

# **SUBMISSION TO THE 5 YEAR REVIEW OF THE SNOWY WATER LICENCE**

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## EXECUTIVE SUMMARY

Snowy Hydro Limited (“**Snowy Hydro**”) is the licensee under the *Snowy Water Licence*. This is the submission from Snowy Hydro to the 5 year review of the *Snowy Water Licence* (“**Submission**”).

This Submission addresses all of the matters within the scope of the review as advertised by the Department of Water & Energy (“**DWE**”).

This Submission focuses in particular on Snowy Hydro’s performance over the review period in meeting the requirements imposed on it by the *Snowy Water Licence* with regard to the initial releases of water to the Snowy River for environmental reasons. Those requirements are set out in Parts Two, Three and Four of Schedule Three to the *Snowy Water Licence* (“**Relevant Provisions**”).

Part Two of this Submission puts the Relevant Provisions into context and summarises the comprehensive regulatory regime with respect to Snowy River Increased Flows and environmental flows generally from the Snowy Scheme, of which the Relevant Provisions comprise but one part.

Part Three of this Submission briefly describes what has been done since the corporatisation date of the Snowy Mountains Hydro-electric Scheme (“**Corporatisation Date**”) in terms of Snowy River Increased Flows and construction of the new environmental flow outlet works at Jindabyne Dam.

Part Four of this Submission clearly demonstrates that from the commencement of the *Snowy Water Licence* on 28 June 2002 (being the Corporatisation Date), Snowy Hydro has met all of the requirements imposed on it with regard to the initial releases of water to the Snowy River for environmental reasons.

Part Five of this Submission contains Snowy Hydro’s recommendations for variations to the *Snowy Water Licence*. Snowy Hydro does not recommend any variations to the Relevant Provisions. Snowy Hydro does, however, recommend some variations to the *Snowy Water Licence* to address anomalies in the *Snowy Water Licence* and to improve the clarity of *Snowy Water Licence* provisions. Those variations relate to:

- (1) The Dry Inflow Sequence Volume, as suggested initially by the Murray- Darling Basin Commission (“**MDBC**”) during 2006 and further developed by the Water Consultation and Liaison Committee (“**WCLC**”) during 2007;
- (2) enabling the Water Administration Ministerial Corporation (“**Ministerial Corporation**”), being the licensor under the *Snowy Water Licence*, to direct monthly and daily environmental flow release volumes from Tantangara Dam in the same way as the Ministerial Corporation is able to do with respect to environmental releases from Jindabyne Dam. These variations were negotiated with the Department of Natural Resources, now DWE, shortly after corporatisation;

- (3) the imposition of a condition precedent to the decommissioning of any Snowy Scheme water assets by Snowy Hydro. This variation was developed by Snowy Hydro and the States of New South Wales and Victoria to address some concerns expressed by the State of Victoria during 2006; and
- (4) the operation of the new environmental flow outlet works on Jindabyne Dam and Tantangara Dam. This variation was developed by Snowy Hydro with the Department of Environment and Conservation during 2006.

# PART ONE: SCOPE OF THE REVIEW AND NATURE OF SNOWY HYDRO'S OBLIGATIONS GENERALLY UNDER THE SNOWY WATER LICENCE

## 2. SCOPE OF THE 5 YEAR REVIEW OF THE SNOWY WATER LICENCE

### 2.1 Scope of this First Review

The *Snowy Water Licence* was issued by the Ministerial Corporation to Snowy Hydro under Part V of the *Snowy Hydro Corporatisation Act 1997 (NSW)* ("**NSW Corporatisation Act**").

Subsections 25 (1) and 25 (2) of the Act provide that:

- (1) *"The Water Administration Ministerial Corporation is to review the obligations under the Snowy Water Licence at such intervals, and in such manner, as the licence provides."*
- (2) *"The licence must provide for such reviews at the following intervals:*
  - (a) *after the first 5 years (being a review of the provisions of the licence relating to the initial release of water to the Snowy River for environmental reasons), and*
  - (b) *at intervals of 10 years thereafter."*

The review requirement set out in subsection 25 (2) of the Act is mirrored in subclause 10 (1) of the *Snowy Water Licence*. That subclause provides that the Ministerial Corporation must, on the fifth anniversary of the Corporatisation Date, review the provisions of the *Snowy Water Licence* relating to "Snowy River Increased Flows".

The term Snowy River Increased Flows is defined in the *Snowy Water Licence* to mean releases of water in addition to the Base Passing Flow that Snowy Hydro releases:

- (1) **during the first three years from the Corporatisation Date:** from either or both of the Mowamba River and Cobbon Creek Weirs into the Snowy River; and
- (2) from the third anniversary of the Corporatisation Date: from Jindabyne Dam into the Snowy River,

under Parts Two, Three and Four of Schedule Three to the *Snowy Water Licence*.

Accordingly, the provisions of the *Snowy Water Licence* that are to be reviewed in this 5 year review are Parts Two, Three and Four of Schedule Three to the *Snowy Water Licence*.

Snowy Hydro notes that many of the Relevant Provisions are of historical interest only in that they related only to the period of the first three years from the Corporatisation Date and therefore, as at the date of this review, have no continuing application.

### **3. THE NATURE OF SNOWY HYDRO'S OBLIGATIONS UNDER THE SNOWY WATER LICENCE GENERALLY**

#### **3.1 Snowy Hydro Required To Target Flows**

The Snowy Scheme is a complicated, highly internally inter-dependent engineering system on a massive scale. Also, there are broader uncertainties around its natural and water environment. It is neither reasonable nor appropriate to require absolute compliance by the licensee with precise release volumes within each Water Year. This fact is explicitly recognised in clause 5.2 of the *Snowy Water Licence* which provides:

*“The Ministerial Corporation acknowledges that in operating the Snowy Scheme the Licensee cannot achieve precise release volumes each Water Year but, rather, can only target a release volume by reference to operational arrangements.”*

Clause 5.2 of the *Snowy Water Licence* qualifies all obligations of Snowy Hydro under the *Snowy Water Licence*. It provides that, despite any other provision of the *Snowy Water Licence*, a reference to a requirement on Snowy Hydro to release a particular volume from a work or to achieve a particular flow of water, is a requirement that Snowy Hydro uses its best endeavours to release that volume or achieve that flow:

- (1) by reference to average annual inflows into the relevant works;
- (2) having regard to the operational characteristics of the relevant work; and
- (3) (where relevant) by reference to simulated available stream flow data for the applicable work as modified.

This provision is relevant to reviewing Snowy Hydro's performance over the review period in meeting the requirements imposed on it by the Relevant Provisions. Snowy Hydro's obligation is to use its best endeavours to target volumes of water for release or to use its best endeavours to target achieve a particular flow of water.

#### **3.2 Snowy River Increased Flows “Overs and Unders”**

The provisions of clause 5.2 of the *Snowy Water Licence* are also relevant to a review of Snowy Hydro's performance over the review period in meeting the requirements imposed on it by the Relevant Provisions.

That clause provides that if in any Water Year the volume of Snowy River Increased Flows actually released is less than the target volume, that shortfall is to be released during the subsequent Water Year in addition to the Snowy River Increased Flows for that subsequent Water Year. Conversely, if in any Water Year the volume of Snowy River Increased Flows actually released is greater than the target volume, that excess is to be subtracted from the release required during the subsequent Water Year (except where the excess is the result of a flood or necessary operational releases from the spillway gates).



This provision in the *Snowy Water Licence* mirrors clause 8.2 of the *Snowy Water Inquiry Outcomes Implementation Deed* (“**SWIOD**”).

## **PART TWO: SETTING THE SCENE - PUTTING THE SNOWY WATER LICENCE INTO CONTEXT**

### **4. SETTING THE SCENE**

#### **4.1 Introduction**

Snowy Hydro's water rights and obligations are granted and imposed under the *Snowy Water Licence*.

The *Snowy Water Licence* does not, however, exist in isolation and its provisions cannot be read (or, indeed, varied) separately from the other instruments that comprise the comprehensive package of regulatory and other arrangements that govern the water operations of the Snowy Scheme.

Any review of the requirements of the *Snowy Water Licence*, including this 5 year review, must be undertaken with a proper understanding of those broader water regulatory arrangements, in particular an understanding of the interaction between the provisions of:

- (1) the *Snowy Water Licence*;
- (2) the SWIOID; and
- (3) the provisions of Schedule G to the *Murray- Darling Basin Agreement* ("**MDB Agreement**").

A short summary of these regulatory arrangements is set out below.

### **5. THE RELEVANT INSTRUMENTS COMPRISING THE REGULATORY REGIME GOVERNING THE WATER OPERATIONS OF THE SNOWY SCHEME**

#### **5.1 The SWIOID**

The SWIOID is a legally binding and enforceable agreement between the Commonwealth and the States of New South Wales and Victoria ("**Governments**"). Snowy Hydro is not a party to the SWIOID.

Among other things, the SWIOID:

- (1) sets out the Governments' commitment to achieve water efficiency savings and the methodology that they will apply in accounting water efficiency savings; and
- (2) establishes the WCLC, which is given the right to review and provide comment on each draft Annual Water Operating Plan prepared by Snowy Hydro.

Subclauses 4.2 (1) and (2) of the *Snowy Water Licence* provide that the Ministerial Corporation in administering the *Snowy Water Licence* must act in a manner that is consistent with the provisions of the SWIOID and not vary the terms of the *Snowy Water*

*Licence* so as to cause the *Snowy Water Licence* not to give effect to the SWIOID.

In addition, under subsection 23 (3) of the NSW Corporatisation Act and subsection 372 (5) of the Water Management Act, the Ministerial Corporation must administer the *Snowy Water Licence* so as to give effect to the provisions of the SWIOID.

## 5.2 The Murray- Darling Basin Agreement

The MDB Agreement is an inter-governmental agreement annexed to legislation of several Parliaments including those of the Governments and the State of South Australia. As a matter of law the MDB Agreement has the character of legislation.

Following corporatisation of the Snowy Scheme, a new Schedule G was inserted into the MDB Agreement. Among other things Schedule G replicates the provisions of Schedule Four to the *Snowy Water Licence* relating to the water available to the Snowy- Murray Development and water releases from that Development, including Snowy River Increased Flows.

The effect of the inclusion of Schedule G to the MDB Agreement is that the MDBC accounts for the water of the River Murray between the States of New South Wales, Victoria and South Australia, including releases from the Snowy- Murray Development, in accordance with Schedule G and not in accordance with the *Snowy Water Licence* (should, in the future, there be any difference between the provisions of those two instruments). That is, releases from the Snowy- Murray Development are accounted 50:50 to the States of New South Wales and Victoria according to the provisions of Schedule G, not according to the provisions of the *Snowy Water Licence*. To the extent that in the future there is a mismatch between the provisions of Schedule G to the MDB Agreement and the provisions of the *Snowy Water Licence*, effectively the State of New South Wales will bear the mismatch.

## 5.3 The *Snowy Water Licence*

The *Snowy Water Licence* is a statutory instrument issued under Part 5 of the NSW Corporatisation Act. Among other things the *Snowy Water Licence* sets out Snowy Hydro's water related rights and obligations and gives effect to the provisions of the SWIOID.

The *Snowy Water Licence* prescribes Snowy Hydro's obligations in terms of providing or modifying infrastructure to enable the making of environmental flows and targeting the actual environmental releases. In the case of the Snowy River Increased Flows, these provisions are generally concerned with the monthly and daily timing of the Snowy River Increased Flow releases.

The *Snowy Water Licence* does not contain any provisions relating to the overall, integrated regulatory framework governing environmental releases from the Snowy Scheme. Rather, it refers only to the outputs of this framework in terms of the volumes of target releases that are to be notified annually to Snowy Hydro by the Ministerial Corporation.

The *Snowy Water Licence* also does not contain any provisions relating to:

- (1) the arrangements for the securing of water savings by Water for Rivers;
- (2) the transfer by the States of New South Wales and Victoria of water savings to environmental entitlements; and
- (3) the formula for apportioning the annual allocations from the environmental entitlements between the three environmental flows (Snowy River Increased Flows, River Murray Environmental Flows and the Mowamba Borrow).

All of these other provisions are contained in the SWIOD and are therefore not within the scope of the 5 year review of the *Snowy Water Licence*.

#### **5.4 Annual Water Operating Plans**

The Snowy Water Year commences on 1 May and concludes on 30 April each year.

Under the *Snowy Water Licence*, each Water Year Snowy Hydro is required to develop and then comply with an Annual Water Operating Plan ("**AWOP**") approved by the Ministerial Corporation.

The purpose of each AWOP is to provide the Governments' water authorities with details of how Snowy Hydro proposes to operate the Snowy Scheme to meet the requirements of Schedule 3 (environmental flow requirements) and Schedule 4 (western river releases) to the *Snowy Water Licence*.

