State Water Corporation
Water Management Licence
Fish River Scheme

Issued under Part 9 of the Water Act 1912
Licence number 10WM000004
May 2012
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Preamble

Introduction

State Water Corporation (State Water) owns and operates the Fish River Water Supply Scheme (the scheme) (Figure 1) which includes Oberon Dam, Rydal Dam and Duckmaloi Weir. The scheme supplies water to Oberon and Lithgow Councils, and the Sydney Catchment Authority for town water supply, as well as Delta Electricity for power generation purposes. A further 300 minor customers are supplied directly from the scheme for domestic (and some stock) purposes.

This water management licence (the licence) is issued under Part 9 of the Water Act 1912. Once a water sharing plan has been gazetted and commenced for the area covering the scheme, this Part 9 Licence will be converted to a combined water supply work and water use approval and a water access licence under the Water Management Act 2000.

Historical water use and basis for water allocation

Prior to this licence, the scheme serviced an annual demand of 14,876 ML. In response to water shortages during the recent drought, in 2009/10 NSW Office of Water conducted a review of the operation and capacity of the scheme. The results of the review were published in March 2011 in the document “Fish River Water Supply Scheme – Review of water sharing arrangements” (NSW Office of Water). The primary recommendations from the review were that:

- State Water should be given a water entitlement for the scheme instead of each of the customers;
- a Part 9 Water Management Licence be prepared and issued to State Water; and
- a revised drought management plan including carryover of unused allocations (as outlined in the review report) be implemented.

The water entitlement for State Water was based on the supply arrangements at the time of the review and was conditional on State Water’s continued supply of water to the existing customers of the scheme.

Licence administration

Matters relating to the administration of this licence should, in the first instance, be referred to:

Manager Corporate Licensing
NSW Office of Water
PO Box 323
PENRITH NSW 2750
Ph: (02) 4729 8128
Fax: (02) 4729 8141
Email: information@water.nsw.gov.au

Licence amendment

State Water may apply to the Ministerial Corporation for a temporary amendment to the terms of this licence for a specified time period, or extend any existing amendment under the provision of section 189 of the Water Act 1912 (hereafter the Water Act).
Figure 1: Diagram of the Fish River Water Supply Scheme
Licence fees and charges

State Water is liable to pay the Ministerial Corporation an initial Part 9 Licence fee. The fee covers the costs incurred by the Ministerial Corporation in the preparation and finalisation of the Part 9 Licence.

State Water is liable to pay the Ministerial Corporation an annual water management charge in accordance with the provisions of section 194 of the Water Act. Water management charges cover the ongoing costs incurred by the Ministerial Corporation in managing the licence.

State Water is liable to pay the Ministerial Corporation an annual bulk water charge at rates determined from time to time by the Independent Pricing and Regulatory Tribunal (IPART), consistent with charges raised under section 22C of the Water Act. The present IPART determination does not include the cost of the preparation of this licence.

Annual site inspections

The Ministerial Corporation may undertake an annual assessment of State Water’s compliance with relevant conditions of this licence. This may include site inspections and verification of site data and procedures. The inspections may also include river gauging by the Ministerial Corporation to ensure the accuracy of State Water’s reported releases.

Interpretation of this licence

The preamble and notes in this licence do not form part of the conditions of this licence. Words or phrases that are in bold and italicised are defined in the dictionary (Section 10) and have the meanings set out in the dictionary. Abbreviations used are listed in Section 11.

1 Term of the Licence

The term of this licence is 20 years.

Note: Under section 193 of the Water Act, the Ministerial Corporation may review this licence at any time, and must conduct a public review before the end of the five year period following the date on which the current licence was issued. Following a successful review, the term of the licence may be extended by five years, maintaining the 20 year licence term.

2 Water Management Works

2.1 The Licence Holder is authorised to construct and use the water management works listed and described below, and in Schedule 2 (“the authorised water management works) to capture, store, transfer and take water, and to release water for environmental and other releases as required by the Ministerial Corporation.
### Authorised Water Supply Works

<table>
<thead>
<tr>
<th>Work No.</th>
<th>Work</th>
<th>Geographic Coordinates (GDA 1994)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>w1</td>
<td>Oberon Dam</td>
<td>16683208 3753861</td>
<td></td>
<td></td>
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<tr>
<td>w2</td>
<td>Duckmaloi Weir</td>
<td>16690176 3757279</td>
<td></td>
<td></td>
</tr>
<tr>
<td>w3</td>
<td>Rydal Dam</td>
<td>16701100 3725100</td>
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<td></td>
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</tbody>
</table>

**Note:** This licence does not cover the operation of the water filtration plant at Duckmaloi, discharges from the water filtration plant at Duckmaloi, water quality of water delivered to Fish River Water Supply Scheme customers, operation of Rydal Dam, and operation and maintenance of the water delivery system including pipelines and associated structures.

