Fitzroy Basin

Callide Valley Water Supply Scheme Operations Manual

June 2018

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Queensland Government

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Chapter 1 Preliminary

1 Short title

(1) This operations manual may be cited as the Callide Valley Water Supply Scheme Operations Manual.

(2) Reference in this document to 'this manual' means the Callide Valley Water Supply Scheme Operations Manual.

2 Interpretation of words used in this manual

The dictionary in attachment 1 defines particular words used in this manual.

3 Water supply scheme

The extent of the Callide Valley Water Supply Scheme is defined in schedule 2 of the Water Plan (Fitzroy Basin) 2011.

Chapter 2 Operating rules

4 Definitions for chapter 2

In this chapter—

Awoonga CS Energy storage account means the account established under section 5 that states the volume of water that was transported from Awoonga Dam for CS Energy Ltd and currently stored in Callide Dam;

Awoonga Callide Power Management storage account means the account established under section 5 that states the volume of water that was transported from Awoonga Dam for Callide Power Management Pty Ltd and currently stored in Callide Dam; and

Callide storage account means the account established under section 5 that states the volume of natural inflow water that was captured by Callide Dam and currently stored in the dam.

5 Storage accounts for Callide Dam

(1) The licence holder must—

(a) establish accounts for the water stored in Callide Dam, being—

(i) the Awoonga CS Energy storage account;

(ii) the Awoonga Callide Power Management storage account; and

(iii) the Callide storage account; and

(b) make public details of the monthly account balances within five business days of the end of each month.

(2) The volumes of water in each storage account must—

(a) be determined and recorded at the end of each month by the licence holder; and

(b) sum to the volume of water stored in Callide Dam.

(3) The balance in the Awoonga CS Energy storage account—

(a) may have a maximum deficit of 3000 ML; and

(b) must return to a zero balance when Callide Dam spills.

(4) The balance in the Awoonga Callide Power Management storage account—

(a) may have a maximum deficit of 2700 ML; and

(b) must return to a zero balance when Callide Dam spills.

(5) In determining the volume in the Awoonga CS Energy, Awoonga Callide Power Management and Callide Valley storage accounts, the licence holder must conduct a monthly storage water reconciliation using the following formula—

(a) The Callide volume account equal to—

$$V_{Ecal} = V_E - V_{E\,cse} - V_{E\,cpm}$$

(b) The Awoonga CS Energy account volume equal to—

$$V_{E\,cse} = V_{B\,cse} - D_{A\,cse} + I_{A\,cse} - SL_{A\,cse}$$

(c) The Awoonga Callide Power Management Account volume equal to—

$$V_{E\ cpm} = V_{B\ cpm} - D_{A\ cpm} + I_{A\ cpm} - SL_{A\ cpm}$$

(6) The parameters used in the formula under subsection (5) are defined in table 1.

Table 1 – Parameters for the formulae detailed in section 5

Parameter	Definition
V_E	The total volume stored in Callide Dam at the end of the month as calculated using the Callide Dam storage curve.
$V_{E\ cal}$	The volume stored at the end of the month in the Callide storage account and available for supply to water allocations within the Callide Valley Water Supply Scheme.
$V_{E\ cse}$	The volume of Awoonga Water Supply Scheme water stored at the end of the month in the Awoonga CS Energy storage account and available for re-lift from Callide Dam by CS Energy.
$V_{E\ cpm}$	The volume of Awoonga Water Supply Scheme water stored at the end of the month in the Awoonga Callide Power Management storage account and available for re-lift from Callide Dam by Callide Power Management.
$V_{B\ cse}$	The volume of Awoonga Water Supply Scheme water stored at the beginning of the month in the Awoonga CS Energy storage account.
$V_{B\ cpm}$	The volume of Awoonga Water Supply Scheme water stored at the beginning of the month in the Awoonga Callide Power Management storage account.
$D_{T\ cse}$	Total diversion by CS Energy in that month.
$D_{CVWSS\ cse}$	Total diversion of Callide Valley Water Supply Scheme water by CS Energy in that month.
$D_{A\ cse}$	The diversion of Awoonga Water Supply Scheme water by CS Energy in that month: $$D_{A\ cse} = D_{T\ cse} + -D_{CVWSS\ cse}$$
$D_{A\ cpm}$	The diversion of Awoonga Water Supply Scheme water by Callide Power Management in that month.
I_{TA}	The total volume of Awoonga Water Supply Scheme water delivered to Callide Dam in that month.
$I_{A\ cse}$	The total volume of Awoonga Water Supply Scheme water delivered to Callide Dam in the last month for CS Energy.
$I_{A\ cpm}$	The total volume of Awoonga Water Supply Scheme water delivered to Callide Dam in the last month for Callide Power Management: $$I_{A\ cpm} = I_{TA} - I_{A\ cse}$$

<table>
<tr><th>Parameter</th><th>Definition</th></tr>
<tr><td>SL_T</td><td>Total Callide Dam evaporation and seepage for that month.
Total Callide Dam evaporation (modified by the Pan Factor) in that month is calculated using the total evaporation for that month at Thangool Airport (Site Number 039089) available on the website of the Bureau of Meteorology.