Each AWOP contains the following information:

- (1) A detailed review of previous Water Year operations, including inflows, diversions, storage changes and releases;
- (2) Factors affecting operations for the coming Water Year, such as major plant outages; and
- (3) Details of the planned operations for the coming Water Year, including the Required Annual Release volumes, quarterly guaranteed minimum releases and environmental flow targets.

The process of developing each AWOP involves Snowy Hydro preparing a draft, which is then reviewed by the WCLC. Snowy Hydro must consider the WCLC's comments and provide a revised plan to the Ministerial Corporation. The Ministerial Corporation then considers the plan and, if satisfied, approves it.

## **6. THE REGULATORY FRAMEWORK FOR ENVIRONMENTAL FLOWS FROM THE SNOWY SCHEME INCLUDING SNOWY RIVER INCREASED FLOWS**

### **6.1 The Governments' Commitments to Environmental Flows**

At Corporatisation, the Governments committed to funding and securing water efficiency savings to be used to provide environmental flows to the Snowy River below Jindabyne

Dam (Snowy River Increased Flows) and to the River Murray.

The details of the Governments’ commitments in relation to environmental flows are set out, in legally binding form, in the SWIOID. In terms of environmental flows objectives, the Governments summarised those objectives in the table below which is extracted from the SWIOID:

| TIMING   | INCREASED FLOW   | TARGET VOLUME   |
|--|--|---|
| <b>STAGE ONE</b>   |  |   |
| During the 12 Months from the Corporatisation Date until the first anniversary of the Corporatisation Date                         | Snowy River Increased Flows from either or both of the Mowamba River and Cobbon Creek  | Target flow up to maximum of 38 GL per Water Year.  |
| <b>STAGE TWO</b>   |  |   |
| During the period from the first anniversary of the Corporatisation Date until the seventh anniversary of the Corporatisation Date | Snowy River Increased Flows including, up until the third anniversary of the Corporatisation Date, a target flow up to a maximum of 38 GL per Water Year from either or both of the Mowamba River and Cobbon Creek | Target average annual flow of 142 GL per Water Year.  |
|  | Snowy Montane Rivers Increased Flows   | Target average annual flow up to maximum volume equivalent to 100 GWh per annum of forgone electricity generation.  |
|  | River Murray Increased Flows   | Target allocation of 70 GL per Water Year.  |
| <b>STAGE THREE</b>   |  |   |
| From the seventh anniversary of the Corporatisation Date until the tenth anniversary of the Corporatisation Date                   | Snowy River Increased Flows  | Target average annual flow of 212 GL per Water Year.  |
|  | Snowy Montane Rivers Increased Flows   | Target average annual flow up to maximum volume equivalent to 150 GWh per annum of forgone electricity generation.  |
|  | River Murray Increased Flows   | Target allocation of 70 GL per Water Year.  |
| <b>TIMING</b>  |  |   |
| <b>INCREASED FLOW</b>  |  |   |
| <b>TARGET VOLUME</b>   |  |   |
| <b>STAGE FOUR</b>  |  |   |
| From the tenth anniversary of the Corporatisation Date   | Snowy River Increased Flows  | Target average annual flow:<br>(a) of 212 GL per Water Year; or<br><br>(b) if applicable under <b>clause 5</b> of <b>Annexure One</b> , from 212 GL up to 294 GL per Water Year |
|  | Snowy Montane Rivers Increased Flows   | Target average annual flow up to maximum volume equivalent to 150 GWh per annum of forgone electricity generation.  |
|  | River Murray Increased Flows   | Target allocation of:<br>(a) 70 GL per Water Year; or<br><br>(b) more than 70 GL per Water Year if agreed between the parties.  |

**6.2 Responsibilities of Various Parties**

Set out below is a table that identifies the entities who are responsible for the various actions required to implement the water regulatory arrangements set out in the SWIOID, the NSW Corporatisation Act, the Water Management Act, the MDB Agreement, and the *Snowy Water Licence* with respect to environmental flows from the Snowy Scheme:

| ACTION REQUIRED  | WHO IS RESPONSIBLE           |
|--|------------------------------|
| Securing verified water savings from water savings projects on the River Murray or Murrumbidgee River (or purchase of water entitlements).                           | Water for Rivers             |
| Transferring verified water savings into Environmental Entitlements.   | NSW (DWE) and Victoria (DSE) |
| Calculating annual allocations from the Environmental Entitlements each year (in arrears).   | NSW (DWE) and Victoria (DSE) |
| Apportioning the annual allocations between the Snowy River Increased Flows, River Murray Increased Flows and the Mowamba Borrow.                                    | NSW (DWE)                    |
| Determining and then notifying Snowy Hydro of annual, monthly and daily release volumes for Snowy River Increased Flows.   | NSW (DWE)                    |
| Providing infrastructure to enable Snowy River Increased Flows from Jindabyne Dam and modify existing infrastructure to enable Snowy Montane Rivers Increased Flows. | Snowy Hydro                  |
| Targeting releases of Snowy River Increased Flows from Jindabyne Dam.  | Snowy Hydro                  |

**6.3 Government Funding for Water Efficiency Savings**

Under the SWIOID, the Snowy River Increased Flows, the River Murray Increased Flows and repayments to the Mowamba Borrow are all to be offset by the annual allocations attaching to (nominal) water entitlements obtained by the Governments primarily through prior verified water efficiency savings in diversions from the River Murray and in the Murrumbidgee and Goulburn-Murray river systems.

In simple terms those (nominal) water entitlements will reduce the volume of water required to supply the needs of downstream entitlement holders on the Murray and Murrumbidgee river systems. Therefore, the volume of the Required Annual Releases can be reduced each year by the volume of the annual allocations attaching to (nominal) water entitlements without prejudicing the security of downstream users’ entitlements.

That water is then available for use as environmental flows.

To achieve these water efficiency savings, the three Governments established the Joint Government Enterprise (trading as “Water for Rivers”) with a charter to obtain water efficiency savings at least cost.

At Corporatisation, New South Wales and Victoria each committed \$150 million and the Commonwealth \$75 million, over 10 years (2002 - 2012), to achieve the water efficiency savings.

#### 6.4 The Key Element of the Environmental Flow Regime: the 1:1 Ratio

The key element of the environmental flow regime established under the SWIOID is that the total volume of environmental flows each year (Snowy River Increased Flows, River Murray Increased Flows and repayments to the Mowamba Borrow) must not be greater than the volume of the annual allocations attaching to the water efficiency savings entitlements achieved by the Governments to date.

Therefore the SWIOID prescribes that environmental flows in a Water Year must be released on a 1:1 ratio with the annual allocations attaching to the water savings achieved by the Governments prior to that Water Year up to the target volume specified in the SWIOID. Any breach of this 1:1 ratio will, by definition, prejudice the security of downstream water users’ rights (irrigators and the environment).

#### 6.5 Environmental Entitlements and Annual Allocations

The SWIOID prescribes in some degree of detail the process that must be gone through each year to determine the volume of environmental flows to be made from the Snowy Scheme. The process can be summarised as follows.

Each Water Year:

- (1) **Transfer of verified water savings to Environmental Entitlements:** the States of New South Wales and Victoria must transfer verified water savings and any water entitlements purchased by Water for Rivers achieved in that Water Year into the State’s relevant Environmental Entitlement;
- (2) **Apportionment of Environmental Entitlements:** the State of New South Wales must then apportion the water within each Environmental Entitlement between the Snowy River Apportioned Entitlement and the River Murray Apportioned Entitlement on a 2:1 basis; and
- (3) **Determining the Annual Allocation:** the State of New South Wales must then determine the annual allocation attaching to each of the Snowy River Apportioned Entitlement and the River Murray Apportioned Entitlement according to the “seasonal availability” of water contained in each Entitlement. “Seasonal availability” means a combination of the final seasonal allocation announcement of the relevant State during the previous Water Year and the allocated volume received during the previous Water Year by South Australia as a proportion of its entitlement during that Water Year under the MDB Agreement.

## 6.6 Why the Required Snowy River Increased Flow Volume May Be Less Than the Volume of the Nominal Environmental Entitlements

Verified water savings and the Environmental Entitlements are in the form of entitlements, not allocations. In other words, those volumes are purely nominal. They may comprise, for example, nominal amounts of NSW high security water, NSW general security water, NSW sales water, Victorian water rights or Victorian sales water.

The actual volume of Snowy River Increased Flow releases to be made by Snowy Hydro is based not on these nominal amounts but on the annual allocations attaching to those nominal entitlements. In simple terms, if during one Water Year the allocations made in respect of the entitlements comprising the Environmental Entitlements were low (for example, due to drought), the allocation volume will be less than the entitlement volume. This is the case, for example, during the current Water Year. It is the (lower) allocation volume calculated by the Ministerial Corporation that is to be targeted for release by Snowy Hydro.

## 6.7 Snowy River Increased Flows Prior to the Third Anniversary of Corporatisation – the Mowamba Borrow

Under the *Snowy Water Licence*, Snowy Hydro was required to make Snowy River Increased Flows from the Mowamba Weir only from the period from the Corporatisation Date until the third anniversary of the Corporatisation Date (28 June 2002 to 28 June 2005). This was a temporary arrangement until modifications were made to Jindabyne Dam to enable the release of Snowy River Increased Flows from Jindabyne Dam.

The releases made from Mowamba Weir during the first three years after Corporatisation were “borrowed” from the Snowy Scheme’s Below Target Water and have to be repaid to the Snowy Scheme. That is, those environmental releases were not off-set by annual allocations attaching to verified water savings at the time of the release but, rather, are to be offset by future water savings as they are verified.

While there is a balance in the Mowamba Borrow account (that is, the Borrow is not repaid), the Snowy Scheme will run out of water earlier in a dry inflow sequence than it otherwise would have in terms of being able to maintain western river releases. This prejudices the security of downstream entitlements on the River Murray and Murrumbidgee Rivers.

## 6.8 Snowy River Increased Flows From the Third Anniversary of Corporatisation

Under the *Snowy Water Licence*, from the third anniversary of the Corporatisation Date (28 June 2005), Snowy Hydro has been required to make Snowy River Increased Flows only from Jindabyne Dam into the Snowy River (and not from Mowamba Weir).

To comply with this requirement, the temporary arrangement for the release of Snowy River Increased Flows from Mowamba River ceased in January 2006 when diversions from the Mowamba River to Jindabyne Dam recommenced.



## PART THREE: THE STORY OF THE SNOWY RIVER INCREASED FLOWS SO FAR

### 7. TIMELINE

#### 7.1 Timeline

**Annexure One** shows a timeline for the key events during the review period.

### 8. THE VOLUMES OF SNOWY RIVER INCREASED FLOWS SINCE CORPORATISATION

#### 8.1 Introduction

The volumes described in this **paragraph 7** are set out in **Annexure Two**.

#### 8.2 Volumes of Snowy River Increased Flows in the First Three Years After the Corporatisation Date

For the first three years after the Corporatisation Date, diversions from the Mowamba River to Jindabyne Dam were temporarily suspended. During that time the volume of the Snowy River Increased Flows (being the additional volume of water flowing into the Snowy River below Jindabyne Dam) was equal to the volume of the flows over the Mowamba and Cobbon Creek Weirs.

These additional volumes were borrowed from the Snowy Scheme's Below Target Water and are referred to as the "Mowamba Borrow". The volumes were:

- (1) **in the 2002-03 Water Year:** 10.5 GL;
- (2) **in the 2003-04 Water Year:** 29.6 GL;
- (3) **in the 2004-05 Water Year:** 23.1 GL; and
- (4) **in the 2005-06 Water Year (from the commencement of that Water Year until 28 June 2005):** 1.7 GL,

making a total of 64.9 GL in the Mowamba Borrow account which needed to be repaid to Snowy Hydro's Below Target Water.

#### 8.3 Volumes of Snowy River Increased Flows in the 2005-06 Water Year

The 2005-06 Water Year was the first Water Year where there was an Environmental Entitlement to be apportioned (and therefore an annual allocation to be released) as a result of the Governments' verified water savings. In accordance with the *Snowy Water Licence* it was during this Water Year that Snowy River Increased Flows began to be released from Jindabyne Dam.

In the 2005-06 Water Year:

- (1) The Environmental Entitlements totalled 57 GL as a result of water savings;
- (2) The 57 GL of Environmental Entitlements were apportioned in accordance with the SWIOID on a 2:1 basis between Snowy River Increased Flows (38 GL) and River Murray Increased Flows (19 GL);
- (3) From those nominal entitlements the NSW Government calculated the Snowy River Annual Allocation as 38 GL and the River Murray Annual Allocation as 19 GL. Therefore the targeted volume of Snowy River Increased Flows from Jindabyne Dam was 38 GL; and
- (4) 39.8 GL was actually released from a combination of Jindabyne Dam and the Mowamba and Cobbon Creek Weirs, an excess of 1.8 GL. In accordance with the *Snowy Water Licence* and the SWIOID this excess was deducted from the volume of Snowy River Increased Flows to be released in the subsequent Water Year.