#### 2.2 The Licence Holder must not use or operate the water management works authorised under condition 2.1 of this licence contrary to the conditions of this licence.

#### 2.3 The Licence Holder must not alter any of the water management works authorised by this licence without the prior written approval of the Ministerial Corporation.

### Entitlement

#### 3.1 The Licence Holder must only take water from the Fish River and the Duckmaloi River subject to the conditions of this licence.

#### 3.2 The Licence Holder must only take water from those water sources identified in 3.1 of this licence by means of the water management works authorised in condition 2.1 of this licence.

**Note:** At times the State Water Corporation is required to utilise the Fish River Water Supply Scheme infrastructure to deliver water to villages within the Lithgow area from the Lithgow Town Reservoir.

#### 3.3 The Licence Holder must only use water for the purpose of supplying water to its customers of the Fish River Water Scheme, and for its own facilities and operations.

#### 3.4 The Licence Holder is entitled to extract a total of 15,876 ML per year from the Fish River and the Duckmaloi River subject to condition 4.4 of this licence.

**Note:** The extraction comprises 14,876 ML per year (which equates to the maximum historical usage within a single water year) plus an allowance of 1,000 ML per year for conveyance losses within the scheme.

**Note:** This licence provides for 100% carryover of unused allocation from the previous water year (see Condition 4.4 below). Thus State Water Corporation may extract in any given water year the yearly entitlement plus the carryover from the previous water year.
4 Access Conditions

4.1 The Licence Holder must manage the Fish River Water Supply Scheme in accordance with the recommendations within the document “Fish River Water Supply Scheme – Review of water sharing arrangement” NSW Office of Water, March 2011 and any subsequent clarifications of rules and reviews.

Note: State Water’s Operating Licence contains provisions for the Fish River Customer Council, Customer Contracts and Fish River water balance and system yield.

4.2 The Licence Holder must maintain allocation to the following customers as per Schedule 3 Water Allocation Table S3.1 Water Allocation – Oberon Dam:

- Delta Electricity
- Sydney Catchment Authority
- Lithgow City Council
- Oberon Council
- Minor Customers *

* At the time of issue of this Part 9 licence to State Water Corporation, Fish River Water Supply Scheme supplied approximately 300 minor customers. State Water may enter into new supply contract and terminate existing supply contracts (subject to State Water’s Operating Licence conditions) for minor customers provided the total volume supplied to the minor customers does not exceed that detailed in Table S3.1 of Schedule 3.

4.3 The Licence Holder is permitted to carryover into the following water year up to 100 percent of the Licence Holder’s annual entitlement.

5 Drought Management

5.1 When Oberon Dam reaches 50% or lower storage capacity, the Licence Holder must prepare a weekly resource assessment for Oberon Dam which details the percentage storage capacity (rounded to the nearest whole percent), restriction level and allowable extraction as detailed in condition 5.2 of this licence.

Note: The percentage storage capacity is to be rounded to the nearest whole percent (i.e. with no decimal point) to permit a more consistent weekly management of supply by reducing the effect of inaccuracies in measurements and storage capacity tables.

5.2 The Licence Holder must restrict the extraction from Oberon Dam according to the table below.

Note: The reduction in the allowable extraction is according to the recommendations of the “Fish River Water Supply Scheme - Review of water sharing arrangements, March 2011” NSW Office of Water. The report also identified how each of State Water’s Fish River Water Scheme customer allocation is to be reduced according to the restriction level.
State Water Corporation Water Management Licence – Fish River Scheme

<table>
<thead>
<tr>
<th>Restriction Level</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Level 5</th>
<th>Level 6</th>
<th>Level 7</th>
<th>Level 8</th>
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</thead>
<tbody>
<tr>
<td>Dam at</td>
<td>&gt; 50%</td>
<td>50%</td>
<td>40%</td>
<td>25%</td>
<td>20%</td>
<td>15%</td>
<td>10%</td>
<td>8%</td>
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<tr>
<td>ML</td>
<td>&gt; 22,381</td>
<td>22,381</td>
<td>17,905</td>
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<td>8,952</td>
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<tr>
<td>Annual (ML)</td>
<td>14,876</td>
<td>12,676</td>
<td>12,114</td>
<td>10,752</td>
<td>9,391</td>
<td>6,562</td>
<td>5,636</td>
<td>3,121</td>
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<tr>
<td>Monthly (ML)</td>
<td>1,240</td>
<td>1,056</td>
<td>1,009</td>
<td>896</td>
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<tr>
<td>Weekly (ML)</td>
<td>286</td>
<td>244</td>
<td>233</td>
<td>207</td>
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<td>126</td>
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<td>60</td>
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<tr>
<td>Daily (ML)</td>
<td>41</td>
<td>34.7</td>
<td>33.2</td>
<td>29.4</td>
<td>25.7</td>
<td>18.0</td>
<td>15.4</td>
<td>8.5</td>
</tr>
</tbody>
</table>

