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**Submission to: INQUIRY INTO THE IMPACT OF THE MURRAY-DARLING
BASIN PLAN IN REGIONAL AUSTRALIA.**

The Murray-Darling Basin and the Snowy Mountains Scheme.

Section 21 (6) of the Commonwealth Water Act 2007 states that the Basin Plan must not be inconsistent with the provisions of the Snowy Water Licence.

Such a provision assumes that the Snowy Water Licence (issued in 2002 for 75 years) optimises the collection, storage, diversion and release of the Scheme's water resource for irrigation, communities and the environment; and that, its provisions do not need to be considered in the context of developing a plan for the Basin.

The Snowy Water Licence **does not** optimise the use of the Schemes water resource, nor the regulation of its storages, with those of the Basin:

- because it is weighted towards the use of the Scheme's water for electricity production and derivative trading. A situation amply demonstrated during the recent period of flooding rains that saw Snowy Hydro Ltd (the present operators of the Scheme) releasing water, for electricity production and trading, from Eucumbene Dam at less than 30% full into Hume and Blowering Dams that were full or spilling.
- because it is couched in terms such as; 'do all things reasonably necessary, 'consider in good faith' and to provide advice as to 'likely range of releases'.
- because of Snowy Hydro's total control over the storage and release of 'above target water' (ie water stored in excess of required annual releases).
- because there is no requirement for Snowy Hydro to meet a specific pattern of water releases within a water year.
- because of the limited extent that other parties – particularly those responsible for water management – can influence the content of the Scheme's Annual Operating Plan.
- because of lack of any obligation on Snowy Hydro to provide up to date Scheme operations to water agencies responsible for the regulation of down stream water storages.

When the Snowy Scheme began transferring water from East of the Divide into the Murrumbidgee and Murray Rivers in the 1950's and 1960's it effectively became a component of the total Basin water resource, contributing inflows of 25% in average years and 60% in drought years to the Murrumbidgee and 8% and 33% respectively, to the Murray.

To optimise the use and regulation of the Snowy Scheme's water resource with that of the wider Basin the Scheme's operations – and the Snowy Water Licence – must

be fully integrated into the Basin Plan: not vice versa as proposed by Section 21 (6) of the Act.

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The above outcome can only be achieved following a revision of the Snowy Water Licence; to address the deficiencies identified above and to change the emphasis on the use of the Scheme's water from electricity production and trading to one of prudent and optimum water management.

Failure to achieve a fully integrated plan for the combined water resources of the Murray-Darling Basin and the Snowy Mountains Scheme will result in the sub-optimum use of an increasingly scarce and precious water resource. An opportunity lost that we will live to regret.

Max Talbot.

SNOWY HYDRO – THE BUSINESS

Snowy Hydro is an integrated water management, electricity generating and trading business. It collects, stores and releases water for irrigation and the environment in accordance with the terms of a 75 year water licence and provides electrical energy and energy related services to the National Electricity Market (NEM) and risk management products (financial derivatives) to other NEM participants.

To understand Snowy Hydro's business, post corporatisation in 2002, it is useful to have an appreciation of the historical concept of the Snowy Scheme and its operation prior to corporatisation.

1. The Snowy Scheme – an historical perspective

The Snowy Mountains Scheme has its genesis in the 1880's when the concept of diverting water that flowed south and east from the Snowy Mountains westward to the dry inland was first proposed.

After a long gestation period, and a variety of proposals of how best to achieve the desired outcome, the Scheme was commenced in 1949 with the passing of the Snowy Mountains Hydro-Electric Power Act by the Commonwealth Government and formation of the Snowy Mountains Hydro-electric Authority. The Authority was a corporation sole headed by a Commissioner.

The Act was established under the defence powers of the Commonwealth because of ongoing dissent, particularly from NSW, thus the emphasis in the Act was on the provision of electricity for defence purposes and for the Australian Capital Territory. Excess electricity, over and above that reserved by the Commonwealth was to be made available to NSW and Victoria in proportion to their respective populations, i.e. 2/3rds NSW and 1/3rd Victoria. With the Commonwealth reserving 13% this left 58% for NSW and 29% for Victoria. These electricity percentages were subsequently used when allocating shares when the Scheme was corporatised in 2002.

