

# Water Plan

## Sun SEQer Australasian Champs Rogaine 2018

The course map is shown in *Figure 1: Water supply point map* below. Water will be made available at six water points, plus the ANC and the HH. The roads to the water points are good quality gravel roads. The transit time from the HH to the ANC is approximately 20 minutes (allow 30 minutes at night). From the HH to W4 is also approximately 20 minutes (30 minutes at night) and the other water points are between 5 and 15 minutes of the HH.

## Water Demand

Demand for water over the duration for the weekend was estimated using the following assumptions and calculations.

**Assumption:** There is a low likelihood of more than 300 competitors participating in the event.

**Assumption:** There will be approximately 30 volunteers and other non-participants at the HH and ANC.

**Assumption:** The maximum temperature during the event will be 27°C, which is the 90%ile temperature for August in Gympie, sourced from the BOM.

**Assumption:** Competitors will consume 9 L of water each during the event.

**Assumption:** Non-competitors will consume 4 L each over the weekend.

**Calculation:** The total volume of water consumed by competitors on the course during the event will be  $300 \times 9 \text{ L} = \mathbf{2,700 \text{ L}}$ . This is an estimate with a low likelihood of being exceeded.

**Calculation:** The rate of water consumption by competitors is estimated as  $2,700 \text{ L} \div 24 \text{ h} = 112 \text{ L/h}$ .

**Assumption:** All competitors will start the event with 3L.

**Calculation:** Competitors will collect and consume  $9 \text{ L} - 3 \text{ L} = \mathbf{6 \text{ L}}$  each on the course.

**Assumption:** No water will be collected on the course from the environment.

**Calculation:** The total volume of water to be collected and consumed on the course will be  $300 \times 6 \text{ L} = \mathbf{1,800 \text{ L}}$ .

**Calculation:** Non-competitors will consume  $30 \times 4 \text{ L} = 120 \text{ L}$  over the weekend. This water will be taken from the HH.

**Assumption:** There will be 60 bus passengers that require 3 L of water each to start the event ( $60 \times 3 \text{ L} = 180 \text{ L}$ ). This will be supplied at the HH.

**Assumption:** 240 competitors will travel by private transport and will bring their own water to start the event (240 x 3 L = 720 L).

**Assumption:** 150 L will be used at both the ANC and the HH for cooking and washing up. Total of 300 L.

**Assumption:** During the event, water demand between the water points will be distributed in the proportions shown in *Table 1: Allocation of demand from competitors during the event*. These proportions have been estimated by the course setter.

*Table 1: Allocation of demand from competitors during the event*

Location	Percentage of demand	Demand volume
	%	L
W1	10	180
W2	10	180
W3	10	180
W4	3	54
W5	12	216
W6	15	270
HH	20	360
ANC	20	360
Total	100	1800

Following the start of the event all flight plans will be reviewed to determine if the above assumptions remain appropriate.

Demands to be supplied by the event organisers for the event weekend are summarised by location in *Table 2: Allocation of all demands*.

*Table 2: Allocation of all demands*

Location	Percentage of demand	Demand volume	Demand for cooking, cleaning	Demand from bus competitors before event	Demand from non-competitors	Total Demand
	%	L	L	L	L	L
W1	10	180	0	0	0	180
W2	10	180	0	0	0	180
W3	10	180	0	0	0	180
W4	3	54	0	0	0	54
W5	12	216	0	0	0	216
W6	15	270	0	0	0	270
HH	20	360	150	180	120	810
ANC	20	360	150	0	0	510
Total	100	1800	300	180	120	2400

## Water Supply

There is a **5,000 L** rainwater tank at the HH that will be used to source and store water for the HH. A **1,000 L** IBC will be used to provide water at the ANC. Both of these water storages will be filled by water tanker on the Thursday prior to the event. Sourcing water from the town of Nanango will be avoided due to the undesirable aesthetic water quality there.

A total of 50 x 25 L containers will be used during the event to hold and transport water for the water points (50 x 25 L = **1,250 L**). These containers will be filled by the water tanker on the Thursday prior to the event at the HH. This volume is less than the estimated volume to be collected and consumed on the course during the event (1,800 L), so water points will need to be refilled during the event. To maintain the volume in storage at the water points, water will need to be refilled across the course at an average rate of 112 L/h. In the first 6 hours of the event, refilling will focus on water points 1, 2, 3, 5 and 6 because W4 is not expected to receive substantial utilisation and will be refilled less frequently. Refilling will be undertaken by transporting a volume of 250 L in a 4WD to refill water points every 2 hours on average. In the last 6 hours before the course closing, refilling can be scaled back to allow water point storage to draw down. Water for the water points will be sourced from the HH. Water resupply will be undertaken by two volunteers whose sole focus will be ensuring that water supply is maintained at all water points across the course. One vehicle will be dedicated to water resupply, with another held in reserve at the Hash House in case of need. The separate, dedicated Safety Patrol will report any observed shortages of water at water points to the water supply team via UHF radio link, and will have two full 25L containers to provide temporary relief if required.

At the start of the event, water will be positioned on the course at six water points in the volumes shown in *Table 3: Water point storage volume*.

*Table 3: Water point storage volume*

Location	No. of 25L containers	Storage Volume L	Storage Volume % of total
W1	6	150	13%
W2	6	150	13%
W3	6	150	13%
W4	6	150	13%
W5	6	150	13%
W6	6	150	13%
Ute	10	250	22%
Total	46	1150	100%
Safety car	2	50	
ANC	1 + IBC	1025	
HH	1 + Tank	5025	

Water at the ANC will be provided in a **1,000 L** IBC container and one 25L container. This storage volume exceeds the demand estimate of 510 L, providing a suitable contingency. This tank will be filled by water truck on the Thursday before the event. In the unlikely event

that the IBC at the ANC fails, the ANC will be resupplied by the water supply vehicle in the same way as the water points.

The total volume stored on site at the start of the event is  $5000L + 1000L + 50 \times 25L = 7,250$ , which is more than the conservative estimate of demand to be supplied by organisers of 2,400 L. Therefore, there is ample spare supply.

## Risk Assessment

<b>Risk</b>	<b>Likelihood</b>	<b>Risk Mitigation</b>
Water containers stolen	Low	Containers placed off main tracks
Water taps left turned on	Low	None
Water tap breaks off	Low	Containers can be laid on back to prevent water spilling
IBC fails due to rupture or valve failure	Low	If the IBC at the ANC fails, the ANC will be supplied with water by the regular water patrol in the same way as the other water points.
Demand at some water points is higher than others, causing the volume in storage to be exhausted	Moderate	Flight plans will be analysed after event start to adjust assumptions on resupply priorities.  Resupply will be undertaken regularly, focussing on the water points 1, 2, 3, 5 and 6, which are most likely to receive higher demand than W4.  If volunteers are available, position volunteers at water points to monitor and report water storage volume.
Weather hotter than anticipated, causing higher water demand than estimated.	Low	If the temperature is hotter than expected, reduce the resupply interval. This can be achieved using two resupply vehicles with half the resupply water containers each.
Wet weather causes water point access difficulties	Low	The water points are on roads with all-weather access.
Response required to other incident on course causes water supply vehicle to be diverted.	Low	There will be a dedicated safety 4WD vehicle available to respond to incidents.



Figure 1: Water supply point map