



Department of
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Office of Water

Fish River Water Supply Scheme – review of water sharing arrangements



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The NSW Office of Water manages the policy and regulatory frameworks for the state's surface water and groundwater resources, to provide a secure and sustainable water supply for all users. It also supports water utilities in the provision of water and sewerage services throughout New South Wales.

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Executive summary

In July, 2010, water levels in Oberon Dam were reaching critical levels (<10 per cent) and there were concerns expressed by Oberon Council that the current water sharing arrangements associated with the Fish River Water Supply Scheme, which includes Oberon Dam, were not working properly.

The Fish River Water Supply Scheme supplies water to Oberon and Lithgow (both primarily out of Oberon Dam), the Sydney Catchment Authority (for a number of townships in the Blue Mountains) and Delta Electricity for power generation. The latter two stakeholders also access water from the Duckmaloi Weir to supplement their water supply. There are also numerous 'minor customers' that extract water from the Scheme for domestic supply. The Scheme is operated by State Water (SW).

The Minister for Water asked the NSW Office of Water to undertake a review of the Fish River Water Supply Scheme's water sharing arrangements and develop some recommendations which would provide enhanced water security for the township of Oberon, whilst minimising any impacts on other stakeholders within the Scheme.

The NSW Office of Water commissioned comprehensive modelling of the current water sharing arrangements and the potential implications of some alternate arrangements. The results of this modelling informed a number of possible modifications to the sharing arrangements.

These modifications have been discussed at length with each of the key stakeholders and as a result, NSW Office of Water has developed a total of 36 recommendations to improve the water sharing arrangements within the Fish River Water Supply Scheme.

In summary, these recommendations:

- a) Secure Oberon's water supply through:
 - A bigger share of water in the Scheme;
 - Reduced constraints on Oberon's access at mid-range storage levels;
 - Increased constraints on other stakeholders' access at very low storage levels, which take into account that they have alternate water supply options and better take into account their essential requirements during periods of extreme water shortage;
 - establishment of a new Level 8 constraint on access for other stakeholders when Oberon Dam's net storage drops to 5 per cent of full supply;
- b) Modify the share of water in the Scheme for Lithgow, which recognises its historical under-utilisation;
- c) Enhance access to Duckmaloi Weir for both SCA and Delta to reduce the pressure on Oberon Dam and offset the impacts of reduced access to Oberon Dam for these two stakeholders;
- d) Do not change access for the 'minor customers';
- e) Clarify the water licensing arrangements with State Water;
- f) Provide some guidance for on-going governance arrangements;
- g) Provide a framework for longer term water sharing arrangements.

In February 2012, the NOW made a number of minor refinements to the water sharing rules in order to provide greater operational clarity and flexibility. These were agreed to by State Water and all customers of the Scheme. These refinements have been labelled in the report "Modified February 2012."

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1. Background

The Fish River Water Supply Scheme ('the Scheme') includes the Oberon Dam as well as extraction from a weir on nearby Duckmaloi Creek. The Scheme supplies water to Oberon and Lithgow Councils and Sydney Catchment Authority for town water supplies, as well as Wallerawang and Mount Piper power stations owned by Delta Electricity for power generation purposes. A further 300 'minor customers' are supplied for domestic (and some stock) purposes directly from the Scheme. The Scheme is owned and operated by State Water.

State Water inherited the Scheme in 2004 from the then Department of Public Works. State Water has a Part 9 'deemed' licence under the *Water Act 1912*. The licence currently has no conditions.

In July 2010, the Minister for Water asked the NSW Office of Water to undertake a review of the water sharing and governance arrangements for the Scheme. The review was in response to record low levels in the Oberon Dam (near 8 per cent at the time) and the perceived threat to Oberon town water supplies.

To ensure its independence, the review has been performed by NSW Office of Water staff from the Water Planning Unit.

