

TRANSCRIPT OF PROCEEDINGS

O/N 2885

FEDERAL COURT OF AUSTRALIA

TASMANIA DISTRICT REGISTRY

MARSHALL J

No TAD 17 of 2005

ROBERT BROWN

and

FORESTRY TASMANIA and OTHERS

HOBART

10.00 AM, MONDAY, 15 MAY 2006

Continued from 12.5.06

DAY TWENTY SEVEN

**MS D. MORTIMER SC appears for the applicant,
with MR P. TREE SC and MR T. MITCHELL
MR D. GUNSON SC appears for first respondent, Forestry Tasmania,
with MR A. ABBOTT and MR C. GUNSON
MR N. O'BRYAN SC appears for the Commonwealth,
with MR A. BROADFOOT and MR I. TEMBY
MR P. TURNER appears for the State of Tasmania,
with MS K. GANLEY**

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HIS HONOUR: Ms Mortimer?

5 MS MORTIMER: If your Honour pleases, I am afraid we are not quite in a position to give your Honour some suggested dates but we are making progress and I have sent the latest proposal to my learned friend who, no doubt, is going to consider it as soon as he can and I am sure through the course of today we will be able to inform you about that.

10 HIS HONOUR: Yes. Thank you.

MS MORTIMER: Pardon me a moment. That is the only matter I have to raise, your Honour.

15 HIS HONOUR: Thank you. Mr Gunson?

MR C. GUNSON: If your Honour please, I call Luke Ellis. Your Honour will require Court book 3.

20 HIS HONOUR: Yes, I have that. Page 780?

MR C. GUNSON: 780, yes, your Honour.

<LUKE ELLIS, SWORN

[10.02am]

<EXAMINATION-IN-CHIEF BY MR C. GUNSON

5

HIS HONOUR: Yes, Mr Gunson?

MR C. GUNSON: Your name is Luke Ellis?---It is.

10

And what is your residential address?---63 Belar Street, Howrah.

And you are employed by Forestry Tasmania?---I am.

15

And you are employed as a resource analyst in the planning branch of Forestry Tasmania?---I am, that's correct.

I wonder if Mr Ellis could be shown Court book 3 at page 780, please?

20

HIS HONOUR: Do you have that there, Mr Ellis?---I do. Thank you.

MR C. GUNSON: Is that a copy of an affidavit that you swore in these proceedings?---It is.

25

If your Honour please, I read the affidavit sworn by Mr Ellis on 21 November 2005.

HIS HONOUR: Yes. Thank you, Mr Gunson.

30

MR C. GUNSON: And that concludes the evidence-in-chief for this witness.

HIS HONOUR: Thank you. Ms Mortimer?

35

<CROSS-EXAMINATION BY MS MORTIMER

[10.04am]

MS MORTIMER: If your Honour pleases.

40

Mr Ellis, you say in paragraph 8 of your affidavit that you were asked by Forestry Tasmania to provide a number of things. Was that request to you made in writing?---Except for the evidence I've already provided earlier - I think a couple of months ago - it was all verbal.

45

I am sorry. You say except for the evidence you have earlier provided?---Yes, we were asked to provide some information via John McDonald, which I provided to him, but except for the information I've already given it's all been verbal information.

5 So the information - when you say in paragraph 8, I have been asked by Forestry Tasmania to provide, are you saying that somebody just sat down in a meeting with you and asked you to do those things and you took notes of what you had to do? Was that what happened?---Correct, yes.

10 All right. And when was that meeting?---There were several meetings. My affidavit was written in November last year, so it would have been around November 2005.

All right. And who was at that meeting? The one at which you took notes about what you had to do by way of a task to produce this affidavit?---Maree Yee would have been at that meeting, Tom Kelley would have been at that meeting.

15 Is that all, just the three of you?---I believe so.

20 And how long before - your affidavit is sworn on 21 November 2005, how long before that do you say the meeting was, approximately?---It would've been at least three weeks. As you can see, there are several pieces of evidence which I've - there are several pieces of models which I've produced which generally have a date. So they would have been preceding those dates.

25 All right. Now, you say in paragraph 8D(iv), if you look at page 783 of the Court book?---I've got that.

30 You have got that. Now, you say that you supplied some results to Mr Mooney, Ms Thompson, and Dr Reed - can Mr Ellis be shown book 4, please? I just want to take you to Ms Thompson's affidavit, Mr Ellis. Now, if you have a look at page 1796, please? Are we to understand when you say that you performed some analysis for Ms Thompson it is what she refers to at paragraph 53 and 54? It might help you to look at the very last page in that Court book which is the exhibit?---Yes.

35 That is the analysis?---Yes.

40 And then you say that - so the table we see at 1924 - the last page of that Court book, did you also supply that to Mr Mooney, did you?---I'm sorry, I'd have to have a look.

45 Okay. So the comparison is between what is page 783 of your affidavit in D(iv) and what is on page 1924, Mr Ellis, and I am asking you whether what is on 1924 is what you supplied to Mr Mooney?---Yes, I was just comparing it with the one in my affidavit. Yes.

It is. And is the thing on 1924 also what you supplied to Dr Reed, is it?---Yes.

All right. And did you also - were you also involved in the preparation of a map with Mr Von Minden for Mr Mooney?---I would have to look at that map.

5 All right. Well, I think my learned friend has a copy of that because it has been, I think, MFI-ed but not tendered yet, it is a very large one. Has it been tendered?

MR C. GUNSON: No, it hasn't yet.

10 MS MORTIMER: No.

Can you just have a look at that, Mr Ellis? Is that the map that you were involved in preparing for Mr Mooney with Mr Von Minden?---Mr Von Minden prepared this map, I did not.

15 You didn't have anything to do with it?---I've seen this map, but I did not in any way help in its preparation.

20 All right. But you see, as I understand it, in relation to almost all of the maps which are exhibited to your affidavit it is Mr Von Minden that has actually prepared them; isn't that right?---That's correct.

25 All right. And isn't it the case that the process of instruction and supervision that you engaged in with Mr Von Minden in relation to all the maps that are exhibited to your affidavit is the same process that you engaged in, in relation to that map?---That's correct.

30 Thank you. Now, your Honour, it might be convenient now to inquire if my learned friend, whether there is still an issue about the tender of that map because we have been waiting a few days to have the answer to that question?

35 MR C. GUNSON: Your Honour, the issue is not so much in relation to tender but rather inspection. You might recall that the State of Tasmania sought orders some time ago in relation to it being notified of any application for inspection. This map and a number of other exhibits that have been tendered which should properly be addressed also in relation to this issue does disclose the location of eagle nests with some precision and the issue is really one of inspection or confidentiality in relation to it.

40 HIS HONOUR: Is it a post-hearing inspection issue?

MR C. GUNSON: Pardon?

HIS HONOUR: It is a post-hearing inspection issue?

45 MR C. GUNSON: Yes, it is.

HIS HONOUR: Well, that is covered by the order I have made and insofar as it is not a post-hearing matter, any application to view the exhibit would have to be made to the Court and I would inform the parties and interveners of the making of the application.

5

MR C. GUNSON: Yes.

HIS HONOUR: And invite submissions.

10 MR C. GUNSON: Yes. I simply raise it at this point in time, that there is no objection to its tender but the issue is confidentiality or inspection of the document, particularly in relation to the precise location of eagle nests.

15 HIS HONOUR: All right. Well, that is all covered by the processes we have set in train.

MR C. GUNSON: Yes, it is.

HIS HONOUR: Yes.

20

MS MORTIMER: Thank you.

HIS HONOUR: I am told BQ was reserved for it unless something else became BQ?

25

MR TREE: No, I have no exhibit marked as BQ?

MS MORTIMER: Yes, that sounds right to us, your Honour.

30 HIS HONOUR: Right. And it won't sound strange when the next one is BV?

EXHIBIT #BQ MAP PREPARED FOR MR MOONEY

35

MS MORTIMER: Now, Mr Ellis, can you look at page 784 of your affidavit please? You say in paragraph E(v) on that page that you also supplied results of the tenure analysis and maps of your swift parrot model to Mr Shields - Dr Shields? When did you do that, do you remember?---It would have been late
40 November 2005.

And did you do that by email?---I provided that information to Maree Yee and she forwarded it on - that information on to Dr Shields.

45 All right, so you don't know how it got to Dr Shields?---I do not.

And what are we to understand that to be a reference to? Can you identify? The tenure analysis is the table, is it, that we find at - let's see, where do we find the tenure analysis that you - - - It's actually an attachment.

5 Yes?---And it is called - okay, LE5 it's called.

All right. So you supplied LE5 to Dr Shields - well, through Dr Yee?---Yes, that's correct.

10 And the maps would be LE7 principally, is that right?---That's correct.

Do you know whether you supplied - or you supplied Dr Yee to give to him any other maps?---I did not.

15 And in relation to what you gave to Mr Meggs, which you talk about at the top of 785, that is the same two kinds of pieces of information, is it? It is the tenure analysis which is table 7?---That's correct.

And it is the map which is LE8, is that right?---Yes.

20

Thank you. Now, did anybody - I withdraw that. Did you draft this affidavit yourself?---I did.

25 Did you have any assistance from anyone?---I got some written feedback from Maree Yee, John McDonald and John Hickey.

John Hickey, was that the last one?---Yes.

30 All right. And did that feedback come to you by the way of handwritten comments on a draft or - - -?---It did.

And do you still have copies of those drafts?---I don't, I threw them out at the time, November 2005.

35 All right?---After I'd made any changes necessary.

And why did you throw them out, because you didn't think you needed to keep them?---Correct.

40 Did you receive any comments by email?---I did not.

And did you help anybody else with preparation of their affidavit for these proceedings?---I did not.

45 What about Mr Kelley?---We discussed them, for sure.

All right, so you discussed what was going to go into his affidavit and what was going to go into yours in terms of dividing up what was appropriate for each, was it?---Correct.

5 Can you go to paragraph 20, please, on page 787? Now, what you set out at paragraph 20, as I understand it, is similar to what we see in subsequent paragraphs of your affidavit and it tells his Honour the sources in terms of the data that you used to create some of these maps; correct?---Correct.

10 Now, we might just go through those. Each of these is a layer of information in digital form stored on a computer; correct?---Correct.

And they come from different sources, that is they are not all created originally by Forestry Tasmania?---Correct.

15 And in relation to C, the provisional coupe layer, what was the date of the layer that you used?---It would have been November 2005, so when I first produced that information it would have come from a live data set, so the data of that layer would have been November 2005.

20 All right, and to your knowledge how often is that layer updated?---Oh, daily.

And why is that?---Operations that were carried out, the field staff update, correct, adjust boundaries. It's a live data set.

25 Because this, as I understand it, is the data set that indicates the planned - the coupes that are planned to be logged. Now, is that from year one out or only from year four out?---This data set has all provisional coupe boundaries and therefore has all coupes in it.

30 All right, so if we were sitting here today talking about what was on that data layer as we are sitting here today in Forestry Tasmania, it would have all provisional coupling from 15 May 2006 onwards that was planned; is that right?---Yes.

35 And so can you just explain to me please, how it gets changed? As a coupe is logged it is taken off the provisional coupling system, is that what you mean?---No, no. A coupe, provisional coupe is both post and pre harvest so it remains on the system. All that would happen is if some boundary change
40 happened through harvesting, the boundary might be refined or changed or deleted, coupes might be merged together, so all coupes remain on the system, so it's updated prior to a harvesting operation. Generally there's some field assessment carried out and a provisional coupe is edited prior to harvesting,
45 then post harvesting after a survey - a GPS survey has been carried out, then an updated boundary would be put back into the provisional coupe layer.