#### **8.4 Volumes of Snowy River Increased Flows in the 2006-07 Water Year**

In the 2006-07 Water Year:

- (1) The Environmental Entitlements totalled 63 GL as a result of water savings;
- (2) The 63 GL of Environmental Entitlements were apportioned in accordance with the SWIOID on a 2:1 basis between Snowy River Increased Flows (42 GL) and River Murray Increased Flows (21 GL);
- (3) From those nominal entitlements the NSW Government calculated the Snowy River Annual Allocation as 42 GL and the River Murray Annual Allocation as 21 GL. However the targeted volume of Snowy River Increased Flows from Jindabyne Dam was 36.2 GL. This was because (a) the excess of 1.8 GL from the previous Water Year had to be subtracted and (b) 4 GL of the Mowamba Borrow Account was repaid to Snowy Hydro's Below Target Water leaving a target volume of Snowy River Increased Flows from Jindabyne Dam of 36.2 GL;
- (4) 36.7 GL was actually released from Jindabyne Dam, an excess of 0.5 GL. In accordance with the *Snowy Water Licence* and the SWIOID this excess was deducted from the volume of Snowy River Increased Flows to be released in the subsequent Water Year; and
- (5) the total of the Mowamba Borrow Account was reduced to 60.9 GL.

#### **8.5 Volumes of Snowy River Increased Flows in the 2007-08 Water Year**

In the 2007-08 Water Year:

- (1) The Environmental Entitlements totalled 67 GL as a result of water savings;
- (2) The 67 GL of Environmental Entitlements were apportioned in accordance with the SWIOID on a 2:1 basis between Snowy River Increased Flows (44.7 GL) and River Murray Increased Flows (22.3 GL);
- (3) From those nominal entitlements the NSW Government calculated the Snowy River Annual Allocation as 33 GL and the River Murray Annual Allocation as 16.5 GL (for an explanation as to why these volumes are lower than the nominal

entitlement volumes, refer to **paragraph 6.6**). However the targeted volume of Snowy River Increased Flows from Jindabyne Dam was 32.5 GL. This was because the excess 0.5 GL from the previous Water Year had to be subtracted; and

- (4) There is to be no repayment to the Mowamba Borrow Account so the total of the Mowamba Borrow Account remains at 60.9 GL.

## **9. CONSTRUCTION OF THE NEW OUTLET WORKS AT JINDABYNE DAM**

### **9.1 The Need for the New Outlet Works at Jindabyne Dam**

As at the Corporatisation Date (28 June 2002), the facilities for the release of water from Jindabyne Dam comprised a siphon and a spillway. The siphon had capacity for only very small flow rates and the spillway for only very large flow rates.

These works were not capable of delivering the increased flows envisaged under the SWI/OID, which range from very small daily releases up to large flushing flows. It was therefore necessary to construct a new outlet with the appropriate capabilities and install other monitoring infrastructure to allow for control and measurement of the Snowy River Increased Flows, such as a new stream gauging station at the first suitable location downstream of the dam.

### **9.2 Timing of Completion of the New Outlet Works at Jindabyne Dam**

Due to the scale and complexity of this major modification to such a large structure, it was recognised that some years would be required for planning, design and construction of the new outlet works. As such the *Snowy Water Licence* required that the new outlet works were to be completed by the third anniversary of the Corporatisation Date or, if not completed by that date, that Snowy River Increased Flows would be stored in Jindabyne Dam until they were capable of being released from the Dam.

### **9.3 The Temporary Arrangement Commenced on the Corporatisation Date: the Mowamba Borrow**

In recognition of the importance of the environmental flow regime, the States of New South Wales and Victoria wanted to establish alternative and temporary environmental release arrangements so that the Snowy River Increased Flows could commence sooner than the anticipated three year construction period for the new environmental flow outlet works at Jindabyne Dam.

The most practical means of achieving increased flows during this period was to temporarily suspend diversions into Lake Jindabyne from both Mowamba River and Cobbon Creek, thus permitting unregulated flows from those streams into the Snowy River a short distance downstream of Jindabyne Dam.

### **9.4 The Capabilities of the New Outlet Works**

The new outlet works on Jindabyne Dam include:

- (1) an intake tower equipped with a multi-level offtake structure that is capable of drawing water from above the thermocline within Lake Jindabyne; and
- (2) a section of tunnel underneath the right abutment of the Dam wall with a

capacity of 5 GL/day.

From the end of the tunnel, the water passage splits. One section terminates at two cone valves capable of releasing larger flows (roughly between 300 and 4,800 ML/day). The second smaller section terminates at a small hydro power station built to capture the opportunity for the generation of a small amount of renewable energy from some of the Jindabyne Dam releases. Releases can be made either through the turbine or through a bypass valve covering a release range of between 0 and about 400 ML/day.

Together these works provide the required 5GL/ day release capacity.

### **9.5 Commissioning of the New Outlet Works at Jindabyne Dam**

As with the construction of all major assets, a range of commissioning activities was required to ensure their correct and safe operation. The initial commissioning period of the new Jindabyne Dam outlet works took place with a number of tests from 1 September 2006 to January 2007.

The commissioning process took place within the constraints of the release regime. Some critical tests and initial calibration issues resulted in slight variations around the daily and monthly target volumes. Where appropriate, local downstream stakeholders were notified in advance of any significant changes to the expected flow regime.

The establishment and rating of the new stream flow gauging station also required a range of flow levels to be manually measured in-stream and so were co-ordinated where possible with commissioning tests and changes in release targets. Further check measurements will be required as flow levels increase in addition to routine checks.

### **9.6 Measuring Snowy River Increased Flow Releases from Jindabyne Dam**

To accurately monitor the releases made from all of these structures, a new stream flow gauging station was constructed at the first suitable location downstream of Jindabyne Dam. This site was established on 1 September 2006.

Daily flow data from this location has been made available by Snowy Hydro on its Internet since January 2007.

## PART FOUR: SNOWY HYDRO'S PERFORMANCE IN MEETING THE PROVISIONS OF PARTS TWO, THREE AND FOUR OF SCHEDULE THREE TO THE SNOWY WATER LICENCE

### 10. SUMMARY OF SNOWY HYDRO'S PERFORMANCE

#### 10.1 Summary of Snowy Hydro's Performance

The table below summarises the obligations on Snowy Hydro arising from the Relevant Provisions and Snowy Hydro's performance in meeting those obligations.

For completeness, those clauses within Parts Two, Three and Four of Schedule Three to the *Snowy Water Licence* that do not impose requirements on Snowy Hydro are summarised in **paragraph 14** of this Submission.

| CLAUSE   | DESCRIPTION OF CLAUSE  | SNOWY HYDRO PERFORMANCE |
|--|--|-------------------------|
| <b>SCHEDULE THREE TO THE SNOWY WATER LICENCE</b>                               |  |                         |
| <b>PART 2: SNOWY RIVER INCREASED FLOWS GENERALLY</b>                           |  |                         |
| 6.1 and 6.3  | Require Snowy Hydro to construct a new outlet at Jindabyne Dam by the third anniversary of the Corporatisation Date or, if not, how releases are to be made if the new outlet works are not completed by the that date | Complied ✓              |
| 6.2  | Specifies that the new outlet must have the capacity to release at least 5 GL per day  | Complied ✓              |
| 7.2  | Sets out the requirements for the commencement of releases in respect of any notification  | Complied ✓              |
| <b>PART 3: SNOWY RIVER INCREASED FLOWS FROM MOWAMBA RIVER AND COBBON CREEK</b> |  |                         |
| 8.1  | Requires Snowy Hydro to make releases from Mowamba River and Cobbon Creek until the third anniversary of the Corporatisation Date  | Complied ✓              |
| 9.1  | Requires Snowy Hydro to make releases up to a maximum volume of 38GL until the third anniversary of the Corporatisation Date   | Complied ✓              |

| CLAUSE  | DESCRIPTION OF CLAUSE   | SNOWY HYDRO PERFORMANCE |
|---|---|-------------------------|
| 10.1  | Requires Snowy Hydro to debit the Mowamba Borrowings Account by the volume release under clause 9 above each Water Year   | Complied ✓              |
| 10.2  | Requires the Mowamba Borrowings Account to be allocated equally between the Snowy-Murray and Snowy-Tumut Developments   | Complied ✓              |
| 11.1  | Requires Snowy Hydro to make releases from Jindabyne Dam after the completion of the new outlet works   | Complied ✓              |
| <b>PART 4: SNOWY RIVER INCREASED FLOWS FROM JINDABYNE DAM</b> |   |                         |
| 12.1  | Specifies that Snowy Hydro must: <ol style="list-style-type: none"> <li>1. target releases to be within 10% of the annual volume of SRIF for that Water Year;</li> <li>2. use reasonable endeavours to target releases within 20% of the calculated monthly volume of SRIF for that Water Year; and</li> <li>3. use reasonable endeavours to target releases within 20% of the calculated daily volume of SRIF for that Water Year</li> </ol> | Complied ✓              |
| 13.4  | Requires Snowy Hydro to incorporate the monthly release volumes for SRIF under either clause 13.1 or 13.3 into the AWOP for that Water Year   | Complied ✓              |
| 14.4  | Requires Snowy Hydro to make releases in equal daily volumes unless notified under clause 14.1  | Complied ✓              |

**11. PART TWO OF SCHEDULE THREE TO THE SNOWY WATER LICENCE: SNOWY RIVER INCREASED FLOWS GENERALLY**

**11.1 Introduction**

Part Two of Schedule Three to the *Snowy Water Licence* sets out the objectives for Snowy River Increased Flows.

This Part of the *Snowy Water Licence* also places an obligation on Snowy Hydro to construct outlet works at Jindabyne Dam that are capable of making Snowy River Increased Flows and sets out when Snowy River Increased Flows are to commence.

**11.2 The New Outlet Works at Jindabyne Dam: Timing of Completion of Works**

Clause 6.1 of Part Two of Schedule Three to the *Snowy Water Licence* required Snowy Hydro to construct an outlet at Jindabyne Dam by no later than the third anniversary of

the Corporatisation Date (28 June 2005). Related to this is clause 6.3 of Part Two of Schedule Three which provided that if Snowy Hydro had not constructed an outlet at Jindabyne Dam by the third anniversary of the Corporatisation Date:

- (1) Snowy Hydro must target to release from the Mowamba River and Cobbon Creek aqueducts into the Snowy River the same volume of water (as far as possible) that would otherwise have been allocated from Jindabyne Dam to the Snowy River Increased Flows;
- (2) store within the Snowy Scheme Snowy River Increased Flows that would otherwise have been released from Jindabyne Dam which was not released by way of substitute releases from the Mowamba River and Cobbon Creek; and
- (3) at the date of commissioning the outlet at Jindabyne Dam, release any stored water in addition to the applicable Snowy River Increased Flows.

Construction of the new outlet works at Jindabyne Dam was in fact delayed beyond the third anniversary of the Corporatisation Date. This was due for the most part to doubts about whether the deemed planning approvals given under the NSW Corporatisation Act covered both the outlet works and the new auxiliary spillway. Those doubts caused Snowy Hydro to seek environmental and planning approvals for both developments under the usual *Environmental Planning & Assessment Act* processes for integrated development – an additional and lengthy process that was not contemplated under the *Snowy Water Licence* or the SWIOD.

Given this delay the provisions of clause 6.3 were then triggered and Snowy Hydro complied with those provisions.

While Snowy River Increased Flows were capable of being released from Jindabyne Dam on the third anniversary of the Corporatisation Date, it was not physically possible to recommence diversions from the Mowamba River to Jindabyne Dam at that time. Therefore, between June 2005 and 30 January 2006, Snowy River Increased Flows were made from Mowamba River and Cobbon Creek and the existing siphon outlet.

The Mowamba Aqueduct was returned to service on 30 January 2006 when the Aqueduct was reconnected at the new spillway works. From this date Snowy River Increased Flows were made only from Jindabyne Dam. Accordingly, from 30 January 2006 all Snowy River Increased Flows have been released from Jindabyne Dam in accordance with the *Snowy Water Licence*.

For the 2005-06 Water Year, a total of 41.5 GL of Snowy River Increased Flows was released from the Mowamba River and Cobbon Creek and from Jindabyne Dam of which 1.7 GL was allocated to the Mowamba Borrow. Therefore this volume was 1.8 GL in excess of the Snowy River Annual Allocation. A full breakdown of these amounts is described in **paragraph 8.3** above and in **Annexure Two**. There was therefore no water stored in the Snowy Scheme that would otherwise have been allocated from Jindabyne Dam to the Snowy River Increased Flows which was not released by way of substitute releases from the Mowamba River and Cobbon Creek over this time. Therefore at commissioning of the outlet at Jindabyne Dam, there was no stored water to be released in addition to applicable Snowy River Increased Flows.

### 11.3 Construction of the New Outlet Works at Jindabyne Dam: Outlet Specifications

Clause 6.2 of Part Two of Schedule Three to the *Snowy Water Licence* required that the new outlet works constructed by Snowy Hydro must be of sufficient size to enable a flow rate of at least 5 GL per day in addition to the capacity of the spillway gates.

