

## Community Committee for Recycled Water Storage (Northern Adelaide Irrigation Scheme)

<b>Project Name</b>	Northern Adelaide Irrigation Scheme					
<b>Purpose</b>	Community Committee for Recycled Water Storage					
<b>Date</b>	30/03/2016		<b>Time</b>	5pm – 7pm		
<b>Meeting No.</b>	8		<b>Frequency</b>	Fortnightly		
<b>Facilitator</b>	Matthew Bonnett, SA Water		<b>Minute Taker</b>	Chloe Ringwood, SA Water		
<b>Venue</b>	Virginia Horticultural Centre, Old Port Wakefield Road, Virginia					
<b>Attendance</b>	Michael Picard	P	Eddie Stubing	P	Matthew Sheedy	P
Ab = Absent	Frank Maiolo (proxy for Dino Musolino)	P	Kieren Chappell	P	Greg Pattinson	P
Ap = Apologies	Peter Rentoulis	P	Felicia Nguyen	P	Louis Marafioti	P
P = Present	Mark Wilson	P	Ross Trimboli	P	Evie Arharidis	P
	Danny De Ieso	Ap	Dino Musolino	Ap	Paul Cleghorn	Ap
	Nick Pezzaniti	Ap	Rocco Musolino	Ab	Nghien Nguyen	Ab
	Susie Green	Ab				

### 1 Welcome and Apologies

Matt welcomed all members.

The agenda for the meeting was outlined as follows:

1. Welcome and apologies
2. Minutes of previous meeting and review of actions
3. Presentation: Licencing, Monitoring and Approvals, Guest Presenters: *EPA – Shaun Thomas & Tim Gubbins, DEWNR – Steven Gatti, Department of Health & Ageing – David Cunliffe*
4. Workshop 2
5. Other business
6. Next meeting

The apologies were noted (as above).

### 2 Minutes of previous meeting and review of action items

The minutes of the previous meeting 16/03/16 were tabled to the Committee with a view to confirming them at the following meeting.

Matt outlined the status of the previous action item 4. AWQC Lab Tour. Chloe confirmed Friday 8 April at 10:30am and for those interested to let her know.

### 3 Presentation: Licencing, monitoring & approvals associated with above and below ground storage for Recycled Water

Matt introduced guest speakers by order of presentations:

- **EPA - Dr Shaun Thomas and Tim Gubbins**
- **DEWNR – Dr Steven Gatti**
- **Department of Health and Ageing – Dr David Cunliffe**

*The presentation slides are attached.*

*The questions received and responses provided after the presentations are summarised as follows:*

A Committee member asked if the recycled water was checked for arsenic upon extraction in any MAR scheme. In response, it was noted that the EPA can set monitoring conditions on any licence for the extraction of water in order to manage those risks if there is concern. Some stormwater MAR schemes are monitored on extraction to identify chemistry changes in the aquifer. It was noted that this would need to be stipulated on the licence. The MAR scheme risk management plan would assist with managing this risk. Department of Health and Ageing (DoHA) recommends that any groundwater that's used for domestic purposes should be tested for E-Coli, Arsenic, Fluoride and Nitrate as a minimum. Groundwater from some bores in the Northern Adelaide Plains has been tested for arsenic and fluoride however, did not identify any traces. David reiterated that for any use, groundwater should be tested for the full suite of heavy metals.

A further question was asked about whether it was difficult to monitor arsenic levels when they differ across sections of ground rock. In response, David added that DoHA test for total arsenic, not the species, and if the test exceeds the acceptable level for total arsenic, regardless of the amount of harmful arsenic 3, the sample fails. The guideline value for arsenic is so low that if any is detected it is recommended to re-consider the use of that water. David added that high levels of arsenic, fluoride and nitrate have not been detected in the Northern Adelaide Plains. Further approval criteria apply once the water is taken out for use. The water would be treated as a different source to the current VPS water and therefore would have separate licencing and monitoring conditions.

A Committee member asked how much it costs to test for the full suite of heavy metals. In response, it was noted that testing for the full suite of Australian Drinking Water Guidelines is relatively inexpensive at approximately \$6 per test. It was added that if further tests for *E. coli*, organics, etc, are requested, then it would become more expensive. An SA Water representative added that the full suite of metals are tested for at the Aldinga MAR scheme, as it's a requirement on the licence and ensures the quality being supplied to the customer is correct. David reminded the Committee that DoHA require any water used for human consumption, including food crops, to be tested.