All right, so that layer tells you not only what is planned for harvest but what has in fact been harvested; is that right?---Yes, in a rough sense. It's only a provisional layer.

5 Well, that is what I am trying to understand, Mr Ellis. In relation to things that have become fact because a coupe has actually been harvested, do the boundaries on that layer reflect what has actually been harvested or not?---Yes, most of the time. So, yes, that is the intended layer.

10 All right, so the layer is adjusted - - -?---Yes.

- - - post harvest to reflect what has been harvested?---That's correct.

15 All right. And so to look at that layer ought be able to give you therefore a complete picture of every part of State forest in Tasmania that has been couped for harvesting?---Yes.

20 All right. Now, the RFAD, the RFA supplementary reserve layer, what is that?---It's the layer which was made during the TCFA, the Tasmanian Community Forest Agreement, so it shows the reserves that were created during the Tasmanian Community Forest Agreement.

25 Now, some of those - no, withdraw that. Does the layer show whether those reserves have, in fact, been implemented on the ground?---All the reserves in that layer were implemented on the ground.

And the layer shows that, does it?---It does.

30 Right. So that, for example, if you were to overlay that layer with the provisional coupe layer, there would be no overlap?---Oh yes, there would, simply because at the time we have to wait until provisional coupes were updated which takes some time so any overlap would only be - would be corrected but at that point in time, at November 2005, then there would be some overlaps but the intent would be then there would not be any overlaps.

35 All right. Now the next data set, VEG '04, Tasmanian Regional Forest Agreement Forest Communities, 1996. What is that?---That is the vegetational layer created during the RFA.

40 Now, that is the vegetation layer that is used by Forestry Tasmania in determining what parts of a State forest might be, for example, suitable habitat for a species? And when you say that it is corrected for plantation conversion until 2004, what does that mean?---Any plantation planted between 1996 and 2004 has been removed from the layer, so it's an accurate representation, or a
45 better representation of the vegetation, or native vegetation.

Yes. So that is the point, Mr Ellis, is it, that it is intended to be a representation of native vegetation and areas that have now been converted to plantation are therefore removed from it; is that right?---That's correct.

5 And they are shown in the layer that is an F; is that right?---On Forestry Tasmania land, yes.

Now, can you go to table 1 over the page, please, page 788, and this is one of your tenure analysis documents; is that right?---Yes.

10

And you talk there of - the entry for the fourth line down is, "State forest couped." Now, that is a reference to what is displayed on the provisional couping layer that you have just given evidence about; is that right?---That's correct.

15

All right. Now, you have shown in relation to that the percentage of the Wielangta Forest block as 10 per cent. If you had just looked at what was the percentage of native forest that was couped, State native forest that was couped, not taking account, for example, private land - no, I withdraw that. If you had done a different exercise, Mr Ellis, and looked at how much of native forest was couped, you would have ended up with a much larger percentage; correct?---Larger percentage of?

20

Of the total?---If I just looked at native forest coupes, sure.

25

Yes?---Yes.

You didn't think that might be a more significant exercise for the purposes of this case?---I did not.

30

Why not?---You have to look at the whole picture. I mean, land, or State forest, or whatever is made up of many different types of land, and only looking at one sub-category, didn't look at the whole picture in this case. We were looking at the types of forested land in the Wielangta area, and only limiting it to State forest couped is discounting lots of other land, both within our - what State forest have in other tenures. I didn't think it was appropriate.

35

That is so, Mr Ellis, but this is a case about threatened species on native forest controlled by the State, so why didn't you think it might be more appropriate to show a percentage that reflected how much of that kind of land was couped up?---I have certainly shown what is couped up in the block, and the purpose of this analysis was just to show the percentage break down of the forest within those different categories, so I definitely - that's why I included private land, because it's a valid category. And, yes.

40

45

All right. But you are aware that this case has got nothing to do with private land, and you were aware of that when you drew this table, weren't you?---That's correct.

Can you go to page 790, please? You say in paragraph 30 there - this is where you start talking - no, I will withdraw that and start with a more general question. As I understand it, Mr Ellis, what we see in your affidavit from
5 about paragraph 30 onwards, is the process that you went through for each of the species with which this case is concerned; correct?---That's correct.

And what you did for each of them was that you describe how you went about constructing a map that shows their potential habitat; correct?---That's correct.
10 Yes, I went through a series of steps both from analysis and maps for each one, yes.

And then you also describe a tenure analysis in relation to each of the species; correct?---Correct.
15

And you also do this exercise about looking at around - no, I withdraw that. You only did that for eagles. And then for eagles you do two extra things. You talk about roading and you talk about totals that are reserved around known nests?---That's correct.
20

Now, so far as you know, based on your experience with Forestry Tasmania, had a wedge-tailed eagle potential nesting habitat model ever been created for Wielangta before you did it?---No. As far as I'm aware, no.

25 And was it you that chose to use the criteria from the Melbourne University PVA analysis?---It was not.

Who asked you to choose that?---I was instructed by Maree Yee to use that.

30 And in terms of the rule set that you talk about in paragraph 31, who told you what to put in that rule set?---As I - yes, Maree, Maree Yee.

Because, Mr Ellis, and I don't mean this disrespectfully, but you don't have any expertise in relation to any of these species, do you?---Correct.
35

And so you rely on other people to provide you with information to construct your rule sets; correct?---Absolutely, yes.

All right. And so it was Maree Yee that provided you with the three parts of the rule set in paragraph 31?---Yes.
40

And did you discuss with her, or did she discuss with you whether you ought to put in active nests as a parameter into that?---To the best of my memory I do not remember discussing that.
45

Do you agree with me that putting in active nests might give a more accurate picture of the best nesting habitat, because that shows you what the birds are actually using?---That's probably out of my area of expertise.

All right. And do you remember whether you had any discussions with Ms Yee or anyone else about whether you ought to include disturbance as a parameter?---Had no discussions on that.

5

All right. So when you are talking about the matters that went in to your rule set, that is, slope, aspect and mature eucalypt forest types greater than 27 metres, what we see as a result of the application of that rule set is really a theoretically suitable forest type; do you agree with that?---Yes.

10

Now, I want to ask you about what you mean in paragraph 32, and for that purpose you need to also turn up Mr Kelley's affidavit, which starts at page 1121 of the Court book, and goes - but the part I want you to look at is at 1132. And what I want to ask you about is what classes went into the definition that you talk about in paragraph 32, but let us just firstly have a look at page 1132. Now, you see those tables there, Mr Ellis?---Yes.

15

You are familiar with the information in those tables?---I am.

20

And they are extracts from the photo interpreted layer of the Forestry Tasmania data base, aren't they?---That's correct.

The thing that is called the PI type, by acronym?---That's correct.

25

And what they show are the way that within that data base eucalypts are classified; correct? Or eucalypt forest is classified?---Yes. A little bit broader than eucalypt forest. That's - yes, also.

Yes. You are right about that?---Yes.

30

But for the purposes of what we are looking at there?---Yes, that's correct.

All right. And they are - and what goes into the classification, if we can just run through the things that go into the classification, it is firstly the height of the tree; correct?---Yes. There is height there, yes.

35

What is called the crown density?---Correct.

Now, what does that mean?---That's the - if you are looking from above it's the - how much, I guess, the crown has covered the surface, so if it's - if you are looking down from above and it is 80 per cent crown cover, then you are only going see 10 per cent of the ground, theoretically there's nothing underneath, so it's the percent of space in the sky that the crowns take up.

40

Right. So if you have got a crown density of five per cent, and you are looking down on it, you have only a five per cent cover - - -?---That's right.

45

- - - and 95 per cent you can see through. Is that the way the percentage is worked?---Of that eucalypt type, yes.

5 All right. And that is over - I withdraw that. The area over which that percentage is taken, how is that fixed? I mean, five per cent of what? Of what you can see on what?---The area it's taken over depends on the - it's sort of - the PI typists, people who make this information, look at a section of forest, and they try and find a similar section of forest, so it's within the PI type boundary that that assessment is made. So if that assessment is made over a
10 200 square patch, then that's what that five per cent assessment is based on.

Now, do you know the area over which these assessments are made for the purpose of this data base?---Do I know intimately the area, no.

15 Well, how does a reader - I withdraw that. How does somebody who has to use this information decide what, for example, it's five per cent of?---Well, it depends on the classification rate. For instance, I think if I get your question right, on Tom Kelley's on page 1132, forest class 2118, it goes E2D.

20 Yes?---So in this case the D classification, so the E2 is the type of eucalypt and the D is then the crown density, that tells you it's the density of the E2 so it's the eucalypt preceding the density that it's the 5 per cent of. Is that your question?

25 Well, yes. See, what I am trying to understand, Mr Ellis, is how a person that is using this information, for example, to identify potential habitat, would understand these percentages so if a person is looking at this PI-type layer for Wielangta - - -?---Yes.

30 - - - and sees a classification for a particular area that says that the crown density in that area is 5 per cent - - -?---Yes.

- - - how does the user know where the 5 per cent might change to 20 per cent or 30 per cent? How does the user know that?---A couple of ways. One for
35 each - like the 5 per cent, there is a classification so it falls - I can't remember exactly, but say the forest type is with 20 to 5 per cent would be the variable, that is the crown density, so everything is classified, so 100 to 80 and 80 to 50 and so on and so forth; secondly, as a user of this data base you are aware that the 5 - the crown cover refers to specific elements in the PI-type information
40 and it can be categorised in many different ways and in this case, looking at Tom Kelley's page, it is always the preceding one to the density that it refers to, so in this case E2 is a mature eucalypt type and the density of that mature eucalypt type is type D so you have to understand the PI-type information to understand where the 5 per cent is coming from.

45 All right. So is it the case then that if a person was trying to use this information to decide whether a particular area was suitable habitat, let's say, for a swift parrot - - -?---Yes.

5 - - - that person would really have to know a little bit about the kinds of forest that a swift parrot uses in terms of, for example, canopy cover, to be able to select out of these classes the ones that might be habitat and the ones that might not?---Yes.

10 Now, in paragraph 32 you say that what you have used - this is page 791, but just keep your finger on the other page is you might, Mr Ellis, please - you say for the eagle you have used mature eucalypt forest greater than 27 metres. Now, that is because there is sufficient information about the eagle, as you understand it, to know that they need trees of a certain height; correct, or are you not able to answer that?---That's out of my field of expertise.

15 All right, but do you know of any other data base that gives you the height of eucalypts apart from the one that you used that is available for mapping?---I'm not aware of any.

20 What you then used, as I understand it, is forest that wholly or partially contain significant mature forest?---Mm hm.

Now, if you look back at the table in Mr Kelley's affidavit - - -?---You'll have to repeat the page, I'm sorry.

25 Yes. 1132, I am grateful to my learned friend. Although we don't see extracts of the classes reproduced there exactly, it is the case, isn't it, Mr Ellis, that there are classes within this PI-type layer that start with the words "significant mature forest"; that is that word "significant" appears as part of the class category in a lot of these classes, doesn't it?---Sorry, I'm just trying to recall.

30 Yes, sure?---Look, I'm not 100 per cent certain but associated with the PI table is certainly look-up tables and it may say that but I can't be 100 per cent confident.

35 All right. Well, why did you use the words "significant mature forest" in paragraph 32 if that wasn't the explanation?---It's inherent, I guess, in the data base if you use it.

That is what I am trying to get at, Mr Ellis - - -?--- I am - yes.