Snowy Hydro has complied with clause 6.2.

The requirement that the outlet be of sufficient size to enable a flow rate of at least 5 GL per day was documented in the design report for the works and was confirmed by Work As Executed drawings. In addition, the requirement to release water from above the thermocline has been enabled through the use of a multi level off-take configuration at the new inlet works.

Commissioning tests conducted by Snowy Hydro confirm that the new assets are performing as designed.

### 11.4 Temporary Releases from Mowamba River and Cobbon Creek

Clause 7.2 of Part Two of Schedule Three to the *Snowy Water Licence* provided that having received notice from the Ministerial Corporation to commence Snowy River Increased Flows, Snowy Hydro must make Snowy River Increased Flows:

- (1) **until the third anniversary of the Corporatisation Date:** from the Mowamba River and Cobbon Creek; and
- (2) **after the later of the third anniversary of the Corporatisation Date and the date of commissioning of the outlet works at Jindabyne Dam:** from Jindabyne Dam.

Snowy Hydro has complied with clause 7.2.

Snowy River Increased Flow releases were made by Snowy Hydro:

- (1) from 28 August 2002 to 28 June 2005: from the Mowamba River and Cobbon Creek Weirs pursuant to Part Three of Schedule Three to the *Snowy Water Licence* from 28 August 2002, being the Mowamba Borrow;
- (2) from 1 May 2005 to 30 January 2006 (being the date that the Mowamba Aqueduct was returned to service): from the Mowamba River and Cobbon Creek Weirs and from Jindabyne Dam; and
- (3) from 1 February 2006: from Jindabyne Dam.

**Annexure Two** sets out the Snowy River Increased Flow releases made by Snowy Hydro since 28 August 2002.



## 12. PART THREE: SNOWY RIVER INCREASED FLOWS FROM MOWAMBA RIVER AND COBBON CREEK – THE MOWAMBA BORROW

### 12.1 Introduction

Part Three of Schedule Three to the *Snowy Water Licence* sets out Snowy Hydro's interim obligations in relation to Snowy River Increased Flows from the Corporatisation Date (28 June 2002) until its third anniversary (28 June 2005). Snowy River Increased Flow releases during this period were to be targeted from the Mowamba and Cobbon Creek Aqueducts.

### 12.2 Mowamba Borrow Releases from Mowamba River and Cobbon Creek Aqueducts

Clause 8.1 of Part Three of Schedule Three to the *Snowy Water Licence* provided that Snowy Hydro was to operate the Snowy Scheme so as to allow a volume of water to pass the Mowamba River and Cobbon Creek Aqueducts into the Snowy River in addition to the Base Passing Flow. This clause must be read in conjunction with the rest of the *Snowy Water Licence* and in particular:

- (1) clause 7.2 of Part Two of Schedule Three to the *Snowy Water Licence* which provided that these releases were to be made only until the third anniversary of the Corporatisation Date; and
- (2) clause 9.1 of Part Three of Schedule Three to the *Snowy Water Licence* which provided that each Water Year until the third anniversary of the Corporatisation Date Snowy Hydro was to make Snowy River Increased Flows up to a maximum volume of 38 GL.

Snowy Hydro has complied with clauses 8.1, 7.2 and 9.1.

Snowy River Increased Flows were made from the Mowamba River and the Cobbon Creek Aqueducts from 28 August 2002 until 28 June 2005 at which time the accumulation of the Mowamba Borrowings Account ceased. **Annexure Two** sets out the Snowy River Increased Flow volumes from 28 June 2002. These flows commenced on 28 August 2002.

### 12.3 Debit to Mowamba Borrowings Account

Clause 10.1 of Part Three of Schedule Three to the *Snowy Water Licence* provided that each Water Year prior to the third anniversary of the Corporatisation Date Snowy Hydro was to debit the Mowamba Borrowings Account by either the volume of the Snowy River Increased Flows derived under clause 9 or 38 GL, whichever was the lesser volume.

Snowy Hydro has complied with clause 10.1.

### 12.4 Allocation of the Mowamba Borrowings Account

Clause 10.2 of Part Three of Schedule Three to the *Snowy Water Licence* provided that the volumes of water to be debited and credited to the Mowamba Borrowings Account were to be apportioned 50:50 to the Snowy-Murray and the Snowy-Tumut Development.

Snowy Hydro has complied with clause 10.2.

The Mowamba Borrowings Account was allocated 50:50 to each Development in each Water Year's AWOP and approved by the Ministerial Corporation.

### **13. PART FOUR: SNOWY RIVER INCREASED FLOWS FROM JINDABYNE DAM**

#### **13.1 Introduction**

Part Four of Schedule Three to the *Snowy Water Licence* sets out Snowy Hydro's obligations in relation to Snowy River Increased Flows from Jindabyne Dam. It also sets out default monthly release volumes to be targeted from Jindabyne Dam and daily release volume obligations.

#### **13.2 Releases from Jindabyne Dam**

Clause 11.1 of Part Four of Schedule Three to the *Snowy Water Licence* provides that Snowy Hydro must operate the Snowy Scheme so as to target Snowy River Increased Flows releases from Jindabyne Dam. This clause must be read in conjunction with the rest of the *Snowy Water Licence* (and in particular clause 7.2 of Part Two of Schedule Three) and therefore this requirement commenced upon completion of the Jindabyne Dam outlet works.

Snowy Hydro has complied with clause 11.1.

Since 1 May 2005 Snowy Hydro has released Snowy River Increased Flows from Jindabyne Dam in compliance with the *Snowy Water Licence*.

#### **13.3 Tolerances for Targeting Releases**

Clause 12.1 of Part Four of Schedule Three to the *Snowy Water Licence* provides that each Water Year Snowy Hydro must:

- (1) target releases from Jindabyne Dam that in total are within 10% of the volume of the Snowy River Annual Allocation allocated to the Snowy River Increased Flows for that Water Year;
- (2) use reasonable endeavours to target releases from Jindabyne Dam in Monthly Volumes that are within 20% of the Monthly Volumes specified in the AWOP for that Water Year; and
- (3) use reasonable endeavours to target releases of water from Jindabyne Dam in daily volumes that are within 20% of the daily volumes notified by the Ministerial Corporation under clauses 14 and 15 of Schedule Three; or 50ML of the daily volumes notified by the Ministerial Corporation under clauses 14 and 15 of Schedule Three whichever is the greater volume.

For the review period Snowy Hydro has made best endeavours to make releases from Jindabyne Dam in accordance with clause 12.1.

#### **13.4 Snowy Hydro's Performance in Meeting the Annual Targets for Snowy River Increased Flows**

**Annexure Four** shows that Snowy Hydro has achieved all annual targets for Snowy River Increased Flows in accordance with the relevant tolerances.

### **13.5 Snowy Hydro's Performance in Meeting the Monthly Targets for Snowy River Increased Flows**

**Annexure Five** shows that Snowy Hydro has generally achieved all monthly targets for Snowy River Increased Flows in accordance with the relevant tolerances.

During the period from August 2005 to January 2006 the reason for releases made in excess of the monthly targets was the unregulated nature of flows from Mowamba River and Cobbon Creek being made before the commissioning of the new outlet works.

Releases from February 2006 to the end of that Water Year were adjusted down to better target the annual total.

The excess releases during November and December 2006 were due to the commissioning process of the new works. The commissioning process included the development of the rating table for the new gauging station on the Snowy River below Jindabyne Dam and the verification of the hydraulic rating tables supplied by the manufacturer for the new outlet works by testing gate and valve settings at various positions.

### **13.6 Monthly Volumes to be included in AWOP**

Clause 13.4 of Part Four of Schedule Three to the *Snowy Water Licence* provides that Snowy Hydro must incorporate into each AWOP volumes of water that Snowy Hydro must target for release from Jindabyne Dam for each month of the relevant Water Year being either the monthly volumes notified by the Ministerial Corporation under clause 13.1 of Schedule Three or the default monthly volumes calculated in accordance with clause 13.3 of Schedule Three.

Snowy Hydro has complied with clause 13.4.

The monthly volumes for release from Jindabyne Dam were set out in the draft AWOPs for the 2005-6, 2006-07 and 2007-08 Water Years in accordance with the volumes agreed at the corresponding WCLC meetings. These AWOPs were approved by the Ministerial Corporation.

### **13.7 Equal Daily Release Volumes**

Clause 14.4 provides that if with respect to any month the Ministerial Corporation does not give Snowy Hydro a notice as specified in clause 14.1, Snowy Hydro must in the relevant month target for release from Jindabyne Dam the applicable monthly release volume in equal daily volumes.

On 20 September 2006 Snowy Hydro received notification from the Ministerial Corporation with regard to daily release volumes from Jindabyne Dam for the remainder of September and the month of October. It was requested that the six day notice period be waived. The notice included all of the relevant information under clauses 14.1 to 14.3. Snowy Hydro agreed to waive the notice period and amended the release volumes accordingly.

Apart from that period, Snowy Hydro has targeted the monthly Snowy River Increased Flow volumes from Jindabyne Dam as agreed with the WCLC at its meeting on 6 April 2006 in equal daily release volumes in compliance with clause 14.4 of Part Four of Schedule Three to the *Snowy Water Licence*.

### 13.8 Snowy Hydro's Performance in Meeting the Daily Targets for Snowy River Increased Flows

**Annexure Six** shows that Snowy Hydro has generally achieved all daily targets for Snowy River Increased Flows in accordance with the relevant tolerances.

There were a few short periods where daily targets were not achieved during late 2006. This was for the same reasons as those described above during the commissioning process of the new outlet works. This also covers the period for those releases under clause 14.1 described below.

Note that Daily releases prior to the commissioning of the new gauging station on the Snowy River below Jindabyne Dam on 1 September 2006 are derived from pro rata monthly figures based on regular stream-flow gaugings.

## 14. PROVISIONS WITHIN PARTS TWO, THREE AND FOUR OF SCHEDULE THREE THAT DO NOT IMPOSE OBLIGATIONS ON SNOWY HYDRO OR WERE NEVER TRIGGERED

### 14.1 Summary of Provisions

For completeness, set out below is a summary of those provisions in Parts Two, Three and Four of Schedule Three to the *Snowy Water Licence* which either do not impose obligations on Snowy Hydro or whose operation was never triggered.

Those provisions are as follows:

- (1) **Clause 5 of Part Two of Schedule Three:** this clause describes the objectives of the Snowy River Increased Flows as being to improve the habitat for a diverse range of plant and animal species. These objectives are copied from the SWIOD. Snowy Hydro has no role or obligation in either determining or ensuring that these objectives are actually achieved;
- (2) **Clause 6.4 of Part Two of Schedule 3:** this clause provided that if the construction of the new outlet works at Jindabyne Dam triggered a requirement for the construction of fish ladders on Jindabyne Dam, the Ministerial Corporation must deduct from the volume of Snowy Montane Rivers Increased Flows to be made in that subsequent period a volume that in terms of its GWh equivalent was the same as the cost to Snowy Hydro of constructing, operating and maintaining the fish ladders. NSW Fisheries were involved in the assessment and approval of the new outlet works but did not, through the integrated development process, impose on Snowy Hydro the requirement to install fish ladders at Jindabyne Dam. Accordingly this clause was never triggered;
- (3) **Clause 7.1:** this clause imposes an obligation on the Ministerial Corporation to notify Snowy Hydro in writing to commence Snowy River Increased Flows;
- (4) **Clause 7.3 of Part Two of Schedule 3:** this clause provided for additional

releases to be made if in any Water Year prior to the third anniversary of the Corporatisation Date, the volume of the Snowy River Annual Allocation exceeded the debit balance in the Mowamba Borrowings Account. The Snowy River Annual Allocation never exceeded the debit balance in the Mowamba Borrowings Account during this period and therefore this clause was never triggered;

