



**City of  
Kalgoorlie  
Boulder**

# **AGENDA**

**Notice is hereby given  
for the Special Council Meeting**

**commencing at 7:00 PM**

**on**

**6 FEBRUARY 2023**

**at the**

**Kalgoorlie Town Hall**

3 February 2023



## NOTICE OF MEETING

An Special Council Meeting of the City of Kalgoorlie-Boulder will be held in the **Kalgoorlie Town Hall** on **Monday, 6 February 2023** commencing at **7:00 PM**.

Regards

A handwritten signature in black ink, appearing to read "Andrew Brien". The signature is stylized with a long, sweeping line that curves upwards and to the right, ending in a small dot.

**ANDREW BRIEN**

Chief Executive Officer

## Table of Contents

<b>1</b>	<b>DECLARATION OF OPENING / ANNOUNCEMENT OF VISITORS</b> .....	<b>4</b>
<b>2</b>	<b>DISCLAIMER READING</b> .....	<b>4</b>
<b>3</b>	<b>RECORD OF ATTENDANCE</b> .....	<b>4</b>
	3.1 ATTENDANCE .....	4
	3.2 APOLOGIES .....	4
	3.3 LEAVE OF ABSENCE (PREVIOUSLY APPROVED).....	4
<b>4</b>	<b>PUBLIC ACCESS AND PUBLIC QUESTION TIME</b> .....	<b>5</b>
	4.1 PUBLIC ACCESS .....	5
	4.2 PUBLIC QUESTION TIME .....	5
<b>5</b>	<b>PETITIONS / DEPUTATIONS / PRESENTATIONS</b> .....	<b>5</b>
<b>6</b>	<b>NOTATIONS OF INTEREST</b> .....	<b>5</b>
	6.1 INTEREST AFFECTING IMPARTIALITY CITY OF KALGOORLIE-BOULDER CODE OF CONDUCT .....	5
	6.2 FINANCIAL INTEREST LOCAL GOVERNMENT ACT SECTION 5.60A .....	5
	6.3 PROXIMITY INTEREST LOCAL GOVERNMENT ACT SECTION 5.60B .....	5
<b>7</b>	<b>APPLICATIONS FOR LEAVE OF ABSENCE</b> .....	<b>5</b>
<b>8</b>	<b>URGENT BUSINESS APPROVED BY THE PERSON PRESIDING OR BY DECISION</b> .....	<b>5</b>
<b>9</b>	<b>REPORTS OF OFFICERS</b> .....	<b>6</b>
	9.1 ENGINEERING.....	6
	9.1.1 Recycled Water Demand Management .....	6
<b>10</b>	<b>CONFIDENTIAL ITEMS</b> .....	<b>17</b>
<b>11</b>	<b>CLOSURE</b> .....	<b>17</b>

## **1 DECLARATION OF OPENING / ANNOUNCEMENT OF VISITORS**

### **2 DISCLAIMER READING**

The Mayor will read the disclaimer to those present.

Please note this meeting is being recorded and streamed live on the Council's website in accordance with Council's Recording and Streaming of Council Meetings Policy, which can be viewed on Council's website.

All reasonable care is taken to maintain your privacy; however, as a visitor in the public gallery, your presence may be recorded. By remaining in the public gallery, it is assumed your consent is given if your image is broadcast.

The recommendations contained in this Agenda are Officer's Recommendations only and should not be acted upon until Council has resolved to adopt those recommendations.

The resolutions of Council should be confirmed by perusing the Minutes of the Council Meeting at which these recommendations were considered.

Members of the public should also note that they act at their own risk if they enact any resolution prior to receiving official written notification of Council's decision.