40 - - - that is a class within the data base, isn't it? The data base uses that phrase "significant mature forest"?---Yes. I'm not sure if it - as I said, I can't be 100 per cent certain but as a user of that data base I know that is the intent.

45 All right. And you didn't mean anything else by the use of it in paragraph 32 other than a kind of a cross-reference to what is in the data base?---No.

And just to make it absolutely clear, you didn't undertake some analysis of your own about what might be significant mature forest and what might not - - -?---Oh absolutely not.

5 No. Now, go to table 3, please, paragraph 34. You have got, in terms of the tenure analysis there for the eagle, you have got a category called State Forest Uncouped. What is that?---Well, we've already mentioned provisional couping so State forest is broken into several categories, one category is provisionally couped. There are formal reserves, there are informal reserves and the
10 remainder of State forest that is unreserved and is outside coupe - provisional coupes, is called uncouped.

All right, and do you have any understanding of what kind of forest falls into that category?---I do.

15 What I am getting at, Mr Ellis, is why isn't it couped? Do you have any understanding of that?---I do.

What is the explanation?---There are various explanations, for various reasons.
20 It could be uneconomic to road, the land could be too steep, it could be very rocky so there's re-gen problems, there are a variety of explanations why it is uncouped.

Pardon me a moment, your Honour. Pardon me, your Honour.

25 I am sorry, Mr Ellis. Could Mr Ellis be shown exhibit 6 to Mr Grove's second affidavit? Now, that affidavit starts in Court book 9 on page 2853 but as I understand it the map may be separate. In fact, I will just hand you up this one, Mr Ellis. But, your Honour, for cross-referencing purposes this is exhibit SJ6,
30 the exhibit sheet is on page 2860 of the Court book.

Have you ever seen that precise map before, Mr Ellis?---I am fairly certain that I created that map.

35 And you created that for Mr Grove and Dr Richards as part of their work on the broad-toothed stag beetle; is that right?---I certainly - yes, I knew I created it for Dr Grove, yes.

40 And what I want to ask you about, you will see that on this map that shows in bright pink, areas that are unloggable and in grey, areas that are inaccessible and in green, areas that are indicated to be non-commercial - - -?---Correct.

- - - and mustard, regeneration problems and purple, steep. Now, do I take it that all of those categories could end up as within your tenure analysis of State
45 forest uncouped?---They all fall within uncouped on that map, yes, and they are uncouped.

And do you happen to know what amount of those areas might end up being included in the reserves system?---No idea.

No idea at all?---As far as these areas that may go into reserve?

5

Those categories?---Yes.

Yes. How much of that might end up being in the reserve system?---In a reserve system?

10

Yes, in any reserve system?---Well, they are not in there currently, so.

All right. I see. So as far as you know there is no overlap between those categories, and either formal or informal reserves?---State forest uncouped is areas that are not reserved, so they not couped nor reserved, so they are outside the reserves, so there should be no overlap.

15

All right. But it is the case, isn't it, that some areas that have been classified, mapped as inaccessible, unloggable, non-commercial, regeneration problems, could well end up in reserves?---Yes.

20

And who decides the data about classifying those areas that I have just run through, those five areas?---Who classifies them?

25

Yes?---District planners.

Okay. Thank you, Mr Ellis. And go, please, to page 793 of the Court book, paragraph 38 of your affidavit. A radius of 500 metres around each wedge-tailed eagle nest gives you what area in hectares approximately?---I think it's around 78 point something, off the top of my head.

30

And who was it that told you that you should do these calculations by reference to areas that are 500 metre radius? Who picked the 500 metres?---I had all my discussions through Maree, so Maree told me, Maree, yes.

35

All right. And do you know - did she tell you whether she had got that information from anyone else?---I don't recall that, I'm sorry.

Do you know how she arrived at 500 metres?---Don't know, I'm sorry.

40

Now, can Mr Ellis please be shown exhibit LE4, which is one of the big maps? Now, I expect it is the case, Mr Ellis, that you are not presently, as you sit there, able to identify for his Honour by looking at this map which eagle nest number is which. Would I be correct about that? So you can't match up the table on page 794 with all the nest numbers with this map?---Oh, that's obvious, yes.

45

You can't?---No.

And in paragraph 39 of your affidavit - I just want you to sort of have the map there and also look at paragraphs 39 and 40 of your affidavit. Now, in paragraph 39 you go through the sources that you used to create table 5.

5 Would I be correct in assuming that at least some of those sources, if not all of them, also were used in creating the map that is LE4?---That would be correct.

And the first source is threatened fauna point data. What is that?---It is a point layer of all threatened fauna points in the State, for any threatened fauna species, and that's stored in an electronic data base, which we, as Forestry Tasmania, have access to.

10 All right. Do you know whether the points, that is, the locations are derived from threatened fauna manuals?---I don't know that.

15 So you don't know what the source of those data points is, other than it is there?---The source of the data is in the electronic data base.

20 Yes. And from how it gets in there you don't know?---From where, no, I do not know.

Who is responsible for putting it in there?---I can't answer that question. I don't know. It's not Forestry Tasmania, to the best of my knowledge.

25 Well, do you actually know that, Mr Ellis, or are you guessing it? It could be someone within Forestry Tasmania that does it, you just don't know, or you have no idea who puts that data in there?---I have no idea.

30 All right. Now, when we look at this map, Mr Ellis, and we look at the parts that are coloured in green, as State forest, how do we tell which of those parts have been logged?---You cannot tell.

35 So you can't look at this map and tell which of the green parts, over which the crop patching for potential habitat might be, you can't tell which has been logged?---No, you can't.

40 And so - and that is because the PI type layer that you use, where you classify eucalypts according to height, is a PI type layer that reflects the original state of the forest, at the time the PI type was done; is that right?---You might want to - what do you mean by when the original PI typing was done?

Well, when the mapping was done through aerial photography - - -?---Yes.

45 - - - it was at that stage that the forest was classified according to height; correct?---That's correct. PI is also updated for harvesting operations.

Well, that brings me back to my question, how do we tell, looking at this map, which parts of the green have been logged?---Well, you can't tell, because it is

possible for a harvesting operation to be carried out, and still have more than five per cent of crown cover of mature eucalypt forest.

5 Yes. By that answer are you saying it is not relevant whether it has been logged, to your mapping exercise?---As far as not relevant, what do you mean by that? Do you mean not relevant for habitat, or?

10 For modelling. This is a model of wedge-tailed eagle habitat. Are you saying to his Honour that so far as you know the fact of whether something has been logged or not is irrelevant?---If that harvesting operation was a partial operation, and therefore had more - it still met the criteria which I was given, given for the model, then, yes, it certainly meets the criteria for potential habitat.

15 All right. So you haven't made a judgment about whether it is or isn't suitable, you just are being asked to look at forests that meets those - - -?---Yes. I just applied a - - -

20 - - - criteria?---Yes. I applied a rule set.

All right. We can put that away, please, and we will move on to the swift parrot. Now, where you talk about from paragraphs 41 onwards, how you went about constructing your map for the swift parrot, and in relation to 42(c) you set out there the kinds of eucalypt forest that you included in the model. Who told you that you should include those kinds?---Maree Yee.

30 And were you given any indication that you should weight those kinds of forests one way or the other depending on how suitable they were for nesting habitat?---There is certainly some indication based on optimal and sub-optimal habitat.

35 Well, there is, but what I am asking you is - well, optimal and sub-optimal in (a) and (b), Mr Ellis, relate to foraging and, as I understand it, in (c), I don't see any weighting given by reference to criteria of optimal and sub-optimal, simply that you used either?---Correct.

Is that right?---Yes.

40 Okay. And who told you to put an eight-kilometre radius around it?---Maree Yee.

And again you don't know the basis for that eight kilometres, that is just what you were told to use?---No, no, don't know.

45 All right. And again at (d) what we see there is that reference back to 5 per cent. So what you mapped as suitable, for example, nesting habitat for the swift parrot was forest with a canopy cover when you look down on it of as low as 5 per cent; is that right?---That's correct.

Now, you then created a table, which I don't think I need to ask you about, but I want to ask you again about your sources of information in paragraph 47 and again that the threatened fauna point data, that is the same database that you referred to in relation to the eagle; is that right?---Correct, that's right.

The part that is in italics, accuracy varies depending recording method, is that something that is out of the database or is that your comment?---That's out of the database.

And do you understand that to be a reference to recording method of the nests?---It's only the recording method of the person recording the nests.

All right. Now, can you go - and again the 500 metres that we see in paragraph 48, that is something that Ms Yee told you to use, was it?---That's correct.

Am I correct, Mr Ellis, in understanding that there might be a table missing from paragraph 49, or am I just missing something? You talk there about table 5, but is that a reference - that is a wedge-tailed eagle table and I just wonder if perhaps there is actually a table missing?---There isn't a table missing, it just refers to - it's just a typo. It just refers to the spatial accuracy and what I was using for the spatial layers and the fact that paragraph refers to the table above, marked LE6.

All right. Okay. Now, can I ask you to look at LE6, please, which you will find on page 809, which is the, as I understand it, the - is that the - perhaps in a different form - the information that is the threatened fauna point data that you refer to?---That is certainly the basis of this table, yes.

All right. And so what we see at page 809 we can take as an example of what is held within Forestry that you call threatened fauna point data; is that right?---No, what you could - the information that is recorded in the threatened species database is the columns east and north, so it provides the location of the threatened fauna. Also the source of the information would also be recorded in that database and the date field. The location field would also be there. However, the other fields - sorry, the nest-site feature ID would be there, but - - -

But the tenure would not?---No.

Yes, I understand that?---Yes.

So if we take the tenure column out and perhaps the MDC protection layer column, the other ones that we see, the next-site number, the easting, the northing, the location, the data, and the source, we could take as the information that is held within Forestry Tasmania as the threatened fauna point data; is that right?---Correct, yes.

Okay. It looks to stop at 2001, Mr Ellis, do you have an explanation for that?---No, none whatsoever.

5 All right. Can I ask you to go to exhibit LE7, please, which is your swift parrot map?---Yes.

10 Now, can I ask you to look at the legend first and I just want you to compare what is at paragraph 49(b) where you talk about the source of RFA forest communities and that is the one that you also talk about at 47(c). But in the legend we see a reference to something in relation to the green bits that is called RFA Veg Communities 2004?---It refers to the same.

15 Right. It is not a new or separate database?---Not separate no, no, it is not, it's the same thing.

It is the 1996 RFA vegetation communities layer?---Correct.

20 Right. And again when we look at the bits that are coloured in green on these maps as potential nesting habitat for the swift parrot we can't tell from looking at these maps which parts have been logged; correct?---That's correct.

All right. And without taking you to it, that would be the same in relation to the map that is LE8 that you did for the beetle; correct?---Yes.

25 Would you like to look at it?---I probably should have a look at it.

All right. Exhibit LE8, if your Honour pleases. Would you like me just to remind you of the question, Mr Ellis, or do you recall it?---I think I recall it.

30 So - - -?---The answer is I cannot tell whether logging has occurred from that map.

35 All right, thanks. Pardon me a moment, your Honour? Your Honour, I just want to take some instructions on one issue that has arisen from Mr Ellis' answers but subject to that my cross-examination is completed so I am happy to take those instructions over a break. In 20 minutes we can start Mr Kelley if that would be more convenient.

40 HIS HONOUR: Oh no, it is probably convenient we adjourn now until say, 11.25.

MS MORTIMER: If your Honour pleases.

45 **ADJOURNED** **[11.07am]**

RESUMED **[11.25am]**

HIS HONOUR: Yes, Ms Mortimer?