The Pan Factor (PF) to be used for each month is shown in the following table:

<table>
<tr><th>Month</th><th>PF</th><th>Month</th><th>PF</th></tr>
<tr><td>July</td><td>0.76</td><td>January</td><td>0.82</td></tr>
<tr><td>August</td><td>0.81</td><td>February</td><td>0.82</td></tr>
<tr><td>September</td><td>0.79</td><td>March</td><td>0.83</td></tr>
<tr><td>October</td><td>0.81</td><td>April</td><td>0.79</td></tr>
<tr><td>November</td><td>0.82</td><td>May</td><td>0.75</td></tr>
<tr><td>December</td><td>0.83</td><td>June</td><td>0.71</td></tr>
</table>

Total Callide Dam seepage is calculated at a standard rate of 25mm per month.
The surface area of the storage of the last day of the month is used to determine the evaporation and seepage volume.</td></tr>
<tr><td>$SL_{A\ cse}$</td><td>The portion of evaporation and seepage for that month to be attributed to Awoonga CS Energy storage account volume:
$$SL_{A\ cse} = SL_T \times (V_{Ee\ cse} \div V_E); and\ if$$
$$V_{Ee\ cse} < 0\ , then\ SL_{A\ cse} = 0$$</td></tr>
<tr><td>$SL_{A\ cpm}$</td><td>The portion of evaporation and seepage for that month to be attributed to Awoonga Callide Power Management storage account volume:
$$SL_{A\ cpm} = SL_T \times \left(V_{Ee\ cpm} \div V_E\right); and\ if$$
$$V_{Ee\ cpm} < 0\ , then\ SL_{A\ cpm} = 0$$</td></tr>
<tr><td>$V_{Ee\ cse}$</td><td>The approximated end of month volume for the Awoonga CS Energy storage account volume:
$$V_{Ee\ cse} = V_{B\ cse} - D_{A\ cse} + I_{A\ cse}$$</td></tr>
<tr><td>$V_{Ee\ cpm}$</td><td>The approximated end of month volume for the Callide Power Management storage account volume:
$$V_{Ee\ cpm} = V_{B\ cmp} - D_{A\ cpm} + I_{A\ cpm}$$</td></tr>
</table>

6 Release rules for Callide Dam and Kroombit Dam

The licence holder may only release water from either Callide or Kroombit Dams if the release is—

(a) for groundwater recharge or the supply of water for stock and domestic purposes; and

(b) in accordance with an approved release strategy; and

(c) is consistent with the limitations on releases for groundwater recharge from Callide Dam stated in table 2.

Table 2 – Callide Dam release limitations

Volume in Callide Dam release limitations	Limitations on releases
> 33 000 ML	No constraints on releases to Callide, Kroombit and Kariboe Creeks for groundwater recharge.
20 000 ML – 33 000 ML	Volume to be released for groundwater recharge is limited to 30% of monthly inflows, with the maximum volume capped at 2500 ML in any water year.
< 20 000 ML	No releases for groundwater recharge.

Chapter 3 Water sharing rules

7 Taking of water under water licences 613582 and 613583

(1) This section only applies to water licences—

(a) 613582 held by CS Energy; and

(b) 613583 held by Callide Power Management.

(2) Water may be taken from the Callide Dam impoundment except when there is less than 20 000 ML stored in the Callide storage account; and

(a) for water licence 613582—the Awoonga CS Energy storage account is in deficit;

(b) for water licence 613583—the Awoonga Callide Power Management storage account is in deficit.

8 Announced allocations

(1) The licence holder must—

(a) set an announced allocation for water allocations belonging to the high A, high B and medium priority groups to take effect on the first day of each water year;

(b) for allocations belonging to the medium priority group—

(i) recalculate the announced allocation for each zone following increases to groundwater levels that have resulted from a recharge event if the current allocation is less than 100 per cent; and

(ii) reset the announced allocation for a zone, only if a recalculation indicates that the announced allocation would—

(A) increase by five or more percentage points; or

(B) increase to 100 per cent; and

(c) make public details of the announced allocation, including the monitoring bore levels used for determining the announced allocation for water allocations belonging to the medium priority group, on the licence holder's internet site within five business days of setting or resetting an announced allocation.

