



ELF MUSHROOM FARM PROJECT AND SUBSTRATE PLANT (CP 08_0255 MOD 2 AND MP 08_0255 MOD 2)

15 October 2019

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TRANSCRIPT OF PROCEEDINGS

TRANSCRIPT IN CONFIDENCE

O/N H-1079454

INDEPENDENT PLANNING COMMISSION

MEETING WITH DEPARTMENT OF PLANNING, INDUSTRY AND ENVIRONMENT

RE: ELF MUSHROOM FARM PROJECT AND SUBSTRATE PLANT

PANEL: PROFESSOR SNOW BARLOW

**PANEL ASSISTING: DAVID WAY
MICHAEL WOODLAND**

**APPLICANT: DAVID TOLSON (ELF MUSHROOMS)
GREG HALL (URBAN CITY PLANNING)**

**LOCATION: IPC OFFICE,
LEVEL 3, 201 ELIZABETH STREET,
SYDNEY, 2000**

DATE: 10.10 AM, THURSDAY, 3 OCTOBER 2019

MR D. WAY: All right. Um, so as we mentioned, we'll be recording this. Um, and I might just pass over to Snow for the opening statement and then I'll just kind of guide things a little bit from this end if it's a - - -

5 MR G. HALL: Okay.

MR WAY: - - - a bit easier in that sense.

10 PROF S. BARLOW: Good morning, ah, David and Greg. Ah, I'm – ah, my name's Professor Snow Barlow. And before we begin, ah, I'd like to acknowledge the traditional owners – custodians of the land on which we meet and I would like to pay my respects to their Elders, past, present and emerging and to the Elders of other communities who may be here today. Ah, welcome to this meeting and thank you for responding to, ah, our invitation. Ah, ah, and this meeting, of course, is about, 15 ah, your seeking approval for a modification to the Elf – ah – Mushroom Project. Um, the – with me – joining me here today – who you've just, ah, introduced yourself to – is David Way, ah, from the Commission Secretariat and Michael Woodland from Keylan, ah, Consulting. In the interests of opening – openness and transparency and to ensure full capture of the information, today's meeting is being 20 recorded and a full transcript will be produced and made available on the commission's website.

This meeting is one part of the commission's decision-making process and is taking place at a preliminary stage in the process and we'll form – from several sources – 25 the information on which the com – commission will base its final decision. It is important that – for the commissioners to ask questions of attendees and to clarify issues whether – whenever we consider it appropriate. If you're asked a question and not in the position to answer, please feel free to take the question on notice and provide additional information in writing. I request that all members here today 30 introduce themselves for speaking before the first time.

Now, ah, because I am, ah, doing this meeting from, ah, Melbourne and we were hoping to be able to do it, um, with Zoom Conference but we're not quite online yet, I have asked, ah, David Way to chair the meeting because I know from past 35 experience that chairing a meeting remotely without visual contact, ah, is, ah – is challenging. So, David, if I can therefore hand over – hand over to you, and if you can chair the meeting from – from here on in. Thank you.

MR WAY: Certainly. Thanks, Snow. Um, so pretty much – as Snow was saying, 40 this is really just a good opportunity, I think, for you to – for you guys to present the – the modification, I think, your – the views on the project, as well as the department's assessment report to us. So normally find it best if we just kind of hand over to yourself to kind of talk us through the changes that you're looking to undertake. And then primarily, um, if Snow has any questions, he can – may 45 interject and, um, we might have a bit of a wrap up discussion once you've that.

PROF BARLOW: Perhaps too, ah, ah, David, ah, and Greg, that – perhaps if you begin to – just giving us a – a brief overall of the – the project before you get into this modification because, ah, you will be aware that – I think this is the first time the, ah – this project has come with, ah – to the commission. Of course, I know it's
5 been approved and then – one modification – and then this is the second modification you are seeking now, ah, but it's, ah, the first time we have seen it in a commission. So a little bit of an overview would be very good and then let's get into the specifics of this modification.

10 MR HALL: Okay. I'll give the overview – this is Greg Hall. Um, I'll give the overview first just on the previous approvals and then I'll hand over to David Tolson who will, um – with his PowerPoint presentation – who will sort of go through the reasons why he's – well, why this modification's being proposed. And there's been a bit of a change in the way that, I guess, mushrooms are grown. David wants to be
15 at the cutting edge of technology. So just the background to this application. Initially, the application was lodged, um, as a part – the old part 3A, um, application back in, um, the, ah, two thou – I think it was 2010 or '11. And the application involved two properties. It involved the substrate property at Mulgrave and it involved the mushroom farm at the Northern Road, Londonderry. And this – and
20 while the – the previous modification there has been – that modification related to the substrate plant, not to the mushroom farm.