5 MS MORTIMER: If your Honour please, I just have a couple more questions.

Mr Ellis, can I just ask you to go back to your affidavit for a moment and look at in particular paragraph 48 where you talk about - no, I withdraw that, paragraph 50, which is the part where you exhibit the swift parrot habitat
10 model. Now, is it the case that before you were asked to do this for - do such a map for this proceeding you had not been asked before by Forestry Tasmania to produce a habitat model of that kind for the swift parrot?---That's the case, that's true.

15 And in relation to the broad-toothed stag beetle and the map that you produced that is LE8, is it also the case that prior to producing that map for this proceeding, you hadn't been asked to produce one for the broad-toothed stag beetle?---That's incorrect.

20 You had been asked to?---Yes.

By Mr Meggs in relation to his paper Meggs and Munks?---That's correct.

Now, you - could Mr Ellis be shown exhibit SJG6 again, which is the map with
25 all the colours on it? We have got a spare one here if that would help. Just omitted to ask one question about the legend on that map, Mr Ellis. It says broad-toothed stag beetle survey points - and then it has got black dots for not recorded and red dots for recorded. Who gave you the information to divide up the two categories of survey points into not recorded and recorded?---That was
30 Maree Yee.

And what did you understand the words "not recorded" to mean?---That the beetle was not present at the time of the survey.

35 Right, thanks, Mr Ellis. Now, just a last couple of questions about some evidence you gave earlier about the provisional coupling layer. The boundaries that are present on the provisional coupling layer, provisional coupling data layer that I asked you some questions about, pre harvest do those - so we are talking about the boundaries pre harvest. Do those boundaries come from the
40 forest practices plan for each coupe or do they come from a different source?---A different source. Those provisional coupe boundaries were formed when they were initially formed and they usually are by natural forms, it made sense to make coupe boundaries, so they often followed rivers, creeks, ridges and so it didn't necessarily reflect what would actually be harvested but
45 just by a defined unit that was called the coupe at that time.

All right. So do the boundaries for a coupe as they become defined on a forest practices plan ever make their way onto this coupling layer?---Post harvest, yes.

All right, so post harvest the boundaries as shown on the forest practices plan go into the layer or not?---The harvest boundary goes into that layer.

5 All right, and who supplies that information?---Well, that varies from district to district. Generally a person from each district would go out and GPS the actual harvest boundary which then would be updated into the provisional coupe layer.

10 So that may or may not be a person who was involved in the certification to forest practices plan?---That's correct.

15 So am I correct to understand that you can't use the provisional coupling layer to give you an accurate before and after picture of what was proposed to be harvested and what was harvested because it doesn't really show you what was really proposed to be harvested, it shows you a coupe boundary at a more general level; is that right?---Generally that's right.

20 I have no further questions, if your Honour pleases.

HIS HONOUR: Thank you, Ms Mortimer. Mr Gunson?

25 **<RE-EXAMINATION BY MR C. GUNSON** **[11.30am]**

MR C. GUNSON: Mr Ellis, is there a difference between the terminology of harvest boundary and coupe boundary?---Yes.

30 And what is the difference or it may be easier is if you could provide a general definition for each of those two terms?---Provisional coupe boundary is just what it says, it is a provisional coupling up of the general area which a harvest is likely to occur, a harvest boundary is the perimeter of the actual harvest operation so most always the harvest operation would be different from that provisional boundary. It would usually be smaller, it would go around things like if areas were taken out for various reasons, like streams or uneconomic areas, whatever, then so the harvest area actually reflects the harvesting operation and the provisional coupe boundary just reflects the general vicinity that the harvest operation might occur in.

40 You were asked some questions whilst being cross-examined, in relation to the wedge-tailed eagle in relation to the updating of the PI-type layer post harvest. Is there a process for the PI-type layer to in fact be updated past post harvest?---There is.

45 And what is that process?---Annually, generally 30 June or thereabouts, all surveys from harvesting operations are then put into the PI-type layer, either by

5 GPSing, which is done most usually, so that's the harvesting boundaries I have just described, or in some cases aerial photography of the harvest boundary and that is the process so either from GPS survey or from aerial photography. It's then put into the PI-type layer. The PI-type layer is then updated to reflect that harvesting operation.

And is it correct - I withdraw that. Does that process involve potentially a reclassification of the forest type?---In a PI-type layer, absolutely, yes.

10 Now, you were asked some questions in relation to the swift parrot model, again in relation to the definition of forest types, and particularly in relation to the 5 per cent canopy cover of some classifications. What does the 5 per cent canopy cover describe?---As I - - -

15 MS MORTIMER: Your Honour, I object to that question. That has been asked and answered and my learned friend, in my submission, can ask for clarification but the witness - I asked the witness that question and he answered it. Unless there is something that arises that is unclear out of it or that he
20 wasn't given an opportunity to deal with, my learned friend can't have another go at the answer.

HIS HONOUR: Mr Gunson?

25 MR C. GUNSON: Does the 5 per cent canopy cover relate to 5 per cent of the entire forest canopy cover or does it relate to something else?---I can answer that question. That is - so what the 5 per cent - there can be several different age structures in a forest so if you are looking down on a piece of forest it could be totally covered in forest, the 5 per cent means that that eucalypt type, in this case, is the mature, so the older types, so in this case what would be the
30 case is to have these older types which would make up 5 per cent around the landscape, and you would have some younger types of forest would then make up the rest of that forest canopy, so we're just talking - when it talks about 5 per cent, it is the individual eucalypt type within that same grouping, so there could well be a different type of forest that makes up the remainder of the 95
35 per cent within that area.

Yes, I have no further questions, your Honour, and would ask that the witness be relieved.

40 HIS HONOUR: Yes.

Mr Ellis, thanks for your evidence, you may be excused from further attendance, but if you wish you may remain in Court?---Thank you.

45

<THE WITNESS WITHDREW

[11.34am]

HIS HONOUR: Mr Gunson?

MR C. GUNSON: If your Honour please, I call Thomas Kelley.

5 HIS HONOUR: Now, his affidavit is in?

MR C. GUNSON: Court book 3, page 1121, and Court book 9, at page 2861,
your Honour.

10 HIS HONOUR: Thank you.

<EXAMINATION-IN-CHIEF BY MR C. GUNSON

5

HIS HONOUR: Yes, Mr Gunson?

10 MR C. GUNSON: Mr Kelley, your name is Thomas Kelley?---That's correct.

And you reside at 23 York Street, Sandy Bay in the State of Tasmania?---Yes.

And you are employed by the respondent, Forestry Tasmania?---Yes.

15 And you are employed as a resource analyst?---That's correct.

Now, you have sworn two affidavits in these proceedings. I wonder if Mr Kelley could be shown Court book 3, page 1121. Is that a copy of an affidavit that you swore on 21 November 2005?---Yes, that's correct.

20

And I wonder if Mr Kelley could also be shown Court book volume 9, page 2861?---Yes, I have got that.

25 And is that a copy of an affidavit that you swore on 3 April 2006?---Yes, that's correct.

Your Honour, I read both of those affidavits.

30 HIS HONOUR: Yes. Those affidavits will constitute the evidence-in-chief of Mr Kelley.

35 MR C. GUNSON: There is one minor matter of clarification that I wish to take the witness to in relation to his first affidavit, at paragraph 10B(ii), which is on page 1124?---Yes, got that.

Mr Kelley, in the middle of that paragraph you have included the sentence:

I believe this is precisely what occurred in Wielangta where a new scenario has made the 2004 version out of date.

40

45 Do you have any comments to make in relation to that sentence?---Yes. The new scenario I was referring to, the 2005 scenario, never actually happened. The TCFA, Tasmanian Community Forest Agreement, had a change in market conditions, basically through the planning process into a bit of disarray last year, so there was never a completed and affirmed three year plan, and the tactical 10 year never occurred either.

And that is a matter that - - -?---At the time I said this I believed that was what was happening, it never did get to the final stages.

Yes. I have no further questions, your Honour.

5

HIS HONOUR: Thank you. Ms Mortimer?

MS MORTIMER: If your Honour pleases.

10

<CROSS-EXAMINATION BY MS MORTIMER

[11.37am]

MS MORTIMER: Mr Kelley, you work more or less in the same area as Mr Ellis; is that right?---That's correct.

15

And I understand from Mr Ellis that you and he had some discussions about your affidavits, which really consisted of what should go into whose affidavit. Would that be a fair summary?---There was some division of labour, I suppose, as far as who was going to do what, yes.

20

And did you decide that between yourselves, or did Ms Yee have a role in allocating that labour?---I suppose Ms Yee probably had a role in that - it's hard to remember exactly.

25

All right. And when you were asked to make this affidavit, were you given a list of topics that you should cover?---I just - as I recall it was some verbal information basically, that review the affidavits of Ms Underwood and Mr Dell, and just see if there was anything I thought I could comment about.

30

All right. So you had a meeting with Ms Yee, and she told you the things that you ought to cover; is that what happened?---That's - I guess that's what happened, yes.

35

And who else was at that meeting, as far as you remember?---It was very informal, probably just sitting in front of my desk. So I think it was just me and Maree.

All right. Now, can I ask you about the evidence you have just given about paragraph 10B(ii) on page 1124? Mr Ellis has given some evidence that the provisional couping layer that is held as a data set in Forestry Tasmania in updated more or less constantly, but I understand that when you are talking about the 10 year scenario, you are not referring to that data layer, are you?---Well, the data layer, the prof coupe data layer, that's a spatial layer of boundaries of provisional coupes. The scenario is basically putting a year against certain coupes to sort them in an order that you may proceed, as far as a plan or a scenario.

45

All right. And that is an exercise that is conducted in an office setting, independently from that data layer; is that right?---I'm not sure - independent from prof coupe? Is that what you are saying?

5 That is right. You don't alter the data on the prof coupe layer. You use that
- - -?---Yes. Okay.

- - - to create a scenario; correct?---You don't alter shapes generally, or
anything at that point in time, although you could - a planner could make
10 different decisions about certain - so he could change the harvest system that
he was thinking about, or something like that.

And you see - - -?---Or the future use. He might decide he had it as a
plantation, and now he's got it as a native forest regeneration coupe.
15 Something like that.

And you talk about this person, this planner, in 10B(ii). At what level within
Forestry Tasmania - I mean, what is the title of this person, the planner, that
creates this 10 year scenarios? What position do they occupy?---District
20 planner.

And in the Derwent district, who is that?---Well, there are several planners in
Derwent district.

25 Who are they?---Well, the planning co-ordinator is Mick Miller, and then
under him, as far as having responsibility for different parts of Derwent, there
is Brett Warren, and Vanessa Thompson, and Kevin Palici.

All right. And is it your understanding that it is Mr Miller who is the planner
30 that is responsible for creating the 10 year scenarios within the Derwent
district?---Well, he would have over all responsibility, but the other three
would actually be doing most of the work of devising the 10 year scenarios.

Right. And then there is a sort of a, some kind of approval or endorsement
35 process by Mr Miller; is that your understanding?---Mr Miller might review
and see if the result of that scenario was meeting targets, and things like that
perhaps.

And targets, you mean wood production targets?---That's one of the targets,
40 yes.

All right. And is that an exercise that is carried out annually, once annually, is
that the process?---Yes. It has been for the last several years.

45 And so once annually there is a 10 year scenario that is planned in relation to a
particular district; is that right?---Yes.

And does that happen at a particular time of the year?---It usually happens after the three year plan has been done. So a three year plan is concluded in June, and over the next couple of months after that usually there is a - that's the time period.

