobbon Creek.
- 2 Murray-Darling Basin Commission *Water Controlled by the Snowy Scheme* Figure.
- 3 Department of Industry, Science and Resources 2000. *Corporatisation of the Snowy Mountains Hydro-electric Authority - Draft Environmental Impact Statement*, June 2000 Canberra.
- 4 Ibid.
- 5 Erskine, W, Lake, S, Brown, P, Pulsford, I, Banks, J, Pendlebury, P, Nixon, J and Robertson, C 1996 *Expert Panel Environmental Flow Assessment of the Snowy River Below Jindabyne Dam* For the Snowy Genoa Catchment Management Committee, February 1996.
- 6 Ibid.
- 7 Ibid.
- 8 Ibid.
- 9 New South Wales Department of Land and Water Conservation, Snowy Mountains Hydro-electric Authority and the Victorian Department of Conservation and Natural Resources 1995. *Snowy River Downstream of Lake Jindabyne - Environmental Flows Scoping Study*.
- 10 Department of Industry, Science and Resources 2000. *Corporatisation of the Snowy Mountains Hydro-electric Authority - Draft Environmental Impact Statement*, June 2000 Canberra.
- 11 Erskine, W, Lake, S, Brown, P, Pulsford, I, Banks, J, Pendlebury, P, Nixon, J and Robertson, C 1996 *Expert Panel Environmental Flow Assessment of the Snowy River Below Jindabyne Dam* For the Snowy Genoa Catchment Management Committee, February 1996.
- 12 Webster RW 1998 *Snowy Water Inquiry Final Report* Submitted to the Governments of New South Wales and Victoria 23 October 1998 Commissioner: The Hon Robert Webster.
- 13 Minchin N 1999 *Water and the Snowy Hydro-Electric Scheme* Media Release Senator the Hon Nick Minchin, Minister for Industry, Science and Resources, 22 December 1999.
- 14 Spencer M 2000 *Snowy Vision Dunked* in The Australian, 20 March 2000.
- 15 Hill R 2000 *Environmental Assessment Report of the Snowy Scheme* Press release for Senator the Hon Robert Hill, Minister for the Environment and Heritage, 12 November 2000.

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- 16 Minchin N 2000 *Snowy Water Inquiry Announcement welcomed by Senator Minchin* Media Release by Senator the Hon Nick Minchin Minister for Industry, Science and Resources, 6 October 2000.
- 17 Hodge, A 2000 *Saving the Snowy: tears for a River reborn* in *The Australian*, 7 October 2000.
- 18 Minchin N 2000 *Snowy Corporatisation - Federal Government to provide \$75 Million for the Environment* Media Release of Senator the Hon Nick Minchin, 6 December 2000.
- 19 Bolkus N 2000 *Labor Welcomes Historic Snowy Rescue Package* Media release Senator the Hon Nick Bolkus, Shadow Minister for Environment, 6 December 2000.
- 20 *Heads of Agreement - The Agreed Outcome From the Snowy River Inquiry 6 December 2000* Hansard of NSW Legislative Council, 6 December 2000.
- 21 Ibid.
- 22 AAP 2001 *SA water's not for sale, NSW, Vic, told*, *The Canberra Times*, 8 January 2001.
- 23 *Snowy Threat to Murray* *The Advertiser*, 27 August 2001.
- 24 Hockley, C 2002 *More water - but we'll have to wait*, *The Advertiser*, 12 April 2002.
- 25 Murray-Darling Basin Ministerial Council 2002 *Corowa Communique* Council Meeting 31, 12 April 2002.
- 26 *Snowy Water Inquiry Outcomes Implementation Deed* Dated 3 June 2002, between the Commonwealth of Australia, New South Wales and Victoria.
- 27 Paterson, I 2002 *Water gates open into Snowy River* *The Land*, 29 August 2002.
- 28 *Water flows in Snowy again*, *The Canberra Times*, 29 August 2002.
- 29 Ibid.
- 30 Commonwealth, New South Wales, Victoria 2002 *Snowy Water Inquiry Outcomes Implementation Deed* 3 June 2002.
- 31 Ibid subclause 16(1).
- 32 In response to the issues raised by the 1995 Audit of Water Use in the Murray-Darling Basin, the Murray-Darling Basin Ministerial Council at its June 1995 meeting decided to introduce an interim Cap on diversions of water from the Basin. In December 1996, this was later confirmed as a permanent Cap effective from 1 July 1997.
- 33 For the purposes of this clause the Contracting Governments include The Commonwealth, New South Wales, South Australia and Victoria.