2. Purpose of 2011 review

The 2011 review looked primarily at shoring up town water supplies for Oberon Council, and analysing the current water sharing arrangements in order to assess their suitability. Oberon's water supply is considered more vulnerable than the other customers due to their 100 per cent reliance on the dam, whereby other customers have alternate supply options.

A secondary focus of the 2011 review was to check whether the governance arrangements could be improved.

3. 2011 Review method

A contract hydrologist (Barma Water Resources) was employed to model a range of water sharing scenarios. NSW Office of Water has built an Integrated Quantity and Quality Model (IQQM) to represent the Scheme, and this was used by the contractor to run numerous scenarios for evaluation purposes. The evaluation considered the implications of various changes to management rules and infrastructure and is based on satisfying some of the key security criteria typically applied to country town water supplies in NSW. The analysis is based on the duration of restrictions not exceeding five per cent of the time, the frequency of restrictions not exceeding one year in ten on average (during the 120 year period of recorded rainfall from 1890 to 2010) and the towns being able to supply 90 per cent of normal demand during the worst drought on record. The analysis considers the 120 year period of historical record, with adjustments for recent catchment land-use change which appear to have reduced run-off. The model includes the recent particularly severe drought, but does not consider a more severe drought than that within the climatic record or the impact of potential climate change in this region.

The technical report *Review of the Fish River Water Supply Scheme, BWR 2010* supplements this report, and makes a range of conclusions about water sharing in the Scheme. The report outlines various scenarios that change access arrangements in order to secure reliability for Oberon.

The model outcomes have been analysed by the NSW Office of Water and form the technical basis for the majority of the recommendations below.

4. Water Sharing Rules

For referencing purposes, all Water Sharing Rules are numbered.

4.1 Licensing arrangements

Two licensing options were considered.

1. Licensing each of the customers individually with an unregulated river water access licence. Each customer would be given the equivalent megalitres (ML) as per their existing (or revised) share in the Scheme.
 - The disadvantages of this approach are:
 - It does not deal well with the 300 'minor customers' who extract small volumes for domestic purposes but technically don't have a basic landholder right because they are not on waterfront land.
 - The licensing products available through the *Water Management Act 2000* (WMA) are quite limited for unregulated river users, and do not reflect the current level of priorities and the nuances of the drought management table. Therefore a number of new licence categories would likely be required to be established.
 - The advantages of this approach are that individual customers could better manage their own individual usage relative to water availability.
2. License State Water with a Major Utilities licence, which would collectively cover the Scheme and State Water continues with contract arrangements to supply water to each of the customers.
 - The advantages of this administrative arrangement are numerous, including:
 - Simple, requiring only one Water Access Licence to be modified, and just one licence conversion to the WMA when the water sharing plan commences.
 - Flexible, in that State Water will have the capacity to refine management arrangements as necessary, as local circumstances change.
 - This is in effect what is happening now and therefore this approach is familiar and understandable to all of the customers.
 - Current arrangements with minor customers are satisfactory and there are no practical options in terms of licensing each of the minor customers under the WMA.
 - Current licensing products available under the WMA do not adequately cater for the complex arrangements required to manage the Scheme, whereby individual contracts can be designed to have more flexibility.
 - Temporary trading within the Scheme will be easier to facilitate
 - Manages the Scheme as a single entity and recognises the Scheme's history
 - The disadvantages of this approach (without banking) are largely related to individual customers not being able to manage their own water supply security, without being affected by the behaviour of the other customers.

On balance, the second option was supported by the NSW Office of Water and is reflected in Water Sharing Rule 2. We have also initiated some additional water sharing rules that will maximise flexibility for customers and mitigate any potential disadvantages of this option.

Further work could be done over the coming years to further explore the first option, but NSW Office of Water sees this as a longer term strategy only.