5

All right. And as I understand your evidence you are saying therefore that some time after June 2005 there ought to have been a decision taken about a 10 year scenario, but that didn't happen; is that right?---That's correct.

10 So is your evidence that there is just a complete absence of planning over a 10 year level from about June 2005 onwards in the Derwent district?---No. I'm saying that the planning process was changed so that the planning at the beginning of the period, the first year or two, was changed so much by the fact that the TCFA came in, and the market conditions were changing, that it was
15 not seen as any point in going further at that point, because the planners were too busy doing other things, working on the first part of the plan.

All right. So as you sit here today, in May 2006, giving evidence, is it your
20 evidence that there is at present in the Derwent district a 10-year scenario in existence about which coupes are planned under that scenario to be logged?---Not really, there isn't one. There is a three-year plan that has almost been concluded now because it's almost June and we're hoping that the planners will be able to move on beyond the three years for it to move to a five or 10-year scenario by August or so.

25

All right. So that is in the pipeline, but you are not there yet?---No.

All right. I want to ask you about - pardon me a moment. Can you go to exhibit TK1 of your affidavit, please, which is page 1135?---Yes.

30

Now, what you are, as I understand it, showing in that map - or the point you are trying to make from that map is that what starts off as the original coupe boundary may not be the same boundary as what ends up getting harvested; is that the idea?---That's correct.

35

Right. And one of the creatures that you refer to in that is this thing called Area Discounts; correct?---Yes.

40 And as I understand what that map shows, it shows that some of the areas that have been described as area discounts have actually moved into other coupes; correct?---Well, if they've moved into other coupes then they're not an area discount.

45 Well, have a look at the bottom of the map, you see there is the word "area discount" and then to the left of that it says now part of WT017F?---Yes.

Now, I understood that to be a reference to the fact that that area was an area discount and it had moved into WT017F; is that not right?---Because it's

moved into another provisional coupe then it's not considered to be an area discount, it's considered to be part of another coupe.

5 All right. And so where, for example, on the right of that map we see a long piece that says area discount, what does that mean on the ground, what has happened there?---That means that it hasn't been harvested and it's unlikely to be harvested.

10 Why?---Well, I don't know about that particular piece of land, I don't know. I think that might be a habitat strip or something, I don't know.

All right. So one reason is because it has been put into the reserve system? That is one reason for an area discount?---That could be.

15 Another reason is if it is unloggable because it is steep or whatever; is that right?---Yes.

20 Another reason might be if it is not commercial - it might be an area discount for that reason?---It could be, yes.

All right. Can you look at exhibit TK2, please, and talk about that paragraph 15 of your affidavit, and what you say at paragraph 15(a) is that there is a GIS layer within Forestry Tasmania that shows harvest boundaries; is that right?---Yes.

25 Now, is that a layer that is based on Forest Practices Plans?---No.

30 What is it based on?---It's based on post-harvest survey, either GPS or aerial photography. So the area that has been harvested is designated.

What is the difference between that and what is shown on the Forest Practices Plan? Isn't the whole idea of a Forest Practices Plan that it shows you exactly what is to be harvested?---I think sometimes there is amendments and things.

35 Yes. There is an amended Forest Practices Plan or a variation to it, but aren't you supposed to be able to tell from a Forest Practices Plan exactly what gets harvested?---Yes, but the Forest Practices Plan isn't necessarily held as a spatial GIS layer, so we don't necessarily have that. We have provisional coupes and we have logged harvested boundaries.

40 All right. So what happens is entirely separate exercise by Forestry Tasmania employees and they go out with GPSs and take measurements of the harvest boundaries; is that right?---Yes.

45 And then that information is put into Forestry Tasmania's harvest boundaries GIS layer?---Yes.

All right. And that information is not available to anybody else except Forestry Tasmania; is that your understanding?---I don't think I can answer that.

5 Why not?---I don't know.

Well, do you know, positively, that it is available to anybody outside Forestry Tasmania?---I don't know if anyone's ever asked, I don't know. Maybe it is, I don't know.

10

You have never been asked for it?---I've never been asked for it.

You have never supplied it to anyone outside Forestry Tasmania?---No, I don't think so.

15

Who would be the person to ask about whether it is available?---Perhaps Martin Stone, the Resources Manager, he usually deals with that sort of thing.

20 Can you tell me why in exhibit TK - no, is the reason that in exhibit TK2 - no, I withdraw that. What is the reason that exhibit TK2 stops at the year 2004 in terms of the harvesting?---I believe it was because I was trying to match Ms Underwood, I wasn't trying to go beyond what she had done.

25 Now, you talk in paragraph 18 of your affidavit about the discovery you made about Mr Dell having double counted some provisional coupes. Do you accept, Mr Kelley, that - and I will tell you that Mr Dell was prepared to acknowledge in his evidence that he did that - may have done that, nevertheless, that that double counting doesn't mean that the coupes - that anything is displayed twice on the maps. Do you agree with that?---That should be right, yes.

30

35 Now, the point that you are making, as I understand it, in paragraph 6 - sorry, paragraph - at the top of page 1131 where you are talking about the files that Mr Dell used, do I understand that what you are saying there is that there may have been some areas that had been partially harvested that had been included that should be excluded? That is the first thing. Is that what you are saying in paragraph A?---I'm saying some areas of partial harvesting are included as mature forest by Mr Dell.

40 Yes, and are you also saying that they should have been excluded or are you pointing simply to an inconsistency that not all partially harvested forest was included?---I'm just pointing to an inconsistency there.

45 All right. And you say the inconsistency is that there were some classes of mature eucalypt forest that he didn't include in his maps; agreed?---I'm saying that there were some he included and some he didn't, yes. And that they were basically similar forest.

Well, whether they were similar forest or not, Mr Kelley, would depend on the purpose for which you were constructing the map; agree with that?---Well, I'm saying that if you have a mature forest element with a D density of 5 to 20 per cent crown cover then the position in PI probably isn't relevant, it still
5 represents that type of forest and if you were out there on the ground you would probably see about the same thing, whether it was the first element or the second element.

All right, but in terms of the judgment that is exercised about why that forest
10 type might be included or excluded, do you agree that that is a judgment made by the individual constructing the map? Has to be, doesn't it?---Could you say that again? Could you repeat that question?

Which forest classes you include or exclude is a matter of judgment for the
15 individual constructing the map?---Sure.

And you know, don't you, that the PI-type layer includes forest classes that are described as significant mature eucalypt?---Yes.

20 What do you understand the word "significant" to mean in that class characterisation?---My understanding is significant means greater than 5 per cent eucalypt cover.

All right, and as I understand it, the other criticism you make is that right at the
25 bottom of 1131 is that in terms of ecological modelling as opposed to planning your timber harvest - do you need to grab a drink?---I'm okay, keep going.

Okay. I think the point you are making at the bottom of 1131 is in relation to
30 ecological modelling as opposed to planning for timber harvesting, that the forest class 2001 data might not be the best; is that the point your are making?---Yes. Because it sometimes doesn't distinguish between the different elements and picks out the first one and uses that as - puts it in a forest class, I am saying that they probably are similar forest in both and you'll find them in different classes and I think using - going straight to PI is a better source of
35 information.

Going - what do you mean by going straight to PI?---Well, using PI instead of forest class 2001 is a better source of information for that kind of thing.

40 Because you get more detail, is that the point?---Yes.

But - and it is the PI type that Forestry Tasmania uses, is that your evidence?---Uses for?

45 For - to construct its mapping of particular forest types for whatever purposes it needs that mapping?---PI type is the basis for the - that's the basic code and then you can derive all kinds of things from that.

And the data base is called forest class?---The data base is called PI type and forest class is a sub set.

5 All right. And Forestry Tasmania doesn't use Tas Veg mapping, is that right for these kinds of exercises?---I don't believe - well, I'm not sure about that. I don't believe we've used Tas Veg for any modelling or anything at this point - to this point in time.

10 I've no further questions, if your Honour pleases.

HIS HONOUR: Yes, thanks, Ms Mortimer. Mr Gunson?

15 MR C. GUNSON: I have nothing by way of re-examination, your Honour, and we ask that the witness be relieved.

HIS HONOUR: Certainly.

20 Mr Kelley, thanks for your evidence, you may be excused from further attendance but if you wish you can remain in Court?---Okay, thank you.

<THE WITNESS WITHDREW

[11.56am]

25 MR D. GUNSON: I call Lachi Ross Clark, your Honour.

<LACHI ROSS CLARK, AFFIRMED

[11.58am]

<EXAMINATION-IN-CHIEF BY MR D. GUNSON

5

HIS HONOUR: Yes, thank you, Mr Gunson?

10 MR D. GUNSON: Thank you, your Honour. You will need volume 3, your Honour, page 775.

Mr Clark, your full name is Lachi Ross Clark?---Yes.

15 And you live at 7 Reeve Street, Moonah?---Yes.

And you're an inventory forester?---Yes,

20 And on 21 November 2005 you swore an affidavit in these proceedings, is that correct?---Yes.

20

And you have a copy of that affidavit in front of you, do you?---Looks like it, yes.

25 And the affidavit is true and correct, is that the case?---Yes.

25

Yes, I have no further questions, your Honour. That is the evidence of Mr Clark.

30 HIS HONOUR: Yes, thank you, Mr Gunson. Mr Mitchell?

30

<CROSS-EXAMINATION BY MR MITCHELL

[11.59am]

35 MR MITCHELL: Mr Clark, can I ask you to turn to page 778, which is page 4 of your affidavit?---Yes.

40 I just wanted to ask you a few questions about the table you have got there?---Yes.

40

Now, do I understand correctly that that table shows that there are six cohorts present within that coupe?---That table shows that there are at least six.

45 At least six, there may be more?---There may be more.

45

And so is it correct to say that that table is not trying to be a representative sample of the ages of different cohorts or different trees within the coupe?---A representative sample?

As in the number of samples that you have taken don't accord with the numbers of trees in each particular cohort on the ground?---Not at all, that is correct.

5 Because it is the case, isn't it, that cohorts four to six - sorry, four and five represent the majority of the trees in that coupe or before it was harvested?---I don't think I can really answer that because the cohorts were measured over a reasonably small area. The purpose of the study was more just to establish that there were multiple cohorts on the site.

10

Can I ask you just to have a look at paragraph 14 of your affidavit and just think about the question that I have just asked you?---Yes.

15

Is your evidence as stated in paragraph 14 or as you have just told the Court?---Well, I did identify six distinctive cohorts.

Yes?---So, yes.

20

And in the second sentence?---Well, yes. Where I did the study the majority of the tree stumps were made up of cohorts from four.

25

Is there any reason why you would expect that not to be the case across the whole coupe?---How can I say this? Depending on what the PI was across the whole coupe there could be patches where say, cohorts two were dominant but I would say where I did the study the majority of the coupes - or the majority of the trees were of cohorts from five.

30

So it is then a fair characterisation of your evidence that, at least insofar as the area of the coupe that you looked at, and you are not probably able to say for the whole coupe, that the majority of the trees were aged 110 years or more?---Yes.

35

And it is also fair to say that, at least in that area, and - actually, no, it is fair to say across the entire coupe 17E that it is a mixed age forest?---Yes.

40

From your analysis of the tree rings, and from your observation of the coupe, can you tell the court whether there has been any natural event over the last 250 years, such as wildfire, or wind throw, or any other natural event, that has had a similar impact on the forest age structure to the impact that the logging has had?---I'm not sure how to answer that question. What do you mean?

