Summary of Lake Jualbup Events 2008-2014

This page summarises **events in order of date**, earliest first, with many pictures. Includes council decisions, community consultations, our petition, and your comments. A lot has been happening, making it essential history for lake lovers and anyone interested in council-community relations.

It totals 20 pp. See **Summary of Events 2015-2022** (also 20 pp) for a continuation and conclusion.

Events in 2008 and 2009

Council dumps the 2000 management plan / Appalling mischief

Council dumps the 2000 management plan

The estimated cost of implementing the 2000 management plan was around $500,000. But in April 2008 the plan was dumped by council on the grounds that "The walls and pathways need re-pairing. The people want the walls and pathways retained. The plantings (multiple attempts) at the eastern end of the lake are not a brilliant example of survival or beauty. The whole thing has gone on far too long against huge opposition. Just start maintaining it now" (councillor Dr Lynley Hewett in the council minutes of 22 April 2008). What happened next was extraordinary.

Appalling mischief

An upset supporter of the plan told the Department of Indigenous Affairs that the council wanted to reconstruct the wall (it didn't). In May 2008 the DIA told the City that reconstructing the wall may be an offence under the Aboriginal Heritage Act. If it was, the City would face a penalty of $50,000 plus a daily penalty of $1000. But the accusation was untrue, and in due course the DIA approved repair of any unsafe walls. The following letters to the POST in August 2008 explain everything:

2 August 2008 p.22

Lay off Subi staff – I wrote the letter

Daniel Boase-Jelinek, Derby Road, Shenton Park

In the minutes of Subiaco council's meeting on July 22, I note that councillor Lynley Hewett announced her intention to find out who wrote the letter to alert the Department of Indigenous Affairs about the council's plans to restore the walls around Lake Jualbup.

It seems Ms Hewett suspects council staff of writing the letter.

I am putting my hand up because I am concerned there may be a witch-hunt against innocent staff members.

I wrote the letter because I believe many residents would be as shocked as I am that councillors Hewitt, Alan Stoney, Paul Clements, Murray Rowe, Judith Gedero and James Turnbull and mayor Heather Henderson appear determined to violate an agreement with indigenous people, which was solemnly entered into by the council on our behalf as an act of reconciliation.

Many people would be outraged if someone proposed to bulldoze one of our sacred sites (an Anzac shrine or Karrakatta Cemetery), and I am sure many Subiaco residents would likewise share my concern that these councillors appear so keen to bend to the demands of a small group of vocal residents to bulldoze a site important to indigenous people.

I intend to continue writing letters to alert government departments as long as this kind of behaviour continues in the council.

9 August 2008, p.8

Facts are wrong on Subiaco's misdoings

Geoffrey Dean, Cullen Street, Shenton Park

Daniel Boase-Jelinek's crusade to alert government departments to the alleged misdoings of Subiaco councillors ("Lay off Subi staff – I wrote the letter", POST letters, 2/8) suffers from one tiny problem: his inability to get a single fact right.

No, the council is not planning to reconstruct the walls around Lake Jualbup. But this is precisely what his letter to the Department of Indigenous Affairs (DIA) claimed.

As a result of his false claim, the council was subjected to threats of $50,000 penalties and the cost of expensive legal opinion about reconstructing walls. All unnecessary.

But wait – it gets worse. … there is not "a small group of vocal residents who want to bulldoze a site important to indigenous people". Pulling out walls might require a bulldozer, but not retaining them.

Finally, it is not true that the "agreement with indigenous people was solemnly entered into by the council on our behalf".

Yes, there is an agreement, but there is no record of it having been ratified by the council, nor of the signatories being authorised to sign it.

The council can hardly be held responsible for an agreement it did not ratify.

Daniel, you owe the council and ratepayers an apology for your appalling mischief. *[Abridged.]*

Similar statements were made by others. There was no response from Mr Boase-Jelinek.

Events in 2010 and 2011

Results of community consultation / Our petition / Spraying / Your comments on this website

February 2010. Council opts for community consultation

In February 2010 council resolved to (1) engage a consultant to determine "community views on how they want the lake to look", (2) engage afterwards a consultant to devise an appropriate management plan for the whole reserve, and (3) endorse its April 2008 resolution to repair the walls and pathways, and to not destroy any walls "by any re-landscaping like the eastern end of the lake". Twelve months later the council engaged a consultant to determine community views. When details were released in May 2011, some ratepayers were outraged by their complexity and expected cost ($130,952 plus extras at $203.05 an hour), and deluged the POST with angry letters. The final cost (see below) was almost double this.

In June 2011 a public meeting held to discuss the consultation process attracted 90 ratepayers, see picture below. Most were angry about a consultation process that, in their view, was outrageously expensive, and which pretended that views about the lake were divided down the middle, when in fact (as several people pointed out) there was a clear majority in favour of water.

The principal of Aha! Consulting addresses a hostile meeting

The meeting was hostile towards a process that seemed to be getting nowhere in determining "community views on how they want the lake to look". After an hour of discussion the people present were asked to put their hands up if they were now happy with the consultation process. Not one person did so. Subsequently the council revised the process to include "a referendum or a statistically valid survey of all residents" as the best way of determining community views, together with a reference group of 12 ratepayers that would determine the questions to be asked.

August 2011. Save Our Jewel petition

The reference group was so inefficient that in August 2011 the Save Our Jewel group began circulating a petition at the Subiaco farmers market, in local cafes and shops, around suburban streets, and among park users. The petition featured an outline of the group's proposals and asked the City of Subiaco to implement them. In just five weeks the petition received 1697 signatures, making it one of the largest of any Subiaco petitions and more than all four lake petitions since 2001 combined. For details see p.5. About twenty group supporters (not all lived near the lake) also displayed **signs** on their properties. The signs were notable for their simplicity.

The referendum. The reference group suffered from a lack of direction. It accepted the consultant's suggestion to send postcards to all 11,517 Subiaco properties asking them to complete an online questionnaire rather than send the actual questionnaire (say as an insert in the council's monthly newsletter). But the postcards looked like junk mail, recipients tended to throw them away, and Australia Post would not deliver them to letterboxes marked with "No Junk Mail" stickers (about half of Subiaco letterboxes). In the end only 450 responses were received. The situation is well described by these extracts from a letter to POST newspapers (not from a member of the Save Our Jewel group) on 19 Nov 2011 page 16:

*Jualbup survey needs more time***.** …Having the internet as the main survey interface is asking for it to go unnoticed by many residents. …That must have been the intention. The survey has two photos of the Noranda Wetland v one of Jualbup, which seems biased. Noranda's 71 ha of bush, maintained by a small army of volunteers, is compared to our tiny Lake Jualbup, and then we are asked for our preference. … It is simply incredible that this poorly constructed and narrowly disseminated survey is the defining result that most residents will see (or not see) of a $130,000 enquiry.

In fact the ten-month consultation with its 450 responses had cost ratepayers $166,000 ($369 per hit), whereas the SoJ petition had got 1697 signatures in five weeks, costing ratepayers nothing.

Elector's AGM

On 3 December a full-page ad in the POST urged electors to attend the AGM and have their say about the lake's future. The meeting unanimously moved that the Council hold a public meeting before the consultation results were announced. But the motion was not supported by Council.

Cost of community consultation

Aha! Consulting $130,952 plus $9833 for additional work, RPS technical review of options $20,416, Nyungah consultation $30,019, Savant postcard survey and analysis of results $25,274, Syrinx environmental survey $21,200, **total $237,694**. This left about $600,000 for restoring the lake. [By May 2014 about $400,000 was left, to which another $1m was allocated in 2015-2016.]

