

WEBVTT

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00:00:08.180 --> 00:00:27.040

Anne Bardsley: Welcome, Abel, Thank you so much for coming back to talk to us today about costs. Um! As recently participants had some confusion over how to cost in the recommendation and what

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00:00:27.050 --> 00:00:43.150

Anne Bardsley: it means, the relatively the cost for different options. So I want to start by re-stating the agreement, and why we're here, and that is to answer the question about what should be the next source for sources

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00:00:43.160 --> 00:00:59.140

Anne Bardsley: of water for all but given uh imperatives of climate change and population growth. We know the trip, the trajectory. By then the two thousand and fortys are going to need another large source. And importantly, although we still will be able to draw

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00:00:59.150 --> 00:01:24.860

Anne Bardsley: more from the White cat. Oh, based on current consent, including a new one round to this year we will not get any additional more beyond that. So that's all taken into consideration that we still need another source, an alternative source for what we're all so. Um! We certainly have noted the importance of both environmental and and cost. But today we're gonna focus

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00:01:24.870 --> 00:01:27.460

Anne Bardsley: uh primarily on the ladder.

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00:01:27.710 --> 00:01:29.030

Anne Bardsley: And

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00:01:30.070 --> 00:01:50.030

Anne Bardsley: um. They They have questions about relative costs of the different options and implications of choosing multiple options in this mix. And there's there's some still some confusion over how to consider the cost of these different strategies, so that, even including phasing options at different times,

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00:01:50.040 --> 00:01:56.100

Anne Bardsley: So i'd like to talk about this and get some clarity to help the Assembly's decision making.

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00:01:56.860 --> 00:02:11.089

Anne Bardsley: Um! It's important to know that we we do know that this is all costs um relative to what's happening now, but we know that anything that we do as an additional source is going to cost something extra.

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00:02:11.100 --> 00:02:19.590

Anne Bardsley: So let's just start with the fact that the draft recommendations suggest implementing

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00:02:19.600 --> 00:02:37.360

Anne Bardsley: indirect recycled water first and um it's. I'm aware that this costs may depend on where the the the dance treatment, facility, and the reservoir or reservoirs are built. Um! And the location to which the war needs to be moved.

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00:02:37.370 --> 00:02:48.289

Anne Bardsley: But can you can you comment on on costs in relation to this this option of starting with indirect recycled border.

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00:02:48.300 --> 00:02:49.190

Abel.Immaraj: Yeah,

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00:02:49.570 --> 00:02:50.709

Abel.Immaraj: I can't.

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00:02:58.620 --> 00:03:05.180

Abel.Immaraj: Yep. You're right, I think, by two thousand and forty. We are going to have to need a new supply source,

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00:03:05.620 --> 00:03:13.880

Abel.Immaraj: not just because of growth, but also we know that there's going to be increasing variability and uncertainty of climate, and that's both rainfall

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00:03:13.910 --> 00:03:16.290

Abel.Immaraj: and consequentially run off,

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00:03:35.110 --> 00:03:39.280

Abel.Immaraj: and it needs to be what I call climate resilience.

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00:03:39.290 --> 00:03:45.310

Abel.Immaraj: There's no real climate, independent supply, but climate resilient supplies. Therefore I think

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00:03:45.340 --> 00:03:50.459

Abel.Immaraj: just capturing. That is is important, because the cost of these different options

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00:03:50.590 --> 00:03:53.850

Abel.Immaraj: has a lot to do with how climate resilient it can be.

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00:03:54.010 --> 00:04:07.679

Abel.Immaraj: So Obviously, if you think of this allination, this allination is quite climate resilient, because it doesn't depend on rainfall, it doesn't depend on what the metrological conditions are.

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00:04:07.740 --> 00:04:09.390

Abel.Immaraj: But it turned.

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00:04:09.550 --> 00:04:13.990

Abel.Immaraj: It's quite expensive, because you you're going to have to disseminate our seawater. So

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00:04:14.000 --> 00:04:15.330

Abel.Immaraj: similarly

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00:04:15.410 --> 00:04:22.129

Abel.Immaraj: recycled water. There's there's going to be implications for cost because of its resilience.

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00:04:22.230 --> 00:04:29.280

Abel.Immaraj: Okay, So we'll just get to the sort of things that we'll help. This discussion on

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00:04:29.670 --> 00:04:31.800

Abel.Immaraj: on resilience.