Water Sharing Rule 1

The deemed Part 9 Water Act (1912) licence that currently applies to State Water (SW) to be immediately modified to include:

- A modified drought management strategy based on a revised restrictions table (see Water Sharing Rule 15 to Water Sharing Rule 22)
- A modified accounting and carryover system (see Water Sharing Rule 23 and Water Sharing Rule 24)
- Access rules to govern extraction from Duckmaloi Weir (see Water Sharing Rule 26 to Water Sharing Rule 30)

Water Sharing Rule 2

On commencement of the Water Sharing Plan, SW will be granted a Major Utilities licence for the Fish River Water Supply Scheme, and renegotiate their supply contracts with each of the Fish River customers. The new contracts are to include the above provisions.

Water Sharing Rule 3

The licensed entitlement for SW will be based on the sum of the customers' allocations ie 15,876 ML, which equates to the maximum historical usage within a single water year, plus an allowance (approximately 1000 ML/annum) for conveyance losses within the Scheme.

- State Water's historical extractions and delivery data are to be utilised to confirm the appropriate 'within Scheme' losses.
- The Scheme entitlement figure will become both the best estimate of the Scheme's 'Cap' allowance and their component share of the water sharing plan limit.

4.2 Allocations

Current allocations have been developed over time and represent historical usage patterns. It should be noted that whilst it is possible to re-distribute allocations between customers, increasing allocations for the Scheme as a whole would have an impact on other licensed users within the Macquarie Valley, due to the Murray-Darling Basin Ministerial Council 1995 Cap Agreement. Therefore, the NSW Office of Water does not support any change to the overall historical Scheme entitlement.

Water Sharing Rule 3.

Delta to maintain its annual share – 8,184 ML

Water Sharing Rule 4.

SCA to maintain its annual share – 3,650 ML

Water Sharing Rule 5.

Lithgow City Council annual share to be immediately reduced by 15 per cent (314 ML) to 1,778 ML. This reduced allocation should be reviewed again when the Clarence colliery augmentation is 'on-line,' in order to determine if it can be further reduced. Any future significant change to Lithgow's water supply should also trigger a further review of Lithgow's allocation.

The rationale for this approach is:

- Lithgow has rarely used their full allocation and this change will have no immediate impact. Average usage by Lithgow has generally been less than half their allocation, with the maximum use being 1,173 ML/annum.
- Lithgow has expressed concern that they have been paying for water that they may never require.
- Lithgow have been able to augment their supplies recently from groundwater produced by the Clarence colliery, and have received Commonwealth grant funds to help with costs. This augmentation should significantly improve reliability for Lithgow over the medium to longer term. Nonetheless, the coal mine has a limited life and the flows from the colliery source may not be reliable over the longer term.

Water Sharing Rule 6.

Oberon Council annual share to be increased from 750 ML to 1,064 ML (i.e. an increase equivalent to the allocation reduction for Lithgow).

- Oberon Council has recently requested an additional allocation of 750 ML (i.e. double the current allocation) to better meet their current and future requirements. This level of increase is not supported, however the recommended additional allocation (313 ML), combined with the revised restrictions table will mean that Oberon Council's water supply is secured and there is some potential for growth, with appropriate demand management strategies in place.

- Furthermore, the NSW Office of Water is aware that the Council is exploring a stormwater harvesting proposal and will work with Council to better understand the possibility of harvestable rights allowances or additional licensing requirements to address population growth, consistent with s.66(3) of the *Water Management Act 2000*.

Water Sharing Rule 7.

Annual share for minor customers to remain unchanged at 200 ML.

4.3 Water sharing plan

On commencement of the water sharing plan that covers the Scheme, the *Water Management Act 2000* (WMA) takes effect and all existing licences are converted to new licensing products, and subject to the conditions and management rules documented in the plan. It will bring significant changes to administrative and water sharing arrangements.

Water Sharing Rule 8.

The Fish River water supply scheme will be covered by the Macquarie Bogan unregulated water sources water sharing plan.

- At this point in time, it is anticipated that the plan will commence during the middle of 2012.

Water Sharing Rule 9.

The Fish River water supply scheme will be part of the Fish River water source.