This – this application is only for the mushroom farm modification. There's no modifications proposed for the substrate, ah, plant. Um, so that's a bit of a
25 background. Again, that was issued, ah – an approval was issued in 2012. There's – on the mushroom farm – um, David's mushroom farm – there's been no works that have started at all on this approval. The works that have occurred have been mainly on the substrate plant. So, um, based on that, I'd like to now just hand over to David Tolson and just get David to, ah, present his PowerPoint presentation. There – there
30 are two presentations. There is one that we provided for the commission which has a – um, a lot of, um, commercial confidentially – confidentiality information in there and we've also provided another – another, um, PowerPoint which is for the public, which has removed those - - -

35 PROF BARLOW: Um - - -

MR HALL: - - - confidentiality. Mainly to do with the technology, the machines, the videos that – of this new - - -

40 MR WAY: Mmm.

MR HALL: - - - technology that David doesn't want, um, the public to find out because it – it really has an impact where other people might get an idea of what he's
45 doing.

MR D. TOLSON: Yeah.

MR HALL: So I'll hand over - - -

MR M. WOODLAND: I - - -

5 MR HALL: - - - to you, Da – oh, sorry.

MR WOODLAND: I was just going to say, um – Michael Woodland here. Keylan Consulting. I'm assisting the, ah, commission. Snow, just – just listening to that around the confidentiality – um, and maybe, David, you could answer for me. I think
10 any presentation you give us will be placed on the website – the IPC website.

MR WAY: Yep.

15 PROF BARLOW: I think, ah - - -

MR WOODLAND: Shall we

PROF BARLOW: So Mi – Michael.

20 MR WOODLAND: Yes.

PROF BARLOW: Ah, it's Snow here. Sorry to cut across you. Ah, you are correct. But, um, I don't know if it was David or Greg in the discussions, um - - -

25 MR WOODLAND: Okay

PROF BARLOW: - - - with the commission, ah, had made this point that - - -

30 MR WOODLAND: Mmhmm.

PROF BARLOW: - - - ah, Greg's just made. Ah, and what we have agreed to is there will be some parts of the presentation that will be - - -

35 MR WOODLAND: No, no, that's fine.

PROF BARLOW: - - - redacted. But we will also put on the website a clear statement of why they have been redacted and what - - -

40 MR WOODLAND: Mmm.

PROF BARLOW: - - - they involve. And then – and a – you know, what – the reason for doing this, which is essentially, you know, commercial in confidence. And, ah, secondly, that the commercial – the commerciality of this really – well, we'll hear from, ah, David now. It probably doesn't affect the visual aspects of the
45 project, the odour – part of the project.

MR WOODLAND: Mmm.

PROF BARLOW: Ah, in other words, the impacts on the residents around this site. Ah, it's more the technology that is being employed inside the shed. But we'll hear from you, David, but - - -

5 MR WAY: Understood.

PROF BARLOW: - - - we have agreed to redact the commercial in confidence components of this, ah – this presentation.

10 MR TOLSON: Okay. It's David Tolson here. I'll, um, just start on the presentation, um, just with the future mushroom farm. To move slides, is it - - -

MR WAY: It's the arrow at the bottom.

15 MR TOLSON: At the bottom. Ah, it's going to take a little bit of – topics: layout of future mushroom farm, picking system, robot packing and picking, um, layout of future mushroom farm. Separate the different stages of the growing. With this new mushroom farm there's a breakup of three different stages.

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25 The reason for these multi stages is for, um, ah, disease control.

Um, we're really – our big goal is to have this farm – the number one things is we're going to hope that we get to be carbon neutral, um, and pesticide free, um, and, um, reduce the energy, um, greatly.

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Um, mushrooms, um – they – the diseases that are most prevalent in mushrooms are, um, generally airborne, um, fly borne or – transported by flies or by people. And having these three district, um, zones allows us one – the pickers, um, only have one area where they go into and – um, which is away from the filling area and the first two weeks. The life cycle of most of the pathogens – either being, um, flies or, um, moulds – the – most of their life cycles are around the 21 to 28 days. And because – with this, um, process the, um, crop is never in the one room for longer than 14 days, um, we believe greatly that will break the, um, cycle within the, um, pathogen. So I'll just

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PROF BARLOW:

MR TOLSON: So that's where the building sections is designed for the – to meet their specific needs. Um, they're the various areas. Filling, emptying area. Um, the walls and corridors, climate units. Everything will be able to be built specific for, um, that actual function, where, at the moment, a growing facility has to have – for
5 example – their climate control unit sized to be able to do the whole six weeks of the process. So some parts – like, for example, a third flush – has very little energy required so you then can downsize your fans and your cooling capacities for your coils so you get more efficiencies.

10 Um, so the picking system. Um, this is a, um, farm that I've been working with in, um, Belgium, um, owned by Paul and Pierre, who you'll see in the thing – in the presentation. This phase 4 is what we call the pin set. So this is where we first fill the growing room and it's filled totally indoors, um, and then they stay in that phase 4 room or the pin setting room for the first week until they're just ready to be
15 transferred for harvesting. Then you have the transfer corridor. The transfer corridor, the only people who go through that transfer corridor is the actual growers and the people who are involved in the filling of the, ah, shelves and, um, pulling them through to the various stages.

