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## **CLOSING COMMENTS**

**Don Atkinson**, Chair, LakesWater Quality Society

I would now like to invite Emeritus Professor Warwick Silvester and Dr Kit Rutherford to the podium to give a summation of what we have done over the last two days. Their comments come with a lot of experience because Warwick reminded me today that he did the same thing back in 2001. It is an enduring programme. They have both been very intimately involved with the Rotorua Te Arawa Lakes and the Rotorua catchment in particular. Kit has done the Rotan plan within it and both have been involved in the Technical Advisory Group.

### **Dr Kit Rutherford**

There are two slides (at the end of this summary) before you rush screaming from the room. We are going to play a tag team. Because I put this table together, I will probably start off and Warwick has offered to come in with his philosophy from time to time.

Firstly I would like to look at the second and third line about monitoring. We have heard a lot about monitoring and what struck me is that we have the tried and true traditional monitoring techniques - TLI, LakesSPI and Fyke netting (SCUEP) and they have produced excellent information. Five lakes are improving and we have two that are deteriorating. The question cropped up - why Rotoiti? Science questions have come out of that monitoring. We also heard about innovative monitoring techniques such as eDNA, Tai koura and autonomous monitoring buoys and I summarise those by saying, 'Wow'.

The eDNA, which sounds a little like testing sewage to find out which of the university dorms is smoking marijuana, clearly has potential and once developed, is going to be fantastic. The Tai koura is really exciting. It is Matauranga Maori at its best and the potential to engage stakeholders.

I go back to what the politicians tell us, and we have heard it all before, stakeholders want simple, practical, cost-effective solutions based on sound science. But we have Prof David Hamilton and others telling us that life is complex. Sometimes it is nitrogen, sometimes phosphorus or the weather causes things to change. We can resort to modelling but as a group of scientists we are still faced with complexity and uncertainty, and decision-making in the face of uncertainty is a huge challenge.

This leads into the need for trust, leadership and dialogue and so many times we see that complexity and uncertainty is an excuse for inaction. I am sure Warwick will have some wise philosophy about that topic.

### **Professor Warwick Silvester**

Going right out to left field now, I want to talk about what happened when I did this sixteen years ago at the first symposium. The contrast between this meeting and the first one is enormous. There were two things that struck me at that original symposium. It was a meeting about all the data and trying to get the regional and district councils to talk to each other. I could not believe just how much friction there was. This meeting is such a contrast because we have a large number of groups talking to each other over the past 15 years and coming up with an amazing body of data, all done within a community of cooperation. The results are enormous.

Not only that, this meeting has achieved far more. It addressed the problems of the lakes and then moved way outside to other environmental areas which impinge upon our

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attitude toward the lakes, particularly last night at the sustainability forum. It was very illuminating to bring Rod Oram here to talk and also brilliant to introduce a school boy. It opened up so many subjects that relate very much to the problems being resolved for the lakes. I will talk about that again in a minute.

### **Dr Kit Rutherford**

Just finishing off this slide, it takes a community to save a lake. I would like to reiterate what people are saying, how the LakesWater Quality Society team have, through their symposia, brought together so many of the community over the years to discuss the issues of the Rotorua Te Arawa Lakes. It is a wonderful example of exactly that – a community saving lakes. I compare what has happened in the Ruataniwha where I have been closely involved. As of yesterday the proposal to produce a dam in the head waters and irrigate 30,000 hectares of the Plain has finally been shot in the head. The process was carried out so badly and in such a marked contrast with the way things have been worked through here. The Hawke's Bay Regional Council failed to take the community with them and that led to so much anger, bitterness and resentment. It is going to take a long time in the Hawke's Bay for people to get over that process.

But it is not all plain sailing:-

- Todd McClay said, 'Decisions are best made at a local level with national standards'. The cynic in me said, 'Yes, we had a national standard of wadeable rivers'.
- John Green, bless him, was able to stand up and say, 'We cannot let the politicians make the decisions' and alluded to the Nordic model. For those of you who are unfamiliar with it, that is where non-negotiable environmental goals are set.
- Rod Oram reminded us of Geoffrey Palmer's assessment of the Resource Management Act, which was his baby of course. He had always intended to have very strong national policy statements and somehow not very many of those have emerged. As a young scientist, I was involved in the RMA and we expected to put up lots of water quality standards to support the RMA. Somehow that process got hijacked.

### **Professor Warwick Sylvester**

Again I will move sideways because we are here to honour famous men. I have been at this game for some time and there are a group of people I have identified that have made this all possible. Twenty years ago it was an impossible task and only a few people who cared. There is No.1 - Ian McLean. It has been said before and I am going to say it again, the work that Ian has done has been absolutely brilliant. He took on a task, which for many of us would have seemed impossible, to deal with this enormous problem and bring groups together that were fighting over territory. It was an amazing feat and I give you honour. Arise Sir Ian. Thank you.

