

The 1st Deliberative Forum Transcription – 8 May 2006

[Opening of meeting]

Presentation – General Manager Water Technologies: Keith Cadee

Unknown: *(during presentation – relating to Neglaria)* - Were those deaths attributed to drinking the water supplies?

Keith Cadee: The drinking water supply was implicated in that the organisms were found in the drinking water supply in those towns.

Karen: I'm a resident in Mundaring and living on one of the sites that's been selected for further study. My question was for Keith: you mentioned the filtration plants and it showed several photographs of the different filtering parts there, and I understand that this may change. When this was first discussed there was a particular type of filtration process described where the water would just, filter down through things basically, but you talked about micro-filtration so are there various things like that, that are possible and do they make any difference to the outcomes or the costs or the area that's needed for processing that way?

Keith: At this stage we probably envisage that it would be a granular media filter which is probably the type you're talking about which is probably coal or activated carbon over sand. But there are alternatives and we have been looking at this plan for about 8 years now and so as time goes by technology and different things change, there is a possibility that it could be a micro-filtration plant, I don't envisage that that will be the case. It's still probably a bit more expensive but it's possible, it wouldn't substantially reduce the size of the plant at all, in fact maybe the same size or larger, but when we get into the detail design stage we'll need to get firm prices from different people about that and firm up on the design. I think it'll probably be a granular media filter for this size, but it's possible it could be micro filtration, but the end result is much the same which way you do it. We'd still need to go through virtually the same sorts of treatment processes.

John: A resident of Mundaring. Could you please explain the prudent commercial principles on which the initial decision to locate the water treatment plant at Mundaring Weir was based, what the different commercial principles were used to make the second decision to locate the treatment plant on Mundaring Hill and what different prudent commercial principles will be used in the next round of analysis?

Keith: I'm not sure that I can answer those questions, Ken are you able to answer the question on siting? I wasn't involved in those processes back...

John: You understand that I'm picking the phrase 'prudent commercial principles' from the Act?

Ken: As you're aware John, I wasn't there at those times however, I think it's appropriate to say that in engineering terms the most logical place for a treatment plant is at the source and I think Keith could... it's most commonly done. The second one was at, that on engineering terms did have some difficulties, mainly around size but also around the heritage issues down near the dam. The second site which was thought about back those days was the Hill, and the main commercial reason for that was at that stage it was actually on a bit of land which was specified as being reserved for water supply purposes. The process we're going through now does go even further than that and as Susanne will say a little bit later on, talks about the total sustainability analysis not only commercial reasons for doing it. And my opinion about the time around now is just as much emphasis put on other things other than commercial. Certainly that's where we've come from and the way forward is to look at it far more than just commercial.

John: I'm sorry I need to go on a bit because your reply although helpful doesn't answer the question. You would agree I think that under the legislation the Water Corporation must, and I stress that word must, act in accordance with prudent commercial principles. If you don't know what the phrase prudent commercial principles means, then we're all, I'm trying to find a polite phrase, but we're definitely going up a creek and there's no rescue for us. You must define that and if it is not within the ability of the offices of the Water Corporation to define it may I suggest you get the Crown Solicitor to do it for you.

Colin: Ken do you want to respond?

Ken: I'm not going to waste my time

John: May I just add one comment, Ken I heard your aside and I thought it was insulting.

Colin: Do you want to respond Ken?

Ken: No I'm not going to respond to that

Steven: Water Policy Officer with the Conservation Council. I stood up during your presentation Colin and counted the number of heads here, 92. We were told that the meeting had been moved down here because in excess of 200 people had registered, can you explain why there aren't 210 people here tonight?

Colin: I can't, I can take a guess, I guess. I mean I guess the move has meant that some are unable to make it. That would be my guess, I know that there were some who rang me and told me that there were things that had come up that meant they couldn't. I'm not sure what the question, has an assumption behind it, I'm happy to respond to the assumption if you could... Are you suggesting there was some other motivation for the move of the venue? The reality was we had 212 people register by last Tuesday; I had another 20 or 30 probably who contacted me saying they were likely to come, so we face the possibility of 240 people. The advice we had was that that senior citizens could take 130 and the hall could take 175. That seemed to me to be a problem and I accept the point you make that there is probably some people who are unable to get here tonight. I guess I had to weigh up that; did I want to have 240 people turn up and have to turn 60 away? But I take your point that probably is a consequence, of moving the venue, it's true. I guess that was a difficult decision at the time.

Peter: Good evening, my name's Peter Marriot, I'm simply a local resident. My input and interest is simply for myself and my family. I don't represent any other group and I'm not directly affected unless you go and build it on my street and right at this stage you're not going to. I have two points, one just to follow up from Steve, I think, mentioned earlier just about the registration, I was surprised to arrive and I had received the pack and yet there wasn't a sticker there. Minor issue but it just concerned me how did it work? How the system worked just as an aside. My real issue is I want to come to terms with as a resident what the impact is for myself and my family? There's obviously noise etc issues and we'll work through those as the process goes through, but Keith could you just in brief tell me, at the moment I open the tap and I get a glass of water and you've obviously, and not you personally obviously, but the Corporation has added x amount of chemicals to it. With the introduction of the new plant and I know the design isn't quite completed but am I going to get more chlorine per glass full of water, more chemicals per glass full of water? What is it going to do to my drinking water plus which will then give me a better feel for, do we really need it?

Keith: Ok, there will be two things that will happen to your drinking water, we'll deal with the first one which was the thrust of what you mentioned, the chemicals. In general, the part of the water treatment process will probably only add one significant additional chemical and that's probably going to be aluminium sulfate. Which when it hits the water becomes insoluble and binds up a lot of the particular and other matter and we filter it out. So in fact I would expect that the amount of aluminium in your water even with the addition of alum will probably be lower than it is at the moment because most of the turbidity in the water is the clays from the natural soil in the catchment which are really high in aluminium. In fact the alum that we use is actually made out of alumina which is made out of baulk site and so the aluminium as such is really just the same material modified that comes out of the Darling Range. So the amount of aluminium will be less, the amount of fluoride in the water will not be

changed, the amount of chlorine that we supply at your tap we would hope would be lower. The total amount of chlorine that we add we would certainly expect to be quite a bit lower because we want to remove the material that reacts with the chlorine so that it lasts longer throughout the system. So that what you'll see in terms of a glass of water is, on a good day it won't be any different, you'll still get a good sparkling glass of water but when it rains or when the dam is a bit more turbid, and if you've lived in the area for long enough, you'll know there are times when the water is a little bit yellow in colour, and sometimes beyond that, those circumstances will be eliminated. But the other thing that you can be assured of, while at the moment you're water is safe to drink there are risk factors at Mundaring that make it prudent to take further measures to provide extra barriers to protect against micro-biological hazard, make sure that there aren't harmful bugs in your drinking water. Now at the moment Water Corporation would do everything in its power to make sure that we don't supply unsafe water and if we had to we would implement a boil water notification or some other measure to make sure that to the best of our ability you didn't get sick. But with a water filtration plant we would be able to provide a much greater level of assurance that the water would be always safe to drink and the need for other measures such as boil water advisories or other advisories in case of events where the water was perhaps too turbid or more contaminated, they would become rare if not unnecessary.

Geoff: Hi I'm Geoff Thompson, I live on Sime Road on number 14 on your map. I accept the case that you make for our need for a water treatment plant so I only have one question. What made you think it was ok, morally ok, to pursue private land as part of your study there and to send out that map which has scared the pants off so many people?