20 Um, so, ah, out of the – out of a farm of, like, 100 employees, you're only then exposing the – the – that phase 4 area in the transfer corridor to around about, um, six people. So it's very easy, or a whole lot easier to control hygiene with six people, rather than 100 people. Um, then we've got the harvesting room. Um, this is, um, Paul and Pierre, who I've been working with, um, from Belgium. We've been
25 working in collaboration with Paul & Pierre and another Canadian company in developing and looking at the benefits. This is an overview of a test growing room in Belgium. [REDACTED]

30 It's the simplicity of the system which is the thing that is the biggest strength of the system. Higher productivity by an average factor of, um, two point seven. Less logistics movements, activities in the growing rooms and clear overview in the growing rooms. The, at the actual test facility, um, there's enough evidence now that we believe that there'll be around about a 50 per cent reduction in energy per
35 kilogram of mushrooms. And with that, that's a 50 per cent reduction in gas used for heating and electricity used for refrigeration. One – one of the big, um, strengths of that has been because of, um, not having the need to cook out the growing room at the end of the cycle. Because, um, the third flush room only has third flush. So it doesn't, if there's any infection in the third flush, it doesn't then re-infect the crop
40 earlier in the process. So you don't actually need to cook out that third flush room.

This is just a short video. It'll take a little bit of time to load. "The Story Behind Optimisation," um, it's a – this is a two minute video. You can see, it's showing the real-time and the amount of efficient time of picking. [REDACTED]

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[REDACTED] So they don't just get a benefit of,

um, picking two-handed, but they also get the benefit that, um, there's no time wasted for the actually cutting of the mushroom and sorting of the mushroom into its end packaging.

5 Also one of the – the real things that we are wanting to try to achieve is down the track is looking at vision systems that will then guide the harvesters of what mushrooms to pick. A mushroom doubles its size every 21 hours. So if you can leave a mushroom for four hours, you, in effect, increase your weight and yield by 15 per cent. Um, you, traditionally, on a shelf farm, the harvesters would normally pick
10 over the beds, maybe, three times a day. Because they have to go up and down in lorries and there's a lot of logistics movements that makes it hard to go over the beds, even more times. Where with this system [REDACTED] it allows us to move over the beds and pick more frequently, um, which should also, um, help with, um, productivity.

15 This is another video which will – this – this is at the test facility where, currently, the pickers harvest and place on the belt. And at the end here where we're watching the – we've got harvesters who then take off and put in the end packaging. [REDACTED]

20 [REDACTED] So this has been a very fast development in, over the last year. It comes down to a lot of things that were available weren't economically viable for the mushroom industry, because of the high cost. But they've come down in cost a lot.

25 So I'll just move to the next – that's still, if we go to crop, slide 13, at the shelf, you have two harvesters hand picking. And in the front of the shelf two packers collecting, sorting packing. That will be how the farm starts, initially, and we will have a – at least a single growing room where we're employing the robotics to do the, um, packing where it's collecting, sorting and packaging. With just the two
30 harvesters, it increases efficiencies by about 26 per cent. And then the challenge is to robot or automation. The improvements, um, from that, we believe is around about 63 per cent extra efficiency over the 27.

35 Um, this is a video; I'm pretty sure, um, of a finger, a robotic finger that's been developed for grabbing the mushrooms. A lot of work's been done over the last five years with suction caps, with needles, um, etcetera to pick up the mushroom and then place the mushroom. Um, and it's, we've now, really, um, optimised it with this, um, these grippers. So I'll just see if this is, this is in slow motion. You can see how the actual gripper forms around the mushroom. And the testing that we've done is
40 that it's actually, um, softer, um, on the mushroom than a person's fingertips. 'Cause, um, a mushroom doesn't have a skin like other, um, vegetables. It's only a mass of mycelium.

45 So any damage that, um, happens on the external of the mushroom, post-harvest, 24 hours later, you then would see it as a bruise. Um, where, for example, if it was an apple, um, you might not see it until you cut into it. But, um, I guess, it's too late at that stage. 'Cause someone's already purchased it. Where, with mushrooms, um,

you want 'em, "White and bright 'cause then they walk out of sight." And, this is just another snapshot of – on slide 16. Um, one of the big things with this new system has been looking at how we can automate the system and also make better, um, working, um, postures for the harvesters.

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Um, we don't see, in any time soon, that harvesters will totally, um, won't be needed, because of robotic harvesting. But, um, we're really focused on trying to ensure the Work Health and Safety. Um, in this picture you've got, um, the one which is the neutral zone. That's, um, the best, um, option. Two, light physical strain. Three, high physical strain. In the next pic – picture, that's shown, the green is the neutral, the orange is the light physical. The, um, high physical strain is the red. So they're the areas you want to try to keep out of the high physical. Same with the head.

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Um, when we go to slide 21, um, a traditional shelf five high with hydraulic picking lorries, um, in the torso, um, you'll see, the zone one is 84, the orange is nine, red seven and then the arms you've got 49. But then, um, you're – part of the time you're up to 34 per cent into zone three, when they're needing to reach right out. And in the head it's 33 and 67. Where, when you look at the [REDACTED] you've only got in the torso 1 per cent of the time where you're in the red zone, for your arms, you've only got four per cent of the time in the red zone. Which is a, um, big improvement of 30 per cent.