### **3 RECORD OF ATTENDANCE**

#### **3.1 Attendance**

**In Attendance:**

**Members of Staff:**

**Visitors:**

**Press:**

#### **3.2 Apologies**

**Apologies – Elected Members:**

**Apologies - Members of Staff:**

#### **3.3 Leave of Absence (Previously Approved)**

**Leave of Absence:**

Nil

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## **4 PUBLIC ACCESS AND PUBLIC QUESTION TIME**

### **4.1 Public Access**

### **4.2 Public Question Time**

## **5 PETITIONS / DEPUTATIONS / PRESENTATIONS**

## **6 NOTATIONS OF INTEREST**

### **6.1 Interest Affecting Impartiality City of Kalgoorlie-Boulder Code of Conduct**

### **6.2 Financial Interest Local Government Act Section 5.60A**

### **6.3 Proximity Interest Local Government Act Section 5.60B**

## **7 APPLICATIONS FOR LEAVE OF ABSENCE**

## **8 URGENT BUSINESS APPROVED BY THE PERSON PRESIDING OR BY DECISION**

## 9 REPORTS OF OFFICERS

### 9.1 Engineering

#### 9.1.1 Recycled Water Demand Management

<b>Responsible Officer:</b>	Kevin Ketterer Director of Engineering
<b>Responsible Business Unit:</b>	Engineering
<b>Disclosure of Interest:</b>	Nil
<b>Voting Requirements:</b>	Simple
<b>Attachments:</b>	1. Attachment 1 [9.1.1.1 - 1 page] 2. Attachment 2 [9.1.1.2 - 1 page]

#### Officer Recommendation

That Council:

1. Adopt the **recycled water volumetric allocation** restrictions methodology as provided in the body of the report and detailed in Attachment 1;
2. Adopt the **recycled water application rate** restrictions methodology as provided in the body of the report and detailed in Attachment 2;
3. Adopt **Level 5** water restrictions on all irrigation water users, for total annual Water Supply Agreement Allocations, with the remaining unconsumed balance of the 22/23 annual allocation as at 1 February 2023, or the pro-rata allocation for February 23 to June 23, whichever is the lesser, to be distributed over the balance of the financial year (Feb 23 – June 23);
4. Adopt **Level 5** water restrictions for irrigation application rates on all irrigation water users;
5. Exempt the Kalgoorlie-Boulder Golf Course from the restrictions detailed in Points 3 and 4 above and restrict the total volumetric allocation to the Kalgoorlie-Boulder Golf Course to 70% of the historic average seasonal consumption levels of recycled water for the duration of the water restrictions, determined on a month-to-month basis;
6. Approve that Cruikshanks Oval be de-commissioned as a sporting oval with no irrigation supply;
7. Approve that Norkal Park be irrigated at the Level 5 restrictions but limited to 1/3 of the current area of the park;
8. Confirm that the water restrictions:
  - a. Be applicable with immediate effect; and

- b. Be monitored on an on-going month-to-month basis and if required, be amended in terms of the methodologies adopted in Points 1 and 2 above with 7 days notification to all affected water users.
9. Advise any affected third-party consumers of the above water restriction decisions accordingly;
10. Advise all third-party recipients of recycled water:
  - a. of the requirements of the Department of Health in this respect; and
  - b. that they are required to make the arrangements as are necessary to meet those requirements prior to 30 June 2023, after which time no recycled water will be supplied if the requirements have not been met; and
11. Request the Chief Executive Officer to arrange a briefing for all affected users to explain the adopted restrictions and address any concerns raised.

### **Executive Summary**

The City of Kalgoorlie-Boulder (the City) is one of very few local governments that recycles treated effluent and harvests stormwater for re-use. In this manner, the City can irrigate its open spaces and other community facilities for the enjoyment of the community. This has enhanced the reputation of Kalgoorlie-Boulder as a surprisingly green city in the desert.

Over recent years, the City has expanded the demands on the recycled water system which includes the construction of a first-class golf course and the provision of recycled water to private irrigators.

While by all accounts all the demands can be accommodated during years with normal rainfall, the recycled water system is placed under strain when rainfall is below the long-term annual average. Currently, the rainfall is well below the annual average, resulting in the recycled storage systems being placed under strain with water shortages or unavailability predicted to occur in the near future.

This report provides details on the background, technical details of the interrelationship between storage and demand, and makes recommendations relating to restricting irrigation water consumption in order to preserve the irrigation resources for the preservation of City and community assets.

### **Community Engagement Consultation**

No community consultation was undertaken in relation to the recommendations contained in this report. Following Council consideration and adoption of a recommended course of action, consultation will be undertaken with users of recycled wastewater.

### **Community Strategic Plan Links**

This report links to the Strategic Community Plan through the following Guiding Theme/s:

SUSTAINABLE: We implement sustainable practices such as ensuring responsible use of water and other resources.