Cartoon comment from the POST

Outcome of the 2011 Jualbup Accord community consultation

The outcome is described in three reports totalling 172 pages. They reduce to the following:

Breakdown of the 450 responses from supposedly 11,517 sampled (look at the black figures):

Compare this with the 845 Subi signatures from the SoJ petition (852 were non-Subi):

46%	Central ward	46%	) There is good agreement,
41%	South ward	42%	) which confirms that the SoJ
6+7%	N & E ward	12%	) petition was unbiased.

The respondents

Distance from lake: <0.5 km 48%, 0.5-1 km 35%, 1-3 km 14%, >3km 2%.
Residency: <2 yr 10%, 2-5 yr 14%, 5-15 yr 34%, 15-25 yr 22%, >25 yr 21%.
Visits: daily 42%, weekly 42%, monthly 12%, yearly 4%.
For: wildlife 75%, fitness 66%, recreation 53%, child-related 47%, dog 36%, picnic 36%, other 9%.

The above is similar to the response to a Steering Committee questionnaire circulated in September 1999 to residents living within one km of the lake. Almost 300 of the 1000 questionnaires were returned. 82% visit at least once a week for up to an hour. 5% are under 25, 66% are female, 51% are alone (usually walking for exercise, often with a dog). Fewer come before midday than after. Top activities are walking 60%, playground 13%, wildlife and picnics 10% each. Top likes are wildlife 44%, trees 33%, peace 28%, open spaces 18%, grass 13%, tortoises 7%. Top dislikes are run-down state of wall 25%, dog and bird poo 19%, low water level in summer 17%, rubbish in lake 14%, long distance to toilets 5%. Some (no figure is given) seem to have no dislikes at all. (Condensed from Steering Committee archives)

General preferences

Future of lake: permanent water 61%, seasonal 22%, both 16%, do nothing 1%.
Prefer: walls 41%, embankments 31%, mixed 25%.
Planted areas: as is 72%, more 26%, less 2%.
Tree preference: more natives 48%, more non-natives 13%, mixture 38%.
Replace dead trees with: natives 43%, non-natives 41%, mixture 13%.
Most common improvements: more water, fix paths, more trees, fix walls.

Particular preferences
When neutral responses are divided equally into ***for*** and ***against*** to allow an overall ***for*** to be calculated, the outcomes as percent ***for*** are as follows:

Clearly for	**Not clearly for or against**	**Clearly against**
80 Seating	58 Covered areas eg rotundas	38 Water-related play areas
80 Protected wildlife areas	58 Observation platforms	37 Community garden
77 Disabled access	57 Pathways	36 Facilities for teenagers
77 Drinking fountains	50 Water features	31 Tearooms
73 Info on wildlife	50 Public art	28 Food vans
72 Picnic areas	47 Tiered areas for concerts	26 Parking
68 Lighting	41 Sports facilities	15 Sports fields
65 Barbecues		
65 Toilets	The above responses show general support for what Save Our Jewel	
64 Playground equipment	was proposing – but not always. For example there was only modest	
60 Info on history	support for more pathways and for tiered areas for concerts	

April 2011. Spraying the lake bed

In April 2011 the Subiaco council was forced to spray the entire dry bed of Lake Jualbup with herbicide, killing the weeds (below**)** – and also the plants needed by bottom feeders.

None of the environmental consultants predicted these disasters, so can we trust their advice?

Dewatering. Excavations below the water table at QEII Hospital required the pumping of ground water to Lake Jualbup (enough to fill the lake about seven times) over a period of six months from August 2010, which temporarily kept the lake from drying out. Further excavations requiring the pumping of about 3x the above volume over 3x the period began around mid 2011.

August 2011. Comments from your emails

In July 2011 the Save Our Jewel website was launched. It received many positive comments and no adverse ones. The following is a selection. To save space they have been abridged.

Web site looks great. The pictures are absolutely fantastic.

Excellent history. I never knew so much was known about the lake.

Congratulation on your website. I hope it will be very successful. It gives the community plenty of opportunities to become part of the whole debate. A tremendous amount of work has gone into your site and I recognize and applaud all the hours you have given to it. Geoffrey Dean's History of the Lake, much of which I have seen before, is just great.

Thank you for such a comprehensive website on Shenton Lake and environs. It made very long and interesting reading. We have been following the Lake issue for the many years, and your website seems to address most aspects -- social and environmental -- for lake restoration / rehabilitation. What we would prefer is permanent water. Thank you for your time and effort.

Loved the bird photos. Jualbup is a special place.

Dear Councillors, The future of Lake Jualbup has been allowed to be an ongoing festering issue, mainly because the wishes of the community have not been listened to. We hear all sorts of

reasons why things can't be done even when they are fairly much the status quo. Yet the sorts of things we would like to see here are already happening in many other councils that are far less wealthy and just as conservationalist. So I thoroughly commend the efforts of the Save-Our-Jewel group as reaching a good compromise with all the wishes of the community. In particular, the needs of wildlife are considered a priority. In our drying climate it is ridiculous to think that letting the lake dry out unnecessarily is going to be better for wildlife. Please listen to your community -- if you doubt what they want, then ask them formally.

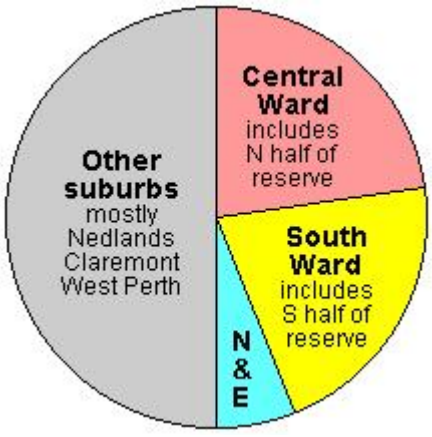
September 2011. Results of our petition to restore Lake Jualbup

During August and September 2011 we circulated a petition at the Subiaco farmers market, at local cafes and shops, around suburban streets, and among park users. The petition featured an outline of our proposals and was headed

"To the Mayor and Councillors of the City of Subiaco: We the undersigned support the proposal overleaf, which aims to cost-effectively retain permanent water and restore Lake Jualbup to its former glory. We request that the City of Subiaco implement this proposal."

Our petition told ratepayers they could choose between a lake that in most years dried up (above) or stayed wet (below)

In just five weeks the petition received 1697 signatures, more than all four previous lake petitions since 2001 combined, and one of the largest responses to any Subiaco petition. In fact in recent years only the petition opposing the use of Rosalie Park for car parking has received more signatures. On 20 September our petition was presented to Subiaco Council.



Petition signers came from Subiaco (845 signatures) and other suburbs (852 signatures from Nedlands, Claremont, West Perth, and a dozen others). The breakdown of Subiaco signatures was 46% Central, 42% South, 12% N&E, almost identical to that of the 450 responses to the 2011 community survey (46% Central, 41% South, 13% N&E), which indicates that the petition was not biased by the collectors.

The sheer number of signatures and their breakdown by area shows that, contrary to the myth, concern about the lake is not confined to a vocal minority who live next to it.

So how did the signers react? People were generally eager to sign. Disillusion and frustration over the present lake was evident, especially with the younger mums and dads who visit the park. Most people were aware of the debate but not in great detail. But they all wanted water. Nobody was strongly against. Most saw the drying out as detrimental to the park and wildlife.