A Committee member asked how often the ANZECC guidelines are reviewed so they remain up to date with current issues, such as microplastics and endocrine disrupting chemicals (EDC's). In response, it was noted that these guidelines are currently being reviewed as they were last reviewed in 2000. It was noted that they will include EDC's however, the guidelines are mainly focused around impacts to the environment and DoHA would be able to elaborate on the affects to public health. David added that the concern around EDC's, pharmaceuticals and trace organics was covered in the Phase 1 document and in the Guidelines of Drinking Water Augmentation. Whenever recycled water is added to drinking water schemes, there tends to be a lot of negative public perception around the idea, however the risks are very low. Research indicates that the risks posed by EDC's and illicit drugs are very low in recycled water appropriately treated for drinking purposes and does not support the negative perceptions. There are a lot of international studies around the chemical content of secondary treated effluent (which is much lower quality than the VPS water) and, of the 500 chemicals that were studied, only about 4-5 went over guideline values at the secondary treatment level. It was added that this was specifically looking at if the water was going to be used for drinking. When the exposure to food crops is analysed, the levels that are recorded are insignificant compared to those that would exceed the Guideline values. David spoke of a scheme in Western Australia which has had a huge amount of research and modelling carried out, as they plan to add recycled water to the groundwater system for drinking.

A Committee member asked if the impact on microorganisms in the soil had been tested. In response, it was noted that any impacts to the environment are monitored by the EPA. It was noted that when wastewater irrigation occurs sustainably, it has a positive impact on the environment in terms of more nutrient rich soil. It was noted that the EPA are unaware of any studies that have occurred which look at the impacts to soil from EDC's. The EPA have participated in studies looking at inland waters that receive discharged recycled water and, if the water is tertiary treated or has similar level to Bolivar, there haven't been any impacts. It was added that impacts are identified when the water isn't treated to that higher level.

A Committee member asked if the water being injected in the Western Australia scheme was stormwater or treated wastewater. In response, it was noted that it was highly treated wastewater, however it is treated at a higher level than at Bolivar in order to account for the perception issue. Reverse Osmosis (RO) isn't the most efficient treatment method in terms of health aspects for recycled water. Other treatment methods are preferred, such as UV light or chlorine. DoHA requires that SA Water tests the level of pesticides, chemical make-up and pathogens.

A Committee member asked if some European cities drink recycled water, due to the density of the population. In response, it was noted that there are a lot of cities in Europe and the USA which drink treated recycled water indirectly. Generally, they'll take water from the rivers that receive the treated sewage. In London, treated sewage is injected into the Thames, which is then drawn out for secondary treatment to meet drinking water standards. The water that's discharged into the Thames is of far lower quality than the Bolivar water.

A Committee member spoke about how the information provided to the Committee Members has led to open discussions around below ground storage as a possible method and asked whether the Committee would still be involved in discussions and the process after the Committee meetings conclude. In response, it was noted that it is likely there will be future opportunities for the Committee to re-convene after the draft storage plan is accepted by the wider community. Matt reminded the Committee that there will be a lot more consultation after the Draft Plan for Recycled Water is developed and would expect that there will still be a lot of interest from Community going beyond this point. It was added that DoHA and the EPA set specific requirements for SA Water to ensure there is a certain level of community consultation around the use of recycled water. For example, if the plume at the Aldinga MAR scheme were to ever move in manner that was not predicted, or if any changes were identified from the monitoring bores, then SA Water must notify the EPA and DoHA of these incidents.

A Committee member raised the need to ensure that the water produced by the scheme is cost effective to the end user; referring to a friend in Aldinga who cannot afford the water for irrigation. Matt acknowledged that the price of water is critical and reiterated the role and responsibilities of the Committee is to make informed decisions in determining the water storage criteria to ensure a cost effective storage solution. For example, if the criteria are set too high, then it will cost too much to achieve and ultimately this will impact on the price to the end user. The Committee need to work together to ensure there are boundaries that are reasonable and achievable, to ensure the price of the water is fair to the end user.

The Committee member asked if underground storage was a cheaper method. In response, it was noted that it is cheaper in the initial capital construction cost and land acquisition however, it is higher in the operating cost. The upfront capital cost is a huge driver to ensure there isn't a significant impact on the final cost of water. The operating cost is incurred over a longer period of time and therefore easier to manage. The Committee was reminded that this project has been added to the list of National Priority Projects. This positions the project very well to seek Commonwealth funding and this will assist with keeping the cost down to the end user.

## 4 Workshop 2 – Review principals/criteria for recycled water storage in Aldinga

The presentation slides are attached.

*The questions received and responses provided from the presentation are summarised as follows:*

A Committee member asked if there were any conditions to the site selection process as there are a number of domestic bores in Virginia which are relatively close to each other. David explained that the EPA and DoHA would be looking at models to determine the following criteria that would be part of the approval:

- Location of injection site
- Possible paths the plume may travel
- Location of the monitoring bores
- Location of the observation bores.

Matt added that the ongoing consultation processes are going to be very important when engaging with the community around site selection and would include determining how the surrounding bore owners use their water.

A Committee member sought clarification around the percentage of water extracted from a MAR scheme each year. The member questioned why 100% of the injected water needed to be extracted at the Aldinga MAR when only 80% was planned to be extracted in the Northern Adelaide Plains. In response, it was noted that these were the conditions that were proposed specifically for Aldinga and that different conditions may apply if the scheme was introduced into the Northern Adelaide Plains area.

