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

Project Name	Northern Adelaide Irrigation Scheme					
Purpose	Community Committee for Recycled Water Storage					
Date	16/03/2016		**Time**	5pm – 7pm		
Meeting No.	7		**Frequency**	Fortnightly		
Facilitator	Matthew Bonnett, SA Water		**Minute Taker**	Chloe Ringwood, SA Water		
Venue	Virginia Horticultural Centre, Old Port Wakefield Road, Virginia					
Attendance Ab = Absent Ap = Apologies P = Present	Michael Picard	P	Eddie Stubing	P	Matthew Sheedy	P
	Bryan Robertson (proxy for Dino Musolino)	P	Nick Pezzaniti	P	Steph (Proxy for Kieren)	P
	Danny De Ieso	P	Felicia Nguyen	P	Greg Pattinson	P
	Rocco Varacali (Proxy for Louis Marafioti)	P	Peter Rentoulis	Ap	Tom (Proxy for Paul Cleghorn)	P
	Susie Green	Ab	Dino Musolino	Ap	Evie Arharidis	Ap
	Louis Marafioti	Ap	Rocco Musolino	Ab	Nghien Nguyen	Ab
	Ross Trimboli	Ap	Kieren Chappell	Ap	Mark Wilson	Ap
	Paul Cleghorn	Ap				

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: Soils & Hydrogeology of the Northern Adelaide Plains, Guest Presenter; Glenn Harrington
4. Other business
5. Workshop 1
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 24/2/16 were tabled to the Committee. No amendments were noted.

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

3 Presentation: Soils & Hydrogeology of the Northern Adelaide Plains

Matt introduced the guest speaker:

- **Dr Glenn Harrington, Principal Hydrogeologist Innovative Groundwater Solutions Pty Ltd**

The presentation slides are attached.

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

A Committee member asked if any aquifer structure north of the Gawler River would be suitable for a MAR scheme. In response, it was noted that the T1 would be suitable and is present north of the Gawler River however the T2 begins to disappear beyond this point. The Committee member also sought clarification about the T1 aquifer structure in the NAP as they suggested they were informed differently. It was noted that the member had been encouraged not to apply for a bore in this area on the basis the T1 would be unsuitable for irrigation use. In response, it was noted that the information in the presentation is talking about the extent of the aquifer rather than the thickness and that without looking at the well log, the thickness of the T1 in that area could be quite narrow. The T2 might still be present in this area and providing a suitable yield. A Committee member added that the information provided by Glenn Harrington has always been what had been communicated to him previously.

A member queried whether each well was located 50 meters apart in the trial at Parafield Airport and the quantity of injected water. In response it was noted that the wells were approximately 50 meters apart and only injected 30ML. It was explained to the Committee that the trial determined that it could be replicated over a much bigger scale. Glenn added that a larger scale injection (i.e. 300ML) would need a thorough characterisation of the aquifer further along to provide the confidence of how it will behave.

A question was asked about what modelling is recommended. In response it was noted that it is not a 'one size fits all', however the Australian Groundwater Modelling Guidelines set out all the considerations needed in order to design the model.

A member sought clarification around the proposed scheme and how many bores would be required for such large volumes of water. In response, it was noted that it may depend on what is discovered through further tests. To store 12GL there would need to be approximately 40-50 wells, based on the characteristics of the aquifer at the Two Wells site (predicted to accommodate 300ML per well). If a different location was chosen, the aquifer characteristics would be slightly different and therefore require further trials to determine whether it was a suitable location.

A member sought clarification around the simplified explanation of extraction from the plume once the water is injected into the aquifer. In response, it was noted that a simplified explanation was necessary as any MAR scheme is an incredibly complex process. Glenn added that there is a large amount of information available globally about the operation these schemes and stressed the importance of investing heavily into characterising the aquifer prior to any scheme. For example; drilling exploration wells, testing to determine how fast the aquifer flows, investigating the natural range of salinities that sit in the aquifer, whether any cavities are present or if there are layers which may prevent water moving. It was noted that, all of these processes should be tested prior to any modelling to ensure a high level of understanding can be obtained for assurance.

4 Other business

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

No further questions were noted.

A sample of the black hexagon cover, mentioned at the previous meeting (7) as a possible cover for above-ground storage, was handed around the table for interest.

5 Workshop 1

Matt outlined the workshop would be an open discussion to identify Committee and community's views on the information provided to date and to start structuring the Draft Master Plan for Recycled Water Storage (DMPRWS). The open discussion aims to determine the next steps in identifying acceptable parameters for above and below ground storage options in order to develop a DMPRWS. Matt reminded the Committee that SA Water would begin the process in this meeting, however next meeting will continue to provide information with guest presenters from EPA, Department of Health and DEWNR.

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

A Committee member questioned the size of land required for the above ground storage of 12GL and whether it would require one large holding pond or a series of holding ponds. In response, it was noted that if this method was required it would be 12 ponds of 1GL each.

A Committee member questioned the method of the workshop and wondered if identifying a location would be a better place to begin discussions. In response, it was noted that in order to work towards identifying parameters for above or below ground storage options, specific locations should be temporarily put aside. Matt outlined that SA Water would like the Committee to define these parameters so that they can then be used to identify possible locations.

For example, parameters may include the level of water quality stored, whether an agreed distance to the nearest neighbour is set and what monitoring criteria are required. If these types of parameters are discussed and agreed by the committee, then it should help determine the location of the storage. It was noted that, the end use for the water should be determined before going through these steps. It was added, if we know the end user and what they are using the water for then all the parameters should fall into place.

A Committee member suggested that SA Water needed to know their customer base to determine how much water they are planning on using. The location of the water storage would then be determined, as it may need to be in close proximity.

