

IMPORTANT NOTICE

WATER RESTRICTIONS UPDATE #11

It is just on four weeks since we shut down our irrigation supplies with a small amount of storage in the lake that was to sustain the river for as long as we could. We got to less than a day away from 'zero storage' when there was sufficient rain in the dam catchment to arrest the lake level decline and reinstate a bit of a buffer that has enabled the minimum river flow to be maintained.

We are endeavouring to enable a limited period of irrigation prior to season's end but this will be entirely dependent on building enough water in the lake for both river and irrigation needs over the next two to three weeks.

WATER STORAGE SITUATION

On the 7th March, the lake level actually increased slightly over the day – the first day in a 174 day sequence that the level had not declined. The lake had dropped to within 50mm of our zero storage position (370m RL) before the turnaround.

Since that turnaround day, there has been intermittent rain in the top of the catchment that has seen the inflows to the dam lift slightly and the lake level increase slowly. After a reasonably good rain over the weekend just gone, the lake is again seeing a lift in inflows and the level has just passed through 372m. While over the three week period this increase looks very encouraging, the 2m increase represents just 3% storage and is the position we were in just three days before we shut down the irrigation on 25th February.

Progress? – definitely. Recovery? – not even close! I do take some heart though, that the recent rain does seem to signal a change in the weather patterns at least.

RESTRICTIONS AND POTENTIAL IRRIGATION

There is currently no abstraction for affiliated consents below the dam while we try and recover some lake storage.

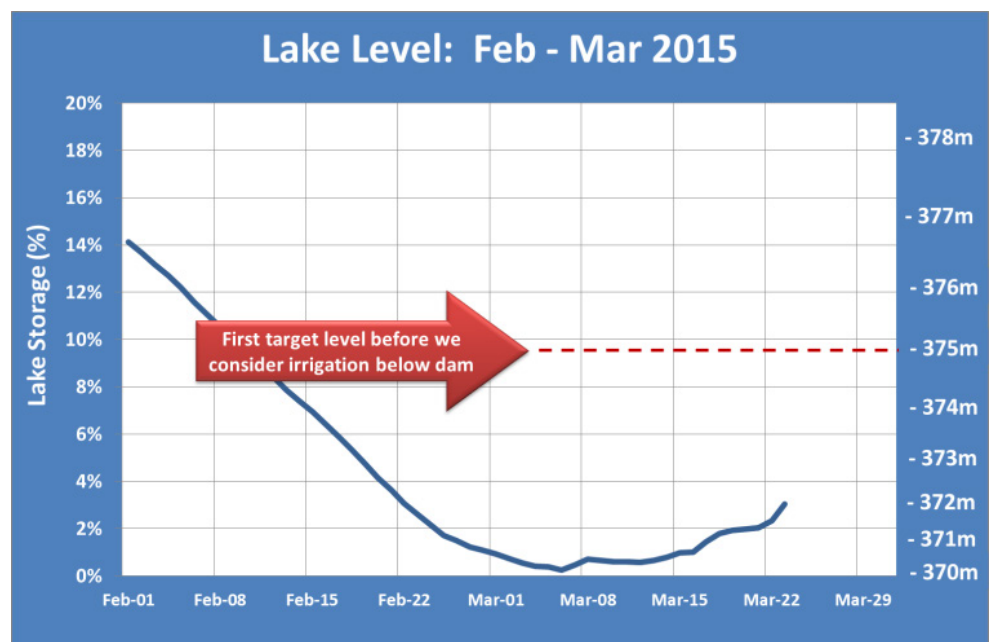
Many of you will be aware that we have enabled some irrigation for our 'Above Dam' shareholders since the rain returned around the 8th March and there was at least a half metre buffer in the lake. These farmers are only able to irrigate when their tributaries (North and South Opuha, Opihi above Rockwood and Te Ngawai) are above a prescribed minimum flow and this 'second level' of restriction has meant that most of them have had no more than six part days irrigation since the New Year. Even since March 8th, no-one above dam has had an unrestricted period of irrigation but most have had sufficient opportunity to make some in-roads into their severe soil moisture deficit. Fortunately they have also had some rain directly on their properties over that period.

As part of our recovery plan, we have signalled that we would like to be able to run at least another

'round' of irrigation while there is still opportunity for pastures/crops to benefit from the moisture before temperatures drop too much. At this stage we have identified an initial target lake level around 374-375m (8%-10% storage) at the OEFRAG forum. This lake level should enable us to initiate a period of 8-10 days of irrigation under a 50% regime – similar to that we finished up with through February with a 4 day roster or 50% continuous take restriction. We will refine this approach depending on just what is happening with lake level, with the intention of obtaining the most effectiveness for irrigators from the limited water release. The irrigation period will also need to be coordinated with some flow targets in the river to ensure that we gain most benefit for the seasonal requirements there.