A desire for native planting never arose, nor for removing the walls, nor for changing the look of the park. Having water was the main concern provided the proposal was sound and showed respect for the environment (both true of our own proposal). Some people were worried about the 2010 spraying over summer to kill weeds. Nobody raised any indigenous issues. Some were aware of

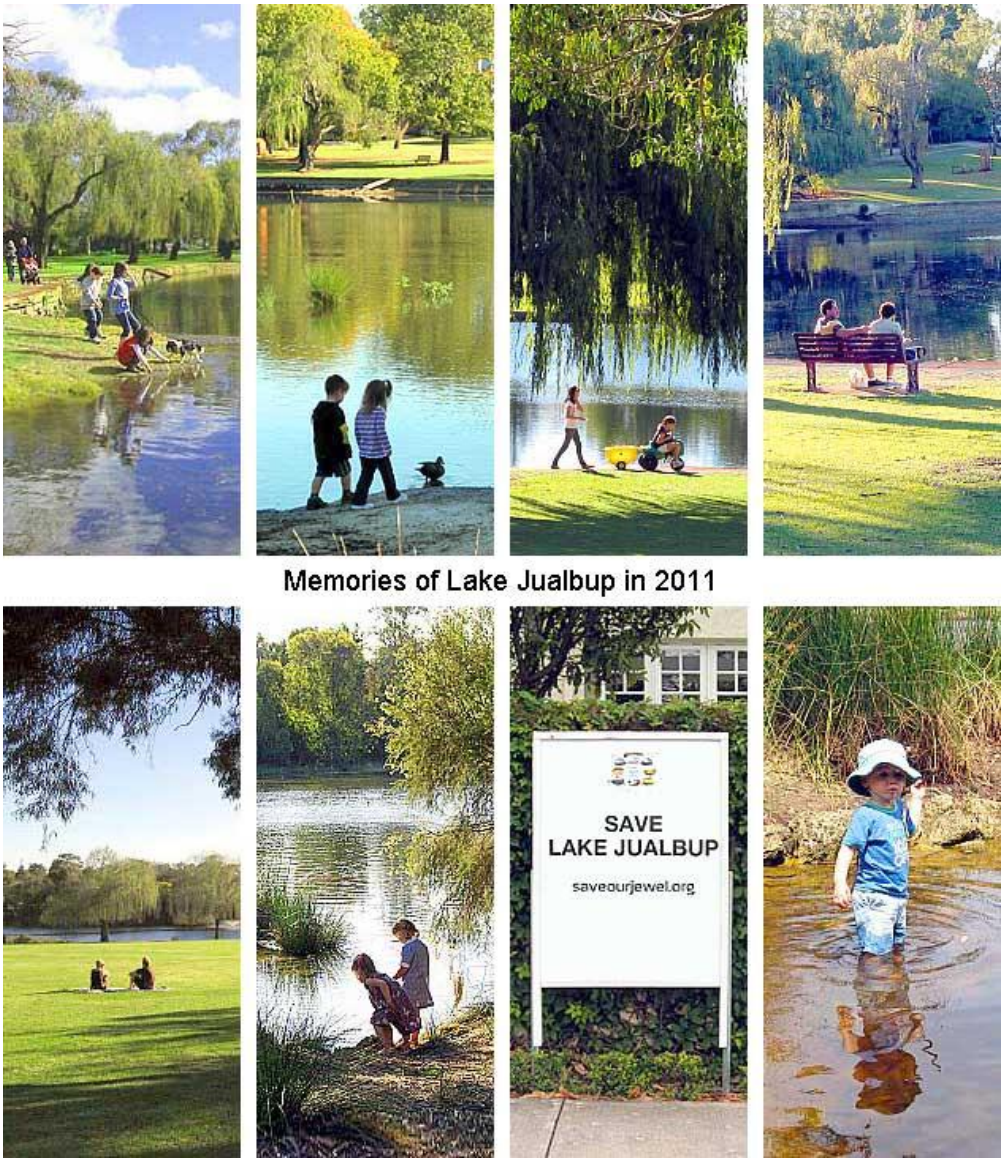
Perry Lakes and Hyde Park Lakes and wanted their water retained. Most people got their information from the Post newspaper.

Those from outside the Subiaco area said they liked the park because it is so tranquil and attractive when the lake contains water. One lady came to the park from Cottesloe five (yes five!) times a week, because to her it was as beautiful as Cottesloe but without the sand and tourists. Specific reasons for visiting the park from outside the Subiaco area included:

- We got married there.
- We have family picnics there every birthday.
- We grew up there and played in the tip!
- We have grandparents living in Shenton Park.
- My children love the swans and ducks.
- We grew up there and it always had water.
- It's one of the few suburban parks where you feel safe.
- We go there for the kids' sport and always stay on.
- A lake without water? What's wrong with your Council?

An uninformed comment

Lake Jualbup is a 3-ha shallow lake spring fed [it is not spring fed], with a daily evaporation during the summer of around 450-800 cu metres a day [it is rarely more than 300 cu metres a day]. The lake has no leakage [it has massive leakage], so water loss is solely due to evaporation [at most 15% is due to evaporation]. So any liner would be a waste of time and money. The liner would also swell up during winter when ground water pushes in [we have never proposed using a liner].



Above: water levels were helped by dewatering at QEII. No mosquito problems were noticed.

Events in 2012

Council to restore lake / Celebration / Options for restoration / Sustainable ecology / Rockwater confirmation

February 2012. Subiaco council vote 8-5 to restore lake

On 28 February 2012 the Subiaco council voted 8-5 in favour of a resolution put forward by Cr Hewett to "abide by the majority community wish to maintain a sustainable but adequate permanent body of water in Lake Jualbup", retaining the existing willows and most of the current wall, reducing leakage via a polymer, planting more reeds and sedges, and widening some paths. For details click on *Map of Lake Jualbup Restoration*. Opposition came from (1) Cr Hemsley who felt the wider community needed to be consulted (apparently not noticing that the community survey did just that, nor that his opposition was contrary to the wishes of his own South Ward ratepayers), (2) Cr Arbuckle who felt the resolution had to tread the real middle ground of half dry and half wet (apparently not noticing that 61% of responses were against it), and (3) Cr Walton who successfully moved to replace dead willows with native trees rather than with new willows. When the resolution was adopted there was a standing ovation from a packed gallery.

Comments on council decision

After the decision to restore Lake Jualbup we received many comments. Here is a selection:

Congratulations on the fantastic result last night. A journey of 1000 miles begins with a single step. While your Save-Our-Jewel group took that step some time ago, last night Subiaco council took a step of its own -- how pleasing that it was in the right direction. While work still lies ahead, a tremendous amount of progress was made in that single vote last night. And you did it! Best wishes from all residents who, like me, treasure the Lake. Thank you!

The first step in what looks like a long journey was taken at the council tonight. The opposing councillors' understanding of the issues was in inverse proportion to the time they spent talking against them.

Pity about the threats / blackmail / bullying from some opponents. It was my first visit to a council meeting -- very impressed with Cr Lynley Hewett. Hope things can now start moving for the lake.

I sat in the gallery and listened while our representatives were not intimidated by the bullying and threats, and that gives me pride. After twelve years of indecision and a serious waste of City resources and finance, we the people have a decision that reflects the majority view of the community. It has restored my faith in my community and our representatives.

Sad to see the willows not being replaced (they were a big part of my childhood) but it's a compromise I'm willing to make if it helps get the lake restored.