The Fish River water source covers 1,296 sq km, i.e. the Fish River sub-catchment.

- This water source is one of 30 water sources in Macquarie-Bogan unregulated rivers extraction management unit (EMU).
- The 15,876 ML Scheme entitlement will form part of the long term average annual extraction limit for the entire Macquarie-Bogan unregulated system.
- Any growth in use (either in Fish River or anywhere else in the EMU) will result in a reduced available water determination across the entire EMU. It should be noted however that a growth-in-use response doesn't apply to major utilities, effectively quarantining the Scheme should any growth occur in the Macquarie-Bogan valleys.

Water Sharing Rule 10. (modified February 2012)

The State Water licence for the Scheme will initially be given the same accounting and carryover rules as other unregulated licences throughout the Macquarie-Bogan.

In the event that these accounting rules are resulting in unacceptable constraints on State Water, the Water Sharing Plan will allow NOW to review the accounting rules and consider an amended approach.

- These rules in unregulated rivers typically allow up to 100 per cent annual carryover, and a 3 year rolling account.
- The final rules will be subject to the normal processes involved in developing a water sharing plan.

Water Sharing Rule 11.

The WSP will allow State Water to purchase unregulated river licences from within the Fish River water source, into the Duckmaloi Creek part of the Scheme.

- The newly purchased licences will maintain their licence category, and the access rules will apply.
- There are about 2,200 ML of unregulated river access licences in the Fish River water source. If all of this entitlement were purchased by State Water, this would effectively enhance the State Water entitlement by 15 per cent, which is a significant increase.

- It should be noted that major utilities are not permitted to sell any of their entitlement under the *Water Management Act 2000*.

Water Sharing Rule 12. (modified February 2012)

Trading of additional entitlement by State Water into the water source is not supported. However the NSW Office of Water will include an amendment provision in the water sharing plan to allow State Water to apply to trade additional entitlement into the water source, if State Water can demonstrate:

- Minimal impacts on both Bathurst City Council's water supplies and inflows into Burrendong Dam.
- Minimal environmental impacts throughout the water source, noting Duckmaloi Creek is known to have in-stream environmental values

Minimal impacts to other unregulated water licence holders throughout the Macquarie Bogan EMU from any growth-in-use response that might arise from a trade

An interagency review group (equivalent to the current Interagency Regional Panel) would be convened to consider the merits of amending the WSP.

Water Sharing Rule 13.

Temporary trading of account water between Fish River customers is permitted. This will not be part of the water sharing plan, rather an aspect of the contracts with State Water.

4.4 Drought management strategy

The drought management strategy i.e. the dam ‘restrictions table’, is designed to tighten limits on extractions from Oberon Dam as dam levels drop. They don’t apply to the Cease to pump (CTP) for Duckmaloi Weir. The restrictions table has been used effectively by the Customer Council to ration supplies throughout drought events. It has been continuously modified over the years. However there is room to further refine the table in order to improve the reliability for Oberon and it is recommended that the table be immediately modified (see the modified table attached to the end of this report):

Water Sharing Rule 14.

All restrictions will be calculated on net storage, that is the volume of water in storage, excluding any water in carry over accounts (see Water Sharing Rule 24).

- All restrictions described below relate to net storage.

Water Sharing Rule 15.

Oberon Council will be unrestricted to Level (L) 4. For L5, L6, L7 – extraction will be restricted to 90 per cent of 1,064 ML. (i.e. 958 ML)

- The current restriction is 80 per cent of 750ML (i.e. 600ML), therefore this change in combination with the increased share in the Scheme will result in a significant ‘loosening’ of restrictions (358ML) for Oberon Council at mid-range storage levels.

Water Sharing Rule 16.

At L7, Delta will be restricted to 2 per cent (163 ML/annum) access in order to meet their ‘domestic’ and some limited industrial requirements.