Colin: Do you want to respond to that Ken? Probably some of those questions I will suggest Ken deal with now and it will also come up in the next presentation as well.

Ken: For people who have got the history on this, when I became involved was at... the map which we put out at the time, when we were going to Sawyer's Valley Hill, didn't show the maps with the sites which said sites not meeting the initial criteria, which is one of yours. The reason why they were put out was because of concern by people in Mundaring that we hadn't looked at things wide enough at that stage, and we were virtually instructed to put on a map, all locations which we'd even considered. I will go through that in my presentation, but certainly yours and others are areas of land which were picked off an aerial photograph showing some areas which were no longer forest and were not small blocks of land. I'll go through that a little bit more in my presentation but that's where they came from like that. So yes, I'm aware that you've had the pants scared off you but I'll go through that a little bit more if I can in my presentation and the same sort of questions can be asked again.

Natalie: Hi I'm Natalie from Chidlow. I'm just concerned about site 19 and how you picked that off an aerial map? That also is private property and it backs on to Lake Leschenaultia and the reserve next to it and I'd like to know how you're going to address the concerns of that environment?

Colin: Ken's suggesting that he will walk through all those sites in his presentation and try and address that, I'll ask him to come back to that question when we get to the issue around sites. I guess I was interested in questions at this time that relate to either mine or Ken's presentation. We'll talk about the sites in the next phase.

Sharon: Good evening, Sharon Davies, Councillor East Ward Shire of Mundaring. I just have a couple of general questions that I want to telegraph. The first one is exactly what kind of water treatment plant are you looking at? How can we have full and proper public consultation when we don't know what we're consulting on? The second thing is, and this is again being telegraphed for later I hope, have you studied best practice including biological practices around the world particularly in the United States? An awful lot of this seems outdated and outmoded to me and downright dangerous, so I'm wondering if we're going to look at that, are we actually going to be consulting, do you want us to design a water treatment plant? Exactly what's going on here? The other thing is things like aluminium sulfate scare me to death and where it's going to go and all of that, so the environmental implications just on that. Plus safety of transport and the rest is horrendous. Now one of the other things that just suddenly came up for me was the fact that you get a chlorine degradation as this water moves right now, to Merredin or Beverley, well why not just put a chlorination plant at Merredin? I can't quite understand what's going on here so I'd like some of this clarified as we go, I'd also like a lot more homework done. I also think that some of the sites you picked were cynical I don't know why you did it. You even say in there you've got no idea that you're going to use any of those. So the other thing that I'm concerned about, if it goes anything like the way that we grade sites which I've seen in other consultations I've been on, will be that the Water Corporation will actually grade the sites and then we'll be given a blind test to say what we hold the most valuable. It could be environment, society and the rest and then conveniently those sites will just happen to meet what we're interested in. For example, no waterways when there are waterways or something like that so I'd like these things clarified, as well as the process seems to be, do we need a plant or don't we? And if we do, exactly what kind and I don't see any of this being addressed in this process.

Keith: I thought I was very clear about why we needed a plant and that was to remove the micro-biological hazards and to remove the organic matter that reacts with the chlorine. The treatment process will be a coagulation process probably with aluminium sulfate but it could be other coagulants depending on which ones work best with the water at the time, followed by a filtration process to remove the coagulant. Then it would be followed

by the same processes we currently use which are chlorine chlorination, a PH control and fluoridation. The water treatment process that we're looking at is a very standard common water treatment process, a very effective water treatment process, a water treatment process that we use in numerous locations throughout Western Australia, in numerous locations within Australia, in numerous locations around the world. So it's nothing new, it's not introducing new hazardous chemicals, these are water treatment processes and water treatment chemicals that have been used for hundreds of years.

Sharon: Just as a follow up, that's what worries me. Are you aware that New York, that they finally did, they went to the head waters and actually cleaned up the water sources and re-generated cleaned up industry farming and the rest of it all the way down and actually require very little water treatment now. I noticed that you went over that, one of our problems is very low catchment management, shouldn't we be really looking at that because we're destroying our water source by the actual process and this is frightening even 50 years down the track.

Keith: I'd love to see better source protection within the catchment but the Water Corporation doesn't control source protection. We can't sit by and wait for somebody else to fix the problem, we've got an issue where we need to bring the water quality up to the standards of the 21st century, we've got to now move to take those measures. The catchment protection measures that you're talking about inevitably are [inaudible] people that live within the catchment.

Neil: Just going back to the micro-filtration system that you've had in operation, I think you said 7 or 8 years now, it concerns you on the cost of this. Are there residual beds with micro-filtration system? Residual beds, drying beds?

Keith: Yeah in this particular case it wouldn't change. Whether we use micro-filtration or granular media filtration we would still need to use coagulation and separation to remove the organic material from the water. So we would still be using virtually the same coagulants, well virtually the same amount of coagulants. We haven't done pilot trials at Mundaring with micro-filtration and whether we would use exactly the same chemical or not I don't know, but it wouldn't be substantially different. So we'd still need to have residual disposal.

Neil: You're talking residual beds? Drying beds?

Keith: Well at the moment we're proposing drying beds so there are other options we could use, mechanical dewatering processes such as centrifugous or other processes but we would believe the most environmentally sustainable process is one that relies on solar drying by drying beds rather than using energy and chemicals to dry the sludge and so where space is available, where the conditions are right we prefer to use drying beds and that's what we use on most of our facilities. The

option of using mechanical dewatering is a possibility but it's not one that we envisage at this stage.

Neil: If I could ask another question and particularly with regard to what you're actually planning to do as a water treatment plant. As I'm sure you're aware there are three processes actually in providing clean drinking water; sedimentation, filtration and then disinfection. Now at this moment in time we actually don't need anything more than filtration. You have sedimentation in the Weir, you have a chlorine plant already in place, why do we need a full water treatment plant, when in real terms all we need is a filtration plant?

Keith: The reason we need to use coagulation and sedimentation, and it may be sedimentation or it could be floatation, it depends on when we get into the detail of design which exact process we might use. But we need to do that because we need to react the water with a coagulant to lower the organic material in the water, this is the material that reacts with the chlorine, this is the material that accelerates the decay of the chlorine or the chloramine. That's why we need to go through the extra stage of coagulation and sedimentation in order to remove a substantial amount of the residual dissolved organic material. This is the natural humic and fulvic material, this is the natural organics that break down from the vegetation in the catchment, there's nothing harmful about these. This is the material that adds to the tea colour that you get in the water but it does react with the disinfectants and does accelerate the decay and that's why we need to take at least the treatment to that next step.

Catchpo: Mundaring. In your documentation I would beg you not to use highly technical descriptions of your processes which none of us understand. I have no idea what draft criteria are and why they should have to be ranked and then turned into thresholds. The other thing is that the documents that you sent by post, are full of acronyms and if you don't have a glossary at the end to find what the acronym means it is very frustrating and time consuming. Please explain what you're talking about to the people who are uneducated in your technology.

R.D Jones: Appearing for a resident of Chidlow who can't be here tonight. In a passing remark I'd like to make before I ask my questions, it's apparent to me and I guess most people that you seem to be miles away from setting any design yet. You don't seem to have even carried out any pilot or laboratory tests; you seem to have no idea what this plant is going to be. That's my remark.