I am sure it will be obvious to all of our irrigators that we will need to have the limited irrigation period well planned out to ensure everyone is able to have a decent run and utilise as much of the available water as possible. We will be planning on the basis that everyone will want to irrigate in this period so we will be calling for indications from anyone who WILL NOT be expecting to irrigate.

Of course all this is reliant on there being some on-going rain in the lake catchment over the next two weeks but at this stage **we are targeting the week after Easter as the likely start time. Please consider this in your planning over the next couple of weeks and be prepared to advise us if you will not require your normal entitlement (under a 50% regime)**



MANAGEMENT OF THE LAKE STORAGE THROUGH THIS SEASON

Given the unprecedented situation we have encountered with prolonged restrictions and then the early cessation of irrigation altogether, I am well aware that many will be questioning “how did we let this happen?” and “could we have done better?”

In response to these obvious questions, I would like to provide some review of our management of the storage leading in to and during this season. I'll say at the outset that, with the benefit of hindsight, we could have done better, but it is apparent that significant restrictions and most likely the cessation were inevitable.

There are a number of factors that influence our decisions on target lake levels as we move through the year.

- One of our primary guides is a running historical monthly average of lake levels. With 16 years of history, over which time the dam has delivered virtually 100% reliability for the river and irrigation, historical averages are at least a meaningful guide and reflect the seasonally variable weather patterns that influence lake inflows.
- The catchment can be very ‘flashy’ with many instances where high rainfall events have caused the inflows to the dam to rise rapidly with the dam level increasing very quickly. From my own experience, I recall in October 2011 when we were concerned that we only had 50% storage heading into the season and implemented a restriction regime, only for it to start raining three days later. Within nine days we were spilling at the dam. You can see from the 12 month chart below that in April last year, we went from 60% to over 100% in just 20 days. There is virtually nothing we can do in these situations to moderate the rate or extent of the lake level rise since we can only discharge 16 cumecs through the power station.
- Spilling at the dam introduces some risks to the facility. The most vulnerable aspect is the fusible embankment at the downstream weir. While this is ‘designed’ to fuse in high flows, and has done so twice since 1998, the impact and

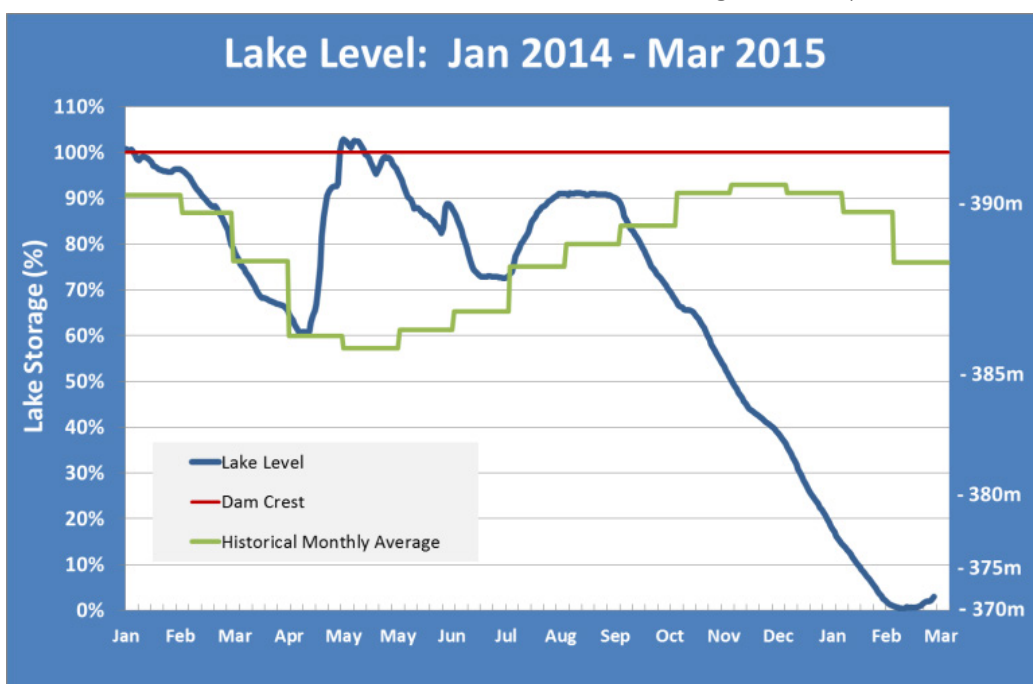
cost of this is well over \$300,000 per event. The repair process is getting increasingly difficult and expensive as sources for the clay material required get further from the site and we have had a clear message from ECan that the impact downstream with the silting of the riverbed is, in their view, unacceptable at the historical frequency of occurrence.