**Report**

**Background**

The City is one of few local governments that have a recycled water program using both sewage effluent and harvested stormwater for irrigation purposes. The recycled water is used as follows:

- Irrigation of almost all City owned open spaces and community facilities
- Irrigation of the golf course
- Supply to private irrigators
- Supply to local industry

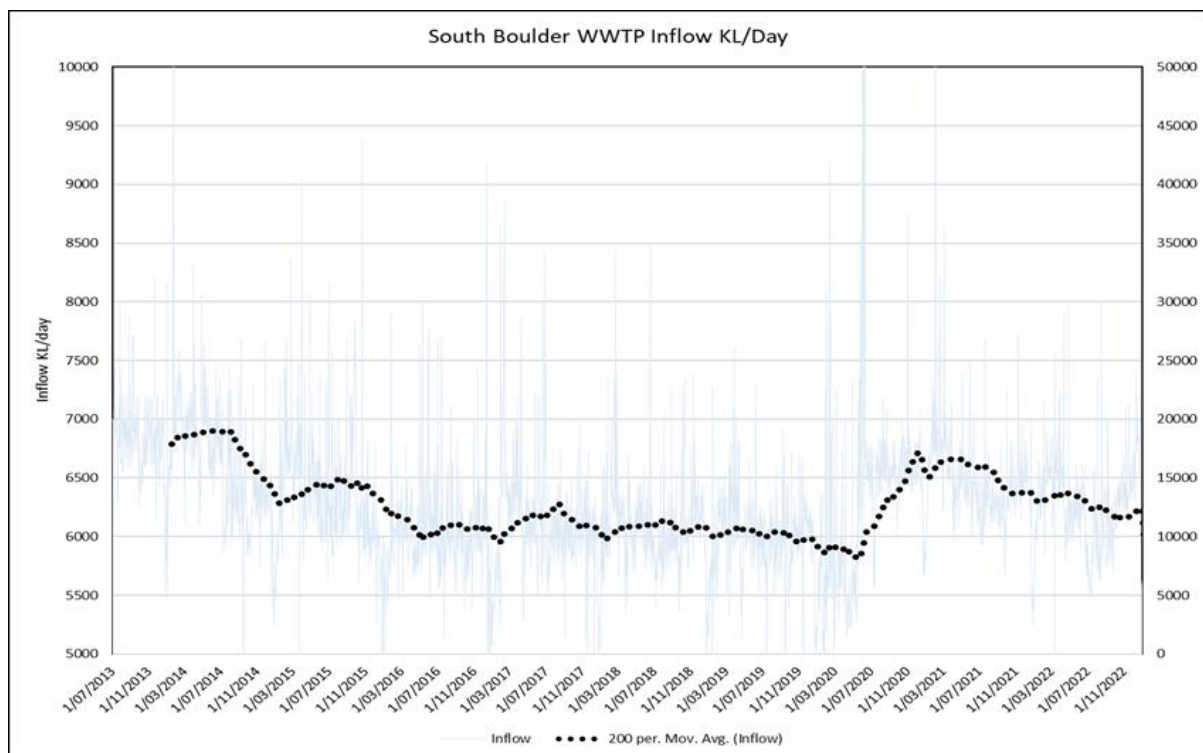
**Water Sources**

The City has two sources for the provision of recycled water:

**1. Treated Effluent**

Wastewater is collected through the sewage piped system which generates an average inflow at the Waste Water Treatment Plant (WWTP) in South Boulder of 6.2ML/d.

The below graph provides detail of the inflow measurements over the past years. The increase indicated on the graph in 2020 was due to a recalibration of the flowmeter which has read accurately since this time.



This wastewater is treated at the plant in processes which take up to 28 days to produce treated effluent which complies with the regulatory standards for such



processes. These processes, however, include the requirement for sunlight which is part of the natural process. This exposure to sunlight, heat and wind has the negative effect of losses due to evaporation, which have been measured at their summer peak to be in the order of 25%. The resultant average outflow from the plant has therefore been consistent throughout summer at approximately 4.65ML/d.