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Attachment 1 - The effects in the Snowy River Downstream of Jindabyne dam of the additional diversion

JINDABYNE DAM to DELEGATE RIVER JUNCTION	
Ecological Effects	
River Channel	Limited, localised movement of fino gravel in spring, considerable movement of sand. Substantial removal of fine sediment & algae in both riffles & pools.
Water quality	Similar algae benefits to Scenarios 3b & 4 in summer & autumn & considerable benefits in spring. Potential to reduce high turbidity/suspended sediment levels on rising limb of freshes due to prior removal of some of this fine material during winter and spring releases.
Riverine vegetation	Substantial changes likely to non-woody vegetation on riffles & pools due to increased depth (0.5-1.0 m increase) and velocities. Establishment of woody vegetation curtailed, but mechanical assistance necessary for removal of most existing plants. Increased depths in pools is likely to increase open water areas
Micro-invertebrates	Significant improvement in species diversity and numbers in all months in both pools and riffles, due increased riffle depths, habitat area and removal of fine sediments.
Mammals (principally platypus and water rat)	Significant improvement to population recruitment success, due to substantially increase invertebrate populations in spring. More substantial improvement in maintenance conditions in other months compared to Scenario 4, despite similar flows, due to more substantial changes in riffle and pool habitat caused by higher winter & spring flows.
Fish	Food, structural and hydrologic habitat diversity and water quality improvements are likely to benefit fish population maintenance and recruitment. Fish passage will be improved over many natural obstructions through drownout and added seasonal stimulus of higher flows.
Social Effects	

Aesthetics	The size of flows in all months is likely to satisfy most people's perceptions of the "Snowy River", however despite reductions in encroaching vegetation, the channel size is likely to remain smaller than pre-dam levels as coarse sediment transport rates will remain highly impacted.
Canoeing/Rafting	Optimal conditions will often be met in winter and spring and moderate improvements in summer and autumn, similar to Scenarios 3b and 4.
River crossings	Many crossings are likely to be significantly affected in all months, particularly winter & spring.
Fishing	Significant increases in numbers and perhaps some increase in native species, because of improved habitat conditions, food supply & fish passage.
Swimming	Improvement in summer and autumn conditions. Winter and spring may be dangerous due to depth and velocity factors.
DELEGATE RIVER JUNCTION TO MARLO	
Ecological Effects	
Fish <i>Victorian authorities consider 1000 ML/day at Jarrahmond will meet the low flow needs of native fish. This is currently met 34% of the time in autumn and 76% of the time in spring.</i>	Target flow met 14%-24% more frequently in autumn & spring respectively. 1000 ML/day met 100% of time in spring.
Riverine Vegetation	The changes in the location of the salt wedges are likely to be similar to those for Scenario 3a in the estuarine area. However, measurable changes in freshwater aquatic and terrestrial communities can be expected as a result of higher flow levels and velocities.
Wetlands	Indirect effects of changes in the location of the salt wedge are unlikely to impact on any of the estuarine wetlands as they are downstream of the location of salt wedge fluctuations incurred under any of these larger flow scenarios.
Social Effects	
Boat access to Marlo	Some potential for minor changes, due to different

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	sedimentation regime, but probably unlikely.
Swimming	Potentially significant improvement along length of river at all times of the year.
Canoeing and rafting	Potentially significant improvement along entire reach at all times of the year and particularly in winter and spring due to depth of flow and removal of vegetation on rapids. Summer and autumn conditions are similar to those for Scenario 3b and 4.
Fishing	Significant increases in numbers and perhaps some increase in native species, because of improved habitat conditions, food supply & fish passage.
Aesthetics	Some improvement in all months, with a noticeable improvement during spring.
Economics Effects	
Irrigation	The 22% increase in freshwater availability will have a similar effect to Scenario 3a in the estuarine area.
TUMUT, MURRAY & MURRUMBIDGEE RIVERS	
Ecological Effects	
Riverine Environment	<ul style="list-style-type: none"> • Potential for reduced channel erosion in the Tumut River. • Improved aquatic and bank vegetation health due to reduced flow heights. • Reduced inversion of flow seasonally may improve ecosystem functioning in the Tumut river. • Salinity downstream of NSW irrigation area may be worsened.

Source: Hugh Milner, New South Wales Department of Land and Water Conservation

30 April 1996