- Snow pack can have a major influence on inflows in spring. We do not have a quantitative measure of snow pack but have relied on subjective assessments at the ski fields and from resident landowners. Despite the high river flow demands in October and November, the lake level is typically maintained or bolstered in these months by nor-westerly systems delivering rain and melted snow into the catchment.
- Restrictions on irrigation and on minimum monthly river flows are managed through the OEFRAG group. Although the Regional Plan has a trigger for restrictions at a lake level of 375m (10% storage), the group has developed an alternative regime that has a much earlier trigger point of 50% storage which reflects the experience that earlier intervention is required to be able to have any significant effect on storage outcomes.

As the chart below indicates we finished the 2013/14 season with the lake at close to average at 60% full coming in to April. Mid-month there was period of high rainfall that filled the lake to over 100% by the start of May. This was a position far above the normal situation for this time of the year and a risky time for the downstream weir. (It was May (2009) when it had previously been overtopped.). From this position we actively tried to reduce the lake level closer to the normal levels for the winter months. We pulled up in July at a lake level one metre above our normal position. We were aware at this stage that there had not been a significant snow fall but it was considered not unusual for snow to occur late winter or early spring. At the start of August we decided to recover some storage and reduced the dam releases to minimum through the month with the finishing lake level at 91%. This was 17% higher than our August average and 11% higher than September. We made a conscious decision to hold

the lake at this level and not go higher to reduce the risk to the downstream weir should a significant rain event occur. The dam releases were increased slightly in September to provide the 6 cumec minimum flow required in the river and through this period, lake inflows matched outflows.

In October the minimum river flow required under our consent lifts to 8.5 cumecs, the highest of any month. As well as this high compliance flow, the irrigation demand kicked off virtually a month early



and by mid-October was up to 4 cumecs (approximately 65% of total demand). Over the month, inflows averaged 4.3 cumecs compared with average outflows of 9 cumecs. The lake level heading into November was 67% - approximately 25% below the average.

A meeting of OEFRAG was convened in early November and was agreed that if there was not sufficient rain to supplement the lake and the lake level dropped to 50% before Xmas, a restriction regime would be considered. By late November the lake level was estimated to be likely to reach 50% at the start of December and OEFRAG applied to ECan for a Water Shortage Direction (WSD) to reduce the minimum river flow required from 6 to 5 cumecs and irrigation takes would be reduced to 75% of consented amount. Two weeks later a second WSD increased these restrictions with 3.5 cumecs for the river and 50% irrigation limits. This regime continued to the end of the month.

Heading into January, the consented river flow is 3.5 cumecs, the lowest monthly flow of the year, and it was felt that this was near the minimum the river could manage with. (this was the revised flow for the latter part of December). Irrigation restrictions were eased back to 75% for a short period at the start of January but shifted to 50% again as the lake continued to drop and passed the 25% storage level.

At the end of January, there was still no relief in sight and OEFRAG agreed to lower the minimum river flow to 2.5 cumecs as a desperate measure to avoid the lake storage depleting completely. As part of this proposal, it was agreed that irrigation would continue at 50% (a more restrictive regime was considered impractical) but would stop one metre above the lake minimum. The remaining one metre would be used to run the river at minimum flow and even that would be tapered off as we approached 370m level.

The lack of rain was relentless and irrigation was stopped on 25th February as we reached the last one metre in the lake. As I've indicated above, the lake got within 50mm of zero level before it levelled out and started to fill – the first time in over five months.

We are currently running with a 2 cumec minimum flow in the river – this is the lowest flow the river has ever experienced since the dam was commissioned and is 5.5 cumecs below the consented flow for March. This means that we are able to wind back the releases from the dam and build the storage level as

inflows increase. Our ability to operate like this a real credit to the process we have with OEFRAG where, through a very constructive process, we have been able to adapt our operation to the unprecedented conditions we have experienced and avoid having the river run dry.

So could we have done better? There are two areas where, with hindsight, it looks like we could have made better decisions – to have the lake higher going into October, and potentially implementing restrictions earlier.