This effluent is pumped into the recycled water irrigation supply system which is then used for one of the following purposes:

- Pumped as a direct feed into irrigation systems, both private and City facilities, in terms of water supply agreements;
- Pumped into storage tanks for irrigation use, both private and City facilities, in terms of water supply agreements;
- Pumped into open dams for irrigation purposes, both City and private uses, in terms of water supply agreements;
- Pumped to local industry, in terms of water supply agreements;
- Pumped into storage dams if all of the above users have been supplied.

## 2. *Stormwater Harvesting*

During periods of intense rainfall, Kalgoorlie-Boulder experiences high volumes of stormwater flowing off all the hard surfaces, which are harvested wherever possible. The main areas of harvesting are:

- **Piccadilly Dam**, located on the corner of Piccadilly and Throssell Roads. This is a very visible picture of the harvesting program, but also provides a good indicator of the availability of irrigation stormwater held in storage.
- **Racecourse Dam**, located on Gribble Creek outside the Racecourse property. This is also currently used as a transfer facility when pumping treated effluent from the WWTP to the storage dams.
- **Kalgoorlie Boulder Racing Club (KBRC) dams** – located on KBRC property. These dams receive almost all the stormwater runoff from the Charles Street catchment, recently enhanced through the reconstruction of the catchment facility in Charles Street and detention basin located on KBRC land behind the houses in Charles Street. While this stormwater is harvested, the main beneficiary is the KBRC, but any overflow from this catchment flows through to Gribble Creek where this can be harvested by the City.

The City is in the process of designing additional harvesting dams throughout its catchments, some of which are in the geotechnical investigation stage while others are still at the concept and catchment analysis stage. It is anticipated that the first additional harvesting dams will come on stream in 2025.

## **Water Storage**

The City has several storage dams as outlined below:

### 1. *Swan Lakes*

Located at the end of Piccadilly St, and which has a capacity of approximately 200ML. This is also used as the staging point for the provision of recycled water to industrial users.

An additional storage dam is proposed for construction at the Swan Lakes location which will boost the storage capacity for banking water by at least 100ML. This is anticipated to be ready for use in 2025.

2. *Racecourse Dam*

This dam is mainly a stormwater harvesting dam, but also serves as a storage dam and staging point for pumping treated effluent to Swan Lakes, and for the distribution of water to private and City irrigators to the “central” irrigation area.

3. *Piccadilly Dam*

Primarily used for stormwater harvesting, but serves as a storage facility of stormwater, which is mainly used for the irrigation of the golf course together with the open spaces in the “northern” irrigation area.

4. *South Boulder Holding Ponds.*

These ponds are not deemed or classified as water storage facilities and are not considered in determining the water balance but do serve as temporary holding ponds for excess effluent, when there is no capacity or need to pump effluent to the upstream storage facilities.

### **Current Situation**

#### *Dam Levels*

The dam levels as at 19 January 2023 are as follows:

	<i>Capacity</i>	<i>Actual</i>	
Swan Lake 1	58	45	
Swan Lake 2	45	30	
Swan Lake 3	100	50	
Racecourse Dam	47	20	
Piccadilly SW	174	0	
<b>Total</b>	<b>424 ML</b>	<b>145 ML</b>	<b>= 34%</b>
Assume 10% evaporation in the next 3 months		130 ML	= 30%

#### *Consumption Rates*

Under the current **average summer** consumption rates the water balance for the City is as follows, taking into consideration that the harvested stormwater storage has been completely consumed during the past 12 months:

Industrial	1.60	ML/d
Irrigators	3.80	ML/d
<b>Total demand</b>	<b>5.40</b>	<b>ML/d</b>
WWTP output (max pump capacity)	4.10	ML/d
<b>Shortfall</b>	<b>1.30</b>	<b>ML/d</b>

In essence, the recycled water users in the City are consuming 1.3ML every day from water stored in the Swan Lakes dams.

#### *Remaining Water Availability*

Taking the balance of water in the dams at 130 ML and a current consumption rate of 1.3ML/d, will result in the current stored water being consumed in 100 days. This situation is clearly untenable and immediate and appropriate actions to extend the current water supply are recommended.

### Application of Water Restrictions

The current long term rainfall average for CKB is 264mm/pa. Over the last 12 months, Kalgoorlie-Boulder has received only 163mm following on from the previous 12 months with below average rainfall, and there is no rain forecast for the next four weeks. It is clear that in order to prevent the City running out of irrigation water, immediate measures are required to be implemented.