(2) The announced allocation that is set by the licence holder must be—

(a) for the high A priority group—100 per cent;

(b) for the high B priority group—100 per cent; and

(c) for water allocations located within each zone that belong to the medium priority group—the announced allocation calculated under section 9.

9 Calculation of announced allocation for the medium priority group

(1) This section applies to water allocations belonging to the medium priority group.

(2) For each zone, the announced allocation for water allocations located in that zone must be calculated as follows by the licence holder—

(a) determine the groundwater level for each assessment site in the zone;

(b) for groundwater levels that are above or within the range specified in table 3 for the zone—

(i) round down each level to a groundwater level mentioned in the table; and

(ii) select the corresponding announced allocation in the table; and

(c) for groundwater levels that are below the range specified in table 3 for the zone—the announced allocation is zero per cent.

(3) If the monitoring bore for the assessment site cannot be used, the licence holder may use another method of determining the groundwater level for the site, subject to approval by the chief executive.

(4) In this section—

assessment site means a geographical location referred to in table 3 stated in eastings (E) and northings (N) as Map Grid of Australia 1994 (MGA94) zone 56 coordinates.

Table 3 – Announced allocation for water allocations belonging to the medium priority group

Announced allocation (%)	**Zone 3B** **Assessment Site— E: 242701, N: 7306915 Hodgetts Road (RN 13030140)**	**Zone 3A** **Assessment Site— E: 242847, N: 7304097 Burnett Highway (RN 13030234)**	**Zone 5** **Assessment Site— E: 249632, N: 7301930 Dawson Highway (RN 13030126)**	**Zone 7** **Assessment Site— E: 246932, N: 7297130 Meissners Road (RN 13030259)**	**Zone 8B** **Assessment Site— E: 250477, N: 7295924 Van Itallies Road (RN 13030747)**	**Zone 8A** **Assessment Site— E: 254746, N: 7296907 Mullers Road (RN 13030079)**	**Zone 10B** **Assessment Site— E: 251641, N: 7292284 Hintons Lane (RN 13030699)**
	Reference height – 159.32	**Reference height – 160.44**	**Reference height – 173.52**	**Reference height – 173.86**	**Reference height – 181.82**	**Reference height – 190.45**	**Reference height – 186.32**
	Groundwater level (EL–metres AHD)						
100	>145.52	>150.74	>161.62	>158.73	>174.22	>184.88	>176.22
95	144.86	150.02	161.30	158.42	173.21	184.26	175.61
90	144.20	149.30	160.99	158.11	172.20	183.63	175.01
85	143.54	148.58	160.68	157.80	171.20	183.01	174.40
80	142.88	147.86	160.37	157.48	171.06	182.38	173.80
75	142.22	147.14	160.06	157.17	170.93	181.76	173.19
70	142.05	147.03	159.75	157.06	170.80	181.63	173.06
65	141.87	146.93	159.44	156.94	170.67	181.51	172.93
60	141.70	146.83	159.13	156.82	170.54	181.38	172.80
55	141.53	146.73	158.82	156.71	170.40	181.26	172.66
50	141.35	146.63	158.54	156.59	170.27	181.13	172.53
45	141.18	146.53	158.27	156.48	170.14	181.01	172.40
40	141.00	146.42	158.00	156.36	170.01	180.88	172.27
35	140.83	146.32	157.72	156.25	169.88	180.76	172.14
30	140.65	146.22	157.45	156.13	169.87	180.63	172.00
25	140.64	146.12	157.18	156.02	169.86	180.51	171.87
20	140.63	146.02	156.90	155.90	169.85	180.38	171.86
15	140.61	146.00	156.63	155.79	169.84	180.26	171.85
10	140.60	145.98	156.36	155.67	169.84	180.24	171.84
5	140.59	145.96	156.09	155.64	169.83	180.22	171.83
0	<140.57	<145.94	<156.02	<155.61	<169.82	<180.20	<171.82

10 Taking water under a water allocation belonging to the high A priority group

(1) This section applies to a water allocation belonging to the high A priority group.

(2) The volume of water taken under a water allocation in a water year must not exceed the nominal volume of the allocation multiplied by the announced allocation.

11 Taking water under a water allocation belonging to the risk priority group

(1) This section applies to a water allocation belonging to the risk priority group.

(2) Water may only be taken under a water allocation during periods of flow in either Callide or Kroombit Creeks, including times when water is being released under section 6.