**Note:** In the event that Sydney Catchment Authority’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 State Water Corporation to extract up to an additional 3.5 ML/day from Oberon Dam for supply to the Sydney Catchment Authority. Simultaneously, a feasibility and comparative assessment must be initiated for emergency augmentation options for both Oberon Shire and the Upper Blue Mountains.

**Note:** The restriction table is based on net storage of Oberon Dam, which is the volume of the storage excluding any water in Fish River Scheme customer’s carry over accounts as permitted by State Water under their customer contracts and operational procedures. The net storage volume is rounded to the nearest whole percent.

5.3 The Licence Holder must preferentially extract water from the Duckmaloi Weir, when:

(a) Oberon Dam is less than 40 percent storage capacity, and
(b) the flow in the Duckmaloi River upstream of the Duckmaloi Weir pool is greater than 80 ML/day

**Note:** The Duckmaloi Weir can supply water to Delta Electricity and Sydney Catchment Authority but both of these Fish River Water Supply Scheme customers have constraints on various water quality parameters. Hence, depending on the water quality at the time, State Water may not be able to fully comply with this condition.

6 Cold Water Pollution

6.1 The Licence Holder must develop an operating protocol for the mitigation of cold water pollution from Oberon Dam for consideration and approval by the Ministerial Corporation within twenty four (24) months of the date of issue of this licence.

6.2 The Licence Holder must, subject to the approval of the Ministerial Corporation:

(a) implement the operating protocol developed under condition 6.1 of this licence; and
(b) report its performance against the operating protocol in the Annual Compliance Report taking into consideration the “Guidelines for Managing Cold Water Releases from High Priority Dams” developed by the Cold Water Pollution Inter Agency Group, including instances of and reasons for departure, outcomes achieved and proposals for improvement in performance.
7. Water Releases

7.1 Environmental Water Releases

7.1.1 The Licence Holder must release 2.4 ML per day from Oberon Dam to provide an environmental flow in the Fish River immediately below Oberon Dam.

7.1.2 The Licence Holder must investigate the feasibility, suitability and environmental benefits of a variable environmental flow regime from Oberon Dam, and provide a written report detailing the results of the investigation with recommendation to the Ministerial Corporation within twenty four (24) months of the date of issue of this licence.

Note: A variable environmental flow regime may be either a transparent and translucent regime or a seasonally varied fixed volume release. The feasibility of a variable environmental flow release regime will be dependent on the present infrastructure of the dam, the cost of any required works to allow a variable release, and the effect on the long term water availability from the Fish River Water Supply Scheme.

7.1.3 The Licence Holder must permit all flow equal to or less than 3 ML per day to pass the Duckmaloi Weir.

7.1.4 The Licence Holder must manage all water releases from the authorised water management works to reduce the risk of contamination of the receiving waters by cyanobacteria when levels in the source water exceed the prevailing recreational guideline limit.

Note: Oberon Dam is the only authorised water management work covered by this licence that has an environmental release requirement. Water releases from Oberon Dam need to be managed in respect to the risk from blue-green algae in the upper levels of the water column and manganese concentration in the lower levels of the storage.

7.2 Banked Environmental Flow Releases

7.2.1 The Licence Holder must bank and keep a record of the volume of water that is not released when environmental flows specified in this licence are disrupted (reduced or stopped) for operational purposes.

Note: The banking of the difference between the required release and the actual release is not required where the environmental water release has been reduced or suspended during periods of severe and extended drought.

7.2.2 The Licence Holder must, within 60 days of return to the normal environmental flows required by conditions 7.1.1 to 7.1.4 of this licence, commence the release of the banked water in the manner agreed to by the Ministerial Corporation.
8. Monitoring

8.1 Water Quantity Monitoring

8.1.1 The Licence Holder must monitor and record;
(a) daily extraction and transfers from the authorised water management works;
(b) daily storage volumes and releases from the authorised water management works;
(c) inflows into the authorised water management works; and
(d) flows at the gauging stations at Duckmaloi Weir and immediately downstream of the environmental flow release point below Oberon Dam.