In this respect, water restrictions are the most common and highly effective means to reduce consumption and to extend the available water resources.

For recycled irrigation water, the following two measures are recommended:

#### 1. *Reduction in Volumetric Allocations*

An assessment of the degree to which water restrictions are to be implemented is recommended. Such an assessment would be based on the longer-term rainfall patterns, as well as the current volumes of storage of water in the City dams. It is recommended that a 12-month moving average of rainfall be used to guide decisions in this regard, with the lower the rainfall is below the historic average of 264mm/pa, the greater the restrictions imposed. The below table provides such a guide.

Level	Allocation %	Annual Rainfall
0	100%	>264mm
1	90%	264 - 242
2	80%	241 - 219
3	70%	218 - 196
4	60%	195 - 173
5	50%	172 - 150
6	40%	149 - 137
7	30%	136 - 114
8	20%	113 - 91
9	10%	90 - 68
10	0%	<68mm

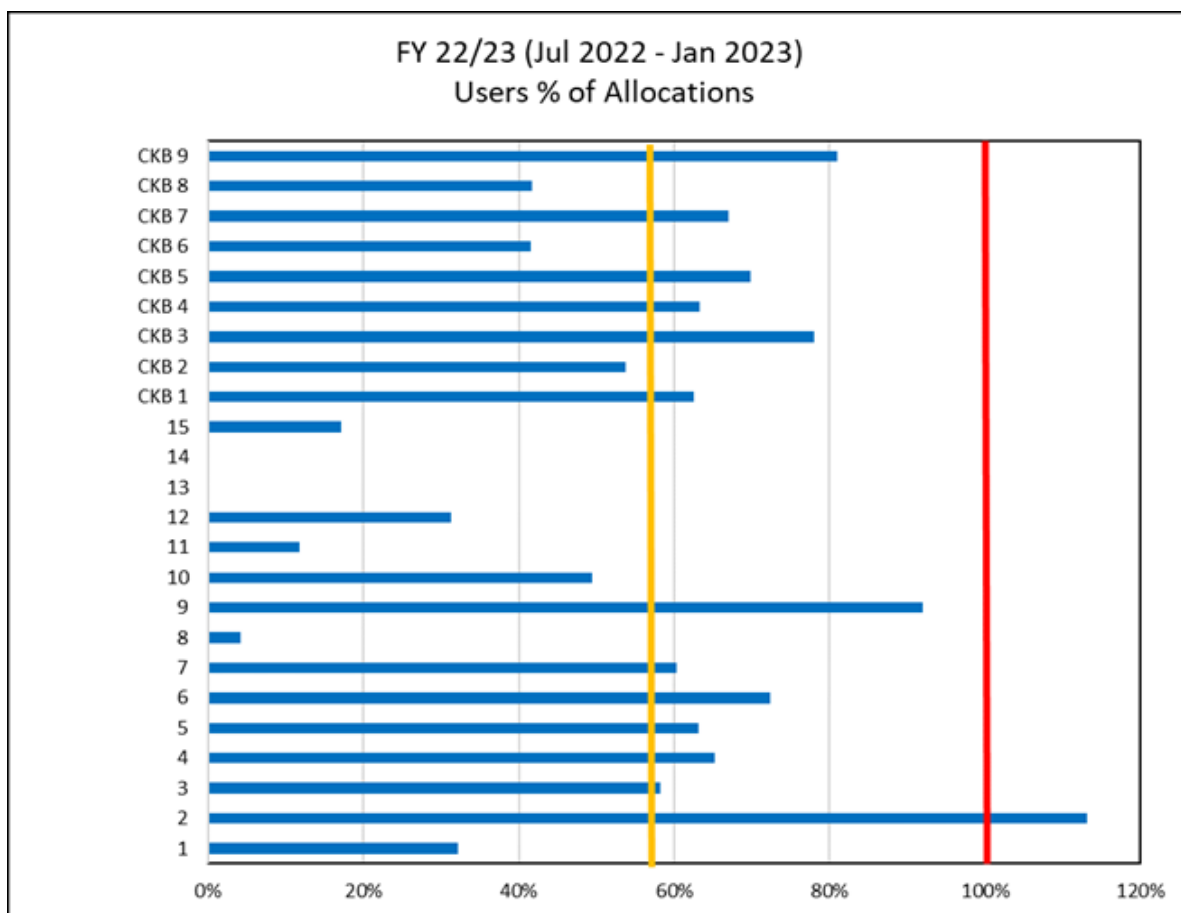
Further details on the application of the volumetric restrictions assessment methodology are provided in Attachment 1.