Design and construction of the Scheme was financed by the Commonwealth from consolidated revenue with the loans to be repaid over 70 years from completion of each stage of construction. Electricity was first generated from Guthega Power Station in 1955, with construction continuing to the completion of Tumut 3 Power Station in 1974.

Prior to its corporatisation the Scheme operated under a net cost of production (NCOP) formulae, which covered repayments to the Commonwealth and the cost of operations and maintenance, with the money coming from the electricity utilities of NSW, Victoria and the ACT when they on-sold their power entitlements, forcing the Authority to borrow for capital works post construction (NCOP averaged around \$150m p.a.).

1957 saw Schedule 1 (known as The Agreement) added to the Act formalising water and electricity sharing arrangements and the establishment of Snowy Mountains Council. The Council comprised two members from each of the Commonwealth, NSW, Victoria and the Authority with duties, inter alia, to direct and control the operation and maintenance of the permanent works of the Authority for control of water and production of electricity. State Government members on Council, except for the final few years prior to corporatisation, were the Chief Executives of their electricity and water utilities, whilst Commonwealth members (one of whom was Chairman) were appointed from the bureaucracy. The Snowy Scheme was thus operated as an integrated water/electricity entity under the direction and oversight of the Council.

Council approved the Scheme's Annual Operating Plan that set out water release and electricity generation targets for the ensuing year and met quarterly to review the plan, to set the direction for the next quarter and to resolve any conflicts (potential or otherwise) between the release of water for irrigation and its release for energy production.

The Snowy Scheme has a total active water storage capacity of around 5300 gegalitres. Average annual inflows are around 2800 gegalitres with losses of around 100 gegalitres due to evaporation, spills and riparian releases.

The Scheme contributes inflows of 8% during average inflow years and 33% during drought years to the Murray River, whilst it contributes inflows of 25% during average inflow years and 60% during drought years to the Murrumbidgee River.

The Scheme has an installed capacity of 3900 megawatts and an average annual electrical energy production of around 4500 gigawatt hours (which represents less than 4% of the NEM) with a minimum guaranteed annual water release of 2088 gegalitres, the latter being based on the Scheme being able to provide that amount of water annually through a repeat of the design dry sequence that commenced late in 1936 and extended to 1945.

Prior to the formation of the NEM in 1998, electricity generated was on sold by State and ACT electricity utilities. With commencement of the NEM, governments established Snowy Hydro Trading Pty Ltd., to trade the Scheme's energy into the market independent of the electricity utilities. On corporatisation Snowy Hydro Trading activities were taken over by Snowy Hydro Ltd.

2. Snowy Hydro Ltd. – A Corporate Entity

2.1 Overview

The Snowy Scheme was corporatised and began operation as Snowy Hydro Ltd in 2002. Snowy Hydro is incorporated under the Corporations Act 2001 and is a public company limited by shares. Shares were issued gratis to the Commonwealth, NSW and Victorian governments in the percentages of their electricity entitlements, i.e., 13, 58 and 29% respectively. The Snowy Mountains Authority's outstanding

debt of about \$700m was transferred to Snowy Hydro who was required to refinance it and repay the Commonwealth.

Corporatisation was achieved via the negotiation and implementation of a series of “agreements” (46 in total) of which the 75 year water licence – that sets out Snowy Hydro’s rights and obligations with respect to management of the Snowy Schemes water resource – and the transfer of the Schemes infrastructure and assets are of critical importance to the viability of its business

Snowy Hydro is a successful member of the NEM where it occupies a unique position selling peak and shoulder energy and energy services to the market and risk management products to other market participants. Since corporatisation it has widened its activities beyond the Scheme into gas turbine generation and electricity retailing. It had an income of \$781.9m in 2009-10 and a net profit of \$266.9m after tax of \$113.7m.

2.2 The Electricity Business

Snowy Hydro owns and operates the 3900 MW Snowy Scheme, 620 MW of open cycle gas fired generation in Victoria and Red Energy, an electricity retailer, also primarily in Victoria.

Snowy Hydro is the NEM’s third largest generator by capacity and its portfolio of hydro and gas peaking generation assets places it in a strong position to take advantage of high prices in the NEM spot market.