8.2 Measurement and Data Quality Standards

8.2.1 The Licence Holder must undertake all quality and quantity monitoring as required by this licence consistent with appropriate quality and quantity control procedures, and national standards, or as required by the Ministerial Corporation. The Licence Holder may include data of acceptable quality from other sources to meet the monitoring requirements of this licence.

8.3 Cold Water Pollution Monitoring

8.3.1 The Licence Holder must:
(a) develop a water temperature monitoring programs for Oberon Dam within twenty four (24) months of the date of issue of this Licence in accordance with the "Guidelines for Managing Cold Water Releases from High Priority Dams" developed by the Cold Water Pollution Inter Agency Group; 
(b) develop a cold water pollution monitoring program capable of measuring the Licence Holder’s performance against the operating protocol required by condition 6.1 of this licence;
(c) submit the monitoring program to the Minister for approval;
(d) implement the monitoring program, if approved by the Minister;
(e) report the monitoring results in the Annual Compliance Report taking into account the “Guidelines for Managing Cold Water Releases from High Priority Dams” developed by the Cold Water Pollution Inter Agency Group; and
(f) store and archive data for future use.

8.4 Water Quality Monitoring

8.4.1 The Licence Holder must monitor and analyse cyanobacteria levels within Oberon Dam in accordance with the Regional Algal Coordinating Committee standards and/or guidelines.
9. Reporting

9.1 Data Access

9.1.1 The Licence Holder must collect, record, quality check and provide the Ministerial Corporation with access to the following data annually or as required by the Minister:

(a) water extractions by water source;
(b) water storage volumes and releases;
(c) stream flow and river height data recorded at the gauging stations at the Duckmaloi Weir and immediately downstream of the environmental flow release point below Oberon Dam; and
(d) details of any failure to measure and record, brief reasons for any such failure, and substituted estimates.

9.1.2 The Licence Holder must present all data and reports to the Ministerial Corporation in the format specified by the Ministerial Corporation, from time to time.

9.2 Event Notification

9.2.1 The Licence Holder must notify the Ministerial Corporation in writing at the earliest practical possible opportunity following any incident or emergency, but not exceeding 5 working days, that has caused, or is likely to cause, non-compliance or alteration to any of the licence conditions. The notification must include, but need not be limited to, the following information:

(a) whether the incident has resulted in a non-compliance or altered event (at the date of the notification) and details of any non-compliance or altered release;
(b) the date, time and location of the incident, or works involved;
(c) the cause and nature of the incident, including details of any environmental harm or damage that may have occurred;
(d) any action taken where it was necessary to avoid harm; and
(e) any action that was, or will be taken to prevent a recurrence of the incident.

Where the incident or emergency involves the failure or inaccuracy of a devise used for measuring the volume of water taken, the notification must include the duration of the failure of the measuring devise(s), and the total hours that the work was operated while the measuring devise was not functioning.

Note: “Emergency’ is defined in the dictionary of this licence (section 10) as follows: Emergency may include an event that is pending, or an event that has already occurred but could not be reasonably foreseen or scheduled, including occurrences such as major infrastructure failure, or a water contamination incident that may place the Licence Holder in serious breach of either its Operating Licence or the Protection of the Environment Operations Act 1997 (NSW), or declared disaster or any other event considered by the Ministerial Corporation to constitute an actual or potential emergency.
9.3 Annual Compliance Report

9.3.1 By 30 September of each year, the Licence Holder must prepare and submit to the Minister a written report on the previous water year from 1 July until the 30 June called the Annual Compliance Report. The Licence Holder must provide the Minister with access to the supporting data referred to in the Annual Compliance Report. The Annual Compliance Report must be provided to the Minister in the form of one (1) hard copy and one (1) electronic copy. The report must include, but is not limited to including, the following information:

(a) an introduction, including an overview of the Licence Holder's water management and supply activities associated with the water sources;

(b) a map to scale, depicting the location of the water source and the authorised water management works, sampling sites and the gauging stations listed in this licence;

(c) a summary (including date, time, location and works involved) of circumstances in which a requirement of this licence could not be fully met and any actions taken in relation to each circumstance;

(d) an annual water balance for Oberon Dam prepared in a manner set out by the Ministerial Corporation;

(e) annual extractions by water source and the annual volume of water supplied to each major customer and to the combined minor customers;

Note: For the annual compliance report, the volume supplied to each minor customer is to be totalled and reported as the total volume of water supplied to minor customers.