#### *Current Users*

The usage volumes for the 22/23 financial year are provided on the graph below. From this graph the following can be determined:

- Most irrigators are meeting their pro-rata volumes which for the end of February 23 is 58.3% of the annual allocation;
- There are a few major exceptions to this rule, with one user already exceeding their annual allocation;

- The industrial users are taking only 30% of their allocation; and
- In terms of the volumetric restrictions, it is proposed to reduce the **balance** of the allocation for each user to the Level 5 restrictions, and then to spread the remaining allocation over the last 5 months of the allocation year. In this sense, those users who have pro-rata used more than their allocated proportion have a net gain in allocation but will have a significant reduction for the remainder of the year. The City anticipates however that most users are likely to request a greater proportion of the remaining allocation (reduced through restrictions) in the hotter months of February and March and the City would be willing to amend water delivery patterns to meet such requests. As from July 23, the full allocations adjusted to the applicable water restriction levels, will be reinstated for all users, in seasonally adjusted delivery patterns.



Therefore, it is proposed that for volumetric allocations, based on the current 12-month moving average of 153mm, it is recommended that:

- Level 5 restrictions be imposed;
- The 12-month average be monitored and the restriction Levels be reviewed every month and amended to more severe Levels as required; and
- Be reviewed with a view to relaxation of restrictions only once the quantity of stored water to service a 180-day annual average demand of 1.72ML/d

(equivalent to 310ML or approximately 2/3 of the available storage capacity) has been achieved.

### *Kalgoorlie Boulder Golf Course*

The Kalgoorlie Boulder Golf Course, however, does require special consideration. While the impact of lower volumes of water on parks, ovals and open spaces can be tolerated for some time, the major elements of the golf course require separate consideration.

In particular:

*Greens* – these are very specialized and sensitive elements of a golf course and require to be managed very carefully. While watering generally takes place during the nights, management with a watering regime closely adapted to the weather variation during the day is especially important. It is anticipated that a reduction to current water levels will be impossible without damage to the greens being incurred.

*Tees* – Tees are one of the more highly trafficked areas of a course and are usually subjected to a high level of damage by golfers. As such the recovery time for greens if accelerated by a good watering regime and it is suggested that only a minor reduction in watering levels could be tolerated before tees are “lost”.

*Fairways* – These are the lowest impacted areas on a course and usually suffer the least usage damage. Damage is also well spread throughout the course and fairways are the area where a significant reduction in watering volumes could be implemented. These areas will in response change from green to yellow and even through to brown in prolonged low watering periods.

Overall, if the golf course were to have a reduction in water volume of 30%, then the greens could be maintained to current standards, the tees to a lesser standard but with a well-operating course, while the fairways would have a net reduction of well in excess of 30%.

The golf course does use water with a seasonal variance and is very weather dependent even on a day-to-day basis. With restrictions, the daily allowance based on historic monthly usage patterns adapted for the weather on any given day, will be used as a basis for the 30% reduction in volumetric supply.

It is therefore recommended that:

- The Kalgoorlie Boulder Golf Course water allocation be reduced to 70% of the average monthly allocation based on historic water allocation patterns.

## **2. Reduction in the Rate of Water Application**

Current rates of water application are measured in KL/m<sup>2</sup>/pa, and currently vary from 1.1KL/m<sup>2</sup>/pa to 0.6KL/m<sup>2</sup>/pa. It is considered that a reasonable normal usage rate of application should be determined at 0.75KL/m<sup>2</sup>/pa. This figure is therefore used as the baseline for the determination of restrictions in this regard.

Similar to the restrictions on volume allocation detailed above, it is also recommended to place restrictions on the rate of application for irrigators as

determined in the following table, which is based on the same principles as the volumetric restrictions logic.