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00:04:42.310 --> 00:04:46.020

Abel.Immaraj: Forum is already picked up on those things, which is a good thing,

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00:04:46.270 --> 00:04:47.570

Abel.Immaraj: because the word

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00:04:48.120 --> 00:05:01.320

Abel.Immaraj: first, you know what's the thing that we want to focus on first, and you know the indirect, audible reuse as the first option on the first step. That's a really good pointer in that. There's going to be a series of things,

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00:05:01.390 --> 00:05:05.940

Abel.Immaraj: meaning the focus question is what is going to be the next supply the

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00:05:06.210 --> 00:05:13.410

Abel.Immaraj: and then the question is, do we have indirect first, or how does that compare the

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00:05:13.530 --> 00:05:16.309

Abel.Immaraj: one way or another with direct portable

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00:05:16.540 --> 00:05:29.189

Abel.Immaraj: in that quick comparison, all other things being equal. In other words, i'm not talking about location. Where do we build it? When do we build it? How do we build it? Just parking all those questions aside?

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00:05:29.380 --> 00:05:33.870

Abel.Immaraj: Yes, indirect has a slightly higher overall cost

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00:05:34.630 --> 00:05:36.120

Abel.Immaraj: compared to direct

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00:05:36.720 --> 00:05:37.490

Abel.Immaraj: it's.

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00:05:37.500 --> 00:05:57.249

Abel.Immaraj: I think it helps to just clarify that a little bit indirect means. You're basically going to have to supply all the treated water from treated effluence treated to a portable quality, and send it all the way to a reservoir such as a name. Or if you're lucky, we might have

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00:05:57.260 --> 00:05:59.840

Abel.Immaraj: a groundwater echo for somewhere close by,

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00:06:00.370 --> 00:06:03.760

Abel.Immaraj: and then pump it back into the system,

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00:06:03.860 --> 00:06:10.390

Abel.Immaraj: then treat it again through traditional treatment, and then reticulate it through the pipes, back into the homes. The

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00:06:10.400 --> 00:06:21.979

Abel.Immaraj: so you can see where there's quite a lot of process automotive pumping quite a lot of infrastructure that's needed to support that indirect portable. We use

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00:06:23.070 --> 00:06:33.749

Abel.Immaraj: whereas direct portable reuse is basically injecting it into the system wherever it's produced as and when needed, it doesn't need a lot of storage,

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00:06:33.760 --> 00:06:38.600

Abel.Immaraj: and if it does. It's clear water storage, so it's not going to be put into a dam,

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00:06:38.890 --> 00:06:49.330

Abel.Immaraj: and of course, clear water. Storages are sealed. There's no losses other than you know, sort of in the pipelines themselves, whereas if you put into a dam

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00:06:49.820 --> 00:07:03.700

Abel.Immaraj: again, you're going to lose water through evaporation from the surface of the dam. So there's also going to be, if you like, losses through evaporation and seepage, and so on. So if you look at it in totality,

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00:07:04.150 --> 00:07:09.810

Abel.Immaraj: like I said. All things considered, that's where the the plate is.

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00:07:10.000 --> 00:07:28.369

Anne Bardsley: Can I ask about considering Auckland's options for downs offers? I I I am not an expert at all. But I understand that those that we we aren't necessarily talking about for the indirect option

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00:07:28.380 --> 00:07:36.290

Anne Bardsley: feeding it to a down and existing down that I know of I'm. Assuming, from what I understand, that some new

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00:07:36.540 --> 00:07:39.360

Anne Bardsley: reservoir will need to be built,

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00:07:39.510 --> 00:07:52.179

Anne Bardsley: and so obviously that's a cost. And is it but it I also understand that that is a storage facility that would

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00:07:52.270 --> 00:07:55.260

Anne Bardsley: create some resilience against

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00:07:55.340 --> 00:07:58.639

Anne Bardsley: trout. Potentially. Is that correct?

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00:07:58.650 --> 00:08:01.769

Abel.Immaraj: Yeah, There, there would be some benefits of um

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00:08:02.070 --> 00:08:08.460

Abel.Immaraj: things like a reservoir beyond just storing recycled water

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00:08:16.990 --> 00:08:33.149

Abel.Immaraj: could be optimized. So this this is why i'd say, all other things being equal. So we're not talking about the actual scope or the concept design, because locational, specific infrastructure has a lot to offer

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00:08:33.159 --> 00:08:37.840

Abel.Immaraj: by way of efficiencies. Right? So it depends on where you build these things,

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00:08:37.919 --> 00:08:42.840

Abel.Immaraj: it depends on where the demand is. So you need to consider about those.