(f) a summary of the environmental water, including minimum daily releases and minimum daily flows;

(g) a section detailing the performance against the cold water pollution operating protocol required by condition 6.2 of this licence;

(h) performance reporting against any of the remaining conditions of this licence; and

(i) any other information required by the Ministerial Corporation.
10. Dictionary

Words and expressions that appear in this licence have the same meanings set out in this dictionary. Words and expressions defined in this dictionary that appear in section 5 Definitions of the Water Act 1912 and the Dictionary of the Water Management Act 2000 are the same and are shown in bold italics. A reference in this dictionary to a section is a reference to a section of the Water Management Act 2000.

1. **Approval** means a water use approval, a water management work approval or an activity approval.

2. **Biovolume** is the total volume of cyanobacteria, in cubic millimetres per litre (mm$^3$/l), present in the water sample. The risk of recreational users suffering an allergic reaction to cyanobacteria increases with biovolume.

3. **Cold water pollution** or thermal pollution occurs downstream of most large dams due to releases of water derived from deep within the dam to the downstream river channel.

4. **Construct** a work includes install, maintain, repair, alter or extend the work.

5. **Contingency flow** is a flow release required to achieve a specific river health outcome, such as enhancing fish breeding or flushing cyanobacterial blooms. It is in addition to normal environmental flow requirements.

6. **Customers** are those local water utilities, major utilities or individuals supplied with water from the Fish River Water Supply Scheme by the State Water Corporation.

7. **Cyanobacteria** are photosynthetic bacteria naturally present in all waterways. They are commonly known as blue green algae. Cyanobacteria can have irritant or allergic effects in some people, and some species are known to be capable of producing highly potent toxins that can damage liver and nerve tissues.

8. **Diversion work** means infrastructure built to divert water away from the natural watercourse.

9. **Divert** means the transfer of water by artificial means from a water source to another water source by a route the water otherwise would have taken.

10. **Emergency** may include an event that is pending, or an event that has already occurred but could not be reasonably foreseen or scheduled, including occurrences such as:

    (a) major infrastructure failures; or

    (b) a water contamination incident that may place the Licence Holder in serious breach of either its operating Licence or the Protection of the Environment Operations Act 1997 (NSW); or

    (c) declared disaster or any other event considered by the Ministerial Corporation to constitute an actual or potential emergency.

11. **Extraction** means the act of taking water from an artificial or natural source, such as a dam or river.
12. **Full supply level (FSL)** is the storage level considered to be the limit for the purposes of storage of water, except in periods of flood operation.

13. **Incident** may include accidents, equipment failure, failure of devices for measuring the volume of water extraction or any other such cause outside of the Licence Holder's effective control.

14. **Landholder**, in relation to land, means:
   
   (a) the owner of the land or (if the owner is not in occupation of the land) the lawful occupier of the land, or
   
   (b) the local council, in the case of land that comprises:
      
      i. public road vested in, or under the control or management of, the local council, or
      
      ii. the site of work that is, or is proposed to be, constructed for the local council.

15. **Licence** means this Water Management Licence issued to the State Water Corporation under Part 9 of the *Water Act 1912*.

16. **Megalitre (ML)** means one megalitre, which is equivalent to 1,000,000 litres.

17. **Ministerial Corporation** means the Water Administration Ministerial Corporation constituted by the *Water Management Act 2000 (NSW)* (section 371). At the time of preparation of this licence, the functions of the Ministerial Corporation were delegated to the NSW Office of Water under section 377 of the Act.

18. **Outlet works** means infrastructure built to enable release of water from a water management work into the natural watercourse.

19. **Recreational Guideline** for cyanobacteria is the upper concentration of cyanobacteria, or the maximum biovolume of cyanobacteria, that can be present in a waterway and be unlikely to affect the health of recreational users. Above this limit, the health risk to recreational users is thought to be unacceptable. Guidelines are constantly being revised and updated as new scientific and medical information becomes available. Refer to the National Health and Medical Research Council’s website ([http://www.nhmrc.gov.au/publications/synopses/eh38.htm](http://www.nhmrc.gov.au/publications/synopses/eh38.htm)) for up-to-date information.

20. **River** includes:

   (a) a stream of water, whether perennial or intermittent, flowing in a natural channel, or in a natural channel artificially improved, or in an artificial channel which has changed the course of the stream,

   (b) an affluent, confluent, branch or other stream of water into or from which a stream referred to in paragraph (a) flows, and

   (c) anything declared by the Ministerial Corporation by order published in the Gazette to be a river,

   but does not include anything declared by the Ministerial Corporation by order published in the Gazette as not being a river and, unless the regulations otherwise provide, does not include those waters of a tidal river that at any time are not capable of being used for irrigation or for watering stock.