Keith: We have a very very good idea of what the plant's going to be, we have done extensive pilot testing at Mundaring but we did it some time ago with the expectation that we could settle on a site many years ago and build a treatment plant. The basic process that we use, going to use, will be based around the addition of aluminium sulfate to the water, which will coagulate, we'll then settle that out, possibly float it, depends we get into

the detail design, but the process is virtually the same. We'll then filter what comes off that process, probably through a granular media filter, possibly if it takes us another 5 or 10 years to get to build a plant, micro-filtration or some other process. We will then chlorinate it, we will add ammonia to turn that into chloramines, we will adjust the PH to stabilise the chloramines and we'll add fluoride. The precise details of which combinations of those processes will depend to some extent on which site we end up with. If for example we have less space available or other constraints we may be looking at processes that are more compact than others. So we're very certain of the treatment process at a process level but in terms of the specifics of the actual details down to the individual sizes of the units that will to some extent depend on the site selection but also we'll need to possibly do further work to characterise specific processes. But we have done a lot of work, we ran pilot filtration plants at Mundaring over a period of I think, 6 to 9 months, some years ago.

R.D Jones: I've heard a lot of uncertainties there. Anyway I'll move on.

Keith: There's no uncertainty in my mind, or in the Water Corporation's mind about...

R.D Jones: Well I'm afraid Sharon also took the same view. On the aerial photograph you have three areas that have anonymous circles around them, could you please explain why and what they mean?

Colin: Do you want to respond to that Ken?

Ken: I will go through that in a bit more detail as I was saying on the others. But the background to those is when I came on board there was concern that we hadn't looked far enough and wide enough on sites. So I got hold of that map and drew some circles around general areas and have asked GHD and also our internal people to have a look at them to see if it is possible that they would be better sites than what had been suggested in the past. I'll go into a bit more detail in that after the break.

R.D Jones: What is their status though?

Ken: The status is exactly what's on the plan, and some of the overheads which I will put up which is information which has been provided to me over the last week or so. I'll go into that in more detail and that would be the appropriate time to ask specific questions on that.

R.D Jones: Ok, and very very quickly, what does 'look at the Australian Drinking Water Guidelines' mean? What does 'look at them' mean?

Keith: Sorry was that part of my presentation?

R.D Jones: That was on your presentation, a line of text said that.

- Keith: I guess what that was meant to, in terms of determining whether we needed to have further water treatment measures at Mundaring, we look at various sources of information, sources of guidance, and some of those guidance are things like the Australian Drinking Water Guidelines (R.D. Jones: which have been around for many years now). The latest versions were published in 2004, we look at things like the World Health Organisation guidelines, which the latest versions were published in 2004, similarly the one before that was published in 1996. We look at learnings from elsewhere, such as the USEPA Drinking Water Guidelines; latest versions were published in January this year. We look at the recommendations from practices elsewhere in terms of what constitutes an acceptable level of risk in an environment such as Mundaring. So we look at a variety of sources of information so that we can satisfy ourselves that we are exercising our due diligence in making sure that the water supply that we provide is absolutely safe to drink at all times.
- Paul: From Mundaring. I've got questions for three speakers so far. To Colin first, Colin was there a notice put up at the Mundaring Shire Hall so that those people who weren't aware of the venue, and were turning up, could see that the venue had indeed changed?
- Colin: I understand the Water Corporation did arrange that, yes.
- Paul: Excellent. The Nagleria build up, Keith, now is that primarily due to the temperature of the pipes, because they're above ground?
- Keith: It's certainly not helped by the high temperature but we do get Nagleria growing in pipelines that are buried and elsewhere. Neglaria tends to like water temperatures that are probably about 25 degrees or higher, and so we have had neglaria detected in pipelines throughout the whole of Western Australia at various times, and the way we strive to manage that is through maintaining a chlorine residual at all times.
- Paul: Have you looked at reducing the water temperature? I don't know how you would do that though.
- Keith: We don't know exactly how we would do that either at any affordable price.
- Paul: The last one to Ken is, and you may well answer this later, what about sites 20, 30, 40 km's plus outside the Mundaring and populated areas? I haven't seen anything about that yet.
- Ken: In the presentation which I'm giving, we'll come up with some figures which have been supplied to us, but basically if we are going to supply treated water to, I call it greater Mundaring, we need a treatment plant nearby, where it gets very very expensive to bring it back. Remembering that this source does supply water to greater Mundaring and then through the 48 towns and onto Kalgoorlie. So if we went 34 km's out we've got to bring another pipe back or put a second treatment plant somewhere in

Mundaring as well. But yes we can go through, and I think that will come up in the costings in forum 234. But after my presentation if you've got any questions on that I can certainly go further with them.

David: I'm a resident at Mundaring. My question is that the current system has provided very well for the last hundred years or so, and I just ask the question is there a plan to change in the water that is going to enter the Mundaring Weir? Because you mentioned earlier on, that there is currently some ground water pumped in from one of the larger filtration systems down in Perth and I guess that is treated water that's pumped in, and I've noticed that when I've been out at the Weir, sometimes in an evening, particularly in the summer, there is a great lot of water tumbling through the pipeline that enters at the southern end of the Weir wall. So that water is coming from somewhere and I believe that it comes from the pipe head dam and, as you said from ground water from Perth. So is the plan to continue pumping that water in but in fact to pump in unfiltered water or untreated water from ground water, therefore to some degree releasing facility in Perth because those facilities are becoming overloaded? And in fact then having the ground water enter the Mundaring Weir it is untreated and that is the need for having the treatment plant?

Keith: No the reason for needing a treatment plant at Mundaring is to deal with the water quality impacts that come from the Mundaring catchment. Just to explain some of your questions a little bit further, over the last 5 to 10 years the relatively low rainfall that we've had in the Mundaring catchment has meant that the amount of water that we're able to harvest from the Mundaring catchment is no where near enough to meet the demands that the Mundaring Weir has historically met. So most of you will probably be aware that Mundaring Weir was originally built in, finished in about 1902 or 1903, it was raised in about 1950 and then the pipe head dam was constructed at lower Helena in about 1973 or 1974. That scheme back then had a capacity to supply about 30 plus Gigalitres of water a year. The current demands on the scheme are around about 26 to 28 Gigalitres a year, it varies a little bit from year to year. In recent years we've had to put as much as 18 to 20 Gigalitres of water from other sources into Mundaring to meet the demands. So in some of the dryer years we've had over the last 5 to 10 years the run off into Mundaring Weir has only been enough to meet the evaporation from the dam itself. But it still remains a very important source of water and one that we have no intention of abandoning. The water we supply back from the integrated scheme into Mundaring is the water we get from our normal water supply pipelines so it is not untreated, it's fully treated and we have no intention of doing otherwise. It is just uneconomical to bring water from other sources and pipe it all the way back into Mundaring. So the way we maintain that supply is we have an integration or a cross-connection at lower Helena with our normal scheme. One of the reasons for that is that when the dam was raised in 1950 the demands on Mundaring, the water that was needed out of Mundaring was much in excess of the capacity of the dam, there was a lot of surplus water, and so Mundaring was

integrated back in with the metropolitan area in about 1950. So the ability to move water both ways from Mundaring into Perth, or from Perth back into Mundaring, has been available since about 1950. That has not been used very often I believe from bringing Mundaring water back into Perth but certainly over the last 8 to 10 years has been used extensively to move water from the integrated Perth system back into Mundaring Weir. I hope that answers the question, it's a bit long winded.

Annette: I live near Lake Leschenaultia in Chidlow. Given that inappropriate over development of the hills forest catchment has caused many of the water quality problems we now face, is a 25 hectare chemical water treatment plant a clean and green industry for the catchment or will it cause more problems than it solves? And could salinated agricultural land that is beyond rehabilitation be used instead? Example, outskirts of Northam to save the cost to the environment?