- (5) **Clause 12.2:** this clause sets out how compliance by Snowy Hydro of its obligations in clause 12.1 is determined and clause 12.3 provides that clauses 12.1 and 12.2 must be read together so that if Snowy Hydro fails to comply with its obligations in Part Four of Schedule Three it would do so only once per Water Year. As demonstrated in this Part Three of this Submission and reflected in each AWOP to date, Snowy Hydro has complied with all of its obligations under subclause 12.1 of Schedule Three and therefore subclauses 12.2 and 12.3 have never been triggered;
- (6) **Clause 12.4:** this clause provides that despite any other provision in Schedule Three to the *Snowy Water Licence*, the Ministerial Corporation and Snowy Hydro may agree to vary the volume of water targeted for release from Jindabyne Dam. To date no such agreement has been made;
- (7) **Clause 13.1:** this clause imposes an obligation on the Ministerial Corporation to notify Snowy Hydro by 13 February each year of the monthly volumes of Snowy River Increased Flows to target for release from Jindabyne Dam for the following Water Year;
- (8) **Clause 13.2 of Part Four of Schedule Three:** this clause effectively imposes an obligation on the Ministerial Corporation to ensure that the total of the monthly volumes specified in any notice from the Ministerial Corporation must not exceed the Snowy River Annual Allocation allocated to the Snowy River Increased Flows for that Water Year;
- (9) **Clause 13.3:** this clause provides for the calculation of default monthly volumes of Snowy River Increased Flows if no notice of monthly flow volumes is given by the Ministerial Corporation to Snowy Hydro with respect to the relevant Water Year. The default monthly volumes are calculated using a specified percentage of the Snowy River Increased Flows for that Water Year. Experience to date in this regard is as follows:
  - (a) In the 2005-06 Water Year, due to the continuation of Snowy River Increased Flows being made from the Mowamba River the monthly release pattern for Snowy River Increased Flows was varied by the Ministerial Corporation through that year's AWOP based on the average distribution of flows in the Mowamba River for the previous three years;
  - (b) In the 2006-07 Water Year no notice was received from the Ministerial Corporation, therefore Snowy Hydro was required to target the default monthly volumes. However, given the low annual volume of the Snowy River Increased Flows, the default percentages prescribed in clause 13.3 of Part Four to Schedule 3 would have resulted in some months in daily flow volumes that would have been less than the volume necessary to achieve the passing flow required at Dalgety for the town water supply system to access water in the Snowy River. Accordingly, at its meeting on 6 April 2006 the WCLC agreed that the monthly

distribution of Snowy River Increased Flows over the Water Year should be as per the default percentages prescribed in clause 13.3 of Part Four of Schedule Three to the *Snowy Water Licence*, modified to ensure a floor of 95 ML/d release from Jindabyne Dam across the entire year;

- (c) In the 2007-08 Water Year no notice was received from the Ministerial Corporation but the arrangement applied in the 2006-07 Water Year for Dalgety town water supply was applied in this Water Year as well;
- (10) **Clause 15:** this clause applies only with respect to Water Years where the volume of the Snowy River Annual Allocation allocated to the Snowy River Increased Flows exceeds 100 GL. Since the Corporatisation Date, the volume of the Snowy River Annual Allocation allocated to the Snowy River Increased Flows has never exceeded 100 GL, therefore to date this clause has never been triggered; and
- (11) **Clause 16:** this clause relates to spills from Jindabyne Dam. There have been no spills from Jindabyne Dam during the period from the Corporatisation Date and therefore this clause has never been triggered.

## 15. PUBLIC STATEMENTS MADE BY THIRD PARTIES AS TO SNOWY HYDRO'S PERFORMANCE IN MEETING THE RELEVANT PROVISIONS OF THE SNOWY WATER LICENCE

### 15.1 Introduction

A number of third parties have publicly asserted that Snowy Hydro has failed to meet the requirements of the Relevant Provisions in one or more other respects.

As demonstrated above in **Part Four** of this Submission, Snowy Hydro has met all of the requirements imposed on it under the Relevant Provisions. Snowy Hydro therefore strongly refutes any assertions to the contrary.

In addition to the material above in which Snowy Hydro has demonstrated that it has met all of the requirements imposed on it under the Relevant Provisions, Snowy Hydro makes the following observations with regard to the public statements made by third parties.

### 15.2 Snowy Hydro Recommended Diversions From the Mowamba River In Contravention of the *Snowy Water Licence*

As noted above, the Snowy Water Licence prescribes that Snowy Hydro must make Snowy River Increased Flows:

- (1) **until the third anniversary of the Corporatisation Date:** from the Mowamba River and Cobbon Creek; and
- (2) **after the later of the third anniversary of the Corporatisation Date and the date of commissioning of the outlet works at Jindabyne Dam:** from Jindabyne Dam.

Accordingly, on the third anniversary of the Corporatisation Date, diversions were to recommence from Mowamba River to Lake Jindabyne (if diversions were not

recommended, Snowy Hydro would then be releasing Snowy River Increased Flows from both the Mowamba River and Jindabyne Dam – in contravention of the *Snowy Water Licence*).

In fact, diversions were recommenced after that date in January 2006 being the date that the Mowamba Aqueduct was reconnected at the new spillway works (prior to this time it was physically impossible to recommence diversions).

**15.3 Snowy Hydro Is in Breach of the Snowy Water Licence By Failing to Achieve Target Volumes of Increased Flows in the SWIOD**

Responsibility for the implementation of each part of the environmental flows framework is set out above in **paragraph 6** of this Submission.

Snowy Hydro's only obligations under the *Snowy Water Licence* in relation to environmental flows generally and the Snowy River Increased Flows in particular relate to the targeting of releases notified by the Ministerial Corporation to Snowy Hydro.

Snowy Hydro has no role:

- (1) in securing water savings either from water efficiency projects or from the purchase of water entitlements. That is the responsibility of the Governments through Water for Rivers; or
- (2) in allocating the annual allocations derived from the accumulated environmental entitlements. That, too, is the responsibility of the Governments through the DWE and the Department of Sustainability and Environment.

**15.4 There is a Lack of Transparency and Accountability Regarding Environmental Flows**

Snowy Hydro asserts strongly that there is no lack of transparency or accountability regarding environmental flows:

- (1) Annual and potentially monthly and daily Snowy River Increased Flow targets are set by the Ministerial Corporation (if it elects to do so);
- (2) Those targets are specifically detailed in each AWOP which is reviewed by the WCLC;
- (3) In each AWOP Snowy Hydro also reports to the Ministerial Corporation and by extension the WCLC, on its performance in achieving Snowy River Increased Flow targets in the previous Water Year; and
- (4) in addition to those formal requirements, since January 2007 Snowy Hydro has published on its Internet site daily Snowy River Increased Flow figures relative to the applicable target flow.

**15.5 Snowy Hydro Is in Breach of the Snowy Water Licence By Flat Lining Daily Flows Which Is Contrary to the Monthly Default Release Volumes as Designated in the Snowy Water Licence**

Contrary to this assertion, the *Snowy Water Licence* actually prescribes that Snowy

Hydro must target equal daily releases during each month unless the Ministerial Corporation notifies Snowy Hydro of a different daily release profile in advance of the relevant month.

Such a notification has only be given once by the Ministerial Corporation - for the months of September and October 2006.

**15.6 Snowy Hydro Polluted the River Then Used Environmental Flows to Clean Up The Mess**

An environmental incident occurred in late July through to early August 2006 when, during construction of the new Jindabyne Dam plunge pool, turbid water flowed into the Snowy River immediately downstream of the Jindabyne Dam construction site.

Shortly after that incident, several agencies of the NSW Government including the Department of Environment and Conservation, the Environment Protection Authority and the Department of Natural Resources, together with the Southern Rivers' Catchment Management Authority, collectively determined to direct Snowy Hydro to release a remedial flow from Jindabyne Dam. Following this determination, the Ministerial Corporation gave a notice to Snowy Hydro nominating daily flow volumes for the months of September and October 2006. Snowy Hydro waived the timing requirement specified in the *Snowy Water Licence* for the giving of that notice and targeted the nominated daily volumes.

Snowy Hydro could not and did not act unilaterally to release a remedial flow from Jindabyne Dam.



## PART FOUR: VARIATIONS TO THE SNOWY WATER LICENCE

### 16. VARIATIONS TO PARTS TWO, THREE AND FOUR OF SCHEDULE THREE TO THE SNOWY WATER LICENCE

#### 16.1 Introduction

The purpose of making Snowy River Increased Flows is to achieve the objectives set out in the SWIOID as mirrored in clause 5 of Part Two of Schedule Three to the *Snowy Water Licence*.

In Snowy Hydro's view, any proposed variations to the provisions of Parts Two, Three and Four of Schedule Three to the Snowy Water Licence must therefore be assessed on the basis of whether the proposed variation will make achievement of those objectives more likely. This assessment can only be made on the basis of fact, not assertion.

#### 16.2 Proposals for Variations Are Premature

Snowy Hydro notes the conclusions of DWE in its report "*Snowy River Flow Response Monitoring: Assessment of the First Stage environmental releases to the Snowy River 2000-2005*" that against six attributes of river health, it is too early to detect any significant river health benefits from the Snowy River Increased Flows to date. That report found, in part, that:

- (1) Increased environmental releases have increased the wetted habitat area at some sites below Jindabyne Dam but flows greater than the initial releases are required to significantly change the channel shape and sediment size;
- (2) There is no sign of a change in the mean, minimum, or maximum water temperature at Dalgety associated with increased environmental flows but there was the suggestion that larger environmental flows may reduce water temperature;
- (3) Preliminary results indicate that there are no significant changes in vegetation;
- (4) There has been no change in the number of macro invertebrates (water bugs) and that there would need to be larger flows to see such a change; and
- (5) Environmental flow releases have had little influence on fish assemblages although it is demonstrated that fish passage does occur.

On the basis of DWE's own conclusions, Snowy Hydro believes that it is far too early for any proposal to vary the provisions of Parts Two, Three and Four of Schedule Three to the *Snowy Water Licence*.

Snowy Hydro itself does not propose any variations to those provisions.

### 16.3 Variations Require Amendments to the SWIOID

As stated in **paragraph 5.1** of this Submission, the NSW Corporatisation Act, the Water Management Act and the *Snowy Water Licence* all prescribe that it is the duty of DWE to ensure that the provisions of the *Snowy Water Licence* are consistent with the terms of the SWIOID.

This is of critical importance to the current review. The table set out in **Annexure Seven**, a “ready reckoner” of Snowy Water Licence and corresponding SWIOID provisions, shows that all of the provisions of the *Snowy Water Licence* that are the subject of the current review mirror corresponding provisions in the SWIOID.

Accordingly, given the high degree of inter-relatedness of the *Snowy Water Licence* and the SWIOID (and, potentially, Schedule G to the MDB Agreement) and the legislative provisions governing that inter-relatedness, any variation to Parts Two, Three and Four of Schedule Three to the *Snowy Water Licence* will also necessitate amendments to the corresponding provisions of the SWIOID. Any such amendments require the agreement of all of the parties to the agreement, being the three Governments.

## 17. SUGGESTED VARIATIONS TO REMOVE ANOMALIES IN THE SNOWY WATER LICENCE AND IMPROVE CLARITY OF SNOWY WATER LICENCE PROVISIONS

### 17.1 Introduction

This section of Snowy Hydro’s Submission sets out suggested variations to the *Snowy Water Licence* to address anomalies in the Licence and to improve the clarity of *Snowy Water Licence* provisions. Those variations relate to:

- (1) The Dry Inflow Sequence volume;
- (2) Release arrangements for Tantangara Dam;
- (3) Decommissioning of assets; and
- (4) The operation of the new environmental flows outlet works at both Jindabyne Dam and Tantangara Dam.

### 17.2 Variations with Respect to the Dry Inflow Sequence Volume

The *Snowy Water Licence* requires Snowy Hydro each year to target for release from each of the Snowy- Murray Development and the Snowy- Tumut Development the nominal volumes of 1,062 GL and 1,026 GL respectively.

These volumes are nominal. They are to be adjusted under formulae contained in Schedule Four to the *Snowy Water Licence*. The variables referred to in those formulae include environmental flow volumes and “overs and unders” carried forward from previous Water Years. The variables also include a volume referred to in the *Snowy Water Licence* as the “Dry Inflow Sequence Volume” (“DISV”). The DISV itself is calculated according to separate formulae contained in Schedule Four to the *Snowy Water Licence*.

A short explanation of the DISV and its purpose is as follows.

The nominal Required Annual Release volumes of 1,062 GL and 1,026 GL are volumes calculated by reference both to the physical design of the Snowy Scheme and the period of hydrological record for the Snowy Scheme being the period from 1905. In short, given those two references, if the Snowy Scheme commenced a Water Year with its storages “on target” and it then experienced an inflow sequence as bad as but not worse than the worst inflow sequence on record, the Snowy Scheme is capable of releasing (nominally) 2,088 GL through each year of that inflow sequence. (The worst dry inflow sequence on record occurred in the years from 1936 to 1946 and is often referred to as the “design dry sequence”).

It follows, however, that if the Snowy Scheme commenced a Water Year with its storages “on target” and it then experienced an inflow sequence worse than the worst inflow sequence on record, the Snowy Scheme would not be capable of releasing (nominally) 2,088 GL through each year of that inflow sequence without failing.

The DISV is the measure of relief given to Snowy Hydro from having to release the nominal Required Annual Releases on account of the Snowy Scheme “incapability” to make those releases. The DISV is a predictive tool that is designed to calculate the Snowy Scheme’s future ability to meet the Required Annual Releases.

The formulae under which the DISV is calculated predicts, on the basis of annual lowest on record inflow conditions, whether the current inflow sequence is worse (drier) than the design dry sequence. If it is, the measure of the difference - the DISV - is then deducted from the volume of the nominal Required Annual Release. This effectively delays the Snowy Scheme running out of water.

