

Bourke Shire Council

Draft
Drought Management Plan

Bourke Shire Council Drought Management Plan

Data

1. Community Water Services
2. Community Water Requirements
3. Industry Dependent Services
4. Water Supply Schemes
5. Bourke Weir Pool
6. Rainfall & Evaporation Data
7. Maps

Planning

1. Strategies
2. Predictions
3. Restrictions
4. Impacts
5. Alternate Water Sources
6. Legal
7. Resources
8. Costs
9. Media Strategy
10. Contacts

Monitoring

1. Rivers
2. Bores
3. Rainfall
4. Water Quality

Consultation

1. Public
2. Government Agencies

Review

1. Records
2. Strategies

Data

1. Community Water Services

Existing Potable Water Supplies:

Community	Population	No. Houses	Water Source	Provider	Storage Vol.	Pump Capacity
Bourke	3000	1150	Darling R Weir Pool	Council	4470 ML	3.0 ML/d
North Bourke	46	25	Darling R Weir Pool	Council	4470 ML	Incl in Bourke
Louth	32	25	Rainwater Tanks	Private	Av 10kL/house	
Byrock	45	22	Rain Water Tanks	Private	Av 10kL/house	
Enngonia	110	39	Rainwater Tanks	Private	Av 10kL/house	
Fords Bridge	8	12	Rainwater Tanks	Private	Av 10kL/house	
Wanaaring	96	20	Rainwater Tanks	Private	Av 10kL/house	
Barringun	10	2	Rainwater Tanks	Private	Av 10kL/house	
Yantabulla	4	2	Rainwater Tanks	Private	Av 10kL/house	
Pera Bore	200	40	Rainwater Tanks	Private	Av 10kL/house	
Properties	350	400	Rainwater Tanks	Private	Av 10kL/house	

Existing Non-Potable Water Supplies

Community	Population	No. Houses	Water Source	Provider	Storage Vol.	Pump Capacity
Bourke	3000	1150	Darling R Weir Pool	Council	4470 ML	11 ML/d 8.3 ML/d
North Bourke	46	25	Darling R Weir Pool	Council	4470 ML	
Louth	32	25	Darling R Weir Pool & Bore	Council	4000 ML WP Bore NK	River Bore
Byrock	45	22	Ground Tank	Council	50 ML	
Enngonia	110	39	Artesian Bore	Council	NK	
Fords Bridge	8	12	Artesian Bore	Council	NK	
Wanaaring	96	20	Artesian Bore	Council	NK	
Barringun	10	2	Artesian Bore	Private	NK	
Yantabulla	4	2	Artesian Bore	Private	NK	
Pera Bore	200	40	Artesian Bore	Private	1.0 ML/d	1.0ML/day
Properties	350	400	Var. Bores Tanks,river	Private	Var	Var

2. Community Water Requirements

Community	Population	Human Consumption Requirements (9L/person/d) kL/day	Potable Minimum Requirements (100L/person/day) kL/day	Non-Potable Basic Requirements (715L/house/day) kL/day
Bourke	3000	27	300	822.3
North Bourke	46	0.4	4.6	17.9
Louth	32	0.3	3.2	17.9
Byrock	45	0.4	4.5	15.7
Enngonia	110	1.0	11	27.9
Fords Bridge	8	0.1	0.8	8.6
Wanaaring	96	0.9	9.6	14.3
Barringun	10	0.1	1.0	1.4
Yantabulla	4	0.001	0.4	1.4
Pera Bore	200	1.8	20	28.6
Properties	350	3.2	35	286

3. Industry Dependent Services

Horticulture Operators Dependant on the Bourke Weir Pool

Property	Crop	Area (ha)	Av Weekly Requirement (kL)
Lodebar	Citrus	45	9000
Rivergum	Table Grapes	30	6000
Darling Farms	Citrus	40	8000
Darling Farms	Jojoba	80	15000
Mansell's	Table Grapes	160	31000
Mansell's	Citrus	140	27000
Mansell's	Stone Fruits	10	2000
Pitches	Citrus	6	1000
Parkdale	Table Grapes	5	1000
Joaquin	Table Grapes	5	1000
Ferguson Farms	Wine Grapes	3	1000
	TOTALS	524	101000