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Or from 34 to four per cent, so – so – and then in the head zone it's pretty much the same as a traditional, um, picking. Um, also one of the benefits of [REDACTED] because the people are standing on the ground, they keep on walking. And that's been shown to be of benefit for, um, harvesters, rather than being on a picking lorry where they're stuck, um, in one place. Um, because then you don't get blood flow and movement through your legs. Um, slide 22 is just a traditional picking. A lot of tasks and movement are required to be done on a fairly limited platform space.

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Um, they have to select the right mushrooms, pick the mushrooms, cut the stems, place in correct box and weighing, move during, ah, ah, ah, along the shelf, move full and empty packaging material. Um, the traditional complaints are stiff neck, shoulders or arms, um, stiff legs and lower back. Um, at the test facility at [REDACTED] Belgium [REDACTED] um, this has been proven, now, for 12 years. And the big amount of work that's been done in recent times is in relation to the harvesting and getting the produce out of the, um, growing rooms. So the new way of picking, separation of tasks, picking, automatic stem cutting, packaging and logistics, picking with two hands, better view over the beds.

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Um, to slide 24, robot developments in the past. Um, I'll just go through this. Because there's a few, um, actually, I'll just go back to slide 24, 'cause I thought there was, ah, it may have been 23. I thought there was a video, um, must be further in the process, in the – so this slide 25 is a prototype, um, for – to replace the two people at the end of the picking room, um, that actually, then pack off into the end packaging. Um, we'll still need to have people in the growing room to load punnets, load trays, etcetera. But, um, where in traditionally, um, there's been two people at the

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end of each conveyor, we would think we will probably be able to have one person to do, um, the two conveyors in a single room.

5 Um, this is the robot development in the past. I'll just, this is some of the work that's been done over the years with – with the trials. The biggest issue, the biggest improvements have been with, um, the vision systems to look at the placement of the, ah, mushrooms and also the gripper. Um, on the slide 27, slide 28, this is, um, a laser scanner to scan the mushrooms, to look at 'em for their quality, um, and size. Um, when they're scanning, they're determining the average size of the mushroom to then be able to use that for sorting. Um, the accuracy is to one thousandth of a, um, millimetre, so that will allow us to have more accurate, um, packaging.

15 When the mushrooms are more even in the end packaging, it also makes for better presentation. Um, there's also some scanning that we're, I haven't got in this presentation, but that we've been doing some work on currently. Where, um, we believe we will be able to, actually, look through a mushroom and the advantage of looking through the mushroom is, one, to be able to see if the stem has a – a black stem, which is caused by a – a bacterial rot. And also, to look at the colour of the gills. When you – a mushroom is very young, it has very, very pale gills, just a very pale pink, and then just before they start opening up, they get darker and darker, and then once they open up to being a flat, they're actually, um, like a dark brown. And it will be able to give us an indication of the, um, growth cycle of the mushroom. Rather than just looking at the mushroom and harvesting it on its size, we'll be able to harvest it based on its maturity.

25 This is just the 3D camera being used to, um, look at where the mushrooms are in the punnet so as to determine where to, um, place the next mushroom in the punnet. In the past, we were doing that basically on a grid pattern and cause mushrooms are fairly round in their shape, they would move in the punnet, and then the – the hand would, um, put it into the wrong position, and then you wouldn't have a – a nice presented, um, pre-pack. So – just the robot. I think this is a video. Um, this is just where the stems are being cut, and then placing it into the end packaging. So that's slide 31. One of the things that's a little bit different about the Australian market to the European market, the European market is predominantly on – in pre-packs, around about – in excess of 90 per cent, where the Australian market is around about 35 fifty-fifty of pre-packs and, ah, loose product. So to go to, um, slide 32, um, we're looking at being able to, um, do punnets and punnets, boxes and crates.

40 Um, this one on slide 33 is a, ah – a packing, um, robot, so as to do pre-packs, and the next one on, um, slide 34 is able to do, um, bulk boxes or pre-packs, um, in trays. So that's something that we think we will be developing further. Um, it's not something that's very popular in, um, other parts of the world, but Australia is quite unique in that, um, 50 per cent is still sold loose, but we – as an industry, we see that as one of our highest risks in relation to, um, food safety and tampering. So that's 45 why we want to have a system where we can move to all, um, punneted product very quickly if the market, um, demanded that.

The future upgrades, um, the stem cutting, weighing, filling, um, third quality checking and all of the software possibilities, um, that go with that. Um, as I've said before, um, we want to direct the pickers of what mushrooms to harvest, but it's also something to then be able to scan over the – the beds and then determine, “Well, did the pickers correct – correctly pick the right mushrooms?”, and also be able to scan over the beds in the morning before the, um – the work staff turn up and be able to determine to a fairly accuracy of how – what mushrooms will be available for market for that day.