I want to thank you for all the work that you have done to restore Lake Jualbup to the condition it should be in. You deserve huge congratulations for last night's council decision. I do have one question, though. I can't find the map that shows the restoration plan that was referred to in last night's debate. Can you tell me where I can find it?

Yes, return to the home page and click on *Map of Lake Jualbup restoration*.

April 2012. Celebration

On 29 April 2012 an overnight rainfall of 55 mm half-filled a previously dry Lake Jualbup just in time for an informal **meeting of local residents**. They were celebrating the outcome of the community consultation, and the decision by Subiaco council to abide by the majority wishes of their ratepayers. With perfect weather, a sparkling lake, and relaxed company, it could not have been a happier occasion. Also present were Subiaco mayor Heather Henderson, councillors Lynley Hewett and Derek Leeder, and environmental experts.

June 2012. Options for restoration

In June 2012 Subiaco council engaged Rockwater to simulate options for the restoration process. The aim of course is to maximise the retention of water and minimise overflow to the ocean.

Among other things this will involve re-calibrating their existing hydrogeological model using the comprehensive records of water level kindly made available by Dr Geoffrey Dean.

Council also announced that restoration would begin with these steps:
1. Rockwater simulation. Research into use of polymers.
2. Outcomes to be placed on the City's website.
3. Obtain responses from relevant authorities such as Water Corporation.
4. Responses will determine how to proceed.

The City's webpage on Lake Jualbup includes more than 30 historical documents on Lake Jualbup including nearly half a million dollars worth of reports and tests of water quality. But response times can sometimes be slow.

July 2012. A new trail

The *Western Suburbs Bush-to-Beach Trail*, which is part of the Whajuck trail network, is being organised by the City of Nedlands and network supporting groups. It is hoped that a mobile phone application and website for the trail can include pictures of Lake Jualbup, possibly including some from the Save-Our-Jewel website. (That was the hope, but by 2015 none had been included.)

The much-loved playground equipment shown here was demolished in June 2012. By November 2012 new equipment costing $126,000 had been erected on the grassed area beyond the figures, see picture below, but attracted controversy and a petition because parents felt it was unsuitable for small children. But the Council was listening, and a year later the playground was expanded to cater for small children. Bottom, the crowd is attending a Sunday@Subi concert in 2014.

November 2012. Water level higher than normal due to QEII dewatering

Despite low rainfall the lake level in November 2012 was about half a metre higher than normal due to groundwater pumped from QEII dewatering. Dewatering began in October 2012 and continued through February 2013. Dewatering also kept levels higher than normal in 2010 and 2011.

November 2012. Expected outcome of council restoration

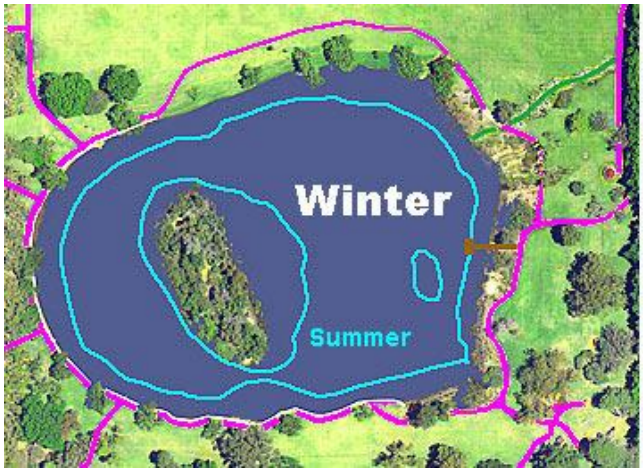
The key is a sustainable ecology

Subiaco council's survey revealed a strong community interest in permanent water to attract birdlife to Lake Jualbup. But by itself permanent water is not enough -- also needed is a healthy food chain based on a sustainable ecology. Which is why the council restoration stresses the need for a

sustainable environment that provides food at every step up the food chain. In the days before white settlement, the lake and its surrounds offered fish, waterfowl, frogs, turtles, lizards, grubs, and larger game such as kangaroos coming down to drink. The traditional residents lived well on just a few hours of hunting and gathering each day. Today the surrounds have changed and such incredible diversity is no longer feasible. Nevertheless a healthy food chain is still essential.

Producing a sustainable ecology

The council restoration (essentially the Save-Our-Jewel proposal) aims to produce a sustainable ecology via water levels that vary during the year as they have always done from one season to the next. The pictures below show how it will work, and how everything depends on the food chain:



Left: Here are the water levels predicted for a restored Lake Jualbup in a typical winter and summer. In late summer the low water level (pale blue line) exposes drying margins to attract wading birds. But unlike the present drying-up in summer that leaves the area devoid of both water and birdlife, the council restoration will retain permanent water (and thus the birdlife) in most years. Existing and proposed paths are shown in purple. Right: A concrete lake kept permanently full by pumping in groundwater as here at Subi Centro (it is part of the reticulation) might temporarily attract a few ducks, but would it support a sustainable ecology? Absolutely not. This lake has no sloping banks, no drying margins, no reeds, no sages, no food chain, and almost no birdlife to eat the weeds. Without a food chain it is effectively dead.

Constructing the physical form

The Save-Our-Jewel proposal was guided by our own public consultation and incorporated the following physical factors, now adopted for the council restoration: (1) Walls to permit community access. (2) Sloping banks to provide a growth environment for the food chain. (3) Higher lake bed next to the wall to reduce depth and increase community safety. (4) Island refuge for nesting wildlife with more sloping banks. (5) Restoration of the natural seal to reduce water loss and retain overflow that would otherwise be lost to the ocean. For details see *Our Proposals* on this website.

But physical form is only the first step

The lake will slowly develop an ecology suited to its environment. To make sure it heads in the right direction we need to draw on the expertise of our universities, Government departments such as Fisheries, and environmental industries to: (1) Decide the best plantings for the drying margins. (2) Decide the best shelter habitats. (3) Investigate the food chain of species the community might want to see. Not just turtles and water birds but fish and frogs, including bull frogs and tree frogs that contribute to night noises. For ideas, start by visiting the Herdsman Lake information centre. (4) Progressively return turtles previously removed. (5) Stock with fish, frogs, and microfauna that are appropriate for the food chain.

Don't forget this essential last step!

Restoration does not end when the last frog is safely in place. It is not enough to take these ecological steps without community education. So we hope restoration will include educational signs (similar to those in King's Park) that explain the lake's history, ecology, and Aboriginal significance. Let everyone see how Subiaco's Jewel in the Crown is shining again!

November 2012. Rockwater report confirms permanent water is achievable

The report was commissioned by the City to examine whether permanent water was achievable by a 75% reduction in lake bed permeability. The conclusion of the report was yes, it was achievable. The City subsequently sought comments on the report from the relevant authorities, whose concerns focussed on seven main topics, namely **1** drying vs permanent water. **2** food chain. **3** water

quality. **4** lake bed permeability. **5** use of polymer. **6** raising outlet. **7** flooding.

Events in 2013

Invited response to comments / Soakage test results / Polymer tests begin / QEII lake excavated

March 2013. City invites our response to the authorities' comments

Following an invitation by the City, the Save Our Jewel group prepared a response to the authorities' comments, and how each issue is addressed by the Subiaco Council Resolution re Lake Jualbup. Our response occupied four pages. Here is a summary in which their seven main topics are treated under three main headings. Our response is in *blue italics*. The authorities are:

DEC Department of Environment and Conservation. **DIA** Department of Indigenous Affairs. **DOW** Department of Water. **EPA** Environmental Protection Authority. **WC** Water Corporation.