- Delta currently has 4 per cent (327 ML/annum) at L7, so this recommendation effectively halves Delta’s access at L7
- At L7, Delta’s access from Oberon is reduced to being for domestic requirements and some limited industrial requirements (eg cleaning and maintenance) only. This recommendation provides water for these purposes.
- This tightening of the restrictions reflects the very low level of Oberon Dam, and that remaining supplies need to be managed conservatively and equitably.

Water Sharing Rule 17.

A new L8 will be created for when Oberon Dam’s net storage is at 5 per cent.

- It should be noted that the very conservative NSW Office of Water model indicates extremely low probability of Oberon Dam reaching the 5 per cent level.
- The model is considered conservative because:
 - The model assumes full usage by all customers (this is not generally the case)
 - The model has been adjusted for current (decreased) catchment run-off which appears to have reduced as a result of changes in catchment vegetation. Therefore the historical data possibly over-estimates long term run-off and the magnitude of large inflow events under current catchment conditions.

- Further, new pump infrastructure at Oberon Dam means that the last 5 per cent of the dam volume can now be accessed by State Water and delivered to Oberon Council if required.

Water Sharing Rule 18.

At L8, Delta access will be cut to 0.5 per cent (40ML/annum).

- This recommendation effectively reduces Delta's allocation to only domestic purposes. There are approximately 400 employees at Delta and we adopted an approximate water usage rate of 250-300L/person/day, which is consistent with those for the Greater Metropolitan Region.
- This tightening of the restrictions reflects the extremely low level of Oberon Dam, and that remaining supplies need to be managed very conservatively and equitably.

Water Sharing Rule 19.

At L8, Oberon will be restricted to 80 per cent of 1,064ML (850 ML/annum).

Water Sharing Rule 20.

At L8, Lithgow will have zero access to the net storage.

- Lithgow has alternate water supply options which should be preferentially accessed when Oberon Dam is at critical levels.
- Lithgow would still have access to any water held in their carry over account (see Water Sharing Rule 24).

Water Sharing Rule 21.

At L8, SCA will have zero access to the net storage, subject to the following considerations.

- In the event that SCA's Cascade storages are at critical levels (less than 50% storage), and maximum restrictions have been applied to the upper Blue Mountains villages, consideration should be given to allowing SCA to extract up to 3.5 ML/day from Oberon Dam.
- Simultaneously, a feasibility and comparative assessment should be initiated for emergency augmentation options for both Oberon Shire and the upper Blue Mountains.
- SCA has alternate water supply options which should be preferentially accessed when Oberon Dam is at critical levels, but when these options run-out, SCA is also left with Oberon Dam as their only option.

Water Sharing Rule 22.

The current 'banking' arrangements are to cease immediately, and any banked water in customers' accounts will be deleted.

Water Sharing Rule 23. (modified February 2012)

State Water are to modify the banking system in order to better manage the storage. A 'carryover' arrangement is supported, where:

There is no limit on the amount of unused available weekly allocation that is allowed to be carried over from one week to the next, up to a volume equivalent to 20% of the customers share in the scheme. A weekly carry over limit may be imposed in the future after further analysis is completed.

- Water restrictions and carryover are calculated on 'net' storage volumes, not full allocations, i.e. actual dam levels and the available water calculation,
- Access to carryover is not subject to restrictions
- there is a reduction of water held in the carryover accounts for evaporation rates
- carryover water volumes are reset when the dam spills
- carryover water in accounts is subject to a maximum volume restriction - 20 per cent of the customer's share in the scheme, which is to be applied continuously throughout the year
- The carryover volume is added to allocations for the subsequent year.

No other changes to the drought strategy are proposed. In the medium term, a thorough examination of moving away from the restrictions table approach is warranted.

Water Sharing Rule 24.

A more contemporary approach, akin to that used in regulated systems throughout the State, warrants investigation.