Shaun added that it's important to note that Aldinga was the first wastewater MAR scheme and was treated with precaution. As it is quite close to the coast and there are sensitive reef systems in the area, taking a conservative approach warranted the EPA requirement for 100% extraction. There has been difficulty meeting this target as the aquifer in this location is quite saline. Generally the last part of the plume that's extracted contains a mixture of native groundwater and recycled water.

A Committee member asked how far the Aldinga MAR scheme is away from the sea. In response, it was noted that it is approximately 3-4km. Shaun added that, because Aldinga is injecting into the aquifer at a lower depth, it had a higher risk of entering the marine environment. However, monitoring has since showed that this risk is very low. In the NAP, the water may be injected 100-200 metres down and therefore the plume would travel very slowly. Groundwater may move anywhere between 10-15 meters per year or 50cm per year, it really depends on the gradient and what's pushing it. The EPA would like to see an optimised recovery of the plume and therefore getting the optimum use for the water. David added that there is also an economic driver and would expect SA Water would want to extract as much water as possible.

A Committee member asked how prescription medications and narcotics can be detected in the water being injected. In response, David reassured the Committee that the water can be tested for these and that from previous tests, concentration levels are very low and do not pose any concerns for human health. The Committee member asked how they are filtered. In response, it was noted that the chemicals tend to bind to particles and are removed at the treatment plant in the sewage treatment process. The concentration levels are actually tested in the raw sewage entering the plant, so levels are much lower post treatment. David added that in Europe the population density is much greater than Australia and drug use is also higher, so there have been programs that have

investigated concentrations and the results still remain as insignificant to human health. A Committee member asked how often these tests occur. In response it was noted that they're not tested on a day-to-day basis because it is not necessary. Testing on a yearly basis is more effective, as it determines the change in drug use in society on a year by year basis. DoHA are aware of the concentrations, however they are so low they do not pose any health risk. Some concentrations of chemicals can be 100,000 times below the guideline levels, so even though they are present, they don't pose any risk.

A Committee member asked what would happen if a farmer cannot use the water due to something harmful being detected. In response, it was noted that the WRSV have a supply agreement with their customers around these types of risks. SA Water has a number of schemes that include conditions around back-up water if a failure were to occur in the recycled water resource. For instance, when a burst occurred in the Glenelg to Adelaide pipeline, which was going to take a long period of time to fix, SA Water pressurised part of that network with drinking water to ensure supply was still maintained. If there was something to occur at Bolivar and SA Water was unable to supply the water, SA Water could always inject drinking water into the current VPS. Because drinking water is of higher quality, there are no issues if it is injected into the recycled water scheme.

A further question was asked about what would occur if water was injected, only to realise afterwards that it had quality issues. An additional question was asked about how the plume could be contained so that it doesn't reach the nearest farmer. In response, it was noted that the water could be immediately extracted (including by using monitoring bores). David added that DoHA require monitoring of the water from Bolivar so that if any incidents do occur with the treatment plant, supply would be stopped. DoHA doesn't expect this to occur, but these safeguards are in place. EPA, SA Water, NRM, PIRSA, DoHA share a 24/7 notification system, so that if SA Water detect any type of fault, the appropriate Government body is informed. If a Priority Type 1 incident occurs at any treatment plant, SA Water are required to notify DoHA by telephone (not SMS) within the hour the incident was detected.

A Committee member asked if the observation bore is smaller than the extraction bore. In response it was noted that it can be smaller but would depend on how the scheme has been engineered. At Aldinga, there are small and large bores depending on where they are and what the modelling identified. It was noted that at the injection and extraction site, a larger bore would be preferable so there is a high extraction rate to match up with supply to the customers. A Committee member asked who is working on the storage plan. In response, it was noted that the plan will be drafted by SA Water and will include the specific criteria and key points identified by the Committee through meeting discussions. The Committee will need to endorse the draft plan before it can be distributed for wider consultation.

A Committee member asked if a survey could be included when SA Water take water samples from customer bores in order to determine what each bore is used for. In response, it was noted that this was a good suggestion and would be added to the criteria around the consultation process.

## 5 Other business

Matt asked the committee if there were any further questions or other business they wish to discuss.

No further questions were noted.

## 6 Next meeting

The next meeting is scheduled for 13/04/2016 from 5-7pm at the Virginia Horticultural Centre.

SA Water has arranged for guest speaker Jonathan Roberts, Senior Manager Asset Operations, City of Playford to present on a recent licence application which will permit to inject WRSV water into the existing Stebonheath/Curtis MAR scheme.

### Open Action Items Register

No.	Action	By Whom	Date Raised	Status
1.	Arrange a visit to Bolivar Wastewater Treatment Plant and advise Committee members	SA Water	11/11/15	Complete
2.	Dr Glenn Harrington to send information to the Committee about T3 and T4 aquifer and aquifers further north.	Dr Glenn Harrington	10/02/16	Complete
3.	Consider how an independent hydrogeological assessment of the technical modelling of any future managed aquifer storage schemes established as part of NAIS (in line with established Plan) could be undertaken and made publicly available.	SA Water	13/01/16	To be included in storage plan
4.	Arrange a visit to AWQC and advise Committee members	SA Water	9/12/15	Complete