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00:08:43.130 --> 00:09:00.859

Anne Bardsley: So, for example, considering that we don't have an option. Ah, a water source on the north shore of a Balkan. Ah, and we do have. So we have potential, I guess, to build a facility on the north shore which would then feed a local area.

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00:09:01.050 --> 00:09:20.920

Abel.Immaraj: Um! Is that the sort of thing that would reduce costs as well? Um, considering you're not pumping the water around. Now, now, we're getting to some specific locations and potential local benefits and things like that. So let me just again reiterate one thing

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00:09:21.220 --> 00:09:29.270

Abel.Immaraj: I think the advantage of going with indirect bottom readers, if if I can speak, you know, in support of that option,

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00:09:29.280 --> 00:09:36.669

Abel.Immaraj: that indirect, portable reuse generally, the community is more willing to accept than direct, portable the

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00:09:37.800 --> 00:09:54.129

Abel.Immaraj: so it's possible, Then we can make that a generalized statement and say, how much indirect polymer reuse can we produce? And you can produce it at scale, because we know that most people are willing to take research. What if it's indirect

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00:09:54.280 --> 00:10:03.610

Abel.Immaraj: right? So when you're designing that option you can design for a larger volume, which means you get the benefits of economies of scale.

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00:10:04.000 --> 00:10:12.369

Abel.Immaraj: Also you can put it into the system, knowing that most people will be tolerating it, and are happy to use it for portable reuse,

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00:10:12.440 --> 00:10:15.510

Abel.Immaraj: whereas direct, portable reuse.

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00:10:15.710 --> 00:10:24.590

Abel.Immaraj: Again, it's going to take a lot of acceptance from the community to to allow that to happen right.

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00:10:24.600 --> 00:10:33.279

Abel.Immaraj: But there may be sections where you can provide that as direct possible, and if so, it would be very specific to a location

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00:10:34.510 --> 00:10:35.490

Anne Bardsley: right,

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00:10:35.500 --> 00:10:41.520

Abel.Immaraj: the other a recommendation, I think, came from the Citizens Forum was the the

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00:10:41.760 --> 00:10:46.280

Abel.Immaraj: recycled water for not for potable use,

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00:10:47.160 --> 00:10:52.950

Abel.Immaraj: right, so that, too, in the sequence of interventions that

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00:10:53.080 --> 00:10:57.270

Abel.Immaraj: that you would put in place would fit somewhere in that

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00:10:57.680 --> 00:10:59.649

Abel.Immaraj: in the set of options.

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00:10:59.980 --> 00:11:16.189

Anne Bardsley: Yeah, I think that. Um. It seems a bit assumed that I guess, in the Assembly's recommendations. It's not at least the draft form that we need to get to that drinking water source. If, if

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00:11:16.200 --> 00:11:24.679

Anne Bardsley: if indirect, is built first and is acceptable, then clearly there's also the option to use that not for drinking.

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00:11:24.690 --> 00:11:37.089

Anne Bardsley: So um, it's not it hasn't been laid out specifically in their in their draft recommendations now. But um, I think that's sort of implicit in there. If we're going to start with. Indirect um

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00:11:38.840 --> 00:11:55.739

Abel.Immaraj: reuse that you could also take that water and use it not for drinking in that first stage. Is that correct? That's correct? So you can't progressively build this up. So again, as I mentioned, I like the word first, because you have to start somewhere,

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00:11:55.750 --> 00:12:10.389

Abel.Immaraj: and and therefore it's good to think about. Yep. We actually are thinking about indirect as the first step, but we are producing water that's fit to direct Don't forget. So that's still A. A. No regret approach.

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00:12:10.400 --> 00:12:38.220

Anne Bardsley: Yeah. So I think this assembly has taken on for that idea, and it, and know that indirect is likely to be acceptable. So they want to start with that option. And, as you say, they, they're now quite aware that they're they're already in some ways. So um that that that seems like an okay first step, and they're just now really wanting to understand all the cost of the patient.