As Snowy Hydro is able to provide significant generation at short notice it is a leading supplier of electricity price risk hedging contracts to other market participants seeking protection against price fluctuations in the NEM spot market.

Snowy Hydro is also mainland Australia’s largest renewable generator (70%) and as such benefits from existing schemes to promote the use of renewable energy.

Snowy Hydro’s marginal cost of generating from its hydro-electric generating plant is virtually zero, however, whilst it has a guaranteed amount of water available – by virtue of the water licence – water is not unlimited, thus the decision to generate or not generate at a particular time is the opportunity cost of the water used.

Snowy Hydro’s competitive position in the NEM is provided by its unique portfolio of highly reliable generation assets enabling it to provide ‘firm’ electricity price risk hedging contracts to other NEM participants.

2.2.1 Sources of Revenue

Snowy Hydro earns revenue from a variety of sources, namely;

- Electricity sales into the NEM spot market

- Energy (ancillary) services to NEM
- Electricity price risk hedging contracts
- Inter-regional settlements
- Renewable energy certificates
- Retail electricity sales (Red Energy)
- Water, timing of release or pre-release fees.

Looking at each of the above briefly:

(a) Spot market sales

Snowy Hydro bids its available generation into the Market for dispatch generally targeting peak or shoulder demand periods that attract higher prices. However, to manage its water release obligations and to manage periods of high inflows a portion of generation is dispatched during off-peak periods.

(b) Ancillary services to the market

The nature of Snowy Hydro's generating assets provide an opportunity for it to provide ancillary services that assist in maintaining the security of the inter-connected power system.

These include, voltage and frequency control, black or system restart and generation contingency reserve.

(c) Electricity price risk hedging contracts

Price risk hedging contracts entered into with other generators and retailers include a range of financial instruments such as caps, swaps, collars and options.

Snowy Hydro receives or pays difference payments under the contracts and aims to generate when exposed to paying difference payments so as to cover its exposure.

(d) Inter-regional settlements

Snowy Hydro participates in the Settlement Residue Auction (SRA) process to partially offset the risk it faces by entering into contracts across NEM regions – such as, transmission system load constraints or transmission system failures – and receives revenue from the SRA Units that it has purchased, which may or may not fully offset payments that it may need to make to counterparties.

(e) Renewable energy certificates

Snowy Hydro sells renewable energy certificates (REC's) to other market participants. REC's are created whenever Snowy Hydro's hydro generation exceeds its historical average generation. This situation does not arise every year and thus income generated from REC's is variable.

(f) Retail electricity sales

Snowy Hydro's retail electricity income is a result of its purchase of Victorian retailer Red Energy. Its customer base is relatively small at present.

(g) Water timing of release or pre-release fees.

Snowy Hydro has – with the approval of water agencies - entered into agreements with irrigators which effectively enabled them to “borrow” water from future years releases for a fee. The Water must be “paid back” from future entitlements.

During the recent drought these ‘borrows’ contributed to the premature triggering of the water licence dry inflow sequence clauses, with resultant reduction in releases from the Scheme. Such releases also have the potential to benefit irrigators able to afford Snowy Hydro's price; to the detriment of the wider irrigation community.

Timing of release fees are dependent on a number of factors outside Snowy Hydro's control and are not a reliable source of income.

2.2.2 Summarising

Snowy Hydro's total income is comprised of a number of income streams. Whilst income details are not publically available, it is reasonable to conclude that predominant sources of income result from spot market sales and electricity price risk hedging contracts.

Snowy Hydro uses its physical generation capacity to manage its price risk hedging contracts and its fast-start and reliable generation assets allow it to structure a portfolio that provides, on average, more upside than downside from unpredictable market events.

Additionally, its business is underpinned by the rights bestowed on it by the Snowy Water Licence over the collection, storage, diversion and release of the Snowy Scheme's water resource.

2.3 Water Management

Snowy Hydro's rights and obligations, with respect to the Snowy Scheme's water resource, are contained in a 75 year water licence issued to it on corporatisation in June 2002. The Licence is administered by the NSW Water Administration Ministerial Corporation.