10 So we, um – we currently do that by people, um, doing estimates, but we're wanting to get, um, more detailed in doing that. So then we can go to the Woolworths, Coles, Aldis and be able to, um, tell them at 8 o'clock in the morning that we're going to have all of their order, where at the moment we probably don't confirm that until 4 pm in the afternoon. So it's also about cutting the, um, stems. At the moment, um, mushrooms are only, um, cut singularly, and the height of the stem is optimal is half the height of the cap of the mushroom. Um, we're going to also look at possibly, um, twin cutting, so we just cut the dirt off the bottom, and then cut it again so as to make the stem the – the right length for presentation for the market, but then the stem will be used for other purposes, like soups and, um, burger material. Just some pictures on slide 37. Process robot picking, slide 38, talking about the scanning, scan information, um, packing and placing.

This is, um, a little bit of the 3D work that's, um, being done with, um, scanning the beds so as to determine what mushrooms, um, to be harvested, but also with it, they're – determine that by scanning the mushroom and seeing actually how the mushroom grows from a small stage from when it's like 2 millimetres and grows, they then can, um, have a better determination of how a robot would pick it off the bed, because they can – can determine what way a mushroom will break out of the bed without taking, um, the casing soil, um, with it. So this is a bit of the scanning information, looking at mushroom size as they're growing, and, um, also the – how fast they are growing. The top one is the grow map, um, in the different colours determines which mushrooms are growing quicker. So that would be used to determine, once they're getting close to their, um, end of their maturity, when they would start opening up, 'cause, um, they would start slowing up in their growth, um, and then we've got, um, mushroom diameter on the very bottom of the slide on slide 40.

Um, robot picking and placing, um, this is a little bit of work, um, that's been done with scanning the mushrooms and then having a robot, um, pick the mushroom off the beds. As you can see, the mushrooms are fairly sparse on this, but, um, you always need to start somewhere. You can probably – I don't know whether you would have picked up, but sometimes the, um, robotic hand would push the hand forward; other times it would pull it back. So that's been determined during the growing process of how that mushroom is probably, um, best to be able to be harvested.

And that's pretty much my presentation. I guess one of the only other things is, um, with the, um, placement and direction of the farm, um, it's north facing for, um, solar access, and the north facing, um, rooves have been increased to a five-degree pitch, um, because the, um, various companies who produce solar panels, um, have told us
5 that they'd only warrant solar panels once they're at an angle of five degrees or higher. So, um, hence the rooves north facing are at a five-degree pitch.

MR WAY: Fantastic. Thank you, David. I think at this time I might hand over to Snow, just to see if, um, he has any, I guess, questions – or that he has after that.
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PROF BARLOW: Ah, thank you, David, and thank you, Greg. Yes. That's fascinating to see where you are headed to in the, ah – the mushroom industry and the efficiencies. Um, just a – a question – I know it's not the – but your carbon neutrality you're trying to reach through solar panels, are you, and decrease – well,
15 you know, both ways, generating your own power but also decreasing usage; is that the way you're trying to do it, David?

MR TOLSON: Yes. That's correct, and also with the substrate, um, drying, um, process at the, um, rear of the, um – the facility, it will allow us to reduce the, ah,
20 moisture level of the, um, spent mushroom compost, and with that, um, our goal is to be able to then, um – at the moment, we buy our straw from farmers, um, and just pay a – a dollar per tonne for straw and pay for cartage, et cetera, um, but we see in the future where we want to be, then, um, more integrated into the, um, farming, um, sector, where we will give them an amount of nitrogen back, um, for the, um, amount
25 of, um, straw that we take. So it's about putting the, um, spent mushroom compost, um, back into the, um, ground as well.

PROF BARLOW: Thank you. Ah, look, I have some other questions, David, but I have been talking with, ah, Michael, who's assisting us on this. Ah, I thought it was
30 probably better that Michael ask these questions, as you guys are face-to-face, and I might chip in as we go. So perhaps we'll turn them over to you, Michael.

MR WOODLAND: Sure. Okay. Thanks a lot for that, David. I've learned a lot about mushrooms in the last 45 minutes or so. It was very comprehensive. Just a
35 question on the substrate. You mentioned about the spent substrate and where that's stored. Can you just talk about that in terms of where that material – where it's stored, and how is it taken off the – the premises.

MR TOLSON: Okay. At the actual first stage of the, um, process, the spent mushroom compost will be pulled out and it will go directly into trucks and away
40 from site.

MR WOODLAND: Okay.

MR TOLSON: But, um, we do see, um, long term, um – I think it's proposed for in stage 3 that then we will, um, put it into the, um, rear of the building at the very end. They're, um – they're concrete tunnels with, um, aeration, um, so as to help dry the

substrate out, and the work that's being, um, done over in, um, Belgium, um, they're able to take the moisture. They, um, first take the, ah, casing soil of the top, the peat, and then that's re-used for other horticultural, um, activities, and the spent mushroom compost, um, is then dried in a matter of a two-week process from, um, 70 per cent
5 moisture down to around about under 40 per cent moisture.

MR WOODLAND: And how is that impact in terms of odour?

MR TOLSON: It – it doesn't create odour.
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MR WOODLAND: Right. So from the two-week drying process, is there less of an odour after that process?