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00:12:38.230 --> 00:12:46.290

Anne Bardsley: And from what you you've explained, it will depend on the scale, and where it's where it's been put. So

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00:12:46.890 --> 00:12:56.329

Anne Bardsley: then moving. If the second stage is moving, that once that's quite acceptable, to move to a direct portable reuse.

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00:12:56.590 --> 00:13:10.880

Anne Bardsley: Um, is there? Would you consider that you would use the same system? Or would you say, Well, it's okay to build another facility somewhere else. That, then, is Um serves as a direct recycled source,

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00:13:11.670 --> 00:13:29.589

Abel.Immaraj: so that comes down to some of the things that we would consider during the design of the system. So let's say, the main thing is as a direction we have agreed that say, indirect auto reuse is the way to start off with. When we're doing the design of that system,

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00:13:29.600 --> 00:13:30.829

Abel.Immaraj: we will look at.

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00:13:30.920 --> 00:13:34.979

Abel.Immaraj: What would this look like in the next next stage of scarcity?

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00:13:35.140 --> 00:13:48.099



Abel.Immaraj: How would we then plug that into a direct, portable reuse arrangement. Right? When we do the modeling of that, we may actually discover something quite interesting in that

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00:13:48.540 --> 00:13:50.629

Abel.Immaraj: when there is scarcity,

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00:13:51.140 --> 00:13:59.839

Abel.Immaraj: it doesn't really matter what the supply is, as much as is the supply meeting demand.

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00:14:00.220 --> 00:14:13.889

Abel.Immaraj: So we're actually looking at that particular balance between supply and demand. So sometimes indirect reuse could be substituting for the security that's needed for drinking water.

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00:14:14.690 --> 00:14:17.959

Abel.Immaraj: So, for example, outdoor use

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00:14:24.410 --> 00:14:28.670

Abel.Immaraj: all for anything that doesn't have a high human risk,

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00:14:28.880 --> 00:14:41.200

Abel.Immaraj: right? And we also discovered that when there's scarcity and we still need playing surfaces and fields and sporting areas, then recycled actually provides for that livability. And well being

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00:14:42.430 --> 00:14:49.180

Abel.Immaraj: so, this could all be substituting for the risk that's being posed on on drinking water.

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00:14:49.530 --> 00:15:00.290

Abel.Immaraj: So when we do the modeling, we may discover that you know what indirect, portable reuse is great as a next supply source we designed for it.

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00:15:00.390 --> 00:15:11.360

Abel.Immaraj: But if we always continue to get rainfall. And this is why that future uncertainty is such a big theme is, if it remains wet. What are we going to do with the system that we've invested in.

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00:15:12.610 --> 00:15:24.200

Abel.Immaraj: We create headroom in our network or in our in our dams by using this water for outdoor use. So we put our assets to good use.

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00:15:24.390 --> 00:15:36.890

Anne Bardsley: That's a great point that that source of indirect, recycled water can always be used for out or use when and to to keep the downs for

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00:15:36.900 --> 00:15:37.850

Okay,

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00:15:38.090 --> 00:15:41.000

Anne Bardsley: great. So um.

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00:15:42.210 --> 00:15:59.129

Anne Bardsley: You would agree, then, that with their phase approach potentially that um designed correctly to start with an indirect source where that has multiple ways to be used, and that we could go to a direct source. Um! They also recommend

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00:15:59.820 --> 00:16:14.589

Anne Bardsley: at the moment there are multiple options be considered, and that includes rain tanks and potentially even desalination in the future, if we understand it better, and then that's still a need.

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00:16:14.600 --> 00:16:27.199

Anne Bardsley: The The focus is mostly on these two recycled sources. But how does uh the recommendation of of pushing also for rain tanks come into that cost picture?

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00:16:27.630 --> 00:16:35.209

Abel.Immaraj: Yeah. So a couple of comments here. One is some investment in rainwater tanks.

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00:16:35.450 --> 00:16:42.770

Abel.Immaraj: It may be private investment, like a resident, decides to put rainwater tanks on their property,

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00:16:42.800 --> 00:16:45.050

Abel.Immaraj: and they get some private benefit.

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00:16:45.350 --> 00:16:55.510

Abel.Immaraj: In other words, they can use it for their outdoor use. They could even plum it in to their toilets, washing machines, so on. So there's private investment and private benefit.