- The licence provides Snowy Hydro with rights over the collection, storage,

diversion and release of the Scheme's water;

- Licence term 75 years, commencing June 2002
 - Required annual releases for irrigation (1 May to 30 April – the Water Year)
 - 1062 gegalitres to the Murray River
 - 1026 gegalitres to the Murrumbidgee River
 - a total release of 2088 gegalitres to be progressively reduced as environmental releases are made as a result of irrigation savings.
 - Required annual releases may be reduced in accordance with a relaxation clause (as a result of dry inflow conditions) and/or a flexibility clause (with agreement between the Ministerial Corporation and Snowy Hydro).
 - Environmental release to the Snowy River
 - 21% of average annual flows – 212 gegalitres by 2012
 - 28% of average annual flows – 282 gegalitres – timing indeterminate - this additional 7% attracts a compensation payment to Snowy Hydro for lost income.
 - 282 gegalitres represents around 530 GWH (gigawatt hours) in lost electricity generation.
 - Snowy Montane Rivers Increased Flows – additional flows that must be allowed to pass through some regulating structures, increasing proportionally with Snowy River environmental flows, capped at 150 GWH of foregone electricity generation.
 - Water stored in excess of required annual releases (known as ‘above target’ water some 300-400 gegalitres annually depending on inflows) can be stored and released at Snowy Hydro's discretion.
 - Snowy Hydro has the following water rights:
 - the right to collect, store and divert all the water from rivers and streams within the Snowy Catchment,
 - the right to use the water to generate electricity and manage the water,
 - the right to release the water at times and in quantities as it sees fit provided it complies with the Annual Water Operating (AOP).
 - In preparing the AOP Snowy Hydro must consult with the Water Consultation and Liaison Committee* and consider advice in good faith. The AOP must include the maximum probable release from the Scheme, detailed on a quarterly basis.
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* Comprised of a nominee from each of the Commonwealth, NSW and Victorian governments, Murray Darling Basin Commission (MDBC), NSW Department of Natural Resources and Snowy Hydro Ltd.

- Snowy Hydro must submit the AOP to the Ministerial Corporation who must approve the plan and can only request an amendment if the plan is inconsistent with the Licence provisions.
- The Ministerial Corporation cannot require Snowy Hydro to amend the plan to require the release of above target water; as release of above target water is solely at Snowy Hydro's discretion.
- There is no requirement in the water licence that compels Snowy Hydro to meet any specific pattern of releases within a water year. Snowy Hydro only has to do all things reasonably necessary to meet releases outlined in the plan.
- Apart from requesting amendments to the Plan and providing quarterly historical advice on inflows and releases Snowy Hydro has no obligation to keep either the Ministerial Corporation or MBDC informed of its intentions with respect to future release volumes nor the timing of releases.
- Whilst there are provisions in the licence to vary the licensee's obligations there are no specific penalties for failure to meet the licence conditions and the revocation provision is such that it can easily be avoided by the licensee.
- Whilst the licence is for 75 years it is subject to reviews, the first being after 5 years relating to Snowy River flows followed by a more general review on every tenth anniversary, however, there are no details on how such reviews are to be conducted.

2.3.1 Summarising

The water licence is weighted towards the use of the Scheme's water for electricity production and trading, it does not optimize the use of a scarce natural resource and it does not adequately regulate Snowy Hydro;

- because it is couched in terms such as 'do all things reasonably necessary', 'consider in good faith' and to provide advice as to 'likely range of releases',
- because of Snowy Hydro's total control over the storage and release of 'above target' water,
- because there is no requirement for Snowy Hydro to meet a specific pattern of water releases within a water year. For example, it has the right to release water into irrigation storages that are already full or spilling; for electricity

production and trading.

- because of the limited extent that other parties can influence the content of the AOP,
- because of lack of any obligation on Snowy Hydro to provide up to date information on Scheme operations to water agencies responsible for regulation of down stream water storages.

The 75 year Snowy Water Licence (issued in 2002) provides flexibility to Snowy Hydro to store and release the Scheme’s water resource for electricity production and derivative trading and sub-optimises the use of the water for irrigation, communities and the environment. It also falls short of providing optimum regulation of the combined Snowy Scheme, Murray and Murrumbidgee River storages.