This would include:

- A 'resource assessment' to be undertaken to allow annual allocations to be set for each water year based on the availability of the water resource, with upward revisions possible as a result of dam inflows.
- A carryover system, with the features described in Water Sharing Rule 24 above;
- Rules for temporary trading which will provide customers with greater certainty and flexibility, and will remove the current situation whereby there is no motivation for customers to preserve supplies.

However, various scenarios may need to be tested through the NSW Office of Water's IQQM in order to come up with a regime of access and priority that is acceptable for all customers.

4.5 Duckmaloi Weir extraction

Delta and SCA can access water from both Duckmaloi Weir and Oberon Dam. Duckmaloi Creek has a weir and extraction is from the weir pool.

Water Sharing Rule 25.

All extraction from Duckmaloi Weir will be debited against full (unrestricted) allocations.

The combined extractions of any customer from both Duckmaloi Weir and Oberon Dam cannot exceed their full (unrestricted) allocations plus any individual carryover they may have.

Water Sharing Rule 26.

The restrictions table will not apply to extractions from Duckmaloi Weir.

Water Sharing Rule 27.

The term ‘supplementary’ will no longer be used to describe extractions from Duckmaloi Weir as it has an alternate statutory meaning under the WMA.

Water Sharing Rule 26 and Water Sharing Rule 27 describe access to Duckmaloi Weir water as being more analogous to ‘uncontrolled flow access’ which is a feature in some other water sharing areas in NSW, for example the Peel Valley.

Water Sharing Rule 28.

With the current infrastructure associated with extraction from Duckmaloi Weir, the cease to pump (CTP) level will be set at 3 ML/day passing over the weir.

Points to note with respect to this recommendation include:

- The current CTP has been operated at 6 ML/day. Despite a significant search effort by NSW Office of Water and State Water, there appears to be no logical or statutory basis for the 6 ML/d CTP figure. In fact, NSW Office of Water’s contemporary analysis indicates that this appears to be overly stringent when compared to CTP rules being developed throughout the Macquarie catchment as part of the WSP, which are based on the ‘macro’ framework being used throughout NSW to set CTP levels. Furthermore, it is not a condition on the State Water Part 9 licence.
- Under the ‘macro value and risk’ assessment, the indicative CTP would be 1½ ML/day (i.e. the 95th percentile). However, when considering the final rule, specific factors can be more carefully examined and, given the locally important conservation values (platypus habitat), NSW Office of Water believes a more conservative rule of 3 ML/day (i.e. the 90th percentile) will suffice.
- The weir pool is known to be platypus habitat, so it is important to cease all pumping prior to flows stopping to ensure the weir pool isn’t drawn down.
- Downstream irrigators will be given a cease to pump of ‘no visible flow’ at their pump sites.
- Significant tributaries enter Duckmaloi Creek downstream of the weir.
- A CTP of 3 ML/day will help ensure downstream BLR supplies are maintained.

- Higher CTPs were modelled by NSW Office of Water (4, 5 & 6 ML/d) however these impacted significantly on Delta's and SCA's reliability of access to Duckmaloi Weir.

Water Sharing Rule 29.

When Oberon Dam net storage drops to 40 per cent, or when flows in Duckmaloi Creek (upstream of the weir pool) are greater than 80 ML/day, then SCA and Delta should preferentially access water from Duckmaloi Weir.

- Preferential access to Duckmaloi Weir whilst the water level in Oberon Dam is falling will help to preserve dwindling supplies for Oberon township.
- When flows are greater than 80ML/day, environmental impacts from extraction are minimal due to the relatively small volumes extracted (an approximate maximum of 25-30ML/day) compared to the available flow.

4.6 Longer term

It is noted that State Water have requested permission to investigate augmentation options, including:

- New weir/dam across Duckmaloi Creek downstream of the junction with Bindo Creek
- New off-stream storage on Duckmaloi Creek which is filled during moderate to high flow events
- New pipeline between Duckmaloi Weir and Oberon Dam.

Each of these options could result in a growth in diversions and this has implications for the Murray Darling Basin Ministerial Council ‘cap.’