45

Well, you have been to the coupe, you have seen the effect of the logging that has taken place, you have seen, at least in the area that you surveyed, which trees have been taken and what remains. And so you would understand the nature of the changes to the age structure that has occurred at least in that area; is that all true?---Yes.

Now, are you able to determine, by looking at the ring counting that you have done, and - or by any other means, whether there has been a similar effect caused to the age structure of the forest over the last 250 years?---To do that accurately you would probably have to look at every stump.

5

From the stumps that you looked at, was there anything to indicate that that might have been the case?---That the harvesting had an effect greater than wildfire in the past?

10 Exactly?---I can't answer that.

Would you agree that in the space of a few months 80 to 90 per cent of the largest trees have been removed from at least that area of the coupe that you were looking at?---From the coupe that I was - from the area that I was looking at, yes, because I was looking for stumps.

15

Yes. And there are some trees remaining amongst the stumps?---Yes, there was.

20 Yes. But you would agree that 80 to 90 per cent of the largest trees have been removed?---Yes. Probably.

No further questions, your Honour.

25 HIS HONOUR: Thank you, Mr Mitchell. Mr Gunson?

MR MITCHELL: I apologise.

HIS HONOUR: There is a further question?

30

MR MITCHELL: I have done it again. I have one. Could exhibit Q please be shown to the witness. Hopefully you are now looking at a photograph of a felled tree with a person standing next to it?---Yes.

35 Are you able to indicate to the Court approximately the age of that tree?---I would say it's probably about the size of cohorts four and five.

So we would expect that that was somewhere in the age of 120 to 190 years, as a rough estimate?---As a rough estimate, yes.

40

Different tree types will often be different thicknesses at the same age, won't they, different eucalypt types?---Yes.

45 So for example if the pulchella variety of eucalypt will often be narrower and considerably narrower than other types of eucalypt, such as obliqua and delegatensis, won't it?---At the same age, yes.

Yes?---Generally.

Thank you. No further questions.

HIS HONOUR: Thank you, Mr Mitchell. Mr Gunson?

5

MR D. GUNSON: I don't re-examine, your Honour, and may the witness be relieved?

HIS HONOUR: Certainly. Thank you, Mr Clark, for your evidence. You may be excused.

10

<THE WITNESS WITHDREW [12.07pm]

15

MR D. GUNSON: I had planned to call Mr Laffan next, but I had anticipated longer cross-examination. Mr Gunson is just going to check whether he is here, your Honour.

HIS HONOUR: Dr Laffan?

20

MR D. GUNSON: Yes, your Honour. It would appear that Dr Laffan is not here.

HIS HONOUR: Do you have any other witness - - -

25

MR D. GUNSON: No, your Honour. Could we make inquiries as to where he is? He had to travel from the north.

HIS HONOUR: I see. Is he likely to be here, say in 15 minutes, or don't you know?

30

MR D. GUNSON: If I had an opportunity to find that out, your Honour, we could probably answer that. I just can't at the moment.

35

HIS HONOUR: All right. I might just stand the matter down briefly and wait in the anteroom.

MR D. GUNSON: Yes. Thank you, your Honour.

40

ADJOURNED [12.08pm]

RESUMED [12.24pm]

45

<EXAMINATION-IN-CHIEF BY MR D. GUNSON

5

HIS HONOUR: Yes, Mr Gunson.

MR D. GUNSON: Thank you, your Honour.

10

Dr Laffan, your full name is Michael Dawson Laffan?---It is.

And you live at 2 Lanena Crescent, Lanena, Tasmania?---I do.

15

You swore an affidavit in these proceedings on 18 November. Could Dr Laffan be shown, please, book 3 at page 1138? You have a book containing a number of affidavits in front of you, Doctor?---I do indeed.

And do you have it open at page 1138?---I do.

20

Is that a copy of your affidavit there?---It is.

Subject to one matter I will address in a moment, is the affidavit true and correct?---It is, apart from the matter you mentioned.

25

Yes. Could I ask you please to turn to page 1143, and I draw your attention to paragraph 23. Do you have that paragraph in front of you?---Yes.

And does the last sentence of paragraph 23 read now:

30

Produced to me and marked MDL4 is a true copy of the analytical results provided to me by Allison Laboratories.

That is what it says?---That's what it says, yes.

35

And if you could turn, please, to page 1172 do you see the document there that is headed Soil Nutrient and Chemical Properties for Major Soils in 17E and 19D, analysis by Allison Laboratories, Hobart?---Yes.

40

You see that? Was that the document that you intended to be exhibited to your affidavit?---That is the - that is a summary of the document. The actual document, well, the actual - exhibit number 4 was supposed to be the actual analysis received from Allison Laboratories, right.

45

Right. Can the witness be shown this document, please?

HIS HONOUR: So should paragraph 23 read - is it - - -

MR D. GUNSON: No, your Honour.

HIS HONOUR: Sorry.

5 MR D. GUNSON: It will remain as it is.

HIS HONOUR: I see.

10 MR D. GUNSON: We will be seeking leave to introduce into evidence the document that I am now showing to Dr Laffan, and I will just pass those along to my learned friends. And did you in fact intend that the document I have now produced to you be exhibited?---I did indeed.

15 Yes. Well, I seek leave, your Honour, to uplift, if that is the appropriate process, MDL4 and to substitute it with the document that I am now handing
- - -

20 HIS HONOUR: It would be probably easier to, seeing as it appears in a book, and short of ripping it out of the book it is going to be a bit difficult to - just to make - - -

MR D. GUNSON: If it is the only option.

25 HIS HONOUR: - - - hand it in addition, notation on 23 in the book at 1143, and to the effect that it is a summary only, and make the actual document exhibit 36, and make a handwritten cross reference in the book at paragraph 23 to exhibit 36.

30 MR D. GUNSON: Yes. That is an appropriate course, I think, your Honour. In that case, your Honour, I formally tender a copy of the Allison Laboratories analysis for the Court's use, and a copy for your Honour.

HIS HONOUR: Yes. Certainly. Exhibit 36.

35

EXHIBIT #36 ANALYSIS RECEIVED FROM ALLISON LABORATORIES

40 MR D. GUNSON: Yes, that is all I wished to ask Dr Laffan in evidence-in-chief, your Honour.

HIS HONOUR: Thank you, Mr Gunson. Mr Tree?

45 <CROSS-EXAMINATION BY MR TREE

[12.29pm]

MR TREE: Dr Laffan, am I correct in reading your affidavit as doing essentially two things, firstly, you undertake an analysis of the soils, or an examination of the soils with the assistance of an expert analysis, and you request some views as to the likely history of that soil. That is the first thing
5 you do?---The first part is correct, the bit about the history is - there was a little bit of interpretation.

I see?---Yes.

10 Thank you. And based upon your examination of the soil, the analysis, and to some extent that interpretation, you then looked forward in anticipation of the effects or likely effects of forest operations on that soil?---That's correct.

Now, do I understand that in terms of building-block knowledge there are three
15 different types of soils which you have identified on the two coupes in question?---That's correct.

Two of those three types are red soils, one is, you described as a brown-and-grey mottled soil?---That is right.

20 But am I correct in saying that all three soils are primarily derived from dolerite?---That is correct.

So that what has occurred is that different events have impacted upon
25 particular aspects of the rock to cause different soils to be produced?---That is right.

There may have been some slight different in a rock itself, I suppose?---Unlikely, these red soils and brown-and-grey soils, the origin of
30 them, the genesis of them is interesting because we really don't know the path - the soil-forming pathways, why some go red and so brown and grey, it may be related to drainage - just drainage conditions forming different types of clay minerals in the brown and grey versus the ones in the red, but we don't know.

35 And I suppose it could have had some input from whatever overlay the dolerite for thousands of years?---I'm not quite sure what you mean by that.

I don't think we need to trouble ourselves. But can I then get you, please, to
40 identify that the two different types of red soils which you have referred seem to be nigh identical save for the different types of forest which they support?---No, that is not correct, they're both red soils but the one under dry forest tends to have a much thinner organic topsoil, A1 horizon, and it certainly has lower levels of nutrients, such as organic carbon, total nitrogen and phosphorous. These are trends which I think I pointed out in my affidavit,
45 which occur in a wide range of soils in Tasmania, soils under dry forest versus soils formed under wet forest from the same sub-strait are typically different.

I see. So that the type of forest which overlies the soil can over time - and no doubt extensive periods of time - have some impact upon the soil itself?---It certainly can.

5 And what you have identified - not just restricted to Wielangta but Tasmania wide - is that generally speaking soils under dry forest tend to be lower in nutrient?---That is correct.

And also tend to be thinner?---Organic topsoil tends to be thinner, yes.

10

Thank you. But when it comes to - leaving aside the nutrient level - the actual characteristics of the soil, the two different types of red soil here seem to be very similar?---I presume you're talking to the morphological characteristics like colour and the physical properties, maybe?

15

The physical properties are?---Physical properties no, there are differences in what we call aggregate stability. I don't think they show up in these red soils, but in other situations between wet and dry forest there are normally differences in aggregate stability. But in this case, they're pretty much the same.

20

Is aggregate stability a measure of the - and I don't want to embarrass myself too much here, but is that a measure of effectively the silt and clay particles in the soil?---No, aggregate stability, it's when you use a wet-sieving method to determine aggregate stability and it's basically, it's resistance to wetting and disturbance. It's a weighting, which we use to determine soil erodability and it is basically a function of clay and organic matter content plus clay type.

25

So clay and organic matter do have an impact as to the - on the erodability of soil?---Yes.

30

And would I be correct in saying that poorly drained soils have a greater risk of erodability?---They create a risk, perhaps you mean high erodability?

35

Yes?---In my experience, poorly-drained soils do tend to be higher - have a higher erodability.

Thank you. Now, do I understand that in broad terms both red soils here are well drained?---Yes.

40

But the grey-and-brown mottled soil is not well drained?---That's right, it's what we call imperfectly drained.

And would his Honour be correct in understanding that the drainage - whether a soil is well drained or not is a measure of the extent to which water can, if you like, move through the soil to move ultimately into water courses?---It is really a function of the length of time the soil profile is saturated, that is the way we classify it.

45

So that a clay would not be described as a well-drained soil?---A clay could well be - could be described as well drained. Many of the red basalt soils have very high clay content but they're well drained.

5

I see?---That is because of their structure - well structured.

Now, can I ask you about your understanding of the way in which the soils - or the soil profiles that you saw came into being. Firstly, am I correct in saying that one of the features of both coupes is the presence of rock within the soil?---That is correct.

10

And I think at paragraph 10 you say that more than 50 per cent of both coupes you assessed as being very stony with more than 50 per cent rock fragments and surface layers?---That is right.

15

And that is simply saying if you got a bucketful of what there is on the surface more than half of it is rock?---Yes, to put it simply, yes.

And do I understand that you - for fairly obvious reasons - did not sample any of that very stony soil?---That is correct.

20

Because physically you were unable to collect it?---It's very difficult to find less than a two millimetre sample to analyse, that's right.

25

So would I be correct in saying that what you have been able to sample represents something less than 50 per cent of the area of both coupes?---That is correct.

Thank you. Although you do - correct me if I am wrong - work on perhaps the fair assumption in paragraph 11, that you assessed those very stony soils as being highly resistant to erosion and compaction than the soils that you were able to test?---That is right.

30

Now, do I understand that you identified as one of the likely sources of the extent of surface rock extensive wind-throw over many years?---That is possibly one of the reasons for extensive surface rock, yes.