4. Water Supply Schemes

See Attachments

5. Bourke Weir Pool

Information

- Calculated full weir pool volume (from survey 8/10/940) is approximately 4470 Megalitres. See graph for determining volumes at lower levels
- Length of the weir pool is approximately 47 kilometres. See Map
- River bed gradient is approximately 1:15000
- Weir crest height is 3.15m Above the river bed (3.9m on DLWC gauge)
- Surface area of full Weir Pool is approximately 200ha. See Graph for determining the surface areas at lower levels

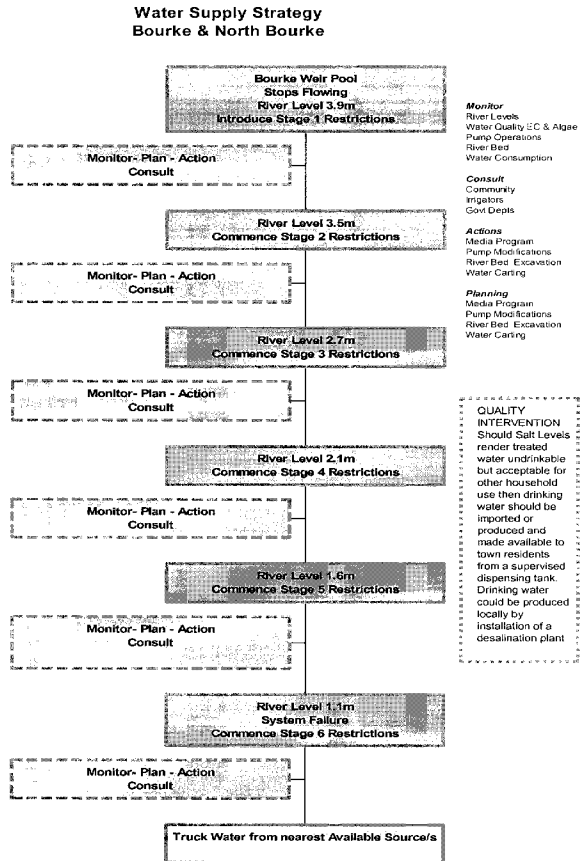
- See Map of Weir Pool

6. Rainfall & Evaporation Data

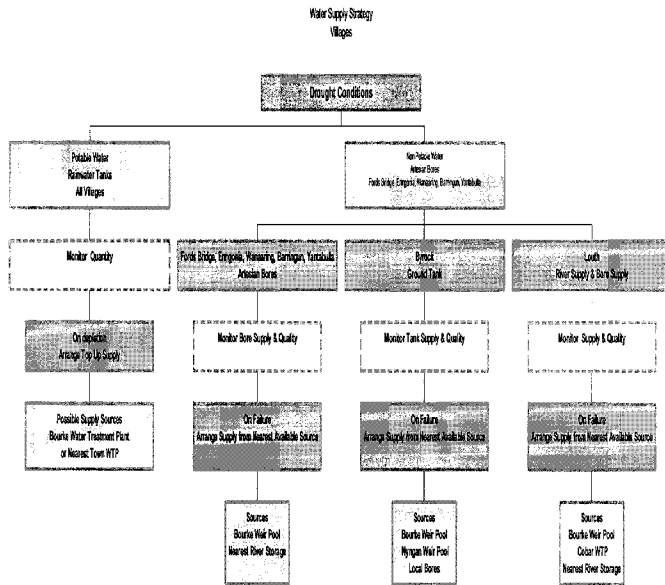
Month	Mean Monthly Rainfall (mm)	Mean Monthly Evaporation (mm)	Mean Monthly Max Temperature (deg C)
January	41	300	36.4
February	42	280	35.4
March	36	240	32.4
April	28	150	27.4
May	29	90	22.2
June	27	70	18.5
July	23	60	17.9
August	21	90	20.5
September	20	130	24.5
October	26	170	28.9
November	29	240	32.7
December	33	280	35.4
Totals	351	2100	