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00:16:56.120 --> 00:17:11.000

Abel.Immaraj: But there's also publicly installed rainwater tanks at strategic locations with public benefit, because when you are able to locate that rainwater tank at right locations, you might be able to take the pressure off the system

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00:17:11.329 --> 00:17:14.789

Abel.Immaraj: and still keep, you know, good availability outcomes.

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00:17:14.800 --> 00:17:18.109

Abel.Immaraj: Therefore we do need to think about when we talk about costs.

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00:17:18.510 --> 00:17:31.890

Abel.Immaraj: There are public investments and public benefits, and there's private investments in private benefits. So just keep that at the back of your mind if we did recommend rainwater tanks as a way of providing resilience we

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00:17:31.920 --> 00:17:36.720

Abel.Immaraj: we need to look at. Where would they best play a part, and how

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00:17:36.730 --> 00:17:38.390

Abel.Immaraj: that's important to think.

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00:17:38.400 --> 00:17:42.950

Abel.Immaraj: Yeah, that's the timing of. When we put these different measures in

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00:17:43.090 --> 00:17:45.469

Abel.Immaraj: um, that's also an important thing.

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00:17:45.700 --> 00:17:57.959

Abel.Immaraj: Do we go with that as a first line of defense for the next supply? Or do we look at that coming in at a certain time in the in the drought cycle, or in the scarcity cycle.

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00:17:58.670 --> 00:17:59.900

Abel.Immaraj: So

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00:18:00.060 --> 00:18:07.329

Abel.Immaraj: sometime in the future I envisaged that there will be a lot more water harvesting even in urban areas,

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00:18:08.010 --> 00:18:09.630

Abel.Immaraj: Because, Sam,

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00:18:09.890 --> 00:18:22.450

Abel.Immaraj: I think we will also have things like, and this is not related. Water! What a security per se! But if you think of overland flow because of intense development of hard surfaces,

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00:18:22.460 --> 00:18:27.309

Abel.Immaraj: we're losing that permeability in and around the growth centers.

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00:18:27.320 --> 00:18:40.350

Abel.Immaraj: So rainwater tanks can provide a completely different benefit which is, it attenuates those of land flows and avoids things like sewers being flooded, or stormwater overflows, and things like that.

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00:18:40.370 --> 00:18:41.860

Abel.Immaraj: So, um!

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00:18:41.870 --> 00:18:53.349

Abel.Immaraj: There are some additional benefits, and that's where good design really comes in. I mean, we call that, you know, water-sensitive urban design. We're trying to achieve multiple benefits of that investment that we're making one hundred and fifty

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00:18:53.940 --> 00:19:02.020

Anne Bardsley: right. So you're not suggesting that people that we should just recommend rain text. Everybody should be

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00:19:03.280 --> 00:19:06.390

Anne Bardsley: to to put everything in where possible.

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00:19:06.400 --> 00:19:26.290

Anne Bardsley: It's more. Ah, because they because they're there with some questions around the cost of that and subsidies, et cetera, without the understanding that actually the taxpayers are going to pay for that, and that some in some cases the the general um population might be subsidizing a a private benefits.

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00:19:26.300 --> 00:19:27.770

Abel.Immaraj: Um! I agree with this

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00:19:27.780 --> 00:19:44.509

Abel.Immaraj: of these more public benefit tanks, and the design of the urban design thing with the added benefit of reducing stormwater runoffs. One good way of looking at this, and Maybe this will help. Maybe you don't. But when you think of water services

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00:19:44.520 --> 00:20:01.240

Abel.Immaraj: um, the infrastructure consists of, you know, large headworks, facilities like dams and treatment plants, and so on. And then it contains long linear pipe networks transmitting that water from the

dams to the treatment plans, and then from the treatment plants to the residences and businesses.

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00:20:01.280 --> 00:20:04.730

Abel.Immaraj: Guess what it's very similar to the energy infrastructure. Right?

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00:20:04.740 --> 00:20:11.010

Abel.Immaraj: There is large power stations generating lots of energy, and then there's transmission and distribution networks to the home.

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00:20:11.490 --> 00:20:19.420

Abel.Immaraj: Of course, water is a lot more complex, because, you know, the whole supply depends on rainfall, runoff weather. In climate.