MR TOLSON: Um, once – once it's, um, finished that two-week process, it's a
15 pretty inert product. Um, traditionally spent mushroom compost, when it comes out of a growing room and gets, um, say, tipped in a paddock, over a 12-month period it would, um, decrease in, um, its volume, um, but with, um, this process it then makes it – it actually makes it a little bit finer product and it's pretty inert at the end. It has – has very little odour associated - - -

MR WOODLAND: Okay.
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MR TOLSON: - - - with it at all.

MR WOODLAND: But the current proposal would be seeking to – you mentioned
25 that the spent mushroom compost would be placed on trucks - - -

MR TOLSON: Yeah.

MR WOODLAND: - - - taken directly out – out of the premises.
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MR TOLSON: That's right.

MR WOODLAND: Okay.
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MR TOLSON: Yes.

MR HALL: If I could just – just ask, David, what percentage of your mushroom
40 would be – would be taken off-site, and what would be kept in that – in that area, like, in terms of percentage wise?

MR TOLSON: I think it's going to be a question in relation to, um, the amount of
45 progress we have with farmers and doing further research into advantages. There's been some, um, small-scale trials that have been done with spreading of spent mushroom compost for, um, wheat production and, um, let's say anecdotally at the moment, um, there's indications of increases of around about 20 to 25 per cent, ah,

yield increase, um, per hectare. But, um, they've been very small trials that have been done - - -

MR WOODLAND: Mmhmm.

5

MR TOLSON: - - - ah, many years ago, and that's something that, um, I think we'll be wanting to investigate further.

MR WOODLAND: Yeah. Okay. I - - -

10

MR TOLSON: But, ah, at the moment we have all of our spent mushroom compost sold. It's sold before it even goes out - out of the farm.

MR WOODLAND: I guess the context of my questions is around the potential odour impacts on neighbouring properties - - -

15

MR TOLSON: Mmm.

MR WOODLAND: - - - if there's truckloads of spent mushroom compost leaving the - the site, and is it - - -

20

MR TOLSON: No. No.

MR WOODLAND: - - - is that an issue?

25

MR TOLSON: Spent mushroom compost doesn't have a, really, odour associated with it.

MR WOODLAND: Okay. Thank you.

30

MR HALL: Not like a, um - - -

MR TOLSON: Yeah.

35

MR HALL: - - - a poultry farm like the

MR TOLSON: Not like poultry farm or a phase 1, um, composting facility.

MR WOODLAND: Okay.

40

MR TOLSON: Um - - -

MR WOODLAND: Thank you. Ah, the second question I had was around the vegetation mounds.

45

MR HALL: Yep.

MR WOODLAND: Ah, could you just talk a bit about that and how they work with the APZs?

5 MR HALL: All right. Well, with the – the – the main – the main, um, I guess, bushfire, um, risk is coming from this – this area here - - -

MR WOODLAND: Mmhmm.

10 MR HALL: - - - which is – if you look at the vegeta - - -

MR TOLSON: The south-western - - -

MR HALL: South-western part, I think - - -

15 MR WOODLAND: Yes.

MR HALL: - - - is where most of it comes from. So the actual vegetation mound – the mound – there is – there are mounds at the – um, the northern boundary - - -

20 MR WOODLAND: Yes.

MR HALL: - - - which acts as a – a landscape mound as well as our – um, our mound for our waste – wastewater disposal.

25 MR WOODLAND: Mmhmm.

MR HALL: It's so big that we have an area that's adequate for the wastewater, and then we have 100 per cent reserve, so that if one mound fails, we've got a – an - - -

30 MR TOLSON: Mmm.

MR HALL: - - - amount exactly the same, so - - -

35 MR WOODLAND: Mmhmm.

MR HALL: - - - that that adequately more than covers the likely, um, generation of wastewater - - -

40 MR WOODLAND: Mmhmm.

MR HALL: - - - that will be generated from the site. And this waste is just the – the – the – from the toilets and that.

45 MR WOODLAND: Mmhmm.

MR HALL: In terms of all the other water that comes off, that goes into the dam - - -

MR WOODLAND: Mmhmm.

MR HALL: - - - and - um, and gets re - um - um, gets treated, and then gets reused. Same way with the - um, the roof water.

5

MR WOODLAND: Mmhmm.

MR HALL: The roof water is used - and use that for washing down. So, again, it's trying to make it as - as - I guess, as, um, sustainable - - -

10

MR TOLSON: Sustainable.

MR HALL: - - - as we can - - -

15

MR WOODLAND: Mmhmm.

MR HALL: - - - by reducing the amount of, ah, water that we've got to pull - or Dave's got to pull off - - -

20

MR TOLSON: Mmhmm.

MR HALL: - - - from the - um, the Sydney water main - 'cause you do have access - - -

25

MR TOLSON: Yeah.

MR HALL: - - - to - to main water. But - - -

30

MR WOODLAND: Yes.

MR HALL: - - - to try and reduce that - that - - -

MR WOODLAND: Okay.

35

MR HALL: - - - impact, or that quantity, the - on - on those systems. The - there's a land - there is a mound at the - um, at the front of the site - and some of these mounds are also for an acoustic - an acoustic, um, reason as well.

40

MR WOODLAND: Mmhmm.

MR HALL: So it's mainly for there and there. In terms of mounds or any landscaping along that southern boundary, um, there's nothing proposed there.