Planning

1. Strategies

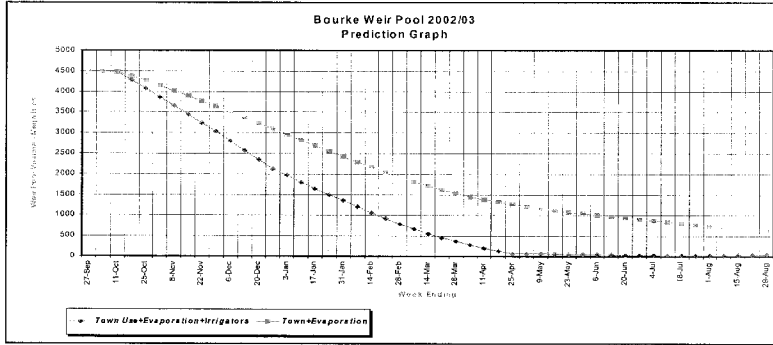


Drought Management Plan Bourke Shire Council



2. Predictions

Weir Pool predictions can be done from the interactive Excel spreadsheet "Darling River Weir Pool.xls", which will produce a graph showing predicted life of the weir pool water. An **example** graph is shown below. A copy of the most current Graph and Information is attached at the end of this Draft Drought Management Plan.



		Irrigators Data – For Graph											
		2002											
Property	Crop	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Lodebar	Citrus			18	18	18	18	18	18				
Rivergum	Table Grapes	30	30	30	30					0	0	0	0
Darling Farms	Citrus		20	20	20	20	20	20	20	0			
Darling Farms	Jojoba		40	40	40	40	40	40	40	0			
Darling Farms	Nursery	0	0	0	0	0	0	0	0	0			
Mansells	Table Grapes	160	160	160	160								
Mansells	Citrus	112	112	112	112	112	112	112	112				
Mansells	Stone Fruit	6	6	6	6								
Pitches	Citrus	12	12	12	12	12	12	12	12				
Parkdale	Table grapes	10	10	10	10								
Joaquin	Table Grapes	5	5	5	5								
Ferguson Farm	Wine Grapes	3	3	3	3								
	TOTAL MTHLY ML	338	398	416	416	202	202	202	202	0	0	0	0
	TOTAL WKLY ML	85	100	83	104	40	51	51	51	0	0	0	0