Maintain sustainable but adequate permanent water body

DOW says this will produce a constructed lake. *But it has been a constructed lake since the rubbish tip was bulldozed in the 1950s, followed by landscaping.* Permanent water may have detrimental impacts such as mosquitoes. **DEC** also says a drying lake would have greater value. *The $237,694.00 community consultation showed that Subiaco ratepayers do not agree. In effect the council resolution returns the lake to much the same condition of permanent water it had enjoyed for most of recorded history with no detrimental impacts. Lake can be populated with pygmy perch to control mosquitoes and add to the birdlife food chain.* **DOW** says no groundwater is available to maintain permanent water. *On average the lake receives each year eight times its volume in stormwater runoff. No groundwater is needed.* **DOW** and **DEC** say changes should enhance the ecology. *The council resolution aims to do exactly that.*

Reduce leakage via a polymer to reduce water loss

How much reduction is required? Both the Rockwater and Dr Geoffrey Dean models agree that a 75% reduction in leakage should suffice, whereas a 50% reduction is not quite enough.

WC needs more information, says reducing permeability will increase risk of flooding. *Their outlet is designed to handle a 100-year event when the lake is full (the worst-case scenario), at which time the inflow from rain and runoff will be at least 100 times the present leakage, so reducing the permeability will have essentially no effect.* **DOW** refers to lining the lake. *The council resolution does not involve lining the lake.* Reducing permeability could increase loss to ocean. *But raising outlet will prevent this and allow excess water to soak back through the grass to the ground water. In earlier years flooding was frequent yet never lasted more than a day or two even when the outlet was blocked by leaves, showing that soakage is fast and efficient.* **EPA** refers to potential for water quality issues and risk of acid sulphate soils. *Historically no water quality issues were reported when the lake had permanent water. Acid sulphate soils occur only when a lake dries out, which permanent water will prevent.* Preventing leakage will lower the water table. *The council resolution does not prevent leakage, it merely slows it to the level likely before the natural seal was disrupted by dredging in the 1970s and removal of the eastern wall in 2001. The lake will still leak sufficiently – enough to fill one Olympic-size pool every two weeks in summer, three times this in winter – to maintain the water table and prevent water quality issues. If loss to the ocean is controlled, see next item, the return to the water table can exceed what it was before.*

Raise outlet to reduce loss to ocean

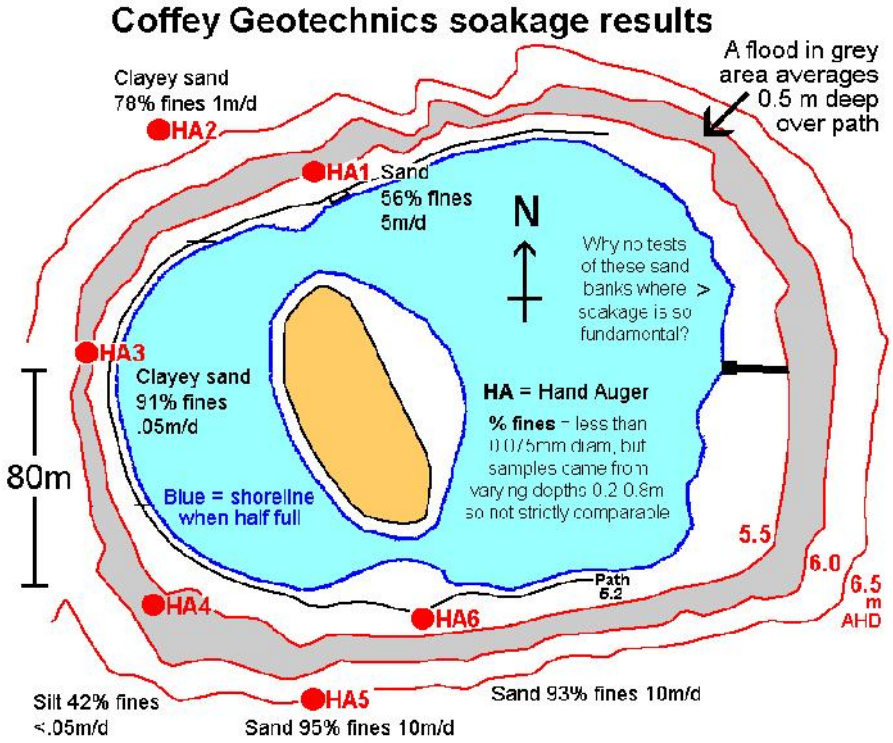
WC says Rockwater's model overestimates rate of outlet flow, it should have used revised outlet data. *In 2011 the WC replaced the outlet grille with a more restrictive grille. In response to our query, WC said this replacement had been part of a general metro-wide safety initiative, but in hydraulic terms the new grille was not suitable, so they would be replacing it.* The assumed start level re effect of raising outlet may be invalid. *Not clear how this is relevant when the WC's worst-case scenario assumes the lake is full from the start.* **DIA** says raising the outlet will require earthworks and excavation. *Not so, just an extra course or two of bricks. And not even that if the outlet is gated instead, with an automatic opener in case there is a threat of serious flooding. There are various examples of such gates in the metro area. Outflow depends on rainfall timing as well as amount, but in general the annual rainfall has to be above average for outflow to occur.*

The outlet grilles referred to above are shown on the next page.

Left: original open grille in 2008. **Right:** temporary restrictive grille installed early in 2011. The broken brickwork at the right of the weir will be repaired. **Middle:** start of the outlet pipe running from behind the grille to the ocean. Not easily visible to the eye but here photographed through the grille. How did all that debris get behind the bars? Shouldn't it be in front of the bars? The WC have advised us they will investigate. **Below:** a new less-restrictive grille was installed in May 2014. The original open grille over the top was retained. The internal bars shown in the middle picture above were removed to allow water to flow more freely, albeit with the disadvantage that the entry of debris would not be prevented.

June 2013. Tests to determine soakage through the surrounding grassed areas

Restoring the seal of the lake bed reduces leakage. But the saved water has to go somewhere, which means that reducing leakage also increases the chance of flooding. How long the flood lasts will be determined by the rate at which the flood waters soak into the surroundings plus the flow of water through the outlet (measurements by David Sim in September 1995, during a flood of about half a metre deep, found that it lasted no more than two days and that soakage was at least as effective as flow through the outlet). Historically no floods were reported to last more than a day or two, but could this be confirmed by modern measurements? To find out, the City asked Coffey Geotechnics to measure soakage rates in eight locations in the grassed surrounds.



Left: In June 2013 the soakage rates through the surrounding areas were tested in holes 50 mm across and half a metre deep located as shown by the red dots. HA = Hand Auger (used to bore the test holes). The lake level was then more than 1 m below the wall (it briefly flooded in September).

The holes were typically 50 m apart, half were above the most likely flood levels, and no tests were made of the eastern sand embankments.

In other words it was not possible to accurately asses how the soakage varies over the area most subject to flooding. Nevertheless the results are consistent with David Sim's 1995 results, and with historical eyewitness reports that no floodings in the past lasted longer than a day or two. So there is no reason why future floodings should be any different.

October 2013. Hugh Richardson elected to Subiaco Council

At council elections in October 2013, Save Our Jewel member Hugh Richardson was elected by a large margin to fill the South Ward vacancy caused by Derek Leeder's resignation due to ill health.