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00:20:20.810 --> 00:20:22.840

Abel.Immaraj: When you think of

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00:20:22.920 --> 00:20:27.389

Abel.Immaraj: rainwater tanks also? Think of rooftop solar panels,

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00:20:27.400 --> 00:20:37.029

Abel.Immaraj: You know people are putting solar panels in to generate power for their own homes, and by doing that they're able to take some pressure off the network,

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00:20:37.040 --> 00:20:43.020

Abel.Immaraj: because their demands have come down because they're now able to generate their own power to some extent the

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00:20:43.120 --> 00:20:48.780

Abel.Immaraj: though there is a private benefit primarily by installing a rainwater tank it.

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00:20:48.950 --> 00:20:55.910

Abel.Immaraj: They're strategically located and incentivized the right way. They can take the pressure off the network,

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00:20:56.100 --> 00:21:01.249

Abel.Immaraj: which means there is some public benefit as a result of people putting in some private investment

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00:21:01.430 --> 00:21:09.539

Abel.Immaraj: right? So, again, intelligent subsidies and incentives Um would would have to work with the design

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00:21:09.700 --> 00:21:20.800

Abel.Immaraj: right? So we know that we don't want everybody putting solar panels in, because it's actually not a very good capital investment, but we know that some locations would do very well,

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00:21:20.810 --> 00:21:29.810

Abel.Immaraj: because you know they're not facing There's large roof areas. You can generate a lot of power, and there's also demand locally nearby.

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00:21:30.410 --> 00:21:39.110

Abel.Immaraj: So certainly in the future we'll be looking at things like, you know. Where can we harvest the in the most amount of rainwater at the time we need it,

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00:21:39.780 --> 00:21:44.830

Abel.Immaraj: and it can be supplied locally. So we don't need large transmission networks

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00:21:44.840 --> 00:21:45.880

right

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00:21:45.890 --> 00:21:49.889

Abel.Immaraj: right, and that will take the pressure off the network in terms of the mixed upgrade.

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00:21:49.900 --> 00:21:51.190

So it is. It is a good

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00:21:51.200 --> 00:22:09.939

Abel.Immaraj: a good thing to do, and again very closely related with understanding where the demand is, where the supplies so smart meters are part of that equation. You wouldn't do just rainwater tanks. You would have a way of managing that rainwater tank, collecting water and distributing it, which means you need smart meters,

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00:22:10.200 --> 00:22:17.449

Abel.Immaraj: and you need to send the right signal. So not you know it's not just those who can afford to put a rainwater tank that will put it in,

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00:22:17.580 --> 00:22:20.020

Abel.Immaraj: but it's really where they

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00:22:20.060 --> 00:22:25.939

Abel.Immaraj: provide the best value to society as a whole. That's when you want to incentivize it.

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00:22:26.280 --> 00:22:31.160

Anne Bardsley: Right? That's a really good point. So

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00:22:31.710 --> 00:22:38.860

Anne Bardsley: that leads to that question of cost of of water efficiency.

157

00:22:39.000 --> 00:22:51.280

Anne Bardsley: Clearly. That is something we want to do, and then assembly. It is recommended that we should be reducing our use of being efficient with water use, but costs will relate to, I guess,

158

00:22:51.300 --> 00:23:07.429

Anne Bardsley: using many tanks, if that's one of the options uh installing smart meters and other incentives. But, um! I I take from What you just said is that it is in a design, and we, and not just the general blanket um

159

00:23:08.920 --> 00:23:17.850

Anne Bardsley: on. On doing a certain thing that it will. It will depend on where these, where there's those

160

00:23:18.750 --> 00:23:21.290

Anne Bardsley: our best used.

161

00:23:21.300 --> 00:23:21.890

Abel.Immaraj: Yep,

162

00:23:21.900 --> 00:23:26.210

Abel.Immaraj: And I think another another way of putting this would be

163

00:23:26.920 --> 00:23:30.769

Abel.Immaraj: um. Supposing um you're thinking of um

164

00:23:30.820 --> 00:23:41.680

Abel.Immaraj: investing in property, because you know the market is looking good, and so on. And you want to, because it's going to increase in capital value,

165

00:23:41.770 --> 00:24:00.010

Abel.Immaraj: and you also wanted to produce some cash flow. So you're thinking, Oh, really, can I buy? And so on? So you do a lot of research as to where to buy and when to buy what to buy. But there's always this unknown risk. You need to have a good tenant, right? It's one thing to make the investment one,

166

00:24:00.020 --> 00:24:06.700

Abel.Immaraj: but you also want to have an assurance that that asset can be used so that it produces what you're looking for

167

00:24:06.710 --> 00:24:08.160

Abel.Immaraj: I'm.