That was followed by a number of people, and excuse me if I mention names. First of all John Green and Don Atkinson, who have taken over the mantle of organising the LakesWater Quality Society and the work goes on. It has been brilliant. I have worked with a few within the Regional Council too, particularly Paul Dell and Andy Bruere. I mention them because they managed the whole programme and also had a relationship with the farmers who respected them. They also talked to us, the scientists. I used to go to TAG meetings, a place of common minds with a common goal and they went very well. I want to honour those two as well - Andy, and Paul Dell who has gone up north to do good things.

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**Dr Kit Rutherford**

These discussions very quickly turn to cost benefit and equity. Costing material things is easy because they are bought and sold. Hannah introduced us to non-market values and several have dabbled in that area and explored ecosystem services. It is a highly contentious area but clearly one that opens up the discussion to get away from, 'How much does it cost to build a fence?' to 'How much production will be foregone if I alter the way in which I farm?'

Now, Rod Oram and Rob both talked about changing behaviour. 'Stop giving away value' was the way Rod Oram put it. We want good growth and not bad growth. Nobody in this room or in the country would disagree with any of that but why doesn't it happen? Rob Fenwick made the point that it is leaders who stimulate innovation and leaders appear at random. I would put myself in the group of timid followers.

We are going into sheep milking but as timid followers we need information, incentives and guidance. So we need leaders and a shared vision.

I would like to say that leaders are not that rare on the ground. Sir Toby Curtis shows fantastic leadership with this statement, 'When you grow up beside a lake it becomes part of you'. Those sorts of leadership statements take us back to this big shared vision. Something I have taken out of this symposium, rather than getting bogged down in nitty-gritty and finding reasons not to do things, is that if we concentrate on shared visions and talk about them we will make progress.

**Professor Warwick Sylvester**

I wanted to talk about the anti-science movement because it has been one of my big bugbears and have had to put up with the anti-science movement for the past 50 years or more. When someone comes to talk to me about such things in their belief system I have developed a habit of saying, 'Don't tell me what you believe, tell me what you understand'. We had an amazing paper by Dave Hansford on this whole movement which was most enlightening, but also very dispiriting because it is out there and growing.

I take heart in using the LakesWater Quality Society as an example of taking science into the community, working with scientists and ensuring that science has a place. The model that this Society, scientists, the community and the two Councils work within is amazing and it needs to be written. I have talked to Ian twice about this during the meeting and wondering whether Ian and others might like to write this up as a case history of the way in which good science can work with the community to have good outcomes. I think this is an amazing sociological experiment that has worked.

**Dr Kit Rutherford**

Nick Smith said, 'We don't want to talk about the good and bad guys, we want to have some action, we polarise issues too much.' I thought, for goodness sake Nick, this is exactly what you do in parliament. Why don't you get some common ground between the parties?

Coming back to Jan Wright's recent paper, she pointed out the awfully sad picture that New Zealand gives on its approach to climate change. The graph for carbon is going up very quickly. In Britain the graph for carbon is going down because they have had a cross-party agreement in parliament and come up with legislation to fight climate change. Many other countries in Europe have also done this very well with cross-party agreements and have attacked the problem. Don't give me good guy, bad guy. Get on with it guys and at the end of the month we might start to think about that.

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Finally, we had a talk about who owns the water. I agree that the Iwi situation is bad and our talk about water is going nowhere. Mary de Winton gave us the idea of the commons. Water is the commons and remembering the eighteenth century problem with the commons, there are a lot of parallels in how it was treated 200 years ago. We might take some lessons from that because the problem of the commons in Europe is similar to our situation here.

**Professor Warwick Silvester**

I would like to reiterate what an amazing conference this has been and an enormous step up since 2001. It has showed enormous progress, not least of which back then was the discussion to appoint a chair in lakes restoration and management. I want to salute David Hamilton and the work that he has done which has generated so much information on what we are doing here.

We have had papers from David Hamilton, Paul White and our other modelling friend here, Kit Rutherford. These are the three modellers that have inputted into the whole system and moved things forward enormously. Their protégé, Chris McBride, gave that brilliant paper this morning. He has taken over the mantel and David has moved on to greater things in Australia. Chris, I congratulate you and the LakesWater Quality Society on a fantastic conference which has raised so many other environmental issues out of the work that has been done.

Thank you.

**Don Atkinson**

Thank you Warwick and Kit. That is a fantastic summation.

I will wrap up from the Society's point of view and say we can leave this symposium knowing that we have a community to restore a lake. That has been demonstrated on all levels and it is a great achievement. All the stakeholders that are involved in this process have come together to achieve a common purpose.