Above: The spring lake is full. But gradually the level falls, and waterbirds congregate on emerging islands.

November 2013. Exploratory tests of polymer begin

The problem of how to test polymer without incurring huge costs was solved by Save Our Jewel. We persuaded Dr Craig Lawrence to make space available for testing at the Department of Fisheries Shenton Park Field Station. Dr Lawrence needed little persuasion because the retention of water in drying lakes is an obviously essential step towards maintaining fish populations.

Left: The polymer test columns at the Department of Fisheries Field Station in November 2013. Dr Craig Lawrence (centre in blue shirt) is showing how it works to City of Subiaco personnel including the mayor Heather Henderson (right). Also present were POST reporter Lloyd Gorman (left), and members of the *Save Our Jewel* group (left and right of Dr Lawrence are Hugh Richardson and Allan Stoney). Various amounts of polymer is added to water in the columns to see how it affects the leakage rate. Initial results showed the polymer being tested was the wrong type (it was designed for mixing into soil like water retention crystals).

Lake Jualbup Management Plan **2000** Page 6

Water quality OK

2.6 Water Quality

Beside the initial spring flush of high nutrient levels, the waters of Lake Jualbup are at an acceptable standard for the protection of aquatic ecosystems. Sampling carried out in August 1999 indicates that the mean total nitrogen levels are 0.6mgl/l (ANZECC 1992 guidelines 0.1 – 0.5mgl/l) and that the mean total phosphorus levels are 0.06mgl/l (ANZECC 1992 guidelines 0.005 – 0.05mgl/l). There is no indication from commissioned analyses (May 1998 – February 2000) that the sediment contains unacceptable levels of nutrients or heavy metals. It should be noted that there are no current environmental guidelines for the interpretation of heavy metals in sediments.

Heavy metals? No problem

Subsequently the City's project working group was addressed by the manager of Intachem, who advised that a correct formulation for the purpose of Lake Jualbup was largely a matter of evaluating unknowns such as the level of heavy metal contamination. (which **left** was in fact known in 2000, the highlighting is ours). For drilling rig samples, see May 2014.

The City has recognised the value of Save Our Jewel's contributions and the measurements and modelling of lake levels by Dr Geoffrey Dean, who together with Allan Stoney, Hugh Richardson industry experts, and staff members now participate in meetings of the City's project working group.

November 2013. Excavation of QEII's Lake

An often overlooked source of noxious weeds is Kilgor Park Lake, the compensating basin at QEII from which water is pumped to Lake Jualbup as needed to prevent Kilgor overflowing. In late 2013 the lake was excavated in order to replace accumulated debris with limestone, thus in principle reducing the risk of passing noxious matter to Jualbup (Kilgor is not under the control of Subiaco.)

Above left: Kilgor Park Lake after excavations were finished. **Right:** leaves and weeds pumped to Jualbup

2013 ended with yet another successful attempt by Mr Daniel Boase-Jelinek to get the facts wrong. It was just one of many similar attempts since the mischief he admitted doing in 2008, see page 1.

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Letters to the POST

↓ Question

Where will waterbirds feed when lake is sealed?

Walking around the Jualbup wetland this week, I noticed a pair of tiny migratory waterbirds (baillon's crake) darting about, feasting on the bounty of food in the mud being revealed as the water body recedes.

Nearby were some black-winged stilts, similarly harvesting food from the lake shallows.

The sight of these birds made me wonder: what will they have to eat if the lake bottom is sealed to slow the drying out of the lake?

Why are we so selfish that we deny our native birdlife this much-needed food resource just to preserve the visual amenity of an "English lake" in Shenton Park?

Why can't we accept that we live in an area where lakes dry out each summer, and that as part of that drying process they provide a welcome source of food and habitat to native birds that replenish their reserves and then move on?

Why can't we accept and value the natural cycles of life in our environment, instead of trying to impose aesthetic values from elsewhere?

Daniel Boase-Jelinek
Derby Road, Shenton Park

↓ Answer

They will feed where they have always fed – in the lake, except they will now have more time and more resources thanks to proposals that are aimed at meeting precisely this need. In the months between winter and summer the edges become shallow and typically support 200 or more water birds, who then disappear as the lake dries up completely. The proposals will slow (not stop) the loss of water and increase the area of shallows, contrary to what Mr Boase-Jelinek claims. The aim is to prevent the water level falling to the level shown in the bottom picture below.

Water levels below footpath. **Top** 1.0 m 4 Dec 2011. **Middle** 1.35 m 14 Jan 2012. **Bottom** 1.9 m 10 Mar 2012

Events in 2014

Drying out / More spraying / City's report / Leakage mostly near edges / Largest floods in 30 years

February 2014. Annual drying out

As was now usual, by February 2014 the lake water was disappearing, as were the waterbirds:

Above: Views from the NE corner (top) and just north of the observation platform (bottom), in February 2014

The water table is highest in Lake Jualbup's NE corner and lowest (by 0.3m) in the SW corner. Its presence is easily detected shortly after surface water has disappeared, as shown below.

Left: In February 2014, when surface water in the eastern part of Lake Jualbup had disappeared, the water table in the NE corner was easily visible in these shallow footprints.

Look closely at that picture. You can see wispy green weeds starting to take hold. This occurs on most parts of the lake bed when they are no longer under water. In March 2010 the weeds were noxious and more than waist-high, with disastrous consequences. In April 2011 the City of Subiaco was forced to spray the entire dry bed of Lake Jualbup with herbicide, killing the weeds (see pictures on page 8) and also the plants needed by bottom feeders, leading to reduced numbers of waterbirds until the plants became re-established. And it wasn't to be the only time.

February 2014. More spraying

Above: Not one, not two, but three sprayings of herbicide (glyphosate) were needed in February-March 2014.

Critics of permanent water in Lake Jualbup claim we live in an area where lakes have always dried out each summer (which is contrary to historical records, see **Our Proposals** on this website). According to these critics, the drying process is a natural cycle of life that is superior to permanent water. But they do not recognise that Lake Jualbup is in an urban environment where the drying

process leads to weeds that have to be sprayed, hardly part of a "natural cycle". Nor do they admit that permanent water would prevent such problems of weeds and the need for spraying.

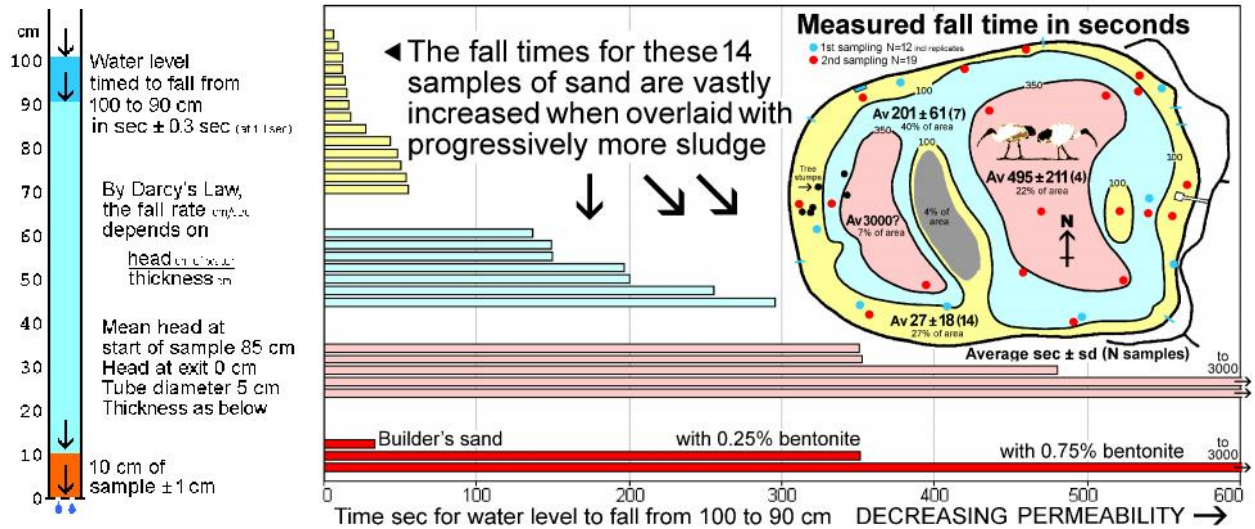
March 2014. City administration issues a report