Allocation %	Annual Rainfall >264mm	KL/m <sup>2</sup> /p a
0	>264mm	0.75
10	264 - 242	0.68
20	241 - 219	0.60
30	218 - 196	0.53
40	195 - 173	0.45
50	172 - 150	0.38
60	149 - 137	0.30
70	136 - 114	0.23
80	113 - 91	0.15
90	90 - 68	0.08
100	<68mm	0.00

Further details on the application of the application rate assessment methodology are provided in Attachment 2.

Based on this table, at Level 5 restrictions, the rate of application would be limited to 0.38KL/m<sup>2</sup>/pa.

It is therefore recommended that for the rate of water application:

- The standard of 0.75KL/m<sup>2</sup>/pa be applied for all users; and
- Level 5 restrictions be introduced.

### *Contractual Arrangements*

All irrigators have an agreement of some form in place. All have expired except for the industrial water users and one commercial business. Those which have expired are on “hold over” arrangements but can be cancelled with 10 days’ notice.

Very few have met the requirement to gain Department of Health (DoH) certification for the use of recycled water and in effect are non-compliant and could be cancelled. Cancellation is not being contemplated, but all users are recommended to take the necessary steps to meet the DoH requirements by 30 June 2023.

### *Other Actions*

The City has a number of lower intensity-use open spaces. It is proposed that these be either restricted in area of irrigation at the restricted irrigation rate or be totally removed from the irrigation program. Specific recommendations are:

- Cruikshanks Oval – this is a largely unused area which Council formally resolved to decommission when the new Ray Finlayson Pavilion was constructed some years ago.
- Norkal Park – this was also formally resolved to be decommissioned when the new Ray Finlayson Pavilion was constructed but is currently used by dog-walkers on an occasional basis.

Rather than close this park at this stage, it is suggested that Norkal Park be irrigated at the recommended lower levels as for all other City open spaces, but that the currently large, irrigated area be reduced to 1/3 of the current irrigated area

### **Impacts of the Proposed Water Restrictions**

From the above proposals the water availability to irrigation users will be reduced by 50% by volume and a further 50% by rate of application, resulting in a net reduction in the volume of water delivered to all irrigated sites of 75%.

There is no doubt that the proposed water restrictions will result in a loss of the “green” feel of Kalgoorlie-Boulder. All irrigated areas which were previously a consistent lush green, will over the next months be reduced to localised pockets of green with some areas reduced to brown. This will be particularly evident in parks, ovals and school properties.

All City open spaces are proposed to be re-engineered to be provided with a potable water connection through the Water Corporation, and all private and industrial users are to be encouraged to do the same. This will provide a certainty of supply for each user and also de-risk their operation in periods of drought. In many cases, the actual irrigation operation will be less prone to blockages at their sprinklers as on occasion the recycled water is contaminated with low levels of suspended solids.

However, the alternative of continuing with the current level of irrigation will cease all water supply within a few months and then almost all open spaces will be lost or suffer long term damage. This will be particularly serious at the golf course, where the recovery of greens will take years and at the cost in the millions.

### **Budget Implications**

The following budget implications are anticipated with the imposition of irrigated water restrictions:

#### *Revenue*

These calculations have been based on the current revenue estimates recued to the recommended restriction levels;

- a. Industrial – contractually a reduction of water supply by 70% to industrial clients will result in a reduction in revenue of almost \$6,000 per day, or \$2,17m annually; and
- b. Private irrigation customers – with volumes reduced to recommended restriction levels, a revenue reduction is estimated at \$60,000.

#### *Expenditure*

- a. 21 potable water supply connections and meters to CKB ovals, parks and POS where required, estimated at \$150,000 in total.

- b. Three additional water storage tanks at CKB ovals, parks and POS where required, estimated at \$180,000.
- c. Additional potable water standpipe and ancillary works, estimated at \$20,000.

Following Council consideration and adoption of a way forward, detailed budget assessments will be completed and a report provided to Council to amend the budget accordingly.

**Statutory Implications**

There are no statutory implications resulting from the recommendations of this report other than compliance with the Department of Health requirements.

**Policy Implications**

There are no policy implications resulting from the recommendations of this report.



## **10 CONFIDENTIAL ITEMS**

Nil

## **11 CLOSURE**