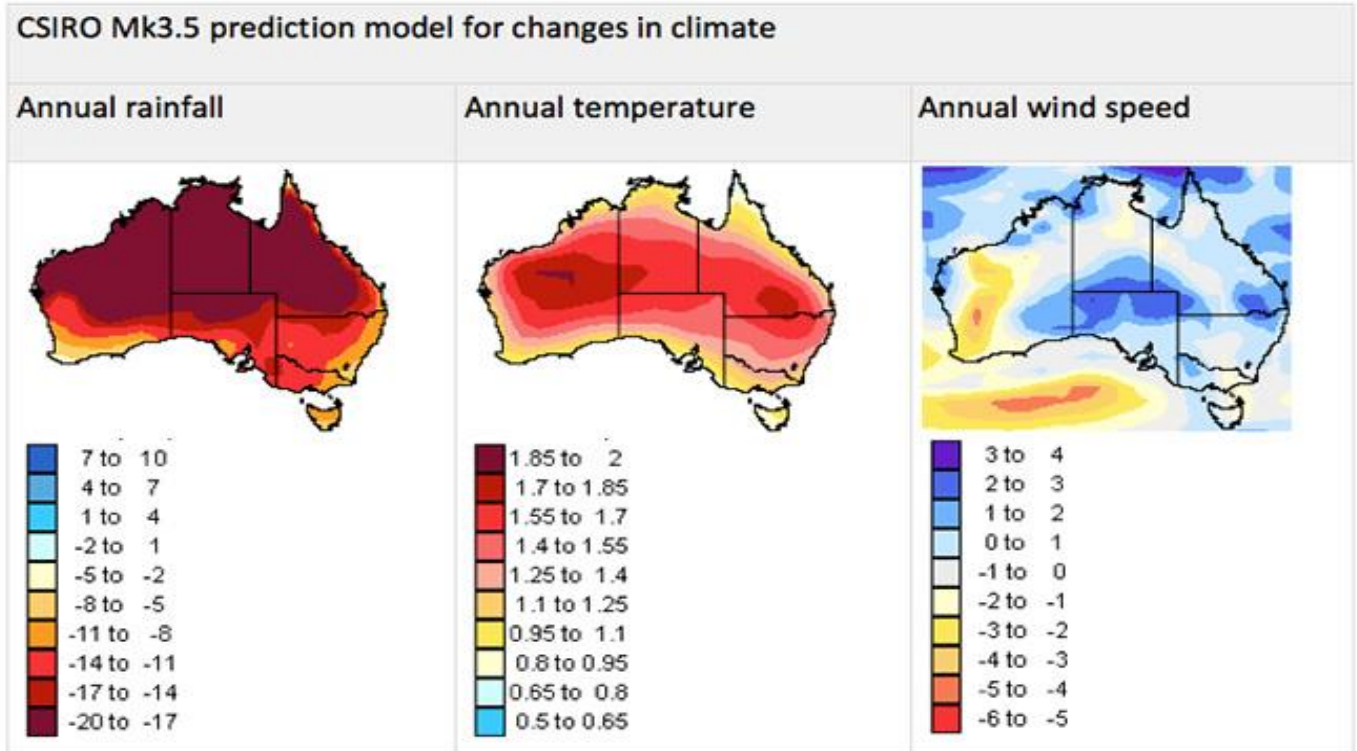


IPOS e-Bulletin

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The Changing Climate & Irrigation

The climate undoubtedly appears to be changing. Although the last major drought in South Australia eased in 2010 and the weather has been largely conventional since, this month we've already had more than double the average rainfall for February. Given that the CSIRO predicts an Australia wide temperature increase of about 1.8 degrees°C as a best case scenario by 2070, resulting in a greater frequency of droughts from here on, reviewing your irrigation planning and practices may well be worth mulling over. For specific details about the predicted climate change impact across the different South Australian NRM regions view pages 19-21 of the [IPOS Code of Practice](#).



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¹ CSIRO Mk3.5 Prediction Model – Climate Predictions to 2070

The impacts of climate change on the management of Urban Open Space in South Australia will include;

- Amount of rainfall-harvested water for irrigation (and other purposes) will decrease.
- Reduced spring rainfall will potentially impact on harvested catchment yield.
- The demand for water by plants will be increase.
- With more frequent extreme temperatures some plant species will be at risk.
- Overall, there will be a greater demand for water by turf and landscape plants.
- There will be greater need for cooling of the urban built environment (more trees).
- More frequent and severe droughts will impact on plants/trees, water sources and plant irrigation demand.