Keith: I think Ken will talk more about that as part of the site selection in a moment, but as the answer that Ken gave to an earlier question, one of the reasons we need to build the water treatment plant as close as practical, is to the first major source of demand which as most people know with the exception of Mundaring Weir Hotel, and I see Ian is over there, which is supplied and some of the houses in CALM. The first major off take into the system is at Sawyer's Valley and so we need to be either up between the dam and Sawyer's Valley or somewhere relatively close to Sawyer's Valley tank, to be able to command the first major area that's supplied by water otherwise we would need multiple water treatment plants.

Participant: But will we be cutting off our nose to spite our face in the process?

Keith: Well I guess that's part of the process we're going through, I don't believe so, I don't think the Water Corporation believes so, that's why we're proposing what we believe is a sensible and responsible solution to the problems that we face. But you and everybody else will have an opportunity to provide your input into that as part of this selection process.

Ian : I'm here as a representative and president of the Mundaring Tourism Association and in my [inaudible] life I'm the proprietor of the Mundaring Weir Hotel. When the Water Corporation announced in 2002 that a treatment plant would be established at the base of the Weir, a strong representation was being made to the Corporation not to do so for many reasons which I won't go into now. As a result of this representation, a committee was established not only for this reason but also because the national trust established that we are a precinct. A committee of planning advisory group called the Darling Range Planning Advisory Group was established and it had members from the Water Corporation, the Shire of Kalamunda, the Shire of Mundaring, myself as a proprietor of the hotel, Mundaring Historical Society, National Trust and the Kalamunda Historical Society. I quote

from a meeting that was held on Wednesday the 9th of October 2002, and Mary Johnson from the Water Corporation, I won't go into rambling on about the whole meeting but he said that the Weir site must no longer be considered for the establishment of a treatment plant. I would like to know why we are suddenly going back to that site as a possibility?

Keith: I think as Ken mentioned, Water Corporation has been asked to go back to the beginning of the process again as part of this public process.

Colin: Ken will address some of those issues I suspect in his presentation but I'll ask him maybe just to respond and we'll also try and probably accommodate that in his presentation as well.

Ken: Yes I'll go through a bit later, I keep saying this, I'll go through it a little bit later. I think that's all part of the process for the forums to go ahead, to have representation from people like yourself, from the Shire, and all the other people. There are lots of issues with many of the sites which we've got the opportunity to look at, some are in what we refer to as a Reserved Protection Zone which we'll get to in the near future. Some sites actually, that have been identified, they're actually in national park, problems there. Some sites are in private land and again from the same point of view we're definitely undertaking there will be no compulsory acquisition of private land. So there's lots of reasons why not to go there, specifically in your case is because it's in a heritage area and those areas looked at previously, but I've given an undertaking to the people who made representation to me earlier in the piece that we are not going to close the door on any, however be aware that all of the sites have issues which make it not the best site. So please carry on and let us have your opinion as the process goes through.

Jael: I'm a resident of Mundaring. My questions are for Keith and I have three, I'm just warning you. In your slide about micro-biological sources of contamination you didn't list logging which happens in the Mundaring Shire both of pine trees and native forests, could you explain how that contributes to turbidity?

Keith: Logging activity I don't think is a major source of micro-biological contamination. Clearly though any human activity in the catchment does add more people and is a factor but I don't believe that logging is the major micro-biological risk in the catchment. Logging does lead to turbidity issues and we work as hard as we can with the Forest Products Commission to get them to implement their forest management practices to reduce turbidity as much as possible.

Jael: So do you know that if we were able to stop logging in that catchment how much that would reduce the need for more chlorine?

Keith: No I don't know the number but I don't believe that it would make a lot of difference.

Jael: Ok, I've got another question; I've got another two really quickly. You talked about the need for the plant to sort of try to mitigate a serious water quality event. You talked about the planets lining up. I was wondering if you could be a bit more specific about that, especially given that last year following sort of the longest drought we've had in a long time and a massive fire through the water catchment. I think the Water Corporation assured us that the water was safe so given that that was a particularly catastrophic event what are you anticipating that might be in the planets?

Keith: I guess what I was alluding to is things that were sort of beyond our control but there are things such as the very extensive fires that happened just over 12 months ago. If that was also to coincide with early rainfall which was to coincide with a cow in the catchment that had a calf that happened to be infected with cryptosporidium and happened to be in the creek zone, look I don't know what those things are. I assure you that we work very very hard to try and anticipate those things and so after the fire, I had a lot of my people working long long hours out in the catchment looking at putting in silt control traps, looking at monitoring and measuring water quality, doing everything we could to mitigate that affect and as a result of that the water that we supplied continued to be safe. But there are things that eventually will become beyond our control in a catchment like Mundaring. What I've mentioned is that we know from experience around the world that the risk factors at Mundaring are such that, it's not that the water is unsafe but eventually we'll get unlucky and that's not what we're put in the job to do, is to rely on luck. We're put in the job, why I'm the General Manager for Water Technology is why I have to sign a letter of representation to the Board of the Water Corporation every year, assuring them that processes are in place to make sure that the water we supply is safe, is because our job is to anticipate those things and take measures to make sure that we've done everything we reasonably can. And the time has come to do those reasonable measures at Mundaring.

Jael: Ok my last question is really quick, it might not be to you but to the Water Corp in general. Given that you have a commitment to sustainability are you committing to renewable energies for these power plants, for these chemical plants?

Keith: Water Corporation has, I'll answer it in a round about way, there are two things that the Water Corporation has done. One is, Water Corporation is one of the few organisations that have made a commitment to be totally greenhouse neutral by the year 2030, and we are working very hard to honour that commitment, we don't necessarily know how we're going to get there but we are working very hard towards it. One of the most tangible things that we have done is made a commitment for the new seawater desalination plant that is being built at Rockingham, or at Kwinana, that plant will be totally powered by renewable energy and we've signed contracts with the wind farm to make that happen and we will be looking at further measures in the future. Our approach to renewable energy has been to take a total corporation view rather than a

particular plant by plant asset view. Water Corporation continues to be probably the largest user of renewable energy other than Argyle diamond mine which have a plant up in the Kimberley's fed by hydro-electric power from Lake Argyle. We purchase wherever we can and maximise the use of renewable energy and I think that we currently use around 8 to 10% of our total energy is renewable which is one of the highest numbers around and certainly beyond the level that's being talked about for State Government and other where. So we intend to be and we have been in the past committed to maximise the amount of renewable energy that we can, and over a period of the next 25 years we want to be greenhouse neutral in terms of all of our energy use but we will do that on an opportunistic basis as part of a total portfolio and to some extent you'll just have to trust us. But in the end you'll see what's happening, and I guess, one of those things are, by trust us I guess we want to build some trust, and we are I say, probably the largest user of renewable energy of people who don't have a choice of using other energy, so we could use all black energy but we don't, we've chosen to be a large user of renewable energy, we have a number of greenhouse mitigation strategies. I mentioned the desalination plant, we've made a commitment there and we'll continue to make commitments to be a leader in the use of renewable energy and mitigating greenhouse gas.

Beth : Perth resident. I've got two comments or questions, the first is given that catchment management is recognised as a very important way of protecting water quality, I think a great deal more could be done in that catchment, such as ending car rallies and making much more serious efforts to stop the dumping of rubbish. But there seems to be an inconsistency between that approach there and approaches being taken in other catchments for instance, the partial clearing of Wungong catchment will surely increase the amount of turbidity and organic matter and the proposal to more frequently burn Banksia woodland and increase runoff. Which seems to be to me an inconsistency and approaches that might also be used in the Mundaring catchment. The other point I wanted to make was, I can accept and we can accept that you have a legal and a moral responsibility to provide people with drinking water of high quality but surely philosophically and politically you don't have an obligation to provide people with all the high quality water that they demand. There has to be a limit on what you feel obliged to provide to the community.