21. **Spill** means the uncontrolled discharge of water from an impoundment to the natural watercourse when the storage level rises above the full supply level.
22. **Translucent flow release** is a release of water from a dam or weir that is equal to a proportion (e.g. 20%) of the inflow volume into the dam or weir.

23. **Transparent flow release** is a release of water from a dam or weir that is equal to the inflow volume to the dam or weir.

24. **Water management work** means a *water supply work*, a drainage work or a flood work.

25. **Water source** means the whole or part of:
   - (a) one or more rivers, lakes or estuaries, or
   - (b) one or more places where water occurs naturally on or below the surface of the ground and includes the coastal waters of the State.

26. **Water storage** means a dam, weir or other structure, which is used to regulate and manage river flows and the water body impounded by this structure.

27. **Water supply work** means:
   - (a) a work (such as a water pump or water bore) that is constructed or used for the purpose of taking water from a *water source*, or
   - (b) a work (such as a tank or dam) that is constructed or used for the purpose of i.) capturing or storing rainwater run-off, or ii.) storing water taken from a *water source*, or
   - (c) a work (such as a water pipe or irrigation channel) that is constructed or used for the purpose of conveying water to the point at which it is used, or
   - (d) any work (such as a bank or levee) that has the effect of diverting away from a *water source* any overflow from the *water source*, or
   - (e) any work (such as a weir) that has the effect of impounding water in a *water source*, including a reticulated system of such works, and includes all associated pipes, sluices, valves and equipment, but does not include:
     - (f) any work (other than a water supply work under the control or management of the Sydney Water Corporation, the Hunter Water Corporation or a local water utility) that receives water from a water supply work under the control and management of the Sydney Water Corporation, the Hunter Water Corporation or a local water utility, or
     - (g) any work declared by the regulations not to be a *water supply work*.

28. **Water year** means a year commencing 1 July.

29. **Work** includes includes any dam, lock, reservoir, weir, regulator, flume, race, channel (whether an artificial channel or a natural channel artificially improved), any cutting, well, excavation, tunnel, pipe, sewer, and any machinery and appliances.
## 11. Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ABN</td>
<td>Australian Business Number</td>
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</tr>
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</table>
Schedule 1  Key Contacts

WATER ADMINISTRATION MINISTERIAL CORPORATION

Manager Corporate Licensing
NSW Office of Water
PO Box 323
PENRITH NSW 2750
Ph: 02 4729 8128
Fax: 02 4729 8141
Email: information@water.nsw.gov.au

STATE WATER CORPORATION

Manager Water Delivery
State Water Corporation
PO Box 1018
Dubbo NSW 2830
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Fax: 02 6884 2603
Email: Dan.Berry@statewater.com.au
Schedule 2  Water Management Works

Water Management Works

All water management works used by State Water for the Fish River Water Supply Scheme to collect, extract and transfer water between the water sources authorised by this licence are tabled on the following pages.

S2.1  Fish River

<table>
<thead>
<tr>
<th>Oberon Dam</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
</tr>
<tr>
<td><strong>Location:</strong></td>
</tr>
<tr>
<td>Lot</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td><strong>Wall Height (m)</strong></td>
</tr>
<tr>
<td><strong>Crest Length (m)</strong></td>
</tr>
<tr>
<td><strong>Spillway</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>FSL (m AHD)</strong></td>
</tr>
<tr>
<td><strong>Operational Capacity (ML)</strong></td>
</tr>
<tr>
<td><strong>Total capacity (ML)</strong></td>
</tr>
<tr>
<td><strong>Outlet Works / Diversion Works</strong></td>
</tr>
<tr>
<td><strong>Other Details:</strong></td>
</tr>
</tbody>
</table>
Map showing location of Oberon Dam
Aerial Photo of Oberon Dam wall and associated infrastructure
### S2.2 Duckmaloi River

**Duckmaloi Weir**

**Description:** Duckmaloi Weir is a concrete overshot arched weir. It was designed and built by the NSW Department of Public Works. The weir was commissioned in 1964 and is located on the Duckmaloi River. It provides town water supply and cooling water for Mount Piper and Wallerawang Power Stations.