45

MR WOODLAND: Mmhmm.

MR HALL: We did talk to the bushfire consultant, and I think with our documentation there was a - um, a letter that he provided which basically said he'd

rather not put any landscaping there because that then has implications, from a bushfire point of view, of - - -

MR WOODLAND: Mmhmm.

5

MR HALL: - - - putting more vegetation in that area to get your - - -

MR TOLSON: Mmm. Mmm.

10 MR HALL: - - - asset protection zones.

MR WOODLAND: Okay.

15 MR TOLSON: With the current consent, um, ah, there's a, um, point where, um, the neighbours on the, um, northern side, if they, um, want us to plant any, um, ah, native trees along their boundaries, um, we're happy to do that, um, at our cost.

MR WOODLAND: And that's not impacted by the APZs?

20 MR TOLSON: No.

MR WOODLAND: Okay.

25 MR HALL: Because that's pretty much a clear – a cleared area there.

PROF BARLOW: Ah, just – just a question that, ah - - -

MR HALL: That's managed land up there.

30 MR WAY: Sorry. You had a cre – question, sir?

35 PROF BARLOW: Michael and Dave – David – sorry. Um, just a question on that, ah., David Tolson. Um, is – has your landscape consultant given any consideration to the specie – sorta, fire-retardant species, um, on those mounds? Ah, you know, there are variations in, ah, even native vegetation in flammability that could – you know, could help you, if – if that happened.

MR TOLSON: Yeah.

40 PROF BARLOW: Ah - - -

45 MR TOLSON: I'd have to say, I'd need to go back and study through the report, but I think there is – um, there may be some, um, differences in the various species and their, um, I guess, ignition, um, capacity.

PROF BARLOW: Yeah. Yeah.

MR WOODLAND: Snow, I think draft condition 36 from the department talks to that issue, in talking about integrated bushfire and vegetation management.

MR HALL: Yeah.

5

MR WOODLAND: Um, by maintain the 25-metre APZ and:

...appropriate landscaping to screen and soften the appearance of the structure, um, can be – both be provided.

10

So I guess the word “appropriate landscaping” - - -

MR TOLSON: Yeah.

15

MR WOODLAND: - - - that would take that into account, you would think.

MR HALL: Mmm.

MR WOODLAND: Ah - - -

20

PROF BARLOW: Thank you. Go ahead, ah, Michael.

MR WOODLAND: I only have two – two more questions. One was around the acoustic management during the construction phase.

25

MR HALL: All right.

MR WOODLAND: Can you take us through - - -

30

MR HALL: Yeah. Well, again, I’ll just - - -

MR WOODLAND: - - - the proposal?

35

MR HALL: - - - um, refer – I’ll just grab – if I can find it. We had a, um, statement of commitments - - -

MR WOODLAND: Mmhmm. Mmhmm.

MR HALL: - - - I think, which sorta talked about the, um - - -

40

MR TOLSON: That one.

MR HALL: - - - construction – ah, no, it was – thanks – the – the – I think we did a statement of commitments which sorta identified what we were gonna do during the, um – just see if I have – I thought I had it printed out here.

45

MR WOODLAND: I’ve got it here on the screen, if that helps.

MR HALL: Which – yeah, which talks about, um – here we go – which talks about, um, certainly, um, noise, management of traffic, minimal visual impacts. Ah, I thought there was one in there about – specifically about the noise of operational noise, and there was also one there, I thought, of construction noise as well. But
5 basically what – what will happen is that the site will only operate during – like, in terms of construction, during the normal operating hours.

MR WOODLAND: Mmhmm.

10 MR HALL: So it won't be, sort of, 24 hours. It'll only – the – we – construction might start from 7 and finish by 5 o'clock. Um, the machineries that will be used, we'll make sure that, certainly, they are suitably, um – um, got mufflers on, and work with tho – with those things. And – and at the same time, too, if – that if there is a
15 place that, you know, we can look at - - -

MR WOODLAND: Mmm.

MR HALL: - - - resolving that by changing a little bit of the operation. But - - -
20

MR TOLSON: Mmm.

MR HALL: - - - again, it's only short-term. The – most of the noise, I think, will occur in that first stage when – with the fill material being - - -
25

MR TOLSON: Yeah.

MR HALL: - - - brought in.

30 MR WOODLAND: Mmm.

MR HALL: Once they start construction, there – there won't be a great deal of – of noise with that.

35 MR WOODLAND: Okay.

MR TOLSON: And there wasn't going to be a – a real high level of truck movements. Um, I think on one of the, ah, present – or something from, I think, Penrith council, there – there was, like, truck movements where it was, like, one
40 truck a minute or something, where - - -

MR WOODLAND: Mmhmm.

MR TOLSON: - - - where, ah, we really feel it'll be more like around about 6 to 10
45 trucks an hour - - -

MR WOODLAND: Mmhmm.

MR TOLSON: - - - movement, being truck and dogs.

MR HALL: And the actual acoustic report does talk about both - - -

5 MR TOLSON: Yeah, it does.

MR HALL: - - - operational and construction - - -

MR WOODLAND: Yeah.