Keith: I think you don't really want me to respond to all of those things, I think most of those were statements rather than questions. I think in terms of catchment management at Mundaring there is more to be done but it is incredibly difficult to turn back a situation that's already alienated in many ways and there already are contamination people living in the catchments. I mentioned earlier that most people don't like the measures that are necessary to implement tighter catchment protection. That involves reducing people's freedom to do things in the catchment, it involves reducing activities and so while I think as communities that we get smarter and more informed about what we do we'll move in that way but those things happen incredibly slowly. And it's not just a question of

Water Corporation statutory obligation, it's my personal obligation, I have to sign a letter every year to the Board to say that we're doing everything that's proper and so if there is a problem I'm going to be the one who fronts the Coroner's Court, I'm going to be the one who fronts the Board of Enquiry, I'm going to be the one who probably has to lose my superannuation or my home to pay any particular fines. So it's not just some arbitrary factor, there are personal accountabilities here. In terms of supplying water that people need, certainly Water Corporation has (Beth: not need, I said 'demand') I think, Water Corporation's role is to meet the demands of our customers, our role is not to regulate what people's behaviour and what water they use in the privacy of their own home. We encourage people to use water wisely, we encourage people to conserve water, we have active programs both from Water Corporation's point of view but also from the State Government in terms of their water rebates. We're strongly committed to reducing per capita water consumption in Perth by at least 15% between now and the year 2012 and we'll continue to look at opportunities to use water more efficiently and more wisely. But the onus is on the users of the water to decide how much water they need, not on the Water Corporation to decide what people need.

Red: Mundaring resident. A question for Keith, the organic matter that's in the water from Mundaring Weir, when you add the chlorine to it to clarify the, to make the water safe, what by-products come down the line to us when you combine chlorine with organic matter without filtering that out first and the delays that this project has undergone, how much is that going to cost us all as tax payers?

Keith: Ok, two questions. The first question relating to organics and chlorine; when chlorine does react with organic matter in water it does produce a wide range of by-products, these by-products are regulated as part of the Australian Drinking Water Guidelines, they're known as either disinfection by-products or one group of chemicals is known as trihalomethanes. These are chemicals that are regulated or there are standards for, Water Corporation regularly monitors those tests for those to ensure that we stay within the requirements of the Australian Drinking Water Guidelines. One of the ways we do that is to use what's known as chloramination. At Mundaring the process consists of adding chlorine and then a short period afterwards we add ammonia. The ammonia then reacts with the chlorine to form chloramines, the chloramines are not as potent in terms of reacting with organic matter but they still do react relatively slowly and that's one of the ways we minimise the amount of disinfection by-products and extend the scope of the chlorine throughout the system, but in order to make the chlorine residuals go further we still need to take more of the organics out. In terms of the cost, it depends on which option we go for but clearly the cost of the project has increased, as cost of everything has increased over the last 7 or 8 years.

Presentation: Project Director Site Selection Ken Walter

Participant: I really do think this question needs answering before Susanne has her say and it is what basis of the calculations of those amounts of money [inaudible], you haven't given us even the vaguest outline on how you got to that figure in relation to each of those sites.

Ken: As we were saying, forum 234, we've got Susanne here and we've got Robert here who can go through how they've come up. At this stage all I can do is give an introduction today, Robert I'm sure and Megan have those figures, and as I've said to you before it's completely open and when we get down to start to analyse them that's what we're looking at. Dollars is only one part of it you know, seriously the social and environmental issues are far more than dollars.

Participant: You just said that dollars are a big part, so why can't we have some basis of those calculations?

Ken: I just said you can.

Participant: You keep taking questions on notice from people, and never coming back with the answer. You took a question on notice at the last public meeting which was about the chlorine and you promised to get back to me and you haven't and I gave Colin a question that I wanted an answer on before tonight and I still haven't got an answer back so when are you going to show some courtesy and respond to the things that we really ask?

Colin: Just on the question of the costings, the Corporation has made the commitment to provide that information in the later forums. It was I guess a decision that the sort of information that was going to be provided tonight was of the nature that was provided and that the commitment to provide that additional costings is something that I've certainly asked them to do and they've taken to do for later forums.

Participant: More than three years ago the [inaudible] project management of the Water Corporation promised to provide costings calculated on the triple bottom-line basis for all potential sites and we still haven't received them.

Colin: I wouldn't disagree with you about that and I think that's the question that I've asked to the Corporation and I've made a commitment to provide it. (Comment: [inaudible] the credibility of the Water Corporation assurance is [inaudible]). They've certainly made the commitment to provide those dollars at the point in the process when they're going to be most useful. I think that certainly the issue is, that they've made a commitment to provide it, I mean I take your point about it hasn't been provided in the last 2 or 3 years and that's true.

Participant: Last winter, Ken had a meeting in Sawyer's Valley with you, Steve McKenzie and Susanne also undertook to provide costings. I know that you came a lot later than [inaudible] and Steve McKenzie.

Colin: The point you raise I take is an important one and it's certainly one I've been asking the Corporation to do and they've taken to do it.

Participant: [inaudible] broken promises

Colin: Listen I understand that and my responsibility is to try to manage this time so we make the best use of it. I think they've said they will make a commitment to provide that information to the forums. I understand that you're saying it's not adequate from your point of view that it hasn't been done earlier and I don't disagree with you.

Presentation: Manager Environmental Approvals Suzanne Brown

Paul: Paul from Sawyer's Valley, I've just got a couple of questions for Ken. You said that you're looking after the main people, like as in Mundaring itself, when we've only got a population of 15,000 where the bulk of the people are really outside of Mundaring as of, what's that 90,000, because you were saying 60 and 30 up at Kal, why not have it north of Northam or Merredin which you were talking about? Have the treatment plant out there instead of where it is here because the bulk of the people are out there not here and our treatment plant that we've got here is coping quite well with the amount of people here?

Ken: The first answer to that question is no it's not I guess, if you listen to Keith's presentation the way that he was going through. Certainly it is possible to put a treatment plant further out, it would almost certainly mean that we would have several treatment plants. If you look at the total integrated water supply system there are treatment plants at the majority of dams and those dams supply water to everywhere. The example of that is the new seawater desalination plant that is a treatment plant in Kwinana and that water is quite possibly going to end up in Kalgoorlie. So it's not an issue of putting a plant where it's being served, it's the issue of putting the plant in its best location.

Paul: Ok, you were saying that you're getting treated water pumped into the Weir from down the hill. Why not just pump it straight up to the tank if that's what you're intentions, because it seems like it's false economy treating it down the hill, sending it into the Weir which is filthy and then re-treating it again, wouldn't it be better just...

Ken: I'll put Keith on for that one.

Keith: It'd be nice to send the water straight through but we're not going to abandon the water in Mundaring Weir and also the times at which we have the capacity to send water from down in Perth up into the hills during the winter, when demand on the integrated scheme in Perth is low and that's also a time when there's a low demand up in the Goldfields. So while it's theoretically possible to run two systems of piping [inaudible] water and also treating the water in Mundaring and blending that together it's far more sensible, far more economic, to blend the water in

Mundaring. The treated water doesn't add any more contaminate, in fact it dilutes it down, it makes the treatment a little bit easier, you don't have to add any more chemical, or don't have to go through any more significant treatment steps just because the treated water is finding its way into Mundaring Weir.