**Location:** Located on the Duckmaloi River on the following lots/DPs

<table>
<thead>
<tr>
<th>Lot</th>
<th>DP</th>
<th>Parish</th>
<th>County</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>632183</td>
<td>Norway</td>
<td>Westmoreland</td>
</tr>
<tr>
<td>3</td>
<td>264133</td>
<td>Duckmaloi</td>
<td>Westmoreland</td>
</tr>
</tbody>
</table>

- **Wall Height (m):** 3 m
- **Crest Length (m):** 13.1 m

**Spillway**

- **FSL (m AHD):** RL 1057.64 m
- **Operational Capacity (ML):** 20 ML
- **Total capacity (ML):** 20 ML

**Outlet Works / Diversion Works:** Consists of one 600 mm pipe through the weir wall. The outlet works have a capacity of 250 L/s at full storage level.

**Other Details:** Operating initially under the *Fish River Water Supply Administration Act 1945*, the scheme is now administered by State Water.
Map showing location of Duckmaloi Weir

Aerial Photo of Duckmaloi Weir and associated infrastructure
## S2.3 Rydal Dam

<table>
<thead>
<tr>
<th><strong>Rydal Dam</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong> Rydal Dam is an earth fill embankment dam constructed from medium plastic clay with traces of gravel. The dam was designed by NSW Department of Commerce and constructed by W.V.Hall and Elliot in 1956 and 1957, and upgraded in 1994 (spillway). The dam is located 2 km north of Rydal and provides emergency water storage for the supply to Delta Electricity.</td>
</tr>
<tr>
<td><strong>Location:</strong> Located on the Duckmaloi River on the following lot/DP</td>
</tr>
<tr>
<td>Lot</td>
</tr>
<tr>
<td>-----</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td><strong>Wall Height (m)</strong></td>
</tr>
<tr>
<td><strong>Crest Length (m)</strong></td>
</tr>
<tr>
<td><strong>Spillway</strong></td>
</tr>
<tr>
<td><strong>FSL (m AHD)</strong></td>
</tr>
<tr>
<td><strong>Operational Capacity (ML)</strong></td>
</tr>
<tr>
<td><strong>Total capacity (ML)</strong></td>
</tr>
<tr>
<td><strong>Outlet Works / Diversion Works</strong></td>
</tr>
<tr>
<td><strong>Other Details:</strong> Rydal Dam is an off stream storage with negligible natural inflow. The water in Rydal Dam is transferred from Oberon Dam and Duckmaloi Weir. This is a Prescribed Dam under the <em>Dams Safety Act 1978</em>. At full storage level the maximum water depth of the dam is 10 m and the surface area is 7 hectares.</td>
</tr>
</tbody>
</table>
Map showing location of Rydal Dam

Aerial Photo of Rydal Dam wall and associated infrastructure
# Schedule 3  Water Allocation

## S3.1 Water Allocation - Oberon Dam

### Annual

<table>
<thead>
<tr>
<th>Restriction Level</th>
<th>Nil</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Level 5</th>
<th>Level 6</th>
<th>Level 7</th>
<th>Level 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of Full Storage Capacity</td>
<td>&gt; 50%</td>
<td>50%</td>
<td>40%</td>
<td>25%</td>
<td>20%</td>
<td>15%</td>
<td>10%</td>
<td>8%</td>
<td>5%</td>
</tr>
<tr>
<td>Storage Volume (ML)</td>
<td>&gt; 22,381</td>
<td>22,381</td>
<td>17,905</td>
<td>11,191</td>
<td>8,952</td>
<td>6,714</td>
<td>4,476</td>
<td>3,581</td>
<td>2,238</td>
</tr>
</tbody>
</table>

### Percentage Supply Restriction

<table>
<thead>
<tr>
<th></th>
<th>Delta</th>
<th>SCA/LCC</th>
<th>Oberon</th>
<th>Minor Consumers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delta N/A</td>
<td>20.0%</td>
<td>10.0%</td>
<td>0.0%</td>
<td>10.0%</td>
</tr>
<tr>
<td>Lithgow CC N/A</td>
<td>20.0%</td>
<td>20.0%</td>
<td>0.0%</td>
<td>20.0%</td>
</tr>
<tr>
<td>Oberon</td>
<td>30.0%</td>
<td>30.0%</td>
<td>0.0%</td>
<td>20.0%</td>
</tr>
<tr>
<td>Minor Consumers N/A</td>
<td>30.0%</td>
<td>30.0%</td>
<td>0.0%</td>
<td>20.0%</td>
</tr>
</tbody>
</table>