35

So that what occurs is that the routes bind rocks physically within the root ball of the tree, so that when it blows over that rock is brought to the surface where it otherwise was underneath the surface?---That is correct.

40

And over years the uplifted soil erodes away from the root and the rock?---I would hesitate to use those words erode away, from my experience the soil falls from the root ball but does not disappear, it basically accumulates in the same place.

45

Right?---It's basically been displaced but I would not say it's eroded.

5 All right. What are the other explanations for the prevalence for surface
rock?---It could well be the way it started initially. There was certainly a lot of
physical erosion of rock during the last ice age which ended about 10,000 years
ago. This was basically raw rock which was produced by frost splitting, ice
forming in fissures, freeze-thaw phenomena. A lot of rock can get produced
and moved down the slope by periglacial processes so that the distribution of
rock initially in which soil forming takes place can vary widely depending on
what happened, depending on the geomorphic history of that site.

10

I see. And there is no way now of being accurate in relation to such fine scale
areas as these two coupes as to whether that occurred or not?---The process
occurred but to determine whereabouts in the coupe that occurred, that is right.
It's almost impossible to determine, yes.

15

Now, you yourself I think saw - you have been to the site?---Of course.

And you observed two things. Firstly, wind thrown trees particularly in coupe
19D?---That's correct.

20

And you observed a number of decaying logs consistent with a history of wind
throw?---Yes.

25 It would be fair to assume then, wouldn't it, based upon firstly the surface rock
and your own observations that wind throw has been a substantial source of
decaying debris on the forest floor in this site for a long time?---I would agree
with that. It would seem so from the evidence.

30 Yes. Would you also agree with me that fire has been a factor in the formation
of this landscape or is it impossible to say?---No. I think that was something
that I pointed out in my affidavit that fire has been a significant factor in the
formation of these soils. There is a lot of strong evidence to show that dry
forests in Tasmania and the mainland have had a long history of relatively
frequent fires.

35

And so his Honour can understand the importance of that - we touched upon it
at the outset I think - firstly, that tends to free nutrient to the
atmosphere?---Fires can cause phyllatellisation of nutrients and loss to the
atmosphere, yes.

40

And secondly, it enables erosion of the soils which would not occur in unburnt
areas?---Well, that we don't know. Fires can actually produce a lot of carbon
which - carbon is also tied up in the formation of stable aggregates so I am
unable to comment on your hypothesis.

45

All right. But would it be fair to say that one of the possible explanations for
why there is a thinner A profile in the dry red soil is related to fire and
erosion?---The fire? I would say yes. Erosion? No. I am not convinced.

I see. Is there any other factor other than fire that has led to the development of that shallower A profile?---Yes. Frequent wind throw so that the soils are displaced, disturbed frequently so that it takes time again to form a new organic surface horizon, a new A horizon - A1 horizon.

5 So again that may be a measure of the extent of wind throw over thousands of years?---Yes.

10 You then undertake a consideration of what you understand the physical impacts of forestry operations on this site are likely to be? You have discussed them?---That's right.

And you, correct me if I am wrong, see them as having two particular aspects. Firstly, the mechanical disturbance of the soil and that which overlies it?---Yes.

15 By principally machinery passing over it?---That is right.

20 And secondly the impact of any post harvest burn?---Did I say that in my affidavit or are you asking me?

Well, I am asking you. Do you accept that the impact of post harvest burn is one of the factors that would need to be taken into account in assessing the soil response to the harvest event?---No, I don't think so at all. I think any impact would be utterly negligible compared to the thousands of years of fires which have already occurred.

25 Now, in saying that am I correct in saying that you are assuming that the impact of a post burn fire on this site would be less than past wildfire events?---I am saying the impact of a single backburn fire would be significantly less. It might be negligible compared to the cumulative effects of fires over the past 10,000 years or more.

30 I see. I wonder if the witness might be shown exhibit AM please, your Honour.

Now, I want to make it clear to you, doctor, that these are not photographs of either of the two coupes that you have inspected?---Yes.

40 But I do want to suggest to you that these are photographs of the result of what was prescribed to be a low intensity burn. Would I be correct in understanding your evidence that in identifying the nature of fire that might take place on either of the two coupes you didn't have in mind a fire producing consequences such as this?---Natural fires? I can see no reason why they wouldn't produce situations such as this.

45

If I look, for instance, at the surface insofar as I can see it for instance in the first photograph there appears to be - I think the correct term is mineral earth, in other words there is nothing between the viewer and the soil; that is correct?---No, I am not quite sure what you mean. Are you trying to say that
5 - - -

I can see what appears to be soil, can't I?---I can see rocks. I can many rocks, lots of rock.

10 Yes?---But I can see a lot of black stuff which is charcoal.

Well, look at the second photograph for instance?---Yes, I'm looking at the second photograph.

15 In the foreground can I see what appears to be soil?---The red orange coloured material I would say would be soil although they have often thought about what this material is but we think it could actually be ash, sort of a fused ash but I don't know. It appears to be mineral but whether it's soil or silica from the tree, from the woody tissue, I don't know.

20 But would you agree with me that the production of that sort of material on the surface of the earth is not the frequent result of stochastic wildfire in eucalypt forest?---Would you repeat that again? I am not quite sure what you mean here.

25 That isn't one of the results which would ordinarily feature from a natural wildfire?---Well, how can you say that?

30 Well, I am asking you. If you don't know, you don't know. I am just asking you?---Well, what I am trying to say then is that I think you could get this situation quite easily from a natural wildfire.

I see. You see one of the features that we can see for instance in the second photograph is that there has been a large amount of debris on the ground which has been partially consumed in the fire. Do you see it?---I can see charred logs, charred wood.

Sure?---Yes.

40 Which is consistent with it having been partially consumed in the fire?---Right.

Assuming that that is debris associated with the harvesting operation that preceded the fire, it seems a fair assessment does it not?---I assume so.

45 It appears as though it has burnt with some intensity or at least an intensity sufficient to partially consume substantial pieces of debris?---Right.

That level of intensity of fire on the surface is not characteristic of ordinary wildfire?---What evidence have you got to say that?

5 Well, I am asking you?---No, I don't agree with that statement of yours. I see no reason why high intensity wild fires could not be - produce that sort of thing.

10 If there is that volume of debris for it to consume and debris of a sufficient size that it can support a substantial fire?---Yes, but there would be a lot of debris from wind throw.

15 Now, am I correct in saying that you have assumed certain - or a certain degree of impact on the site from machinery operations?---That is right. This assumption is based on studies from other coupes and other parts of Tasmania formed - where soil was formed on dolerite.

20 And is that level of disturbance something that is within your own knowledge or did you ask and were provided with that material?---No. I have carried out studies in conjunction with other researchers in the southern forest looking at the impacts of snig tracks on soil properties.

25 I understand you are effectively a Launcestonian at the moment. When you say southern forests do you mean those in the south of the State or do you mean those, for instance, in the Huon?---I mean those - these are studies carried out in the Warra experimental area - - -

Which is in the Huon?--- - - - near the Tahune reserve.

30 Thank you?---Yes.

A somewhat substantially different location to Wielangta?---It's a different location, yes, but there are similar soils.

35 What you have assumed is that there is a degree of impaction in the soils over - or caused by the passage of machinery, correct?---That's right.

40 Would I be correct in saying that there is a recognised difference between the length of time that that impaction has effect between wet and dry forest?---I would think that would be a reasonable assumption but I haven't got the evidence at this stage to prove or disprove it.

All right. Well, are you familiar with another forestry employee who I think is - forgive me if I don't know whether he is Dr or Mr, Bill Nielson?---Yes.

45 And are you familiar with a paper which, in conjunction with Mr Williamson, again excuse me whether if I am not giving him proper description in relation to his title, but a paper called Amelioration of Adverse Snig Track Soil, Properties and Revegetation?---Yes, I have seen that paper.

All right. Might the witness please be shown this document? That is a copy of the Williamson and Nielson paper, is it not?--Yes.

And very helpfully, there is an abstract of it, I think, on the first page. It reads:

5

Compaction and soil displacement during harvesting were studied on eight harvested areas of various ages covering three forest sites. Under a dry eucalypt forest site compaction of the most severely disturbed primary snig tracks persisted 12 years after harvesting. Increased soil strength also persisted. Regeneration of a eucalyptus sieberi was as good on primary snig track as on undisturbed areas despite top soil displacement. Under two wet forest sites with very high rainfall there was generally amelioration of compaction within one year of harvesting when comparing equivalent soil horizons. However, displacement of surface soil from primary snig tracks on wet forest sites resulted in poor conditions for regeneration and trees generally fail to survive or at best remain stunted. The exposed subsoil had attained little of the characteristics of undisturbed top soil and soil strength generally persisted at elevated levels. Under storey species tolerant of poorly eroded soils with the most prominent early colonisers on primary snig tracks on all sites while other species dominated undisturbed areas.

10

15

20

25

Now, have you had an opportunity to consider whether that abstract accurately summarises the paper before?--I believe this paper is an amalgam of information taken from an earlier work by John Williamson some of which I used in my evidence.

30

All right. Could I just remind you of my question which was have you had an opportunity to consider whether that abstract accurately reflects the body of the work?--No.

35

Would you agree with me that on its face it appears to support the proposition which I was suggesting to you a few moments ago, namely that there is a difference in the persistence of impaction between dry and wet eucalypt forests?--It certainly would appear that way.

40

Thank you?--But just a comment, I don't know how many of these - how many soils were studied that were on dolerite. I think the study included a lot of different sub stratas, not just dolerite.

45

I see. Would I be correct in saying though that you are unaware of any specific study in relation to dolerite which could, if you like, compete with this paper?--That's right. The studies I was involved in basically were carried out under wet forest.

Thank you. Now, do I understand that the reason for difficulty in regeneration seems to relate to two things in relation to snig tracks. Firstly, the compaction

of the soil caused by the passage of machinery, but also the movement of the actual soil itself associated with the dragging of logs?---That's right. There's compaction and soil displacement.

5 So that although your work for this case has been directed at soil compaction you have not been asked to, and you have not provided, comment upon the other impact of snigging operations which is the physical removal of soil from the site of the track?---No, I believe that in one of the references in my affidavit - again this is a study carried out in the southern forest, we actually
10 did look at displaced soil as well as compacted ruts on major snig tracks.

But am I correct in saying that in relation to these two sites where you have been expressing opinions about the impact of snigging, that you have not referred to, in the body of your affidavit, the impact of soil
15 displacement?---No, probably because I didn't think it was significant.

Well, that is the difficulty, isn't it? You have undertaken no study as to whether in fact in these particular coupes it has been significant?---Well, from my observations I decided it wasn't significant.
20

Well, do you have any field notes of your observations in relation to soil disturbance on snig tracks please, Dr Laffan?---No, I use my memory. I've got a brain which I use to store information.

25 I see. And I dare say your eyes are as good as mine when it comes to looking at disturbance of soil on the surface of the earth or is there some expertise that you bring to bear on that?---I don't know anything about your eyesight but - - -

Right, fair call. But one can see if there has been disturbance of the soil on the snig tracks, can't one?---You can see visually if there is significant disturbance, yes.
30

Now, the nigh invariable consequence of a snig track is that there is that disturbance, isn't it?---Not necessarily. Very stony soils there is negligible displacement of soil.
35

Because there isn't any soil to get in the first place, I suppose?---Well, that's right.

40 But these snig tracks that we see at 17E and 19 - well, we're not yet in 19D, but in 17E are not just over rocky soils, are they?---They're not just over rocky soils, no.