168

00:24:08.360 --> 00:24:14.069

Abel.Immaraj: But imagine now, rather than leaving it as an unknown risk. You say you,

169

00:24:14.120 --> 00:24:16.810

Abel.Immaraj: if I can work with a tenant

170

00:24:17.130 --> 00:24:20.389

Abel.Immaraj: and understand what exactly they would like

171

00:24:20.490 --> 00:24:24.080

Abel.Immaraj: and decide together what would be mutually beneficial

172

00:24:24.090 --> 00:24:43.569

Abel.Immaraj: Then that reduces risk to both parties. Because then you have bought the place that you know you're going to get a good tenant in, and the tenant is wanting to stay there, and they're willing to pay, or they have the ability to pay. So that's a bit like watercare, deciding to make an investment and working with the community,

173

00:24:43.580 --> 00:24:50.020

Abel.Immaraj: deciding on what can work and what they're willing to pay for, and mutually arriving at a solution. The

174

00:24:50.030 --> 00:25:06.339

Abel.Immaraj: but that requires both parties to understand that risk and and put in place the sort of measures that manage that risk, you know things like drought. They are a mutual obligation on society to work together. Otherwise,

175

00:25:06.350 --> 00:25:17.670

Abel.Immaraj: if watercare said, our community wants to be completely drug-proved, and the only way to do that is to go and build this big desalination plant and no other way.

176

00:25:17.720 --> 00:25:22.859

Abel.Immaraj: Then we spend a lot of money and guess what that becomes a societal debt.

177

00:25:22.870 --> 00:25:38.379



Abel.Immaraj: So some of the examples in in in in Australia is we built some big theseelination plants which Haven't been operating at even more than thirty percent capacity recycled water schemes which Haven't really operated at all,

178

00:25:39.200 --> 00:25:44.859

Abel.Immaraj: because we didn't really work with the community to say, What is that level of service that you're willing to accept.

179

00:25:44.910 --> 00:25:58.289

Abel.Immaraj: So it's really important when making these investment decisions that we think about what the community and what a service provider can work together on defining that level of service.

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00:25:58.300 --> 00:26:04.200

Abel.Immaraj: That is a very important thing in that level of service is a thing called a drought standard,

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00:26:04.420 --> 00:26:24.259

Abel.Immaraj: and that drought standard gives you, if you like, the lower bound of what people are willing to accept by way of restrictions. Ah, right restrictions are a part of life. You know we we face that in transport every day when we're traveling during peak hours, the the traffic lights work in such a way that

182

00:26:24.270 --> 00:26:37.929

Abel.Immaraj: some roads are restricted so that the others can flow right. So it's just part of how society works In the same way Restrictions are required at certain times at a certain frequency at a certain intensity.

183

00:26:43.000 --> 00:26:47.550

Abel.Immaraj: We don't want to just build for peak and peak and maximum all the time.

184

00:26:48.620 --> 00:27:16.490

Anne Bardsley: Right? Which says something about that idea. Let's Let's keep all of those options over. Um. We need to be smart about what the sequences and what is in what they communities will accept, which I think the Assembly is getting quite close to understanding and and recommending. So um! This has been really helpful. Uh, I don't know if you have any other further um comments on these costs options. But it sounds to me that

185

00:27:16.510 --> 00:27:18.169

Anne Bardsley: the idea of

186

00:27:18.410 --> 00:27:33.250

Anne Bardsley: starting with a a very well-designed indirect system um that will serve a community that's going to accept that option. But having those other options open to use later, is um

187

00:27:33.470 --> 00:27:36.789

Anne Bardsley: potentially quite a cost-effective measure.

232

00:33:05.120 --> 00:33:17.940

Anne Bardsley: I don't want to take up too much of your time. But one more question is there that there are costs to keeping all options on the table.

233

00:33:17.950 --> 00:33:36.800

Abel.Immaraj: Is there? Is there a benefit in identifying just one next source without in this scheme of how we've talked about it now? Yes, so this is actually quite an important thing that we do set the direction, and that direction starts with that first step.