So what can be done to prepare for unknowns in the future and mitigate climate change impacts on these valuable public resources?

The 'Irrigated Public Open Space – Best Practice Checklist' is a guide to assist in the achievement of best practice in the management of irrigated public open space. Developed as a tool to assist in the use of the Code Of Practice – Irrigated Public Open Space, the checklist can be used by organisations to ensure their planning, irrigation and horticultural practices and reporting meet the recommended best practice as outlined in the code of practice.

The Best Practice Checklist can be used by organisations to:

1. Demonstrate high achievement in 'best practice' management of irrigated public open space.
2. Identify gaps in current irrigation and horticultural management practices.
3. Monitor and report on improvement in the development of 'best practice' management practices.

To complete the checklist, simply click on the buttons under the contents headings. The 'next' and 'back' buttons allow navigation through the checklist and there is a glossary of commonly used acronyms and terms provided on the second tab.

The checklist is a guide only yet an important tool nonetheless to drive planning. Written by a selection of Australian irrigation management experts it can be downloaded from our web-site through this [link](#).

Tip of the Month

In landscape settings planting drought tolerant trees can enhance the utility of marginal areas whilst reducing or eliminating water requirements. This can save money and resources for areas of high importance.



January Irrigation Requirement Overview

Station	TQVS 1 (kL/Ha)		TQVS 2 (kL/Ha)		TQVS 3 (kL/Ha)		TQVS 4 (kL/Ha)	
	AIR	BIR	AIR	BIR	AIR	BIR	AIR	BIR
Adelaide Airport - 023034	1228	1933	664	1116	523	912	382	708
Kent Town - 023090	1013	1809	505	1037	378	844	251	651
Mount Crawford - 023763	1098	1890	541	1073	402	869	263	664
Noarlunga - 023885	1266	1910	710	1104	571	903	432	702
Parafield - 023013	1089	2000	518	1147	376	934	233	721

AIR is the 'Actual Irrigation Requirement' which is based on the current climate data.

BIR is the 'Base Irrigation Requirement' which is based on the average of the previous 5 years climate data.

Station	Rainfall (mm)			Eto (mm)		
	Current	Long term	% Change	Current	Long term	% Change
Adelaide Airport - 023034	29	18	61%	161	233	-31%
Kent Town - 023090	41	19	116%	145	221	-34%
Mount Crawford - 023763	47	25	88%	159	234	-32%
Noarlunga - 023885	20	17	18%	159	230	-31%
Parafield - 023013	54	21	157%	163	244	-33%

Analysis of Bureau of Meteorology (BoM) Data

January saw a significant decrease in the 'Actual Irrigation Requirement' against the 'Base Irrigation Requirement' across all levels of TVQS ('Turf Quality Visual Standard') levels due to the 88% increase in average rainfall across the monitored sites above. The average decrease in the irrigation requirements across all the standards (TQVS 1-4) was 48% where TQVS-1 reduced by an average of 40% and TQVS-4 reduced by 55%. Compounding the advantages of the increased rainfall was an average 32% reduction in 'Evapotranspiration' (Eto) highlighting the lower than average temperatures and hours of sunshine experienced over the past month.

However, the picture is not as clear cut as the averages would have us believe. Almost 100% of the rain that fell on 3 of the 5 example BOM stations below fell on the 13th or 20th January with barely any rain registering

during the balance of the month. The rains were torrential with Mount Crawford registering some 34.2mm on the 20th January and Parafield experiencing a soggy 38.6mm. The upshot of these downpours was many were focused on removing rather than retaining moisture for part of the month and many open areas became temporarily unusable. Over much of the balance of the month the variance between the 'Base' and 'Actual Irrigation Requirement' (AIR) was much narrower than it would appear at first glance. For the majority of the month there was no rain.