3. Restrictions

WATER RESTRICTION GUIDELINES

Restriction Level	1	2	3	4	5	6
At River Gauge Level	3.9m	3.5m	2.7m	2.1m	1.6	1.1
Weir Pool Volume	100% (4470ML)	75% (3350ML)	50% (2230ML)	35% (1560ML)	25% (1120ML)	15% (670ML)
TYPE OF CONSUMER						
DOMESTIC						
<input type="checkbox"/> Household Use	<input type="checkbox"/> No Restrictions	<input type="checkbox"/> No Restrictions	<input type="checkbox"/> No Restrictions	<input type="checkbox"/> No Restrictions	<input type="checkbox"/> No Restrictions	<input type="checkbox"/> 100L/person/day
<input type="checkbox"/> Evaporative Airconditioners	<input type="checkbox"/> No Restrictions	<input type="checkbox"/> No Restrictions	<input type="checkbox"/> No Restrictions	<input type="checkbox"/> No Restrictions	<input type="checkbox"/> No Bleed-off allowed	<input type="checkbox"/> No Water allowed
<input type="checkbox"/> Garden Watering	<input type="checkbox"/> Sprinklers 2hr/d	<input type="checkbox"/> Sprinklers banned	<input type="checkbox"/> Hand held hoses 2hr/d	<input type="checkbox"/> Hand held hoses 1hr/d	<input type="checkbox"/> Buckets only	<input type="checkbox"/> Reused water only
<input type="checkbox"/> Swimming Pools Private	<input type="checkbox"/> Filling of pools prohibited	<input type="checkbox"/> Filling of pools prohibited	<input type="checkbox"/> Filling and topping up of pools prohibited	<input type="checkbox"/> Filling and topping up of pools prohibited	<input type="checkbox"/> Filling and topping up of pools prohibited	<input type="checkbox"/> Filling and topping up of pools prohibited
<input type="checkbox"/> Wash paved areas and roof	<input type="checkbox"/> No restrictions	<input type="checkbox"/> Buckets only except as required by law	<input type="checkbox"/> Buckets only except as required by law	<input type="checkbox"/> Buckets only except as required by law	<input type="checkbox"/> Banned except as required by law	<input type="checkbox"/> Banned except as required by law
PUBLIC/COMMERCIAL						
<input type="checkbox"/> Public Gardens	<input type="checkbox"/> Sprinklers 2hrs/d	<input type="checkbox"/> Sprinklers 1hr/d	<input type="checkbox"/> Hand held hoses 2hrs/d	<input type="checkbox"/> Hand held hoses 1hr/d	<input type="checkbox"/> Reused water only	<input type="checkbox"/> Reused water only
<input type="checkbox"/> Sports Grounds	<input type="checkbox"/> Sprinklers 2hrs/d	<input type="checkbox"/> Sprinklers 1hr/d	<input type="checkbox"/> Hand held hoses 2hrs/d	<input type="checkbox"/> Hand held hoses 1hr/d	<input type="checkbox"/> Reused water only	<input type="checkbox"/> Reused water only
<input type="checkbox"/> Market Gardens and Orchards	<input type="checkbox"/> Sprinklers 6hrs/d	<input type="checkbox"/> Sprinklers 6hrs/d	<input type="checkbox"/> Sprinklers 4hrs/d	<input type="checkbox"/> Sprinklers 4hrs/d	<input type="checkbox"/> Sprinklers 2hrs/d	<input type="checkbox"/> With Council license only
<input type="checkbox"/> Nurseries and Commercial Flower Gardens	<input type="checkbox"/> Sprinklers 2hrs/d	<input type="checkbox"/> Sprinklers 1hr/d	<input type="checkbox"/> Hand held hoses 4hrs/d	<input type="checkbox"/> Hand held hoses 2hrs/d	<input type="checkbox"/> With Council license only	<input type="checkbox"/> With Council license only
<input type="checkbox"/> Washing Motor Vehicles	<input type="checkbox"/> No restrictions	<input type="checkbox"/> No restrictions	<input type="checkbox"/> Manual - buckets only	<input type="checkbox"/> Manual - buckets only	<input type="checkbox"/> Banned except as required by law	<input type="checkbox"/> Banned except as required by law
<input type="checkbox"/> Bowling greens	<input type="checkbox"/> Sprinklers 2hrs/d	<input type="checkbox"/> Sprinklers 1hr/d	<input type="checkbox"/> Hand held hoses 2hrs/d	<input type="checkbox"/> Hand held hoses 1hr/d	<input type="checkbox"/> Reused water only	<input type="checkbox"/> Reused water only
<input type="checkbox"/> Fountains	<input type="checkbox"/> No restrictions	<input type="checkbox"/> Topping up prohibited	<input type="checkbox"/> Banned	<input type="checkbox"/> Banned	<input type="checkbox"/> Banned	<input type="checkbox"/> Banned
<input type="checkbox"/> Water Cartage from Town Supply	<input type="checkbox"/> No restrictions	<input type="checkbox"/> No restrictions	<input type="checkbox"/> With Council license only	<input type="checkbox"/> With Council license only	<input type="checkbox"/> With Council license only	<input type="checkbox"/> With Council license only
<input type="checkbox"/> Automatic flush toilets	<input type="checkbox"/> No restrictions	<input type="checkbox"/> No restrictions	<input type="checkbox"/> Banned	<input type="checkbox"/> Banned	<input type="checkbox"/> Banned	<input type="checkbox"/> Banned

INDUSTRIAL						
<input type="checkbox"/> Soft Drink Manufacturer	<input type="checkbox"/> No restrictions	<input type="checkbox"/> No restrictions	<input type="checkbox"/> No restrictions	<input type="checkbox"/> 8hrs/d operation only	<input type="checkbox"/> With Council license only	<input type="checkbox"/> Banned
Ready Mixed Concrete.	<input type="checkbox"/> No restrictions	<input type="checkbox"/> No restrictions	<input type="checkbox"/> No restrictions	<input type="checkbox"/> 8hrs/d operation only	<input type="checkbox"/> With Council license only	<input type="checkbox"/> Banned
Others	<input type="checkbox"/> No restrictions	<input type="checkbox"/> No restrictions	<input type="checkbox"/> No restrictions	<input type="checkbox"/> 8hrs/d operation only	<input type="checkbox"/> With Council license only	<input type="checkbox"/> Banned
HORTICULTURE						
Horticulture	<input type="checkbox"/> Under Review	<input type="checkbox"/> Under Review	<input type="checkbox"/> Under Review	<input type="checkbox"/> Under Review	<input type="checkbox"/> Under Review	<input type="checkbox"/> Banned

Note: Evaporative Airconditioners Bleed-off average is 18L/hr . For 24hr operation consumption is 432L/day. 1000 houses x say 80% with evap cooling total Town use = 345kL/day