234

00:33:36.850 --> 00:33:41.520

Abel.Immaraj: So um! There is a thing called adaptive approaches where

235

00:33:41.580 --> 00:33:47.290

Abel.Immaraj: we keep future options open by mapping the pathways we can take with these different options.

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00:33:47.300 --> 00:33:56.279

Abel.Immaraj: So what happens after the first step is the next step. So when we design these pathways, we're looking at. How do we optimize that investment that we're making?

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00:33:56.940 --> 00:34:13.949

Abel.Immaraj: So it is advantageous to identify. Okay, the first step we want to do is indirect, portable reuse. For these reasons that you know we need to get community on board with this, and when we do the design, we'll discover that producing one hundred and fifty megalitres of

238

00:34:13.960 --> 00:34:17.820

Abel.Immaraj: indirect portable reuse can be readily put to good use

239

00:34:17.830 --> 00:34:19.129

Abel.Immaraj: all right,

240

00:34:19.150 --> 00:34:31.250

Abel.Immaraj: whereas, if you start off with the presumption we can produce one hundred and fifty megalitres of water for direct, portable reuse. We need to be sure that the community is ready to take it.

241

00:34:31.260 --> 00:34:32.310  
Anne Bardsley: It's

242  
00:34:32.380 --> 00:34:33.429  
Abel.Immaraj: right. Yeah.

243  
00:34:33.440 --> 00:34:46.569  
Abel.Immaraj: So this is how you sequence it. But you might start with the indirect portable, and then say that in a few years time. We would like to then, based on the population, growth and demand growth. We're going to use that for direct portable.

244  
00:34:46.810 --> 00:34:51.890  
Anne Bardsley: There would be ways to do that quiet cost effectively, if in that order

245  
00:34:51.900 --> 00:35:01.620  
Abel.Immaraj: Yes, it, it starts with good design. So we need to make these design parameters and specifications that design the system, too, and how it'll operate,

246  
00:35:01.660 --> 00:35:11.790  
Abel.Immaraj: and how we might mitigate some of the risks, that if you actually think about it, some of these future scenarios might not play out as we think they might.

247  
00:35:11.800 --> 00:35:16.790  
Abel.Immaraj: So uh, if if food security becomes an issue,

248  
00:35:24.100 --> 00:35:27.909  
Abel.Immaraj: so these are all things that we would map out in these pathways.

249  
00:35:28.210 --> 00:35:33.579  
Abel.Immaraj: But we do start with this first step. Okay, what does that first step look like for this design?

250  
00:35:33.620 --> 00:35:47.599  
Abel.Immaraj: And then what are the things that are not regret investments that you can make in parallel, and I think the community has identified education, and I reckon water literacy is more important than financial literacy.

251  
00:35:48.730 --> 00:35:57.070  
Abel.Immaraj: Help literacy. We've got all these things in. So we need to start thinking about. How do we raise people's awareness? How do we get this into it

252

00:35:57.180 --> 00:36:11.229

Abel.Immaraj: into people's minds that you know, maintaining what integrity, even in the home, is important. We can't just assume out of sight out of mind. So these adaptive pathways will have certain

253

00:36:11.240 --> 00:36:19.019

Abel.Immaraj: parallel investments made into things like, you know, raising awareness of protecting our so attachments.

254

00:36:19.030 --> 00:36:33.010

Abel.Immaraj: Um recycle water advanced recycle water treatment plants. We might even look at things like. How do we incentivize, You know, localized treatment in an industrial precinct?

255

00:36:33.070 --> 00:36:40.879

Abel.Immaraj: So contain it when it is a small quantity of contamination rather than putting that contaminated affluent into the big sewer,

256

00:36:41.210 --> 00:36:48.120

Abel.Immaraj: and then it's so dial you by the time it gets to the sewage street, and it it's very expensive to to treat it.

257

00:36:48.320 --> 00:36:49.450

Anne Bardsley: It's

258

00:36:50.110 --> 00:36:59.320

Anne Bardsley: that's That's an interesting point. That I don't think it's been picked up, but something to consider as well that there are options around

259

00:36:59.390 --> 00:37:05.929

Anne Bardsley: those smaller treatments facilities.

260

00:37:06.050 --> 00:37:22.460

Abel.Immaraj: So that's great. I think this has been really helpful, and I think it will help the decision making on our last day. I'm. Looking forward to, I think hopefully, seeing you there. So thank you very much.