An 11-page progress report (excluding attachments) was prepared by the City administration for presentation to the 15 April 2014 Subiaco council meeting. But before presentation it was amended to address certain areas of concern expressed by Save Our Jewel. At the actual council meeting, Allan Stoney and former councillor Derek Leeder made public statements urging the Council to get on with it. Cr Richardson proposed a resolution to (1) renumber the report to show it has been amended, (2) reaffirm the 12 February 2012 resolution to restore the lake, and (3) prepare an implementation plan with firm targets and timelines. The resolution was passed 11-2, confirming the elected members resolve to restore the lake (those against were Crs Hemsley and Clements).

April 2014. Lake leakage is mainly around the perimeter

As the lake dries it reveals a lake bed that varies from (1) more or less white sand around the edges and around the island, to (2) black organic sludge that concentrates in the hollows. On the flatter areas the sludge forms a layer over the underlying sand like icing on a cake. See pictures.

Save-our-Jewel tests found lake sand to leak faster than builder's sand, and lake sludge to leak slower by up to a surprising 1000 times, which suggests (1) sludge is already doing what a natural clay like bentonite is designed to do, and (2) application of bentonite to reduce leakage might be needed only for the sand areas. The testing apparatus and a summary of results is shown below.



Left: Permeability was estimated using an apparatus similar to that used by Henri Darcy in 1856. Darcy established what became known as Darcy's Law, now routinely used to describe the leakage rate of water through permeable soil under a pressure head. The "fall time" is the time in seconds taken for the water level to fall from 100 cm to 90 cm depth over a 10-cm thick test sample. **Right:** Red or blue dots are sampling locations, yellow is sand, blue and pink are progressively more sludge. Sludge thickness varied from 1–2 cm to at least 20 cm, averaging about 5 cm. Only the top 5 cm of lake bed were tested because this is where the sludge is, so the results would be directly relevant. Subsequent tests of builder's sand showed how the addition of bentonite could reduce its permeability to about the same as sludge, see red bars at bottom.

April 2014. A test of Rockwater's (December 2012) model

Rockwater's model predicts that a "modified lake [ie with a 75% reduction in leakage] would main-

tain water levels at greater than 0.5 m depth for about nine weeks longer than under unmodified conditions. After this time, water level would fall below the desired minimum level [0.5 m] and the eastern side of the lake would dry up after another eight weeks with no rain. If the drain was raised [by 0.3 m], the period the lake remained wet might be increased by an extra week or so" (p.ii). Early in December 2013 most of the water in the eastern half was 0.5 m deep. On 29 December 2013 the island joined the mainland, but the lake still had plenty of water, as illustrated below.

Above: island about to be joined to mainland. **Below:** island now joined but lake is far from being "nearly dry".

The above pictures were taken in 2012 but they illustrate the point

Subsequent weeks experienced near-record heat and dryness (only 5 mm of rain between Christmas and mid April). On 8 February 2014 the eastern half was about 10% covered by water, and was essentially dry a week later. If the lake had been modified as described, the 0.5 m depth would have been reached nine weeks later, and the eastern half would not have dried out before the first substantial rains (20 mm) of late April. (The western half did not dry out). Therefore the prospects for a modified lake having permanent water in a more normal year seem very good.

May 2014. So much for spraying!

In February 2014 the lake bed was sprayed three times to stop barnyard grass taking over as it did in 2010 when it exceeded waist-height, see **picture at left**. But despite the wide brown result (page15) it was not successful, see **picture below**. Those who crusade against permanent water (as on page 14) remain silent about these awkward liabilities.

Above: Despite three sprayings, enough barnyard grass escaped to seed the next dry lake bed. Picture taken 5 May 2014. Permanent water would of course prevent both barnyard grass and acid sulphate soils.

May 2014. Drilling rig takes samples

In response to advice that the lake was "possibly contaminated" due to its previous use as a rubbish tip from the 1910s until it was landscaped in the 1950s, a mini drilling rig took samples of soil from the grassed areas surrounding the lake. The results, when available (they took several months), revealed nothing new. There were no problems due to heavy metals or to acid sulphate soils. Which, from the existing years of quarterly assays see page 13, we knew already.

May 2014. Lake Jualbup refills

Heavy rain on the night of 7 May 2014 refilled the dry lake almost to the base of the wall.

Left: the lake on 9 May 2014 looking west over the sand causeway to the island on the right. The water over the causeway to the island is 30 cm deep.

But contrary to what would normally happen, the influx of water did not attract many water birds because spraying (page 14) had killed the indigenous water weeds they would normally feed on.

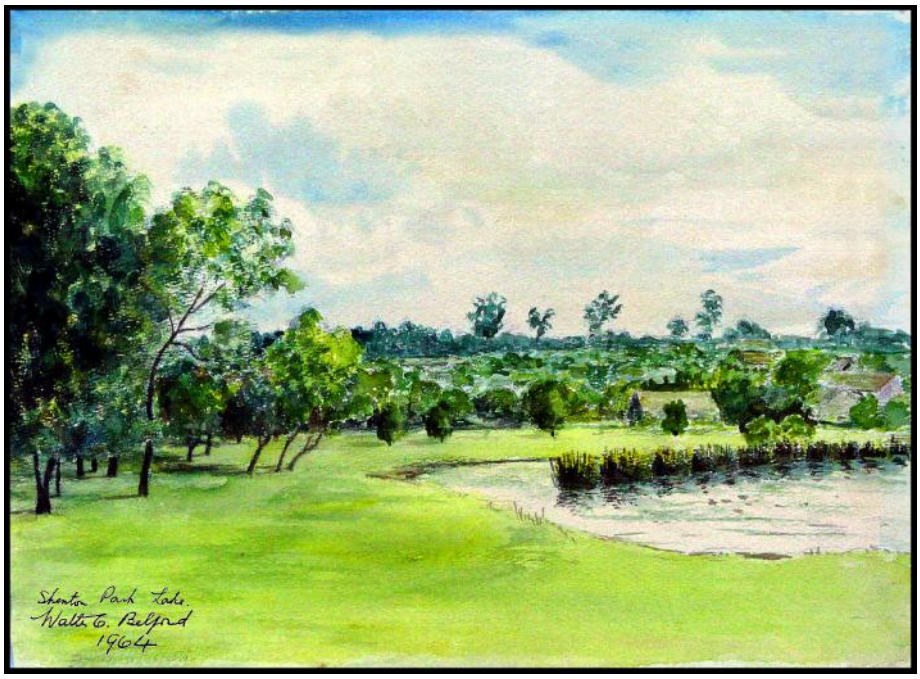
May-June 2014. City's workshop on Lake Jualbup

In response to the council resolution of 15 April 2014 that the City prepare an implementation plan with firm targets and timelines, the City held a two-hour workshop on 12 May 2014 attended by seven staff and seven interested parties including Save Our Jewel and Rockwater. The workshop identified the work to be done and the timescales needed. Among other things it was agreed that testing should include natural clay as well as polymer, and that authority approvals be speeded by having the authorities meet around a table. If all went well then restoration could be finished by 2016-2017. The implementation plan was presented and approved by council in June 2014. In due course a forum was held attended by representatives of all authorities, at which they concluded there were no major flaws in the Plan or concept. (Environmental authorities were in the majority, and much of their discussions involved long-necked turtles.) In December tenders were called for the preparation of a Management Plan for the entire site. It was to be prepared in consultation with a working group of interested parties (again including Save Our Jewel and Rockwater) and was to be completed by June 2015. In January 2015 the commission was awarded to the national civil engineering, mining and environmental consultants GHD Pty Ltd, see later under Events in 2015.