- There is potential to impact on other water users in the EMU including Bathurst City Council who are immediately downstream.
- Inflows into Burrendong Dam may also be impacted with implications for regulated river water users downstream of the dam.
- Environmental impacts in Duckmaloi Creek which has been identified as having high in-stream values;
- Other unregulated water users in the Macquarie Bogan water sharing plan area may be affected by a growth in use response if the Fish River scheme were to grow.

Water Sharing Rule 30.

A highly cautious approach to any proposed growth in diversion is required and will need to be supported by full impact analysis. This will include:

- Impacts on both Bathurst City Council’s water supplies and inflows into Burrendong Dam
- Environmental impacts throughout the water source, noting that Duckmaloi Creek is known to have in-stream environmental values
- Implications of any growth in use to other unregulated water licence holders throughout the Macquarie Bogan EMU

The final Scheme entitlement figure (from Water Sharing Rule 3) will become both the best estimate of the Scheme’s ‘Cap’ allowance and their component share of the WSP plan limit.

Therefore, additional licensed entitlement would be required by State Water to bring into effect any increased diversions above this level. This would require an amendment to the WSP on receipt of the impact analysis work outlined above, the NSW Office of Water would refer a plan amendment proposal to an interagency review group (equivalent to the current Interagency Regional Panel) for advice on the water sharing and environmental implications of the proposal (see Water Sharing Rule 13).

However, if any augmentation is designed to improve reliability, and diversions remain within their entitlement, NSW Office of Water accepts that these works may be beneficial, depending on the outcomes of a full environmental and hydrological impact assessment.

The Water Sharing Plan will allow State Water to apply for a new in-stream dam in the Fish River water source, but approval will be subject to the analysis described in Water Sharing Rule 31.

4.7 Future review

NSW Office of Water acknowledges the generally successful adaptive management approach employed to date by State Water and the Customer Council (CC). Nonetheless, water sharing and governance arrangements in the Fish River Scheme are complex and multi-factorial, and the recommendations from this review should lead to better water management outcomes for the customers. It is also recognised that an ‘advisory’ CC is required under State Water’s operating licence.

Water Sharing Rule 31.

The terms of reference for the Customer Council (CC) are to be amended to include:

- The CC’s role be advisory;
- A rotating chair i.e. each of the customers share the chairing role.
- CC decisions and recommendations to State Water are made by consensus, with each of the customers with one equal vote.

Water Sharing Rule 32.

In the event that the CC cannot provide State Water with a consensus view/advice on any water sharing matters, the NSW Office of Water can be asked by any member of the CC to act as a mediator to help parties work through problems.

- This might be achieved by inviting NSW Office of Water to be the Chair for a special CC meeting on the unresolved issue.

Water Sharing Rule 33.

In the event that the CC (or any member thereof) is not satisfied with an action or response by State Water, then the normal dispute resolution procedures outlined in State Water’s operating licence apply.

Water Sharing Rule 34.

Results of the biennial customer satisfaction survey already undertaken by State Water are to be provided to the NSW Office of Water.

Water Sharing Rule 35.

In the event that there is a significant change to the water supply circumstances of any of the Scheme’s customers, the NSW Office of Water may be required to undertake a further review of the water sharing arrangements for the Scheme.

4.8 Views of the customers

Each of the customers of the Fish River water supply scheme were consulted in the course of the 2011 review and again as part of the 2012 modifications. Whilst the NSW Office of Water believed that the mix of 2011 management changes will result in significant improvements to the running of the Scheme, there were some alternate views from some of the customers, and through the broader central west community. Some of these issues have now been dealt with in the 2012 modifications to operational details.

To their credit, customers have generally pursued a conciliatory approach during both the comprehensive review and the 2012 modifications, and have worked constructively and transparently with the NSW Office of Water in developing and understanding the implications of changes to the Scheme's arrangements. In all cases, they have been prepared to compromise in some way in order to move forward.