Participant: Ken you referred to the top right hand corner site, the Chidlow site, with the circle around it as site 20 – why do you refer to it verbally as site 20 where nowhere else does it appear as site 20?

Ken: Did I refer to it as site 20? (Unknown: Why isn't it on paper as site 20?) Maybe because it's the next one up, look I can't answer that question, there's no hidden agenda or anything on that, it was just one, that circle was just what I asked people to look at.

Participant: Well according to the paperwork it's not a site, according to you it is a site, so my question really is, is it a site or not a site?

Ken: I'm assuming that we're talking there about the bottom one there, which is private property and the conceptual location east of the Chidlow town site? (yes). Where is it mentioned as 20 sorry?

Participant: You verbally described it as site 20.

Ken: That's a conceptual location somewhere out there so if I used that I apologise, I had no intention of making any specific comment about a particular block of land out there.

Participant: So it's not a numbered site?

Ken: No, it's not lot x or lot y or anything like that. If the forum comes out and says that I've got to look at land out there, then I'll no doubt go out there and speak to 15 or 16 or 2 or 3, whoever owns the land out there and see if they're interested in selling and then the process begins that we've got to talk to their neighbours as well.

Participant: So you're saying it is a site then?

Ken: I think....

Participant: When is a site not a site? When it's out of sight...

Ken: I'll move on if I can but certainly it is an area which I've asked to be considered, yes, within that conceptual location. The same as down at Paul's Valley where I asked people to look at Paul's Valley, and when they looked at it they said no there's nothing suitable there however, they did locate the other block which was in the National Park. So at this stage there's been no specific block of land identified however the circle is there and that's where they came up with the figure of 202 million that if we put a plant out there somewhere.

Question in background: [mostly in audible but mentions site 19 and 21]

Ken: Let's not be pedantic about numbers, I think the plan identifies everything that we've looked at and the plan is what we're working on. There is certainly a number missing there but the plan is what we're working at.

Participant: It's a question of trust actually.

Participant: As we are expected to make a recommendation to the Water Corporation I wonder how many of the people here actually know what the sites look like and what effect putting a treatment plant on each individual site would have on the site and I wonder if its possible for us to be taken around actually and having a look at the sites? Because some of the sites are more sensitive than others and I believe that that would be highly recommended to do before we start the recommendations.

Ken: Very much so and in Colin's presentation at the very beginning there was there about site inspections.

Participant: The CALM air strip in the pine plantation, will that have to be moved out of the Reservoir Protection Zone and what about the land between the pine plantation and CALM land? And do you have to get permission from CALM, can they say no and are they interested in letting you use their land?

Ken: You got a lot of questions in there. The answer is that the CALM air strip is in the Reservoir Protection Zone; the policy at the present moment is that there is definitely quote "to be no new development in the Reservoir Protection Zone". I would not go as far as saying, there's a few people round here who will disagree with this, like Robert here, would say that I've got no chance whatsoever of putting a treatment plant in the Reservoir Protection Zone. Exactly the same process would happen at below the reservoir weir, if the forum came out and said that was the best site, then I would go and fight for reasons why we can put it there. The understanding of the way it's going to be written is that existing facilities like the education centre that CALM have got, that's in the RPZ, and also the air strip is in the RPZ, they are most probably going to be allowed to continue but most probably not redeveloped. I think that was the answer of one question.

Participant: Last week the Minister for the Environment announced that the Hills Forest Discovery Centre was going to be redeveloped.

Ken: Yes and that's quite possible.

Participant: It's not possible, it's happening.

Ken: I haven't seen it yet.

- Participant: And the CALM land, the CALM airstrip site?
- Ken: Oh sorry, the other question that you did ask is have we spoken to CALM, the answer to that is obviously yes. When we spoke to CALM 18 months ago, the answer was an absolute and utter and definite no. CALM have now got their development plans, four development plans in place that has allowed a change in attitude. Following suggestion that we should consider that, I have made representation to CALM and like other issues, their not easy to deal with, but I believe there is every chance that by relocating their depo for them we most probably could build a treatment plant on that site which is government owned or forest land, yes.
- John: Paradoxically when the water treatment plant is in place and up and running then you won't need to be so precious about the water quality of the water in the Weir, so how will that affect your environmental management of the Weir catchment area and the Discovery Centre and things like that? Will it then be open for tourism more?
- Keith: No the Water Corporation believes that the quality of the water is best protected through as many barriers as possible and the water treatment process is to deal primarily with the current condition. We don't believe that it's the right thing to do to encourage further development and degradation which will only start an increasing spiral of higher levels of treatment and more extensive treatment. So our strong belief is that our most important priority should be the protection of safe drinking water and we would like to see the catchment protection measures maintained and strengthened and certainly not relaxed.
- Gail: My question, one really quick one to Keith and one really quick one to Susanne. Of the 225 Mega litres you said will be coming out of the proposed treatment plant, how much of that will be for mining and agricultural use? You tell us about people use but...
- Keith: I'd have to take that on notice I just don't know, do you know Ken?
- Ken: The vast majority, it's like everything else, we don't supply commercial, industrial...
- Keith: It's probably, look I'm guessing so, if I'm wrong I apologise before I start, more than half would be used for domestic purposes. Some is used for industrial purposes; I think the demand in Kalgoorlie is something like about a quarter of the total demand, half of the total demand, of which maybe half of that goes to mining in Kalgoorlie. So a significant portion, I would, I don't have the figures, off the top of my head I would say more than half is being used for domestic and domestic type purposes.
- Jael: And Suzanne, a quick question for you, within your assessment in terms of sustainability will you be costing for loss of environment and ecosystem services, I mean economically costing?

Suzanne: If we can, yes, I mean if that's an important criteria that the forum agrees needs to be assessed, and we can find a method for doing that, yes.

Fiona: Colin, I was just wondering when is the next forum going to be?

Colin: It's a good question, basically that was one of the issues you'll see on the workbook that I've provided you. Clearly it's going to be difficult to make a decision here right now, what I'm suggesting and what I understood from what people said last time is that Monday night is the best night. That essentially, if we go to June that leaves us three possibilities if it's Monday night and they're outlined in that handout and what I was suggesting was that people would indicate collectively which of those was preferable and then people would be notified of that Monday. The only other option is that we all put up a show of hands and I felt that was probably not appropriate. So if you're happy to stay with a Monday night it would be a Monday night starting from, I think it's about Monday June 12, 19 or 26 depending on what suited most people around the same time. June the 5th seemed too close and there was also some problems around availability of key people. It's also a public holiday, so the suggestions are the 12th, 19th or 26th as Mondays and I'm asking people to indicate their preferences in that workbook.

Steven: Comms Council. It's my understanding that the Reservoir Protection Zones have not yet been declared, what stakeholder discussion has Water Corp had with the Department of Water on Reservoir Protection Zones and have Water Corp indicated to Department of Water that the site in the pine plantation and site 2 and site 1 could be potential water treatment plants and in addition to your economic analysis of all the sites and the cost of developing each site, in addition to that how much clearing does each site require of remnant native vegetation?

Ken: I'll let Keith handle the other one, I'll come in very quickly about the RPZ but I'll let Keith answer your question specifically. It would be a fairly difficult issue for the Water Corp to convince the Department of Water that that's where it should be. Fairly difficult but I've given then undertaking that if that's where the forum want us to go then I would raise those questions, but Keith has more of a background on them.