Bourke Horticultural Operators

Property	Crop	Area (ha)	0% Restrictions ML/ Wk	25% Restrictions ML/Wk	50% Restrictions ML/Wk	75% Restrictions ML/Wk
Lodebar	Citrus	45	9	6.5	4.3	2.2
Rivergum	Table Grapes	30	6	4.3	2.9	1.4
Darling Farms	Citrus	40	8	5.8	3.8	1.9
Darling Farms	Jojoba	80	15	11.5	7.7	3.8
Mansell's	Table Grapes	160	31	23.1	15.4	7.7
Mansell's	Citrus	140	27	20.2	13.5	6.7
Mansell's	Stone Fruit	10	2	1.4	1.0	0.5
Pitches	Citrus	6	1	0.9	0.6	0.3
Parkdale	Table Grapes	5	1	0.7	0.5	0.2
Joaquin	Table Grapes	5	1	0.7	0.5	0.2
Ferguson Farm	Wine Grapes	3	1	0.4	0.3	0.1
TOTAL		524	101	76	50	25

Note: Horticulture Needs based on 10ML/ha/yr which is an industry standard

It should be noted that irrigation extraction is not guaranteed at any point, and may be suspended at any time. Horticulturalists should be aware of the risk of continuing with a crop without guaranteed access to water.

4. Impacts

Economic

- Cost to Council
- Cost to Government
- Cost to Community – Jobs

Social

5. Alternate Water Sources

**Emergency Water Supply Sources
(Depending on availability & quality)**

**BOURKE & NORTH BOURKE
EMERGENCY SUPPLY SOURCES**

River	No.	Capacity	Dist. from Bourke (km)	Min Supply Level 100L/person/day Cost \$/day to Truck to Bourke	Cost per Week To Truck to Bourke
Bourke Weir	-	4473 ML	0	\$0	\$0
Weir	19A	3700 ML	32	\$2,842	\$19,891
Weir	20A	7300 ML	85	\$7,548	\$52,836
Louth Weir	21	4000 ML	100	\$8,880	\$62,160
Bogan at Nyngan	-	NK	200	\$17,760	\$124,320
Artesian Bores	No.	Capacity	Dist. from Bourke (km)	Cost \$/day to Truck to Bourke	Cost per Week to Truck to Bourke
Pera Bore	4440	1ML/day	20	\$1,776	\$12,432
Enngonia	30554	0.5ML/d	100	\$8,880	\$62,160
Kellys Camp	4279		55	\$4,884	\$34,188
Fort Bourke No.1	4194		30	\$2,664	\$18,648
Sibraas	4472		40	\$3,552	\$24,864
Belvedere	4195		24	\$2,131	\$14,918

6. Legal

- Local Government Act

7. Resources

- Council Staff
- Contract/Additional Labour
- Contract Water Carts
- Pumping Equipment

8. Costs

- Media Reports
- Pump Modifications
- Water Carting
- Water Quality Monitoring
- Water treatment
- Inspections
- Administration

9. Media Strategy

- Radio 2WEB & 2CUZ
- Newspaper – Western Herald
- Provide regular Media reports during the drought event to inform the community
- Provide Water saving advice via the media

Monitoring

1. Rivers

River levels can be monitored from daily DLWC reports on website

2. Bores

Bore outputs can be obtained from regular flow measurements taken by Council Staff

3. Rainfall

Rainfall figures can be obtained from BOM website.

4. Water Quality

Water quality figures can be obtained from DLWC, Bourke Shire Water Treatment Plant And Water Analysis reports from DAL. These reports will advise when water is unfit for human consumption.

5. Water Restrictions

Town properties will be regularly patrolled by Council staff to check that current restrictions are being adhered to. Warnings and fines will be issued to property owners who breach the restrictions.

Consultation

1.Public

public consultation via media radio stations 2WEB & 2 CUZ and Western Herald Newspaper

2.Government Agencies

Review

1. Records

All records of the drought event will be kept for future reference

2. Strategies

All strategies will be reviewed and documented for future reference

Attachments

1. Weir Pool Map
2. Water Supply Schemes
3. Shire Map
4. Weir Pool - Height vs Volume Graph
5. Weir Pool – Height vs Surface Area Graph
6. Current Weir Pool Predictions Graph

It should be noted that this Predictions Graph includes the effects of water sourced from the Wirracanna and Bellvue water transfers, and the proposed water available from current flows in the Darling River as per proposal to DLWC by Back'O'Bourke Fruits for 300ML. The nett effect of the Proposed 300ML from existing flows, will provide the community of Bourke with a minimum of an additional months water supply.