A committee member asked if the customer base would be determined by how much water was injected each year versus extraction. In response it was noted that the customer base would be impacted by the ultimate availability of the water and storage helps buffer the availability to a degree. If a customer that uses water year round is identified, then that would impact on the type and amount of storage required. It was added that hydroponics would use large quantities of water year round. A member added that if there is a volume of water available in winter and current agricultural businesses aren't requiring it, then it could potentially be used for industrial purposes. Therefore the customer base isn't just growers.

A committee member reminded other members of the negative views held by the community in regard to storing recycled water in the aquifer in close proximity to domestic bores. The member added that the Committee has now also learnt that aquifer storage is not viable further north due to unsuitable aquifer characteristics. The member stated that the community are likely to approve a proposed scheme if a potable network was available in the area.

A member added that they did not agree with the concept of storing any water of a lesser quality into the aquifer to ensure the integrity is maintained for future generations. Another member added that they understood that injecting any water can affect the chemistry in the aquifer, including the release of arsenic. In response, Matt asked the committee how confidence in the process could be obtained i.e. through monitoring or testing processes. The member responded that they felt there were two areas to consider. The first being, testing the aquifer to determine the chemistry at a site. Secondly, the water being extracted needs to be monitored for the release of chemicals whilst being stored in the aquifer.

A Committee member spoke of the City of Salisbury's stormwater MAR scheme and whether we could obtain the data from their wells. In response, it was noted that this request would need to be made to them directly, or perhaps obtained from the EPA. Glenn noted that it may be available depending on whether it was a condition on the licence. If its part of the policy, then information should be made available, like salinity information on bores.

A member was aware that at one stage the City of Salisbury were undertaking a MAR scheme and offered to sell water to SA Water. In response it was noted that treated stormwater from the ASTR site is sold to SA Water to mix with recycled water for Mawson Lakes, which was a trial undertaken by City of Salisbury at the Parafield Airport.

A committee member asked Glenn where he would store 20GL of water based on his knowledge of geology. In response, he suggested putting it up north away from the population would be good in theory. However, there is essentially no T2 out that far and the T1 would be far too saline for the purpose of storage. It was added that Bolivar would be a suitable location or under the cone of depression as previously discussed.

A committee member asked what SA Water did at the Aldinga MAR scheme. In response, it was noted that the water is stored in the T2 aquifer Port Noarlunga location and the bores are about 80 metres deep and approximately 3km from the sea. The salinity in the aquifer at that location is about 2,200TDS and there aren't any domestic bores in the area as they have all gone too saline. A further question was asked about how much water is stored at Aldinga MAR scheme. In response it was noted that SA Water only store 400ML at that location, as the water can only be stored for approximately 100 days before its quality is compromised and becomes unsuitable for use.

Matt asked the committee if there are criteria that could be identified to allow SA Water to store the water in the area of the cone of depression. In response, a member suggested that it wouldn't be worth the argument.

A member asked Glenn if he was aware of any other MAR schemes in South Australia that are injecting 12GL of water into the aquifer. In response it was noted that Aldinga is likely to be one of the biggest MAR schemes injecting 400ML in a small area. There are 4 bores injecting 100ML each and are approximately 400 metres apart.

A member asked if SA Water has done modelling around the cone of depression and whether 20GL of water would alleviate what gets extracted out of the cone of depression. In response, it was noted that it's a relatively straight forward exercise and you would see a relief in the cone of depression. The cone of depression wouldn't completely disappear but you would see a reduction.

Matt asked Glenn if he could provide further information around the release of arsenic in the aquifer once water it is injected. In response, it was noted that all aquifers have arsenic in them and all bore

water has arsenic in it, but generally not at levels that are of concern. Bore water can contain arsenic, cadmium, uranium and other heavy metals. The critical point is to understand the natural characteristics of the aquifer and how it will respond to injecting water into it. This would involve a series of tests.

A member asked how SA Water could guarantee that water would still be available for irrigation after a number of drought years if storage options are not developed. In response, it was noted that this falls under contractual arrangements and that SA Water would only contract amounts to users that it can guarantee.

A member asked if Bolivar would receive less water if more and more houses are made water efficient. In response, it was noted that Bolivar produces a relatively consistent supply from 46GL to 60GL each year, so it's very unlikely that household efficiency would impact on water supply for primary production purposes.

A member asked how the draft storage plan feeds into the EOI. In response, it was noted that proponents have been advised they will need to consider the outcomes from the Committee meetings and SA Water will choose the proponents that have considered these issues and demonstrates the best economic benefit to the state.

Matt outlined that the discussions had started to determine some of the parameters for the Draft Master Plan. These included:

- Soils
- Types of crops
- Suitability of aquifer
- Amenity of above ground storage
- Proximity to customers (and types of customers)
- Proximity to drinking water bores
- Impact on water price
- Salinity
- Quality of injected water
- Maintaining integrity of aquifer
- Testing of potential sites
- Monitoring of extracted water
- Monitoring bore network
- Direction of groundwater flow
- Bolivar as potential site
- Proximity to Cone of depression
- Mains water availability
- Avoiding contamination
- Permeability of aquitards (transmissivity of aquifers)
- Establishing adequate trial phase
    - Fit for purpose water
    - Chemistry of aquifer
    - Required chemistry of recycled water
- Proximity to power infrastructure
- EPA criteria

6 Next meeting

The next meeting is scheduled for 30/03/2016 from 5-7pm at the Virginia Horticultural Centre.

SA Water has arranged for guest speakers from EPA, DEWNR and Department of Health to present on licensing, monitoring and approvals associated with above and below ground storage options.

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 Master Plan) could be undertaken and made publicly available.	SA Water	13/01/16	Underway
4.	Arrange a visit to AWQC and advise Committee members	SA Water	9/12/15	Underway