### Supply Availability in Number of Shares

#### Yearly

<table>
<thead>
<tr>
<th></th>
<th>Delta</th>
<th>SCA</th>
<th>Lithgow CC</th>
<th>Oberon</th>
<th>Minor Consumers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delta 8,184</td>
<td>6,547</td>
<td>5,729</td>
<td>4,910</td>
<td>3,274</td>
<td>2,619</td>
</tr>
<tr>
<td>SCA 3,650</td>
<td>2,920</td>
<td>2,555</td>
<td>2,190</td>
<td>1,460</td>
<td>1,278</td>
</tr>
<tr>
<td>Lithgow CC 1,778</td>
<td>1,422</td>
<td>1,245</td>
<td>1,067</td>
<td>711</td>
<td>622</td>
</tr>
<tr>
<td>Oberon 1,064</td>
<td>1,064</td>
<td>1,064</td>
<td>1,064</td>
<td>958</td>
<td>958</td>
</tr>
<tr>
<td>Minor Consumers 200</td>
<td>180</td>
<td>160</td>
<td>160</td>
<td>160</td>
<td>160</td>
</tr>
<tr>
<td>Totals 14,876</td>
<td>12,676</td>
<td>12,114</td>
<td>10,752</td>
<td>9,391</td>
<td>5,636</td>
</tr>
</tbody>
</table>

#### Monthly

<table>
<thead>
<tr>
<th></th>
<th>Delta</th>
<th>SCA</th>
<th>Lithgow CC</th>
<th>Oberon</th>
<th>Minor Consumers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delta 682</td>
<td>546</td>
<td>477</td>
<td>409</td>
<td>273</td>
<td>218</td>
</tr>
<tr>
<td>SCA 304</td>
<td>243</td>
<td>213</td>
<td>183</td>
<td>122</td>
<td>106</td>
</tr>
<tr>
<td>Lithgow CC 148</td>
<td>119</td>
<td>104</td>
<td>89</td>
<td>59</td>
<td>52</td>
</tr>
<tr>
<td>Oberon 89</td>
<td>89</td>
<td>89</td>
<td>89</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Minor Consumers 17</td>
<td>15</td>
<td>13</td>
<td>13</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td>Totals 1,240</td>
<td>1,056</td>
<td>1,009</td>
<td>896</td>
<td>783</td>
<td>547</td>
</tr>
</tbody>
</table>

#### Weekly

<table>
<thead>
<tr>
<th></th>
<th>Delta</th>
<th>SCA</th>
<th>Lithgow CC</th>
<th>Oberon</th>
<th>Minor Customers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delta 157</td>
<td>126</td>
<td>110</td>
<td>94</td>
<td>63</td>
<td>3</td>
</tr>
<tr>
<td>SCA 70</td>
<td>63</td>
<td>49</td>
<td>42</td>
<td>28</td>
<td>25</td>
</tr>
<tr>
<td>Lithgow CC 34</td>
<td>31</td>
<td>27</td>
<td>24</td>
<td>21</td>
<td>14</td>
</tr>
<tr>
<td>Oberon 20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>Minor Customers 4</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Totals 286</td>
<td>244</td>
<td>233</td>
<td>207</td>
<td>181</td>
<td>126</td>
</tr>
</tbody>
</table>

#### Daily

<table>
<thead>
<tr>
<th></th>
<th>Delta</th>
<th>SCA</th>
<th>Lithgow CC</th>
<th>Oberon</th>
<th>Minor Customers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delta 22.4</td>
<td>17.9</td>
<td>15.7</td>
<td>13.4</td>
<td>9.0</td>
<td>0.4</td>
</tr>
<tr>
<td>SCA 10.0</td>
<td>9.0</td>
<td>8.0</td>
<td>6.0</td>
<td>4.0</td>
<td>3.5</td>
</tr>
<tr>
<td>Lithgow CC 4.9</td>
<td>4.4</td>
<td>3.4</td>
<td>2.9</td>
<td>2.9</td>
<td>2.6</td>
</tr>
<tr>
<td>Oberon 2.9</td>
<td>2.9</td>
<td>2.9</td>
<td>2.9</td>
<td>2.9</td>
<td>2.6</td>
</tr>
<tr>
<td>Minor Customers 0.5</td>
<td>0.5</td>
<td>0.4</td>
<td>0.4</td>
<td>0.4</td>
<td>0.3</td>
</tr>
<tr>
<td>Totals 41</td>
<td>34.7</td>
<td>33.2</td>
<td>29.4</td>
<td>25.7</td>
<td>15.4</td>
</tr>
</tbody>
</table>

**Note:** For the above table, one share is equal to one megalitre. All restrictions described above relate to net storage, that is, the volume of water in storage, excluding any water in carry over accounts.

Publication number 12_143