Keith: In terms of specifics about the sites I don't know what specific communication has gone to the Department of Water but Water Corporation has been encouraging the Department of Water and it's predecessor the Department of Environment to implement tighter catchment protection measures in the Mundaring catchment as we've asked them to implement tougher measures in all of our drinking water catchments. We believe that drinking water quality is the most important use for these catchments, so we're encouraged that there's a prospect of promulgating reservoir protection zones around the Mundaring catchment as they have existed for many years around the other catchments in the Darling Range. In terms of the specifics of these particular sites I would be surprised if the details have been communicated to the Department of

Water. [pause] I'm told they have been and in terms of the clearing I think Susanne has a comment on that.

Suzanne: I just wanted to add that at this moment we don't have specific details of how much clearing for each site. We do have a rough approximate idea of footprint that we do need for each site but it will be very site specific as to how much gets cleared on each site. So that's one of the criteria we will work through at each of the forum. It'll be site specific because some sites may already be partially or all cleared so it may be zero for some sites. It'll be a maximum of whatever our maximum footprint is and it'll be a combination of both native or non-native vegetation and obviously native vegetation would have a higher value but non-native vegetation also has its value in providing eco-system, habitat and other values so we need to consider those issues in the criteria when we go into each site specifically.

Ken: And if I could just add a little bit on that one, obviously it's not just the footprint of the treatment plant itself, it's the footprint of all the services in and out.

Participant: Just in brief, each of the sites that we keep talking about, there seems to be, well that'll be an issue that we'll get to etc etc which I don't have a problem and the forum process will go through and I understand that side of it. What concerns me greatly is of the 19 sites that have been nominated for consideration and obviously, and then others like my place as an example, you don't have the specifics and I think at future forums you're going to need to have the specifics. You're going to need to be able to convince me that, to choose the map that's up there, so site 1 which is in a national park, that the national park authority have said yes you can use that land. Why waste my time considering point 1 if CALM, the national park, Mundaring Shire, whoever, say no anyway. Don't waste my time with that, give me sites that we can consider please.

Ken: I agree.

Participant: Then why hasn't it happened?

Colin: I guess one of the reasons why it's not done is because it was important to get some perspective and clarity. I mean if the Water Corporation moved a long way forward doing that sort of work, then I guess it's reasonable for people to say how come they've advanced doing that without bringing that back for some discussion. So I think there's a balance that has to be found, I take your point and I think it has been very clear that there is a lot more information that people require to be able to effectively deliberate on these issues. I think the dilemma is how much does the Water Corporation do without some direction or without some agreement, but your point is well made, thank you.

Mandy I'm an owner and resident of one of the potential sites and have a question for Ken. Can we not shorten the process by, you've repeatedly said that you will not compulsory acquire any private land, all those private land owners are part of considered sites who are not the least bit interesting in selling, can we not just eliminate those sites from the process?

Ken: Almost certainly, we've had a discussion and I'm well and truly aware of your hatred of me even trying to take a square inch of your land and I understand that. The answer is yes, however as Colin said to the previous person who made a question, in being open and honest about it we've got to put it on the table at forum 1. Forum 2 is quite possibly saying you would not sell for any figure, then that's the end of that one.

Colin: I guess it's hoped that those sort of criteria would be available for discussion during the forums.

Leon: I live in McCallum Road, we have a similar interest. Ken I was going to ask you about the buffer zone, the 250 metre buffer zone? We're talking about 25 hectares for the site, is that 250 metres buffer zone in addition to the 25 metres and if so that would dramatically affect a lot more private residents wouldn't it?

Ken: It is not external to the boundary of the lot, it is external from the treatment plant as such where there are chlorine issues. Now we have been fairly generous with the circle, but yes you are correct, the 250 metre buffer zone is from where there's likely to be chlorine and to where the closest resident is.

Leon: Thanks Ken, and one other question, should the plant be above site 4, would there be a return to the residents below site 4 of that improved quality water?

Ken: Site 4 is not currently on the water supply supply, so the answer to that would be no.

Question in background [inaudible]

Ken: Sorry if you have mains water to site 4 then yes...

Participant: So below site 5, site 5 is [inaudible] will you get a return on that improved quality water from that site?

Ken: My experts here are saying yes, sorry I thought you people weren't on the Water Corporation scheme, but if you are the answer is yes you will.

Margaret: I just want to ask if it's possible before the next forum for somebody to do a very simplified cost benefit analysis for each site so that we can have something for everybody to look at and make some comparisons?

Ken: The answer to that is we've got a lot of information there, forum 2 was actually where we're going to start doing those, getting the criteria and the criteria that hopefully you will all develop with us, will lead us down that track. So that we can actually then be specific on the cost benefit on the selection criteria which you people want us to use.

Colin: Can I just comment on that, because I guess one of the ways, part of my role is to be pushing the Corporation to try to provide the information that you need. Now, that's partly what I will do is keep pushing to try to provide that information, I guess Ken's point is it may be different points in the forums that that information becomes available but certainly my role is to push them to provide the information that has been raised both with me and here tonight. The question of when I guess it gets to the forum is, we'll wait and see.

Catchpo: Mundaring; if so much land is needed for this treatment plant can't you compress it? 25 hectares is a hell of a lot of land to gobble up, wherever its put and the second thing is, that a lot of this water is going as you said to Kalgoorlie and its going to be used for mining, so why on earth should we waste our precious land in putting a treatment plant there that's just going to be used for ordinary commercial water? It seems to me to be a terrible waste.

Keith: Well I guess that's part of the reason why we're here, to get your views but clearly it's not economically practical to run a duplicate pipeline all the way to Kalgoorlie to provide two different qualities of water to Kalgoorlie. As I mentioned to another question, most of the water, probably more than half of the water, is used for domestic or domestic type purposes and the fact that some of it is used on mine sites is part of just the way we run water supply schemes. Certainly in terms of the total amount of water used in Kalgoorlie, I believe that Water Corporation only supplies about 25% of the total amount of water, 75% of all the water that's used in Kalgoorlie, obviously most of what's used by mining is hypersaline water that they source locally and the mines make every use to use as much water as they can sources locally. It's only when they need the lower dissolved quality water or the water for drinking and washing and other types of purposes on their mine sites that they need to use water from the scheme but I think its not impossible to construct more complex and compact plants and I guess you've made your point tonight.

Catchpo: I'm having trouble balancing Water Corp's intention as I understand it to thin all the vegetation in the catchment areas to allow more run-off and at the same time be concerned about the existing level of organic material which is in the dam and what about the increase of that material which will be transported to the dam if you do the thinning?

Keith: I think you're referring to the Wungong trial that the Water Corporation is undertaking (comment: which you're intending to do at Mundaring as well). I think you're misrepresenting what we're trying to achieve at

Wungong and all we're intending to do is to undertake a trial at Wungong and that has commenced and the objective of the trial at Wungong is to look at returning the forest to the way it was before it was being managed for timber production and the aim is to look at promoting an older, maturer forest, with larger trees at larger spacings. That type of forest is being shown to be better at producing more water reliably, it's also been shown to be more resilient in terms of resisting fire and other things. From the work that we've done to date, the risk of increasing the amount of organic material in the water is not thought to be significant but one of the reasons we are going to do this trial, which is, I think we're intending to spend something like \$12-15million over about 10 years and we're not intending to do anything outside Wungong in that timeframe, is to understand those sorts of impacts, to make sure that what we've observed elsewhere where there hasn't been an increase in organics when different densities of forest have been applied, to see that that can be replicated at Wungong. So, I think that you're stretching what we're proposing to do at Wungong, which is a trial, into what may or may not happen more widely.