It needs to be extensively revised and fully integrated with the yet to be developed Murray – Darling Basin Plan so as to optimise the regulation of the combined Snowy/ Murray – Darling systems.

2.4 Business Risk

Not unlike other entities Snowy Hydro faces a range of business risks. These fall into several categories; those within the control of management and the Board, those only partially within their control and those outside their control.

The following risk summary represents the more significant of the risks that can be viewed as somewhat unique to a business such as Snowy Hydro.

2.4.1 Risks within the control of Management and the Board.

(a) Failure of generating plant and water infrastructure

Snowy Hydro’s price risk hedging contracts are underpinned by its portfolio of generating assets and access to the Snowy Scheme’s water resource. Snowy Hydro’s generating plant is distributed in 9 power stations and its access to water is via two trans-mountain tunnel systems. A catastrophic failure of generating plant or tunnel system has the potential to significantly impact on income.

To guard against this possibility Snowy Hydro has in place a routine maintenance program and a rolling 20 year generating plant and water infrastructure refurbishment, modernisation and replacement program.

The programs are predicated on the plant being required to meet ongoing high levels of reliability and availability and are dependent on management and the Board allocating the funds necessary to meet the programs.

(b) Structure and level of price risk hedging contracts

The major risks faced by Snowy Hydro's hedging contracts business are transmission system constraints or failures and catastrophic failure of its electricity generating or water storage and diversion assets.

It can mitigate its transmission risk by limiting an/or diversifying the level of trading across NEM regions, by purchasing SRA Units (referenced in 2.2.1(d) above) and by building strategically placed gas turbine peaking plants.

As detailed above it mitigates the risk of catastrophic generating plant or water infrastructure failure by rigorously monitoring plant condition and having in place an ongoing strategic maintenance program so as to achieve high levels of reliability and availability.

It is management and the Boards responsibility to establish an appropriate trading risk profile such that on the balance of probabilities the upside will be significantly greater than the downside.

2.4.2 Risks partially within the control of Management and the Board

(a) Transmission System Constraints and or Failures

The NEM transmission system is owned and operated by others and Snowy Hydro cannot dictate system adequacy or performance.

It does (or should) have Connection Agreements with transmission owners that set out operating and performance criteria that provide it with an avenue for ongoing dialogue to flag any shortcomings in system adequacy or performance.

Also, as mentioned above it can mitigate its transmission risk by purchase of SRA Units, by appropriately structuring its derivative trading portfolio and by the purchase or building of strategically placed gas turbine plant.

2.4.3 Risks predominantly outside the control of Management and the Board

(a) Restructuring of the Electricity Industry

Restructuring of the electricity industry through mergers and acquisitions and increased vertical integration (generators owning distributors and retailers and vice versa) have the potential to reduce demand for Snowy Hydro's hedge products and to reduce overall competition within the NEM.

For example, the NSW governments sale of the State's electricity retailers and generation traders to existing significant NEM participants.

Snowy Hydro can mitigate this risk to some degree by developing strong business relationships with its customers and by offering innovative and flexible products at

competitive prices where it has an advantage due to the diversity of its plant and near zero marginal cost of its hydro generating assets.

It is never-the-less, incumbent on governments, the ACCC and industry regulatory bodies to monitor developments in the market and to disallow restructuring that would restrict competition.

To date they have failed: having over-sighted the progressive corruption of the competitive Market model by not standing against mergers and acquisitions; by allowing the NSW electricity trading assets to be purchased by existing significant Market participants and by presiding over the progressive re ‘vertical’ integration of the electricity industry.

(b) Natural phenomena – fire, flood, earthquake and climate change

Fires and floods have the potential to impact Snowy Hydro’s generating capability either by damaging its assets or the transmission system.

Whilst the power stations are protected by automatic systems against internal events that can result in fire or flood, it is more difficult to fully protect them against, in particular, wild fires.

The Snowy Scheme is located in a geologically stable region such that the probability of an earthquake of a magnitude that would cause significant levels of damage to its infrastructure is slight.

Climate Change is likely to result in a declining snow pack and hence water availability and generating capability that will impact income – likely to be a gradual trend developing over many years.

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