During 2004 the MDBC first expressed to Snowy Hydro its view that there were some technical difficulties with the DISV formula as set out in the *Snowy Water Licence*. During 2005 and 2006 the WCLC worked through the issues raised by the MDBC together with other issues raised within the WCLC as to the operation of the DISV. As a result, in January 2006 the WCLC unanimously agreed to recommend a set of variations to the DISV provisions contained in the *Snowy Water Licence*. The variations recommended by the WCLC were as follows:

- (1) Allow the Required Annual Releases (“RAR” ) for the current Water Year to be reduced by the DISV as calculated at 1 March of that Water Year;
- (2) An additional term be included in the calculation of the RAR which subtracts releases made in the previous Water Year in excess of the RAR up to the DISV;
- (3) Use the minimum recorded (99% Probability of Exceedance (“POE”)) Snowy-Murray Development and Snowy-Tumut Development inflows for a Water Year based on analysis for the period 1 May 1905 to the end of the previous Water Year;
- (4) Estimated net evaporation to equal 1% POE historical net evaporation rates;
- (5) The Jindabyne and Tantangara Base Passing Flows (“BPF”) to be included in calculating DISV. The Jindabyne BPF is to be shared 50/50 between the

Snowy-Murray Development and the Snowy-Tumut Development;

- (6) Net evaporation is to be deducted from Above Target Water (“ATW”) in the ratio of ATW in storage to total gross storage. For clarity the remaining net evaporation is to be deducted from Below Target Water (“BTW”);
- (7) Adjust sign in DISV formula to use BTW in Mowamba borrowings/paybacks i.e. –IB -> +IB;
- (8) Snowy Hydro is to provide notification of the DISV on a monthly basis in line with water authority monthly planning schedules; and
- (9) Implementation:
  - (a) BTW calculated as at 1 May 2006 is deemed to be correct and no retrospective variations to be made to it (on account of the above changes); and
  - (b) The DISV amendments are to be implemented to take effect on 1 May 2007. For the 2007-08 Water Year and subsequently, calculations on the revised arrangements will go back to 1 May 2006 to allow for appropriate carry-over adjustments to be made.

In accordance with those recommended variations, Snowy Hydro proposes the variations to Schedule 4 to the *Snowy Water Licence* set out in **Annexure Eight** be made by the Ministerial Corporation.

### 17.3 Variations with Respect to Release Arrangements at Tantangara Dam

Shortly after corporatisation Snowy Hydro negotiated with the DWE the inclusion of provisions in the *Snowy Water Licence* with respect to Tantangara Dam that:

- (1) enable the Ministerial Corporation to direct monthly and daily environmental flow release volumes from Tantangara Dam in the same way as is provided for with respect to environmental releases from Jindabyne Dam; and
- (2) specify the correct release capability of the outlet at Tantangara Dam.

In accordance with the outcome of those negotiations, Snowy Hydro proposes the variations to Schedule 4 to the *Snowy Water Licence* set out in **Annexure Nine** be made by the Ministerial Corporation.

### 17.4 Variations with respect to Decommissioning of Assets

In 2006 the State of Victoria expressed some concerns that through the decommissioning of assets that form part of the Snowy Scheme, Snowy Hydro could effectively disable itself from complying with certain provisions of the *Snowy Water Licence* (principally those relating to the targeting of Snowy River Increased Flows from Jindabyne Dam), thereby avoiding those obligations and frustrating the intention of the States that those Increased Flows be made.

At that time Snowy Hydro and the Governments developed a variation to the *Snowy Water Licence* which would see the inclusion in the *Snowy Water Licence* of a condition

precedent to the decommissioning of any Snowy Scheme water assets by Snowy Hydro.

This variation would see inclusion of a condition precedent to the decommissioning of any Snowy Scheme water assets by Snowy Hydro.

In accordance with those recommended variations, Snowy Hydro proposes the variations to Schedule 4 to the *Snowy Water Licence* set out in **Annexure Ten** be made by the Ministerial Corporation.

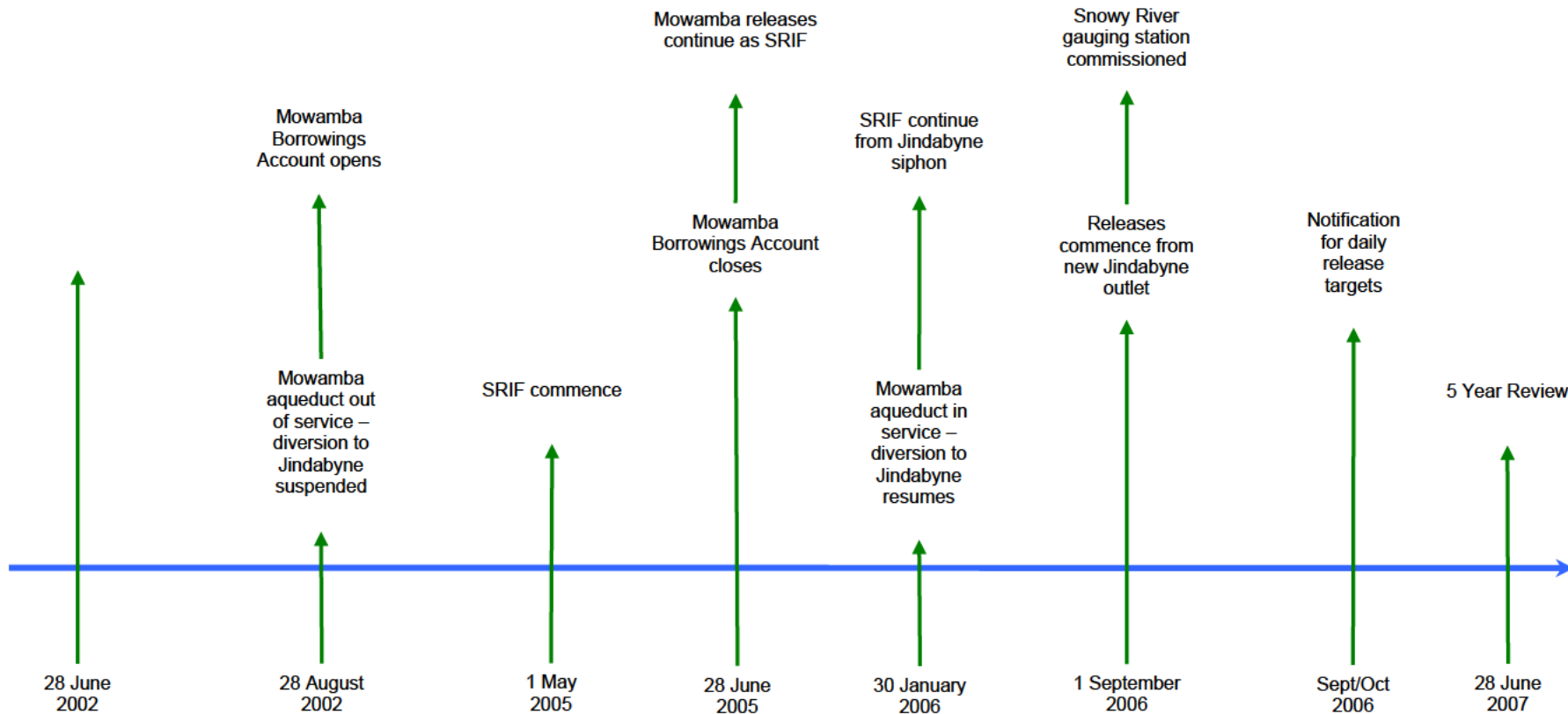
#### **17.5 Variations With Respect To Operation Of The New Environmental Flows Outlet Works At Both Jindabyne Dam And Tantangara Dam**

During 2006 Snowy Hydro negotiated with the Department of Conservation (“DEC”) provisions with respect to the operation of the new outlet works at both Jindabyne Dam and Tantangara Dam to address potential issues of cold water pollution.

The provisions ensure that the outlet works constructed by Snowy Hydro at Jindabyne Dam and Tantangara Dam are to be operated by Snowy Hydro to draw water from the near surface horizon of the reservoir for water being released for riparian flows and Snowy River Increased Flows.

In accordance with those recommended variations, Snowy Hydro proposes the variations to Schedule 4 to the *Snowy Water Licence* set out in **Annexure Ten** be made by the Ministerial Corporation.

# ANNEXURE ONE: TIMELINE OF THE KEY ELEMENTS DURING THE REVIEW PERIOD



## ANNEXURE TWO: SUMMARY OF ENVIRONMENTAL ENTITLEMENTS (NOMINAL VOLUMES), ANNUAL ALLOCATIONS (ACTUAL VOLUMES), JINDABYNE DAM RELEASES AND MOWAMBA BORROW RELEASES

| Water Year | Environmental entitlements |                                 |                                  | Annual allocations              |                                  | Snowy River Increased Flows account |             |                 | Mowamba Borrow account |              |              |
|------------|----------------------------|---------------------------------|----------------------------------|---------------------------------|----------------------------------|-------------------------------------|-------------|-----------------|------------------------|--------------|--------------|
|            | Total (GL)                 | Apportioned to Snowy River (GL) | Apportioned to Murray River (GL) | Apportioned to Snowy River (GL) | Apportioned to Murray River (GL) | SRIF Target Release (GL)            | Actual (GL) | over/under (GL) | Release (GL)           | Payback (GL) | Balance (GL) |
| 2002-2003  | 0.0                        | 0.0                             | 0.0                              | 0.0                             | 0.0                              | 0.0                                 | 0.0         | 0.0             | 10.5                   | 0.0          | 10.5         |
| 2003-2004  | 0.0                        | 0.0                             | 0.0                              | 0.0                             | 0.0                              | 0.0                                 | 0.0         | 0.0             | 29.6                   | 0.0          | 40.0         |
| 2004-2005  | 0.0                        | 0.0                             | 0.0                              | 0.0                             | 0.0                              | 0.0                                 | 0.0         | 0.0             | 23.1                   | 0.0          | 63.2         |
| 2005-2006  | 57.0                       | 38.0                            | 19.0                             | 38.0                            | 19.0                             | 38.0                                | 39.8        | 1.8             | 1.7                    | 0.0          | 64.9         |
| 2006-2007  | 63.0                       | 42.0                            | 21.0                             | 42.0                            | 21.0                             | 36.2                                | 36.7        | 0.5             | 0.0                    | 4.0          | 60.9         |
| 2007-2008  | 67.0                       | 44.7                            | 22.3                             | 33.0                            | 16.5                             | 32.5                                |             |                 |                        | 0.0          |              |

Note: The Ministerial Corporation has responsibility for the notification to Snowy Hydro of those figures within the shaded regions.

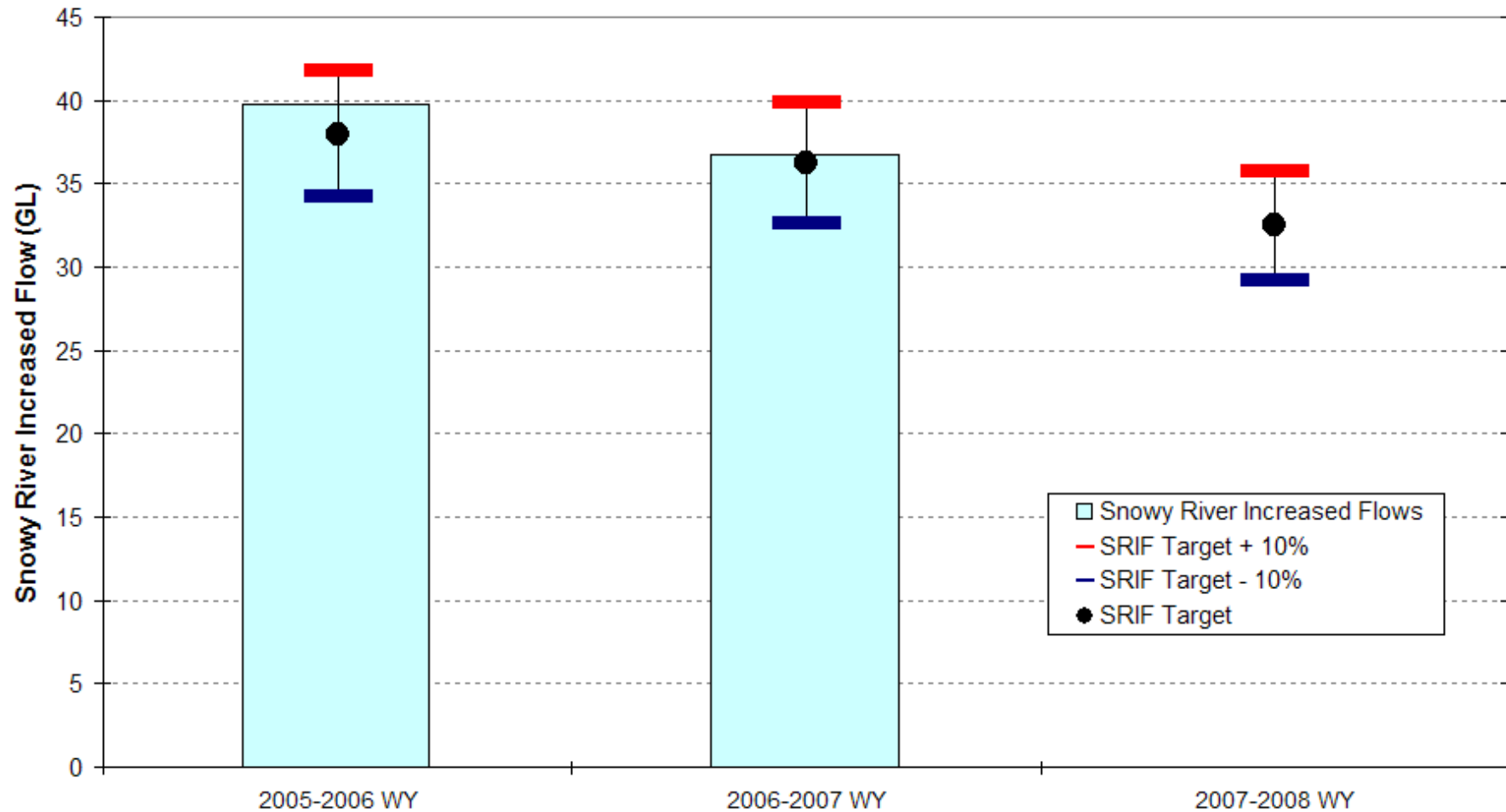
## ANNEXURE THREE: MOWAMBA BORROW FROM 2002 TO 2005

Note: Mowamba Borrow commenced on 28 August 2002 and finished on the 3rd Anniversary of Corporatisation on 28 Jun 2005.