It was acknowledged that some of the 2011 Water Sharing Rules would have a negative impact on some of the customers' operations. This was considered inevitable because the scheme is fully allocated, customers' demands are strong and the competition for water can be intense. Customers were forthright in expressing their views and the NSW Office of Water endeavoured to accommodate each customer.

Based on the individual consultation that we have undertaken, the NSW Office of Water believed that there were no significant unresolved issues amongst the customers regarding the 2011 Water Sharing Rules and the modifications contained in this report. We are of the view that they each seem to recognise that on balance the new arrangements are an improvement to the sharing of water in the Scheme.

Table 1 – NSW Office of Water recommended modified Restriction Table (Oberon Dam)

Annual Dam at ML		Level 1 50%	Level 2 40%	Level 3 25%	Level 4 20%	Level 5 15%	Level 6 10%	Level 7 8%	Level 8 5%	
	44,762	22,381	17,905	11,191	8,952	6,714	4,476	3,581	2,238	
Restriction	Delta	20.0%	20.0%	30.0%	40.0%	60.0%	68.0%	98.0%	99.5%	
	SCA/LCC	10.0%	20.0%	30.0%	40.0%	60.0%	65.0%	65.0%	100.0% ¹	
	Oberon	0.0%	0.0%	0.0%	0.0%	10.0%	10.0%	10.0%	20.0%	
	Minor Consumers	10.0%	20.0%	20.0%	20.0%	20.0%	20.0%	50.0%	50.0%	
Yearly	Shares									
	Delta	8,184	6,547	6,547	5,729	4,910	3,274	2,619	164	41
	SCA	3,650	3,285	2,920	2,555	2,190	1,460	1,278	1,278	0
	Lithgow	1,778	1,600	1,422	1,245	1,067	711	622	622	0
	Oberon	1,064	1,064	1,064	1,064	1,064	958	958	958	851
	Min Cons	200	180	160	160	160	160	100	100	100
	Totals	14,876	12,676	12,114	10,752	9,391	6,562	5,636	3,121	992
Monthly	Shares									
	Delta	682	546	546	477	409	273	218	14	3
	SCA	304	274	243	213	183	122	106	106	0
	Lithgow	148	133	119	104	89	59	52	52	0
	Oberon	89	89	89	89	89	80	80	80	71
	Min Cons	17	15	13	13	13	13	8	8	8
	Totals	1,240	1,056	1,009	896	783	547	470	260	83
Weekly	Shares									
	Delta	157	126	126	110	94	63	50	3	1
	SCA	70	63	56	49	42	28	25	25	0
	Lithgow	34	31	27	24	21	14	12	12	0
	Oberon	20	20	20	20	20	18	18	18	16
	Min Cons	4	3	3	3	3	3	2	2	2
	Totals	286	244	233	207	181	126	108	60	19
Daily	Shares									
	Delta	22.4	17.9	17.9	15.7	13.4	9.0	7.2	0.4	0.1
	SCA	10.0	9.0	8.0	7.0	6.0	4.0	3.5	3.5	0.0
	Lithgow	4.9	4.4	3.9	3.4	2.9	1.9	1.7	1.7	0.0
	Oberon	2.9	2.9	2.9	2.9	2.9	2.6	2.6	2.6	2.3
	Min Cons	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.3	0.3
	Totals	41	34.7	33.2	29.4	25.7	18.0	15.4	8.5	2.7

Please note that all restrictions described above relate to net storage, that is the volume of water in storage, excluding any water in carry over accounts.

¹ In the event that SCA's Cascade storages are at critical levels (less than 50% storage), and maximum restrictions have been applied to the upper Blue Mountains villages, consideration will be given to allowing SCA to extract up to 3.5 ML/day from Oberon Dam. Simultaneously, a feasibility and comparative assessment will be initiated for emergency augmentation options for both Oberon Shire and the Upper Blue Mountains.