Participant: Just a request relating to sustainability, both the Water Corporation's policy and the State Government's policy; we're obviously going to get more information and in a moment of madness I worked out that the material you sent out to us took about 16 reams of paper. None of it's backed, if you could back it, you'd be down to 8 reams and some of those PowerPoint presentations we've got, I know we're all grey challenged here, most of us anyways, excuse me Gail, but most of us are grey challenged but we do wear glasses. A lot of those PowerPoint presentations that have been sent could be reduced, you're looking really at 4 to 6 reams of paper, you're wasting an awful lot of paper and we're getting more information, just be a bit more conscious of that. It says very little for your environmental credentials.

Karen: My first one was about the participants' workbook, whether you wanted that, were you expecting it to be returned tonight or else have you got a close by date for you to be able to summarise...

Keith: I was hoping to get it back tonight but there have been a couple of people who have had to leave early who've said to me that they intend to post it back to me. I mean, we clearly need to move pretty quickly on the next, I need to get out information to you so I would hope maybe by the end of the week, I've got my mailing address here as a PowerPoint for those who want to post it back to me.

Ken: Also if I can, the sooner you get it back the more time we've got of collating the information for the next forum for you.

Karen: My question related to the presentation you had Ken, where you said about, where there was the flashing red lines of the pipes. The one that was going from the Weir which duplicated a pipeline up to the tanks, it

actually pointed towards the tanks, I'm wondering if that was actually the return pipe, back to the dam?

Ken: It's because the treatment plant is way up there we've got to have the option of supplying integrated water supply water from the Mundaring Weir, options of having different water, once you put untreated water in a pipe, we've got to waste all of that if we're going to pump up other water but if you see Robert afterwards he'll be far more technical than I can be.

Participant: You mentioned sending desalinated water from Kwinana all the way to Kalgoorlie, why isn't the Water Corporation getting behind the proposed desalination plant at Esperance? Also the person who raised the point about clearing land here to supply Kalgoorlie, the miners and farming, wouldn't it be more sensible to have a desal at Esperance? It's a shorter distance to Kalgoorlie. Why isn't the Water Corp getting behind it?

Ken: I'll let Keith answer the Esperance one but when I was saying desal water from Perth could go to Kalgoorlie what I'm saying there is any water which is in the integrated water supply i.e. on the flats, is likely to end up in this process here so eventually, and Keith can be a bit more specific, that the Mundaring dam and water up from everywhere, from there up to Kalgoorlie, is likely to be supplemented from water from anywhere depending upon what sources are available.

Keith: The issue of desalinating water in Esperance and supplying that water to Kalgoorlie was the subject of a review by the Economic Regulation Authority requested by the Treasurer who I reported, I believe earlier this year, and that was found to be uneconomical compared to continuing to supply Mundaring via the integrated water supply and via the pipeline. And so if you want details of that, that's not a Water Corporation point of position that was the independent review undertaken by the Economic Regulation Authority. I'm sure if you check their website you'll be able to find a copy of that report.

Participant: I guess there has been a couple of questions that have been asked and the information will be provided later, can I request that that gets put in the information packages that gets sent out prior to the next forum?

Colin: The information, so to specify what information needs to be provided by the Water Corporation?

Participant: Yeah, I guess there was a question from John regarding costings and there was something from Gail regarding the amount of water that the mining industry uses in Kalgoorlie so I was wondering if that could be provided prior to the next forum?

Colin: Well I mean I'm happy to keep pushing the Corporation to provide that, if you can specify as precisely as possible on that workbook what

information you require. Then part of my responsibility is to keep pushing them to provide that.

Participant: I guess the water for mining is not a big detailed question, can that just be thrown in? I know that was taken on notice by Keith earlier.

Colin: I think they will make a commitment that they will see that that information is made available.

Participant: I guess I'm just wanting to ensure that there's some process for these questions that say they will be....

Colin: Listen I take your point and that's been one of the difficulties I've had with this process, is how to, and part of the reason for proposing that scrutinising group was to provide me, because when you're getting information from a lot of people from a large forum I can continually request what information is required but I also need to have that precisely made clear to me what's required. I'm happy to keep, as I've done all through this process, push as much as I can to get that information.

Participant: My question is for Keith, you mentioned earlier the neglaria and you showed the table where it dropped off and it needed to be re-treated. There was a slide earlier showing that the Mundaring residents essentially are only 15,000 people and there's 90 further up the pipeline. The existing infrastructure currently facilitates 100,000 people, why can't the Mundaring residents be given the water that's being treated already and then the actual treatment plant be put further up the pipeline to facilitate the towns in Kalgoorlie? It's a question asked earlier by Paul.

Keith: I think it's been answered before, but just to reiterate (unknown: no not to my satisfaction), all of the water currently supplied out of Mundaring Weir including the water we supply into the township of Mundaring does not meet the contemporary standards required of the 21st century. As I again said earlier it doesn't mean that we supply water that is unsafe or is going to cause people to become sick but the risk characteristics of Mundaring Weir and the water that we supply, by contemporary standards, by the standards of bodies such as the World Health Organisation and others, needs to be treated further to make the risk of infectious diseases lower such that it's practically negligible. So that's the reason why we need to treat all of the water from Mundaring Weir.

Participant: It's treating water for 100,000 people, if you reduce, it would now be treating 15,000 people not 100,000 people.

Keith: No you'd still need to treat all of the water. All of the people who are supplied from Mundaring Weir deserve to receive water that meets 21st century standards and not 19th or 20th century standards.

Participant: It's still not really answering my question.

Keith: Well what is your question?

Suzanne: Just trying to draw a diagram to maybe rephrase what your question is. Is what your saying is, why can't Mundaring just have ground water bypassing, instead of going into the reservoir and then getting treated again, going straight to Mundaring and then we put the treatment plant somewhere further away?

Participant: Well I guess that is an option, but no that's not what I was thinking. It's currently treating water for 100,000 people so if you reduce the overall....

Keith: But you can't reduce, we need to treat all of the water coming out of Mundaring Weir.

Participant: Keith, sorry you said a lot of the water is coming from the Wanneroo water treatment plant. Why don't you just service the Mundaring people straight from the Wanneroo water treatment plant to whatever standard?

Keith: As we said, that's an option but the reason we don't do that is because we don't have the capacity to meet the peak demands in Mundaring from our metropolitan scheme. We could potentially go and build another desalination plant, we could go and take water from Southwest Yarragadee to supply Mundaring and build the infrastructure to do that. We currently need to use Mundaring Weir as a source of water to meet the peak demands in Mundaring. Now during the middle of summer there is not much capacity if any, to bring water from the metropolitan area back in to Mundaring, so during times of low demand, during winter and shoulder periods and sometimes during the night we take water from the metropolitan scheme, pump it back via the Lower Helena pipe back when the streams are not flowing into Mundaring Weir so that during those off peak times there is water sitting in Mundaring dam or Mundaring Weir that we can use to supply Mundaring and all the other demands during times of high demand. Now it is an option of supplying Mundaring off the metropolitan scheme I think that's been looked at as an option, Robert can confirm that but that will just mean that we would lose the capacity out of Mundaring in summer.

Participant: I'll try and rephrase it for the next forum.

John: [inaudible] we break up into separate groups...

Keith: Not just separate groups

John: [inaudible]

Keith: Absolutely, it would be a combination of presentations as a whole and so each forum would involve both, probably not an equal distribution of time but time in both this whole group and then some smaller group and back into the whole group.

[End of meeting]