22 July 2014

Thanks to heavy rain the lake has flooded, much to the delight of lake visitors, especially young ones. Note the absence of ducks.

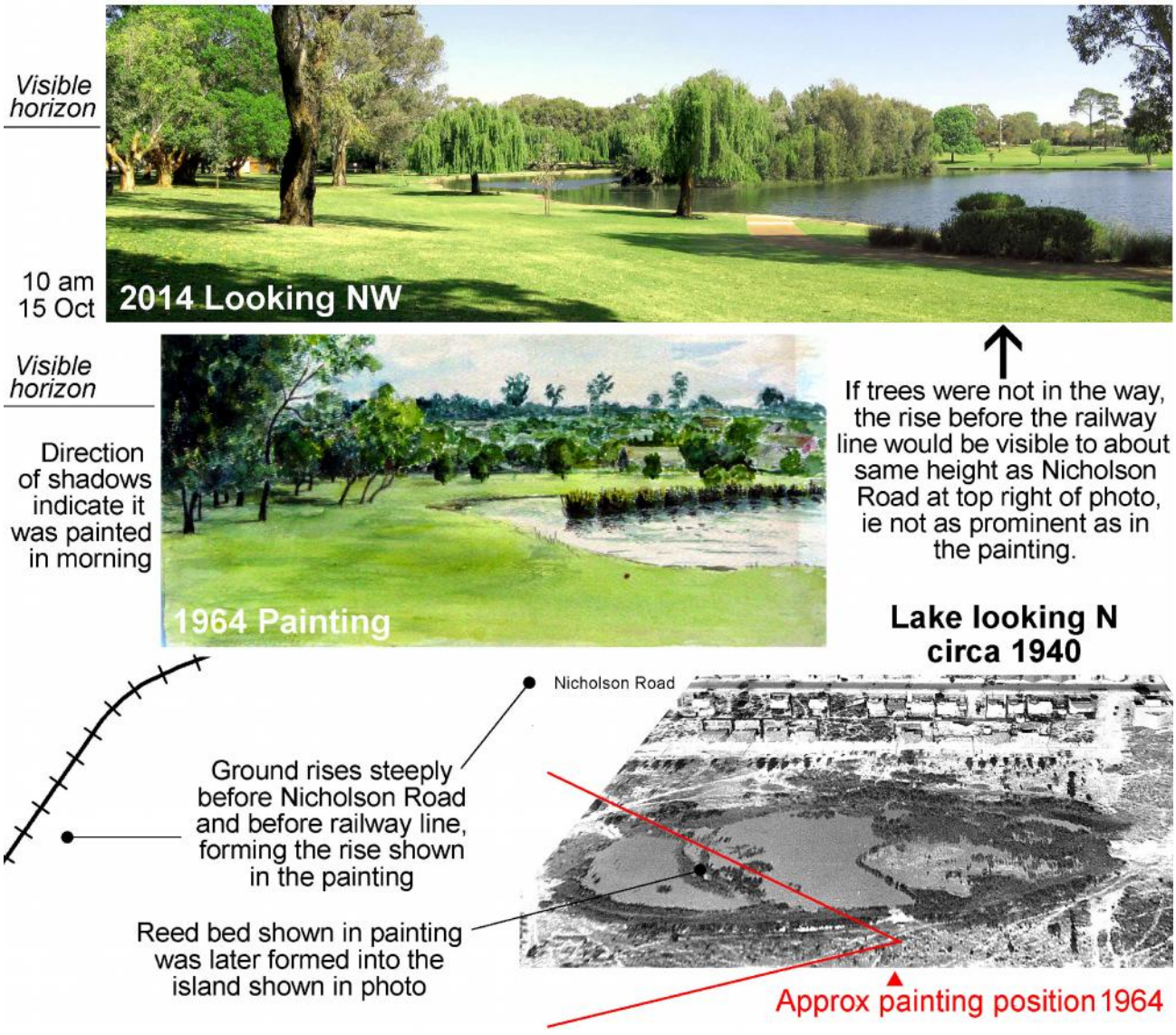
August 2014. A 1964 painting is discovered



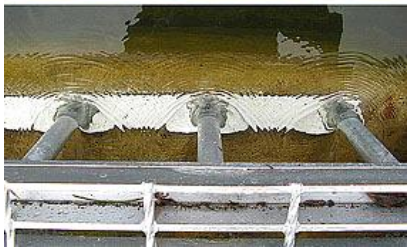
In August an unframed 1964 painting of Lake Jualbup was found in a Guildford junk shop. The purchaser kindly made it available for scrutiny.

Our research suggests the artist is Captain Walter C Belford 1889-1983, historian of the first army battalion to be recruited in WA, survivor of Gallipoli, and twice mentioned in despatches for gallantry. He was a teacher, had an MA from Edinburgh University, and arrived in WA in 1912. His painting is a rare early visual record of the lake.

The painting is in watercolours and was made before the area was bulldozed to form the present lake. The painted view no longer exists, so finding out where it was painted might not be easy. But an earlier photo gave an important clue, and a walk around the lake then gave the answer below. Look carefully – some of today's trees could be in the painting, but it is impossible to be sure:





Left two: In May 2014 Water Corporation installed a new grille to the outlet. Unlike the previous grille it offered minimum resistance to the flow and (bottom picture) allowed smooth streamlines over the weir crest. **Above two**: For those up close on 22 July (when the previous flood picture was taken), the noise of water over the weir threatened to rival Niagara. Five weeks later the lake level was even higher, see next.

30 August 2014. The highest lake level in 30 years

Local residents who had lived near the lake for thirty years said they had never see the lake so full. The rain had not been dramatically heavy but it had been augmented by much dewatering at QEII.




Top left: Edge of the submerged footpath was always visible (nobody fell off). **Bottom right:** Kayakers made one circuit of the island and then left, implying it was boring. The path was 25 cm underwater. **Below left:** Water is several cm deep over the outlet grille. But no Niagara roar announces its presence, just wet socks.

December 2014. Easy feeding time for ducks

Below: It is 26 December 2014. The lake bed weeds have regrown, and the water has become shallow enough the weeds to be reached by bottom feeders. Conditions for feeding are ideal, and the lake is home to more than 200 ducks and coots. By contrast, in winter when the water is too deep for weeds to be easily reached, the number of ducks and coots is typically around 40.

Concluded in **Summary of Events 2015-2022**