(3) The volume of water taken under a water allocation in a water year must not exceed the nominal volume of the water allocation.

12 Taking water under a water allocation belonging to the high B or medium priority groups

(1) This section applies to a water allocation belonging to the high B or medium priority group.

(2) The volume of water taken under a water allocation in a water year must not exceed the nominal volume of the allocation multiplied by the announced allocation.

(3) For a water allocation belonging to the high B priority group that has changed its priority group from medium—the announced allocation for the high B priority group must not apply until the water year following the year in which the change was registered.

(4) Groundwater may be taken under a water allocation if the point of take is within the zone specified as the location for the allocation.

(5) Surface water may also be taken under a water allocation if—

(a) the take is from—

(i) Callide Creek when water is being released from Callide Dam; or

(ii) Kroombit Creek when water is being released from Kroombit Dam; or

(iii) Kariboe Creek when water is being released from Callide Dam to Kariboe Creek via the Callide Diversion Channel;

(b) the point of take is within the zone specified as the location for the allocation; and

(c) the allocation holder has written approval from the licence holder.

(6) Subsection (2) does not include the volume of water permitted to be carried over into the next water year, as specified in section 13.

13 Carryover

(1) The licence holder may, subject to this section, allow a holder of a water allocation belonging to the high B or medium priority groups to carry over part of the water allocation holder's unused groundwater from one water year to the next water year.

(2) The total volume of unused water for the scheme that is permitted to be carried over to the next water year is the lesser of—

(a) 1500 ML; and

(b) 80 per cent of the total volume of unused groundwater at the end of the water year.

(3) If the volume determined under subsection (2)(b) is greater than 1500 ML, the licence holder must make public the methodology for determining the volume of water permitted to be carried over by each water user.

(4) The volume of water that may be carried over by a water user must not exceed the nominal volume of the water allocation.

(5) Any volume of water that is carried over into a water year, and that is unused by the water allocation holder at the end of December, must be deducted from the volume of water available to the water allocation holder.

(6) In this section—

unused groundwater means the volume of water not taken under section 12.

Chapter 4 Seasonal water assignment rules

14 Seasonal water assignment rules

(7) The holder of a water allocation may enter into an arrangement for a seasonal water assignment in relation to the allocation under section 61 of the *Water Regulation 2016* only if—

(a) either—

(i) the zone from which the extraction is to occur under the assignment is the same as the location for the allocation; or

(ii) otherwise—for allocations belonging to the high B and medium priority groups—the approval would result in a potential take volume for a zone that is less than or equal to the total allowable take volume for that zone; and

(iii) the holder of the resource operations licence consents to the arrangement.

(8) In this section—

(a) ***potential take volume***, for a zone, means the volume calculated using the formula—

$$NV_{High\ B} + (NV_{Medium} \times AA_{Medium}) + SWA_{In} - SWA_{Out}$$

(b) ***total allowable take volume***, for a zone, means the volume calculated using the formula—

$$NV_{High\ B} + (MVL \times AA_{Medium})$$

where—

Parameter	Definition
$NV_{High\ B}$	The sum of the nominal volumes for the water allocations belonging to high B priority group that are located in the zone.
NV_{Medium}	The sum of the nominal volumes for the water allocations belonging to medium priority group that are located in the zone.
AA_{Medium}	The announced allocation for the water allocations belonging to medium priority group that are located in the zone.
SWA_{In}	The volume seasonally assigned into the zone for the current water year.
SWA_{Out}	The volume seasonally assigned out of the zone for the current water year.
MVL	The maximum nominal volume for the medium priority group for the zone as detailed in table 5 of the Fitzroy Basin Water Management Protocol.

Attachment 1 Dictionary

Term	Definition
AHD	Australian Height Datum, which references a level or height to a standard base level.
Announced allocation	For a water allocation managed under a resource operations licence, means a number, expressed as a percentage, which is used to determine the maximum volume of water that may be taken in a water year under the authority of a water allocation.
Carryover	The volume of water permitted to be carried over from the unused portion of the entitlement at the end of the previous water year.
EL	Elevation level.
Megalitre (ML)	One million litres.
Nominal volume	Nominal volume means the volume of water, in megalitres, that represents the share of the water available to be taken by holders of water allocations in a priority group or a water allocation group.
Priority group	A grouping of water allocations for taking supplemented water from a water supply scheme with the same Water Allocation Security Objective (WASO).
Release	Water from a dam or weir that passes downstream from the dam or weir either through the dam or weir outlet works or over the dam spillway.
Unused water	Means the volume of water not taken under section 12.
Water use	Refers to actual take of water.
Water user	The holder of a valid water entitlement.