I do want to leave a few challenges with the Bay of Plenty Regional Council, the Rotorua Lakes Council, with DOC and with Government. We have demonstrated clearly that there are opportunities to address the issues that we have raised at this symposium in our three different sections.

We cannot allow the catfish to get away on us. We must eradicate and nothing else would be acceptable. Think about them in the upper streams in the Rotorua Region taking out all the trout or down the Kaituna at the other end to the sea. That is the potential. Eradication is the only way we find acceptable.

Our second section of the symposium was lakeweed and clearly we have the tools available. Our Society is frustrated that the consent process is taking so long but I am sure that the relevant people will focus on ensuring that the tools are available. Plans are in process to allow endohall to be used across all our lakes. The funding in relation to the value of these lakes, as demonstrated by Hannah, is relatively minor to the total cost that we have expended to date. It is not petty cash but it is a minor portion of the total investment that has been made and we cannot afford to allow these lakes to deteriorate with invasive weeds such as hornwort and lagarosiphon.

Our final focus was the Tarawera Lakes complex and it is great to see the build happening at last. We started to focus on it just two years ago and work has been going on in the background but it is far more complex than we ever thought. The questions are hard but

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the solutions are not unattainable to restore those lakes to where they ought to be as prize possessions of this district and country. From our Society's point of view it has been fantastic to see the cooperation and willingness to move things along and I congratulate everybody.

To the presenters, can I say absolutely excellent. All the papers built on each other and established a total picture. Thank you very much.

Thank you very much to the chairs and to my committee. There is an enormous amount of work that goes into these symposiums. Thank you also to everybody else who has been involved in bringing about such a successful three days.

Finally, thank you all for attending. We will circulate you by email to understand your thoughts about the symposium which will be helpful for building our understanding.

Science knowledge	Gaps in the science	Uptake by stakeholders
Strong research BoPRC-UoW TAG & STAG, etc.	Complexity: sometimes N, sometimes P, affected by climate, varies between lakes etc. → Need for modelling → Complexity/uncertainty Decision making in the face of uncertainty Requires trust, leadership, dialogue	Stakeholders want simple, practical, cost-effective solutions, based on sound science  Complexity/uncertainty an excuse for inaction
Monitoring – traditional TLI LakeSPI Fyke netting (CPUE)	5 improving, 3 stable, 2 deteriorating	Rotoiti: DO depletion. Tarawera: high P – why? Citizen science – depth sounders map weed beds Catfish/koi – commercial fishery?
Monitoring – innovative eDNA Tai koura autonomous monitoring buoys	Wow! Matauranga Enables sophisticated modelling	Engage stakeholders
Pest control Planning/Toolbox Successful eradication – small lakes Novel techniques – hessian matting Risks from 1080 – shown to be low Terrestrial pests – possums, wallabies	Responsibilities divided between agencies Ad hoc – differences between Councils 24 years to register Endothall!	Public ‘buy in’ – cleaning boats/gear Stakeholder concerns about ‘poisons’  Science denial
	But it’s not all plain sailing...	Evidence-based science. Stakeholders – science interaction.  It takes a community to save a lake Strong community engagement: Te Arawa Lakes Trust, Lakes Council, BoPRC, LWQS, working groups, TAG, STAG

<p>Decision making</p> <p>Cyclical, build trust Listen/empower</p>	<p>Wadeable!</p> <p>Vigilance</p> <p>Shared vision - plan - act/monitor - communicate Evidence-based science (eg 1080)</p>	<p>McLay: Decisions best made at the local level with national standards Green: Can't let the politicians make the decisions. Nordic model – non-negotiable environmental goals Palmer: RMA intended to set national policy but.. Oram/Fenwick: Need both carrot &amp; stick</p> <p>Douglas: people coming together Hansford: rising tide of science denial</p>
<p>Costs – reasonably easy</p> <p>Benefits &amp; cost/benefit?</p> <p>Who benefits/who pays?</p> <p>Innovation</p>	<p>'Non market' values Smith: Treasury 'valuing' National Parks</p> <p>Mueller: explored Ecosystem Services at Rotorua</p> <p>US timid 'followers' need information, incentives, guidance</p> <p>Shared vision</p>	<p>Smith: Cap &amp; trade a success (Taupo) but 'grand parenting' difficult. 'Natural capital'. Fenwick: to chair a group investigating natural capital in decision making</p> <p>Oram/Fenwick: change behaviour. Stop giving away 'value'. 'Good growth' not 'bad growth'</p> <p>Fenwick: Leaders stimulate innovation – random process finding leaders</p> <p>Curtis: When you grow up beside a lake, it becomes part of you.</p>

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