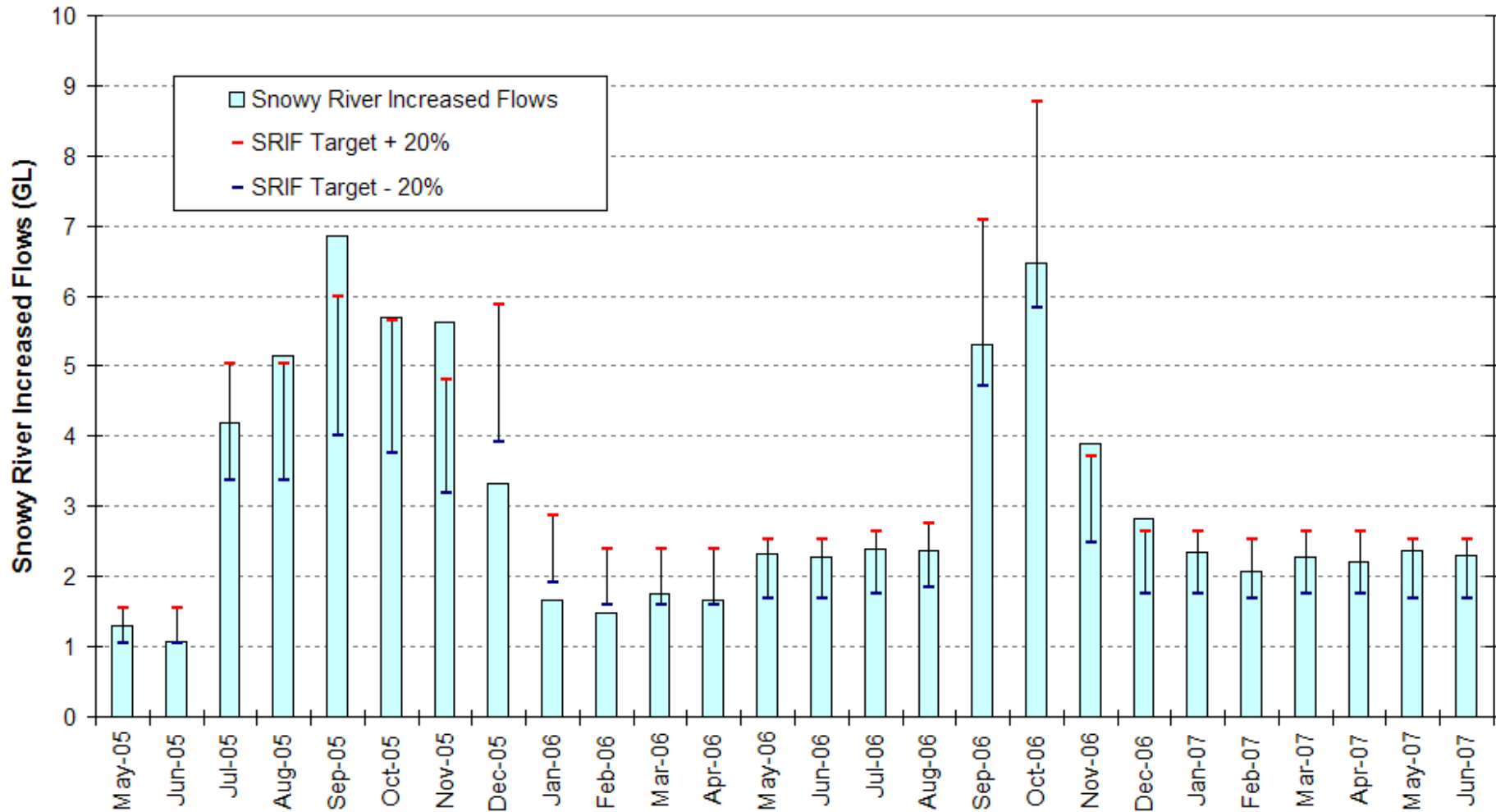




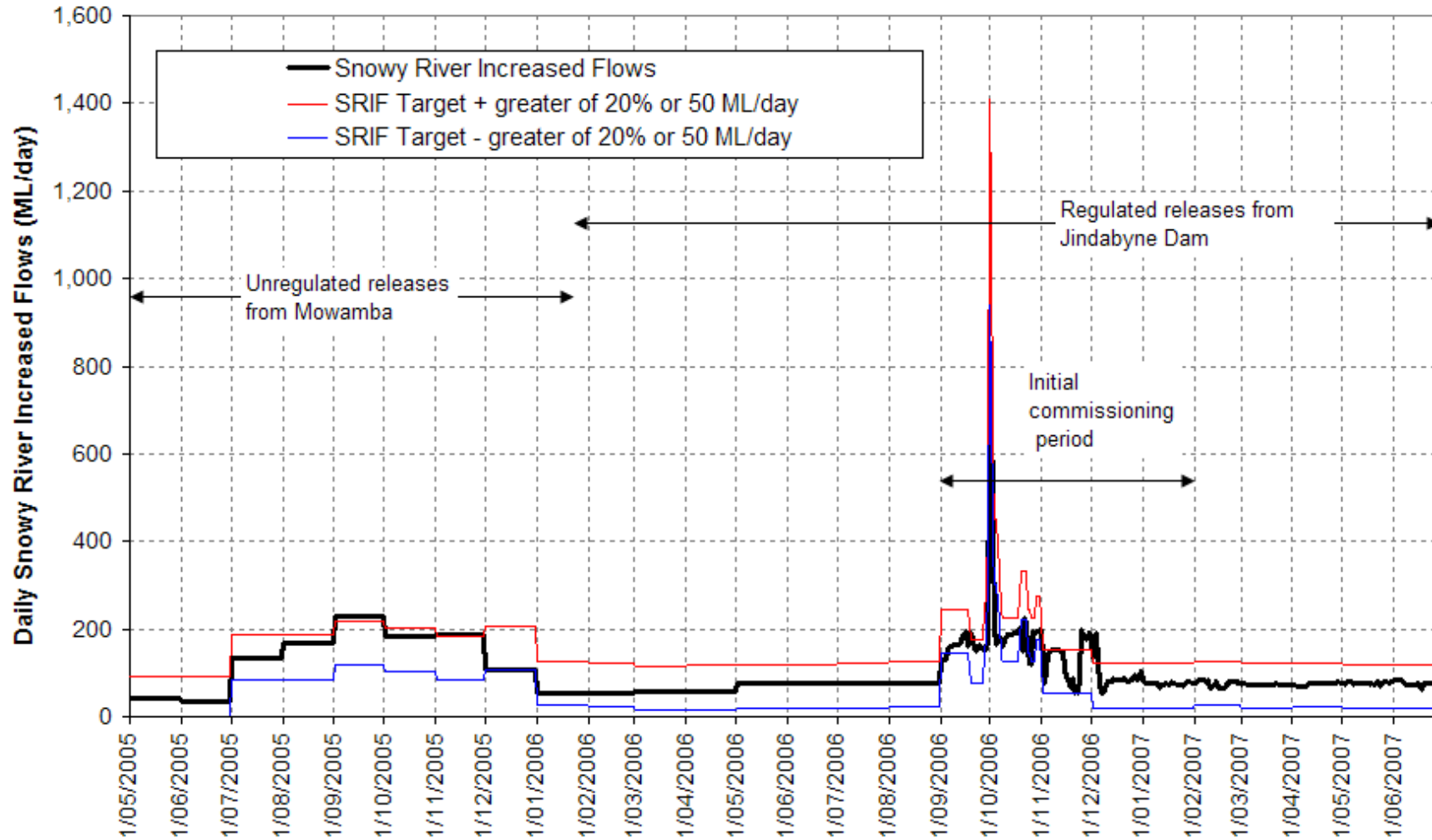
## ANNEXURE FOUR: SNOWY RIVER INCREASED FLOW ANNUAL TARGETS AND ANNUAL RELEASE VOLUMES FROM 2005-06 WATER YEAR



## ANNEXURE FIVE: SNOWY RIVER INCREASED FLOW MONTHLY TARGETS AND MONTHLY RELEASE VOLUMES FROM 2005-06 WATER YEAR



## ANNEXURE SIX: SNOWY RIVER INCREASED FLOW DAILY TARGETS AND DAILY RELEASE VOLUMES FROM 2005-06 WATER YEAR



## ANNEXURE SEVEN: CORRESPONDING PROVISIONS IN THE SWIOID AND THE SNOWY WATER LICENCE

| CLAUSE<br>IN<br>SNOWY<br>WATER<br>LICENCE            | DESCRIPTION OF CLAUSE  | CORRESPONDING<br>CLAUSE IN<br>ANNEXURE ONE<br>OF THE SWIOID |
|--|--|---|
| <b>PART 2: SNOWY RIVER INCREASED FLOWS GENERALLY</b> |  |   |
| 5.1  | Sets out the objectives for increased flows  | 1.1   |
| 6.1  | Requires Snowy Hydro to construct a new outlet at Jindabyne Dam by the 3 <sup>rd</sup> anniversary of the Corporatisation Date   | 2.1   |
| 6.2  | Specifies that the new outlet must have the capacity to release at least 5 GL per day  | 2.2   |
| 6.3  | Sets out how releases are to be made if the new outlet works are not completed by the 3 <sup>rd</sup> anniversary of the Corporatisation Date  | 2.3   |
| 6.4  | Describes arrangements for cost recovery for the construction of fish ladders if they are required   | 2.4   |
| 7.1  | Requires the Ministerial Corporation to notify Snowy Hydro of the commencement of releases   | 3.2   |
| 7.2  | Sets out the requirements for the commencement of releases in respect of any notification  | 3.3   |
| 7.3  | Provides for additional releases to be made if in any Water Year prior to the 3 <sup>rd</sup> anniversary of the Corporatisation Date, the volume of the Snowy River Annual Allocation exceeded the debit balance in the Mowamba Borrowings Account. | 3.4   |

| CLAUSE IN SNOWY WATER LICENCE  | DESCRIPTION OF CLAUSE  | CORRESPONDING CLAUSE IN ANNEXURE ONE OF THE SWIOD |
|--|--|---|
| <b>PART 3: SNOWY RIVER INCREASED FLOWS FROM MOWAMBA RIVER AND COBBON CREEK</b> |  |   |
| 8.1  | Requires Snowy Hydro to make releases from Mowamba River and Cobbon Creek until the 3 <sup>rd</sup> anniversary of the Corporatisation Date  | 6.1   |
| 9.1  | Requires Snowy Hydro to make releases up to a maximum volume of 38GL until the third anniversary of the Corporatisation Date.  | 7.1   |
| 10.1   | Requires Snowy Hydro to debit the Mowamba Borrowings Account by the volume release under clause 9 above each water year  | 8.1   |
| 10.2   | Requires the Mowamba Borrowings Account to be allocated equally between the Snowy-Murray and Snowy-Tumut Developments  | 8.2   |
| <b>PART 4: SNOWY RIVER INCREASED FLOWS FROM JINDABYNE DAM</b>                  |  |   |
| 11.1   | Requires Snowy Hydro to make releases from Jindabyne Dam after the completion of the new outlet works  | 9.1   |
| 12.1   | Specifies that Snowy Hydro must: <ul style="list-style-type: none"> <li>• target releases to be within 10% of the annual volume of SRIF for that Water Year</li> <li>• use reasonable endeavours to target releases within 20% of the calculated monthly volume of SRIF for that Water Year</li> <li>• use reasonable endeavours to target releases within 20% of the calculated daily volume of SRIF for that Water Year</li> </ul> | 10.1  |
| 12.2   | Sets out how compliance with clause 12.1 will be assessed  | 10.2  |