10

MR HALL: - - - and makes recommendations for both of them, so – and, again, in the statements there, we talked about – that’ll be in accordance with the requirements listed in the – I think that’s – um, I think it’s in that statement of, um, ah, commitments. It’s, ah, minimise operational noise – and I think, when they talk
15 operational noise – then implement the following noise pro – and they talk about op – um, construction as well in there, too.

MR WOODLAND: Mmhmm. Okay.

20 MR HALL: Okay.

MR WOODLAND: Thank you.

MR TOLSON: There’s a fair distance, also, um, from the construction site to the
25 residents as well.

MR HALL: To the – to – to – to the – to the north.

MR TOLSON: To the north.

30

MR WOODLAND: Yes.

MR WOODLAND: Okay. Just talking about your neighbouring properties, it’s a
35 large building - - -

35

MR TOLSON: Mmm.

MR WOODLAND: - - - um, obviously, and, ah, have you given any thought or can
40 you talk about the materials that are going to be used in the construction of the building, in particular the roof, in terms of potential reflectivity issues?

40

MR TOLSON: Okay. Well, on the northern side, which is going to be most, um, viewed from that, ah – the northern boundary, the vast, um, majority of that roof long-term, um, will be solar panels.

45

MR WOODLAND: Right. Okay.

MR TOLSON: So to be able to change the reflectivity of solar panels is - - -

MR WOODLAND: Yes.

5 MR TOLSON: - - - beyond - - -

MR WOODLAND: Yes.

10 MR TOLSON: - - - our control.

MR HALL: And the other thing too to bear in mind that when the original approval – because the original approval had that building, basically, a higher building - - -

15 MR WOODLAND: Yes.

MR HALL: - - - but going along that northern boundary. So in terms of the visual side from what those people on the northern side see, there's no change. In actual fact, it would be a reduction, because the actual height of the - - -

20 MR WOODLAND: Mmm.

MR HALL: - - - the building has – has been, um, significantly reduced down from about 9 metres to about four and a half or something.

25 MR TOLSON: I think it's – yeah. Nine or 11 metres - - -

MR WOODLAND: Mmm.

30 MR HALL: Yeah.

MR TOLSON: - - - down to four and a half, but that, um, external northern wall, that can be done in a, um – a green colour - - -

35 MR WOODLAND: Okay.

MR TOLSON: - - - and with the roof being only at a five-degree pitch, it won't have any reflectivity back to the north, because of the, um, low angle of it.

40 MR WOODLAND: Okay. Last question I had, um, and Snow might have some others, but – and David – the department has placed its draft conditions on the web, which no doubt you've looked at. Do you have any questions or commentary around those conditions, the additional conditions?

45 MR TOLSON: No.

MR WOODLAND: Okay. Thank you. That's all from me. Snow?

PROF BARLOW: Um, well, thank you, David and Greg, for coming and sharing that with us. Ah, you know, I'm – I should have said at the beginning, um, that I can see why, ah, you know, some of this material is commercial-in-confidence and we respect that, and we'll – David Way will talk to you about how we're going to do
5 that before you leave today, ah, but in general, um, you have answered most of the questions that Michael has put to you. We – we felt, ah, that glare was, you know, a potential issue, but I accept that, um – one, that the colouring of that north-facing wall and, indeed, um, both the angle of the roof, ah, but also, ah, solar panels are – are usually a – a darker colour, because of their absorptive capacities.

10 Um, that probably won't be a glare problem, and secondly, the other issue, which again, we've dealt with, is the issue of odour, ah, and – and noise on site – different issues, but, ah, the odour issue as it appears that you're going to – um, one, the nature of the spent compost, but, two, it's going to be all internal to your building. So in
15 view of the density of the, ah, residences around you, it shouldn't really be a problem. Ah, so I don't really have any more questions. I don't know whether, ah, David and Michael, you have any more questions?

MR WAY: No.

20

MR WOODLAND: Ah, no.

PROF BARLOW: Yeah. Well, thank you. Well, ah, David, you probably should end off, ah, speaking face-to-face with David Tolson and Greg, um, but thank you
25 for your time today and, ah, sharing with this. It's quite an exciting development.

MR TOLSON: Yeah. We're – we're – we're no – no different to, I think, the milk industry. We need to produce our – our, um, product for a lower cost every year. Um, unfortunately we've got predominately three customers, um, hopefully another
30 one coming into Australia, um, to make a bit more competition, but, um, we – we just need to become more and more efficient every year, and the way of doing that for ourselves is, um, improving labour efficiency and, um, energy efficiency.

PROF BARLOW: Yeah. Over to you, David Way.

35

MR WAY: Fantastic. I think with that, um, I might bring the meeting to a close. So, um, on that note I'm going to disconnect you from the phone, Snow. We'll be in touch quite soon. Um, have a – have a good afternoon.

40 PROF BARLOW: Thank you very much.

MR WAY: Yes.

MR TOLSON: Thank you.

45

MR HALL: Thank you.

MR TOLSON: Thank you.

PROF BARLOW: Thank you all. Bye.

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MATTER ADJOURNED at 11.07 am INDEFINITELY