Removing the rainfall of the 20th from the Parafield data (for example) results in an 'Actual Irrigation Requirement' of 792kL/Ha (TQVS-3) against a Base requirement of 934kL/Ha, a 15% decrease rather than a 60% decrease (551kL/Ha AIR). In other words, in this specific situation if you've been irrigating at the standard (BIR) rate for December you've only used 15% too much water for the majority of the month rather than 60% too much.

So given the variability of the weather in SA, how can we use the Irrigation Management Toolkit to ensure the optimum rate of irrigation is used and money is not wasted? The following article explains how to utilise the toolkit to simply and easily calculate the correct water application rates and frequency using the data supplied by BoM for the current month.



Continued overleaf...

Irrigation Made Easy with our Calculator

The Basic Irrigation Management Calculator.

The [Basic Irrigation Management Calculator](#) has been designed to assist groundkeepers and park managers with the irrigation management of public open spaces across South Australia. The calculator dictates total water requirements and event frequency for the irrigated area dependent on variable factors chosen from the drop down boxes on the left. The factors required to be entered are 'Functional Purpose' (Quality of Turf required), the 'BoM Region' the irrigated area is in, the 'Distribution Uniformity' (evenness of your Irrigation system), 'Turf Type', 'Soil Type' and 'Root Zone' (depth of roots).

The calculator gives the irrigation requirement based on the choices selected for these factors calculated against the historical averages for evapotranspiration (Eto) and rainfall for the month from previous years. This of course provides no responsiveness against the actual weather conditions for the month but does provide an excellent baseline for planning purposes; which allows you to predict the financial and maintenance costs across the year and assists in the scheduling of essential maintenance works.

Fine Tuning the Basic Irrigation Management Calculator

The Irrigation Management Calculator has another trick up its sleeve. With the factors for the site remaining as previously entered, the BoM region can be set to current and the 'actual' rainfall and Eto for the month can be entered. The 'actual' figures can be found through a link on the front page of the Irrigation Calculator. To the right of the line chart can be seen a table where the Eto and rainfall for each month can be entered. Under the table is a hyperlink which brings up a BoM website where the South Australia tab followed by the most appropriate locale can be chosen. The figures can be gained as a .csv by choosing the appropriate month and year from the 'Monthly Archive' below. These figures can then be entered in the table to the right of the line chart on the calculator's front page which results in the actual volumes and frequency required for that month being displayed on the bar graph and the table below. This frequently results in a more accurate and potentially quite different irrigation requirements.

This methodology only provides historic data. It's useful for determining what should have been put on and when over the last month, which can be useful to help determine soil moisture but provides no information about what to put on now and the near future.

However, SA Water is starting to explore the modification of the Irrigation Management Calculator to assist with the short term planning of irrigation schedules based on current and predicted rainfall and Eto. The calculator will be reconfigured to work as an 'App' so it can be downloaded to your mobile device or smartphone and will automatically retrieve the latest seven day weather prediction for your site and use them to calculate the irrigation requirement over the next seven days.

We're interested to know your thoughts about this. As professional grounds keepers and mangers of open spaces, do you think this would be of interest to you and what would you like to see included in The Irrigation Management Calculator 2.0?

Please take a minute to answer the question below and feel free to include any suggestions however outlandish they may seem to you. All answers will be treated confidentially.

A quick question for you....

Here at SA Water we are considering developing the Irrigation Management Toolkit into a convenient mobile 'App'. The 'App' will automatically download and utilise weather predictions to calculate accurate predicted water use data for irrigation managers whilst automating many of the functions of the web-based system.

Please hit **reply** to this IPOS Bulletin mail with a simple **Yes** or **No** if you think this could be useful for you. Feel free to tell us of any other capabilities in the 'App' that you think could assist.

Hot Tip!!

An SA Water Smart Meter can save you money by providing you with daily water use information straight to your computer, tablet or even your smart phone. It can give you water flow profiles, totals, and highlight unexpected water consumption through leaks or faulty electronic irrigation management systems. For more information call us on the phone number below or visit the [SA Water Website](#).

Disclaimer:

SA Water's Business Relations Group provides recommendations and suggestions only. It is advised that further investigations are detailed studies are completed before any projects are implemented. All applicable standards & guidelines (Australian, EU, AQUIS, HACCP, Australian Drinking Water Quality Guidelines etc.) should be adhered to, and care should be taken to ensure water and wastewater minimisation programs do not negatively impact health or processing operations.