| CLAUSE<br>IN<br>SNOWY<br>WATER<br>LICENCE | DESCRIPTION OF CLAUSE  | CORRESPONDING<br>CLAUSE IN<br>ANNEXURE ONE<br>OF THE SWIOD |
|---|--|--|
| 12.3                                      | States that breaches under part 4 will constitute a maximum of one breach per year   | 10.3   |
| 12.4                                      | Enables the Ministerial Corporation and Snowy Hydro to agree to vary the volume of water targeted for release by agreement   | 10.4   |
| 13.1                                      | Enables the Ministerial Corporation to notify Snowy Hydro of monthly release volumes for the following Water Year  | 11.1   |
| 13.2                                      | States that the total of the monthly release volumes must not exceed the annual allocation for the SRIF for that Water Year  | 11.2   |
| 13.3                                      | Sets out default monthly release volumes to be used if no notification under clause 13.1 is received   | 11.4   |
| 13.4                                      | Requires Snowy Hydro to incorporate the monthly release volumes for SRIF under either clause 13.1 or 13.3 into the AWOP for that Water Year                        | 11.5   |
| 14.1                                      | Enables the Ministerial Corporation to notify Snowy Hydro of daily release volumes for the following month   | 12.1   |
| 14.2                                      | States that the total of the daily release volumes must not exceed the monthly volume and that each daily volume must not exceed 5 GL per day subject to clause 15 | 12.2(1)  |
| 14.3                                      | States that the notification must also include the rates of increase, the maximum flow and the rate of decrease for each daily volume                              | 12.2(2)  |
| 14.4                                      | Requires Snowy Hydro to make releases in equal daily volumes unless notified under clause 14.1   | 12.4   |

| CLAUSE<br>IN<br>SNOWY<br>WATER<br>LICENCE | DESCRIPTION OF CLAUSE  | CORRESPONDING<br>CLAUSE IN<br>ANNEXURE ONE<br>OF THE SWIOD |
|---|--|--|
| 15 (all<br>sub-<br>clauses)               | Sets out the arrangements for achieving flushing<br>Flows                                    | 13   |
| 16 (all<br>sub-<br>clauses)               | Sets out the arrangements for managing Jindabyne<br>Dam spills relative to SRIF requirements | 15   |

## ANNEXURE EIGHT: DRY INFLOW SEQUENCE VOLUME VARIATIONS

### 1. DRY INFLOW SEQUENCE VOLUME

#### 1.1 Dry Inflow Sequence Volume

During each Water Year the Licensee must, at the commencement of each Month, calculate the volume of water resulting from the following formula for each Development:

$$\text{DISV} = \max[0, \sum_{j=i-1}^{n-1} (E_j - \text{EAT}_j + R + \text{BPF} - I_j) + m * (R + \text{BPF}) + \text{INE99} - \text{TS}_i + \text{IB}]$$

where:

DISV= The Dry Inflow Sequence Volume for the relevant Development as at the commencement of the relevant Month

i = Initial Month of the dry sequence that commenced when the storage less the above target water in the relevant Development last equalled the target storage in the table below

n= Month of calculation

j= A Month between i and n-1

I<sub>j</sub>= Inflows to the relevant Development in Month j

E<sub>j</sub>= Recorded net evaporation loss from the relevant Development in Month j

EAT<sub>j</sub> = The component of E<sub>j</sub> attributable to the above target water stored in the relevant Development in Month j. Losses must be attributed to EAT<sub>j</sub> based on the ratio of the above target water to the total storage

R = In the case of the Snowy-Murray Development 1/12th of 1,062 and in the case of the Snowy-Tumut Development 1/12th of 1,026

BPF = The annual base passing flow required to be supplied by the relevant Development divided by 12. In the case of the Snowy-Murray Development this is 1/12th of 4.5 GL being half the Jindabyne base passing flow and in the case of the Snowy-Tumut Development, this is 1/12th of 6.5 GL being half of the Jindabyne base passing flow and all of the Tantangara base passing flow

m = The number of months remaining in the Water Year at the start of the Month of calculation

INE99 = The total estimated inflow equivalent to that estimated to be exceeded 99 times in 100 years less the total estimated evaporation loss of below target water equivalent to that estimated to be exceeded 1 time in 100 years for the relevant Development from the current Month to the end of the current Water Year.

IB= Half the balance in the Mowamba Borrowings Account maintained by the Licensee

TS<sub>i</sub>= The target storage of the relevant Development at the commencement of



the Initial Month being:

| Month     | Target Storage (GL) Snowy-Murray Development | Target Storage (GL) Snowy-Tumut Development |
|-----------|--|---|
| January   | 1510   | 1660  |
| February  | 1520   | 1670  |
| March     | 1460   | 1610  |
| April     | 1410   | 1530  |
| May       | 1340   | 1460  |
| June      | 1290   | 1410  |
| July      | 1240   | 1350  |
| August    | 1170   | 1300  |
| September | 1190   | 1490  |
| October   | 1240   | 1580  |
| November  | 1400   | 1590  |
| December  | 1450   | 1580  |

provided that the DISV cannot be decreased in April.

**12 REQUIRED ANNUAL RELEASE FROM EACH DEVELOPMENT**

**12.1 Required Annual Releases from the Snowy-Murray Development**

[Strike the following word from the final term of the calculation:]

MINUS: The maximum Dry Inflow Sequence Volume calculated during that Water Year under clause 8 of this Schedule Four

[Add an additional term:]

MINUS: Any release from the Snowy-Murray Development in the previous water year in excess of the Required Annual Release for that water year up to a volume equal to the Dry Inflow Sequence Volume as at the end of the previous water year.

**12.2 Required Annual Releases from the Snowy-Tumut Development**

[Strike the following word from the final term of the calculation:]

MINUS: The maximum Dry Inflow Sequence Volume calculated during that Water Year under clause 8 of this Schedule Four

[Add an additional term:]

MINUS: Any release from the Snowy-Tumut Development in the previous water year in excess of the Required Annual Release for that water year up to a volume equal to the Dry Inflow Sequence Volume as at the end of the previous water year.”



## ANNEXURE NINE: VARIATIONS TO PROVISIONS WITH RESPECT TO TANTANGARA DAM

### Outlet Capacity at Tantangara Dam

**Clause 20.2** of **Schedule Three** to the Snowy Water Licence is deleted and the following substituted:

#### **“20.2 Outlet Specifications**

The outlet constructed by the Licensee under **clause 20.1** of this **Schedule Three** must be sufficient size to enable a flow rate of at least 1.5 GL per day (capability determined as at minimum operating level).”

### VARIATIONS WITH RESPECT TO RELEASES FROM TANTANGARA DAM: DAILY RELEASES

#### Obligations of the Licensee With Respect to Releases from Tantangara Dam

A new subclause (3) is inserted in **clause 25.1** of **Schedule Three** to the Snowy Water Licence as follows:

- “(3) **“Daily Volumes:** use reasonable endeavours to target releases of water from Tantangara Dam in daily volumes that are within:
- (a) 20 percent of the daily volumes notified by the Ministerial Corporation under **clause 26A1.1** of this **Schedule Three**; or
  - (b) 50 megalitres of the daily volumes notified by the Ministerial Corporation under **clause 26A1.1** of this **Schedule Three**,
- whichever is the greater volume.”

#### Assessing Compliance by the Licensee

A new subclause (3) is inserted in **clause 25.2** of **Schedule Three** to the Snowy Water Licence as follows:

“(3) **with respect to the obligations relating to daily releases:** having regard to all of the daily releases made by the Licensee from Tantangara Dam over the whole of the relevant Water Year.”

### DAILY RELEASE VOLUMES TO BE TARGETED FROM TANTANGARA DAM

A new clause 26A is inserted in **Schedule Three** to the Snowy Water Licence as follows:

#### **“26A.DAILY RELEASE VOLUMES TO BE TARGETED FROM TANTANGARA DAM**

**26A1.1 Ministerial Corporation to Notify Licensee of Daily Release Volumes**

The Ministerial Corporation may, by notice in writing to the Licensee given not less than six Business Days prior to the commencement of each Month, require the Licensee to target for release from Tantangara Dam on each day of the following Month the volumes specified in the notice.

**26A1.2 Limits on Daily Volumes**

With respect to the daily volumes specified in any notice referred to in **clause 26A1.1** of this **Schedule Three**:

- (2) those volumes must not in total exceed the applicable Monthly release volume; and
- (3) each daily volume must not exceed the capacity of the outlet at Tantangara Dam calculated as at the relevant time. For the avoidance of doubt, this clause is intended to allow for greater daily volumes as the water storage level in Tantangara Dam increases, however nothing in this clause 26A imposes any obligation on the Licensee to achieve or maintain any particular water storage level in Tantangara Dam.

**26A1.3 Content of Notice**

Each notice referred to in **clause 26A1.1** of this **Schedule Three** must include:

maximum rate of increase and decrease of those daily volumes; and

- (4) maximum flow rates.

**26A1.4 Default Daily Release Volumes**

If with respect to any Month the Ministerial Corporation does not give to the Licensee a notice referred to in **clause 26A1.1** of this **Schedule Three** within the time specified in that clause, the Licensee must in the relevant Month target for release from Tantangara Dam the applicable Monthly release volume in equal daily volumes.”

## ANNEXURE TEN: OTHER VARIATIONS

### 1. VARIATIONS WITH RESPECT TO DECOMMISSIONING OF ASSETS

It is recommended that the following text be adopted for subclause 5.2 and Schedule Two of the Snowy Water Licence:

#### **Decommissioning Does Not Affect Licensee's Obligations**

**Subclause 5.2(1)** of the Snowy Water Licence is amended by the insertion of the following at the end of **subclause 5.2(1)**:

“For the avoidance of doubt, if a dam, tunnel, power station, aqueduct or other structure is decommissioned or removed, this subclause 5.2(1) does not affect the Licensee's obligations under this Licence as a result of that decommissioning or removal.”

#### **Decommissioning Does Not Affect Licensee's Obligations**

A new **subclause 5.2(7)** is inserted into the Snowy Water Licence as follows:

“(7) the decommissioning or removal of a dam, tunnel, power station, aqueduct or other structure does not affect the Licensee's obligations under this Licence.”

#### **Amendment of Schedule Two**

**Clause 10.7** of the Snowy Water Licence is deleted and the following substituted:

#### **“10.7 Variation of Schedule Two**

Despite any other provision in this Licence:

- (1) in relation to any proposed decommissioning or removal of any of the dams listed from time to time in **Schedule Two**:
  - (a) the Licensee must give the Ministerial Corporation at least 60 Business Days prior written notice of its intention to decommission or remove any of the dams (including full details of the proposed decommissioning or removal and the expected effect (if any) on the matters referred to in **subclause 10.7(1)(b)**); and
  - (b) where the Ministerial Corporation determines, in consultation with the Murray Darling Basin Commission, that the proposed decommissioning or removal of the relevant dam by the Licensee could affect the Licensee's ability to comply with the Water Release Requirements, the Increased Flow

Requirements or any other obligations under the Licence over the remaining term of this Licence then the Ministerial Corporation must notify the Licensee of that determination, and the Licensee must not decommission or remove the relevant dam without the prior written consent of the Ministerial Corporation; and

- (2) the Ministerial Corporation must during the term of this Licence amend **Schedule Two** as required from time to time by:
  - (a) inserting references to new Works lawfully constructed by the Licensee that are not clearly listed in **Schedule Two**; and
  - (b) deleting references to existing Works that have been lawfully decommissioned or removed by the Licensee that are listed in **Schedule Two**.

## 2. **VARIATIONS WITH RESPECT TO OPERATIONS OF OUTLETS AT TANTANGARA AND JINDABYNE**

It is recommended that the following text be adopted for the following sections of Schedule Three to the Snowy Water Licence:

### **Obligations of Licensee With Respect to Operations of Outlet at Tantangara Dam**

A new **clause 20.3** is inserted in **Schedule Three** to the Snowy Water Licence as follows:

#### **“20.3 Operation of Outlet at Tantangara Dam**

The Outlet constructed by the Licensee under **clause 20.1** of this **Schedule Three** must be operated by the Licensee to selectively withdraw water from the near surface horizon of the reservoir for the water being released for riparian flows and Snowy Montane Rivers Increased Flows made under **Part Five** of this **Schedule Three**.”

### **Obligations of Licensee With Respect to Operations of Outlet at Jindabyne Dam**

A new **clause 6.5** is inserted in **Schedule Three** to the Snowy Water Licence as follows:

#### **“6.5 Operation of Outlet at Jindabyne Dam**

The Outlet constructed by the Licensee under **clause 6.1** of this **Schedule Three** must be operated by the Licensee to selectively withdraw water from the near surface horizon of the reservoir for the water being released for riparian flows and Snowy River Increased Flows made under **Part Two** of this **Schedule Three**.”