To have the lake higher meant accepting the possibility of overtopping and potentially damage to the downstream weir if we did get anything like normal spring inflows.

Implementing earlier restrictions (with the lake still above 50%) had never been done before on the scheme and both the Board and OEFRAG considered the 50% level a reasonable trigger point.

The Board and OEFRAG have both reflected on these points and agree that earlier measures now look like prudent options, however with the knowledge, experience and information available at the time, we believe that the decisions made were soundly based. Both groups have acknowledged the experience of this season will influence and likely alter our approach and decisions in future seasons. The Board has undertaken to revisit the downstream weir upgrade project which was deferred from last year when the forecast cost of the project increased significantly. We are investigating ways of getting a better understanding and quantification of snow pack in the catchment to assist with forecasting spring inflows and water 'yield'.

This aspect of managing the water storage is only one of several areas that this season has highlighted with issues and opportunities to take forward. Operating our downstream distribution under constraints, irrigation on farm with limited water availability, the transfer of share allocations (water trading?) within the season and understanding how the river can cope with severely limited flows are all areas where there has been rapid learning and where we will make time to review and capture the experience we've gained.

One final point I would like to emphasise regarding the operation of the lake is to reinforce that simply having a full lake at the start of the season does not ensure we can deliver 100% throughout. The lake just isn't big enough and we are absolutely



reliant on inflows to the lake through the season to sustain supply. In an average year we refill the lake nearly three times every twelve months and most of this recharge occurs from spring through to late autumn. This year, the inflows have obviously been well below normal and the storage has been drawn down continuously.

NEXT SEASON

I have been asked on several occasions whether I think we can refill the dam for next season? My response is understandably guarded because "it all depends!" If we have an 'average' winter, I expect we will fill the dam but if we have a period from July like we did last year, and haven't had a surcharge beforehand (May-June) we may be challenged. I estimate (quite unscientifically) that we will need somewhere around 250 – 300mm in the dam catchment by the end of September to get the lake back near full. We will obviously be monitoring things closely along the way.

MAINTENANCE AT THE LAKE

I had mentioned previously about some opportunity work up at the lake.

Clearing of tree stumps – Steve is working with a local contractor on clearing tree stumps from the more exposed areas.

David and Mark Williams have been busy dealing to old fence lines and some of the more obvious hazards that have been exposed in the lakebed. Thank you both for your efforts here. Our Operations team have also been carrying out some tidy up and safety related work around the lake and dam.

Annual Dam Safety Inspection – we completed this at the end of February and the low lake provided a good opportunity to inspect areas that are normally not accessible.

Maintenance on the Intake Tower – we've had divers up at the lake and they have replaced all the bolts in the submerged section of the tower. We will work on the remaining fastens above the waterline over the next month or so.

Tree Harvesting on the island – hard to find contractors who aren't flat out elsewhere but Steve is still looking whether it is feasible to harvest the pine trees at least from the island in the lake.

FARM PLANS

We will be initiating another round of farm plan preparation workshops in the near future and would welcome indications from anyone that would like to be part of this next group.

We currently have over 20 shareholders who have developed their Farm Plans through our process which now includes an on-line facility that enables individuals to log on and complete or update their plans from any computer.

We believe that most irrigators will be required to have approved Farm Plans in the near future and we would encourage you all to consider getting on-board early and take advantage of the process and resource available from within the company to complete this process.

Contact Julia Crossman at the office if you would like more information or to discuss any aspect of this programme. julia@opuha.co.nz Ph 03 614 7801 or 021 535174.

DROUGHT BUSTER GET TOGETHER

Opuha Water Ltd is pleased to be supporting the Fairlie Lions who are coordinating the family night and BBQ this Friday at the Mackenzie Rugby Grounds in Fairlie.

Many thanks to all those volunteers and organisations that are assisting with the organisation and running of this event.

Regards



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It's 'dam' dry !
so it's time to have a get together
for town and country

A family night and BBQ
March Friday 27th 4.00pm onwards
at the Mackenzie Rugby Grounds

Fairlie Lions and Fonterra hope families
will come along for a get together
So keep this date free

Kids Rippa Rugby Bouncy Castle
Lolly Scramble Tug of War
Goodies compliments of Fonterra

SOUTH ISLAND AGRICULTURAL
FIELD DAYS – this week!

Wed 25th to Fri 27th March at Kirwee

For those of you planning to get to this important biennial event, look out for the irrigation displays and demonstrations that will show case some of the leading technologies, both hardware and software based, that are available.