Thank you. And it is almost certainly the case that there will be some displacement of surface soil?---There could well be some displacement of surface soil. But again I would say it's very minor.
45

You have also adopted general figures for what you believe to be the extent of snig track operations, rather than undertaking independent assessment of these coupes, haven't you?---That's right.

5 And you would defer to the evidence of others who have inspected these coupes with a view to determining the extent of snig track cover?---Yes. I have used information from other coupes where soil was formed on dolerite.

10 Do I understand that one would be surprised if there wasn't some adverse affect on regeneration by the presence of a snig track?---Yes, I think you are probably asking the wrong person. I'm a soil specialist, not a forester.

15 So perhaps Mr Nielson would be the right person to be asking about that?---I would think somebody like Mr Nielson would be the ideal person.

The soils in this coupe, which are most - - -

HIS HONOUR: Mr Tree, are you moving to some other topic?

20 MR TREE: I am, but I will only be a moments, your Honour. The soils in this coupe which are - and I am told that there are some other matters that might wish to be raised, so perhaps if your Honour was looking at the time, now might be convenient.

25 HIS HONOUR: Right. What did you want me to do with this document?

MR TREE: I tender that, your Honour, I am sorry.

30 HIS HONOUR: Exhibit BV.

EXHIBIT #BV ABSTRACT OF WILLIAMSON AND NIELSON

35 HIS HONOUR: And the Court will now adjourn until 2.15.

ADJOURNED [1.02pm]

40 **RESUMED** [2.15pm]

45 **MICHAEL DAWSON LAFFAN:**

MR TREE: Your Honour, it might be useful if I indicate to your Honour that it is anticipated that at the conclusion of this witness' evidence it is unlikely that the respondent will be in a position to put further evidence before the Court this afternoon.

5

HIS HONOUR: I see.

MR TREE: Apparently Dr Grove who, according to the chronology is the next witness, is unavailable today, and it is likely that such witness as is available this afternoon is much further down the list of witnesses, and hence we are not in a position to cross-examine her this afternoon.

10

HIS HONOUR: I see. Well, no doubt - well, I hope you will be in a position to use some of the time to discuss the matter that was raised first thing this morning by Ms Mortimer.

15

MR TREE: Hopefully, your Honour. I am not sure whether my friends have had an opportunity to digest our proposal in relation to the timetable for submissions or not.

20

HIS HONOUR: Well, we will see how we go.

MR TREE: Thank you, your Honour.

HIS HONOUR: Give me a little time to prepare apparently. I am being interviewed at 7 pm today by ABC radio about East Timor.

25

MR TREE: Should we be listening to any particular news, your Honour?

HIS HONOUR: No. Watch Temptation on Channel 9. Yes, Mr Tree?

30

MR TREE: Dr Laffan, could I get you please to turn to paragraph 54F of your affidavit at page 1150 of the Court book?---Yes, I have found it.

And here in discussing the soil physical features you say this, in the second sentence:

35

McDonald indicate that moderately permeable soils have an approximate range of saturated hydraulic conductivity of point 01 to 1 metre per day, and less than .01 metres per day for slowly permeable soils.

40

Can I ask you please to explain whether that is intended to indicate a level of rain fall that can be absorbed, or passed through the soil within that day, or is it some other indication of volume?---No, that is correct. It basically refers to water movement through the soil - - -

45

Yes?--- - - - and basically that would refer to chances of a rainfall.

5 All right. So if I look at what was - if I look at the permeability for these two types, or three types of soils that are presently under consideration here, do I understand that the red soils are moderately permeable, whereas the grey soils are slowly permeable?---That is correct. That really applies to the less stony soils, ie, those which have less than about 50 per cent rock fragments.

10 Right?---Whereas the stonier ones, the greater than 50 per cent rock fragments throughout the profile, basically tend to be slightly more permeable.

15 So leaving the aside the differentiation between the stony and the not stony soils, do I understand that in relation to the grey and brown model soils that you tested that they are slowly permeable, and hence would be unable to absorb, or have pass through them, rainfall in excess of .01 metre per day?---Well, you must remember these are just guidelines. We don't have any - we have never carried out any studies of our own - - -

20 Sure?--- - - - on permeability. So we have just - basically the permeability - I have assessed the permeability from the physical properties, morphological properties in the soil, and use those figures there, taken from McDonald et al for soils with similar permeability classes.

25 Now, that is, correct me if I am wrong, .01 of a metre is 10 - or, sorry, I think it is 100 millimetres; is that - or 10 millimetres, sorry?---Yes, it would be 10 millimetres.

30 Yes. So do I understand that if the grey soils are exposed to rainfall in excess of 10 millimetres per day then that will be beyond their innate capacity to achieve hydraulic conductivity?---Only if they are already saturated. Because it is saturated hydrologic conductivity. If the soils are dry they would be able to absorb much more.

35 Whereas there is a far greater capacity for conductivity in the red soils?---That is correct.

40 But can I focus upon these grey soils? It follows that they are far more likely to have surface erosion in times of heavy rainfall?---They are likely to have some surface run off, but if you look at the figures for aggregate stability I would dispute the fact that they would be more erodable.

I see. So if we were to substitute the word "run off" for "erosion" you would agree?---I don't think you can do that.

45 Right. Well, as a matter of physical response the water will not penetrate the soil, it will then run across its surface - - -?---That's right.

- - - or pond, depending upon the slope of it, I assume?---That's right. Yes. Yes.

And it is then a question of whether that running water along the surface occasions erosion or not?---That is right.

5 And erosion in that context is the movement of small soil particles that are caught up in the water?---That is right.

Now, firstly would you agree with me that whether or not there is erosion of those soils in those sorts of surface run off conditions will depend in part upon vegetation cover?---Yes.

For instance, if there was lawn growing over it, it is less likely that there would be any form of surface erosion?---Yes. Surface cover is important. And under a forest situation things, like, come out of debris, which can trap soil particles, are very important, yes.

Sure. Leaf litter particularly?---Leaf litter, twigs, all sorts of things, yes.

And of course there would be a dynamic interaction between leaf little, twigs, grasses, and all other sort of surface litter?---Yes. And also stones as well, surface rocks also trap sediment.

On the other hand, would you agree with me that if the soils were in the state that I showed you in exhibit AM earlier this morning - you might remember I showed you some photographs of the burnt coupes?---Yes.

Would you agree with me that the opportunity, the physical opportunity for those sorts of impediments on erosion, don't appear to exist there, other than rocks and perhaps some branches?---Well, that's right. There are rocks, definitely rocks, and also the coarser debris which hasn't been consumed by fire.

Sure. The grey soils would be, I want to suggest to you, at risk of erosion if they were subject to heavy rainfall in a condition such as we see in exhibit AM?---Well, you have to remember that the wet 7 tests showed that the A1 horizons were - had - the soil aggregates were quite stable. I think they - I find they look at my results, which are on page 1188, that is the erodability rating. The aggregate stability rating must be - - -

40 HIS HONOUR: Did you need exhibit 36?---I think that might be handy. But looking at page 1188, looking at the erodability class, I see that the brown and grey mottled soils have been given a moderate erodability class, which is a bit higher than the ones for the red soil. So certainly they would be under greater risk of erosion, based on those results.

45 MR TREE: And in a circumstance, such as we see in the photographs in exhibit AM, the risk of erosion would by no means be fanciful on the grey soils?---Could you rephrase that? I'm not quite with you there.

5 Sure. We can talk about whether something is a low or moderate risk of erosion but it's not fanciful if there were to be heavy rainfall in relation to the grey mottled soils in a condition such as we see the surface of the earth in these photographs, there would be a substantial risk of erosion?---Not necessarily. Perhaps I should clarify. The erodability class is not the same as erosion risk. Erodeability is an inherent soil property based on soil factors. Okay? So they don't equate to erosion risk.

10 But because of the factors we talked about before like surface cover for instance?---That's right. Surface cover, rainfall intensity, that sort of thing.

15 And my point is that if there was a period of intense rainfall on soils that have been subjected to this sort of burn that were the grey brown mottled soils, there would be a substantial risk of actual erosion?---There would be a greater risk than in the red soils but whether you would say it would be substantial is open to interpretation.

20 And another factor that would play - would be topography particularly whether the grey soils were in a steep location?---That is correct.

Because that will affect the velocity that the surface water travels at?---Yes, that's right.

25 Now, I understand from paragraph 48 of your affidavit, page 1147, that the brown and grey mottled soils cover about 50 per cent of coupe 17E?---Would you please repeat the paragraph number?

30 Paragraph 48, sorry?---Yes, I have found it. Yes, okay?

35 So that there would be, assuming that coupe 17E were exposed to a fire regime such as that which we see in photographs AM, about 50 per cent of the coupe would be at risk of erosion?---Well, what hasn't been allowed for there is the proportion of very stony brown and grey mottled soils. All the soils recognised within the coupe had variable stone content. Even the brown and grey soils, some of those, were very highly stony - greater than 50 per cent stones and this would - stoniness is one of the factors we take into account when assessing erodability or erosion and erosion hazard that would tend to sort of mitigate any erosion by trapping sediment.

40 Well, again that will depend upon whether the stoniness is evenly distributed across the grey brown soil?---Well, wherever there are very stony brown and grey soils the erosion risk will be diminished.

45 Quite so. And the reality is until such time as we see the surface of the coupe - if you will excuse a clumsy word - uncluttered by leaf litter and twigs and so forth, we will not know whether there are patches that are not particularly rocky or whether the rock is evenly distributed across all of the 50 per cent

surface of the coupe?---That would be one way of assessing it. Another way would be doing detailed grid transects but extremely time consuming.

5 Could I just get an understanding from you please as to what it is that soil strength is?---Soil strength is basically another word for soil consistence. Basically it is a simple field test which involves taking a small tube of soil, about one centimetre in each direction and squeezing between the thumb and forefinger. It is just an empirical test. It basically just indicates - in many ways it just indicates moisture status. The drier the soils are the higher the strength.
10

Is it a measure of erodability?---No.

15 And is that what you were saying in paragraph 49, about two-thirds of the way through that paragraph, where in the round brackets you say:

Note that soil strength is not related to aggregate stability and soil erodability.

20 ?---That's right.

Could I just get you though to focus on paragraph 54D?---Yes.

25 You see there you say, do you not:

Taking into account stone content, confined soil strength, permeability and drainage class, the red soils under wet and dry forest were assessed as having low erodability.

30 Is that not connecting soil strength with erodability in relation to those two soils?---Confined soil strength is a different concept from the other soil strength I referred to in paragraph 49. Basically it is unconfined soil strength. As I said it involves taking a piece of soil - I state there 20 millimetres in diameter, where as the confined soil strength is basically - you have got the soil
35 in situ, basically it is a situation where you have a soil profile and you try and insert a penetrometer or any other instrument into the soil without it being disturbed. One is disturbed, you actually taking a piece of soil sample.

40 I see?---And the other one is not. You are actually trying to - it's in place.

So confined soil strength and soil strength are two quite different tests?---That's right.

45 I see. Thank you. Now, I wanted to ask you some questions about the clearing of surface of the coupe to something that is referred to as mineral earth and as I understand it, that effectively means bare dirt?---I prefer the word "soil".

Soil. All right?---Yes.

Now, are you familiar with the notion of wildlife habitat clumps or reserves of skyline constraint and so forth?---Yes. I am familiar but not strongly familiar but I am aware of the terms, yes.

5

And are you familiar with the idea that coupe boundaries are intended to act as the edge of all harvest operations including after harvest burnings?---Yes, I am.

10 And are you familiar with the suggestion that is made in technical bulletins that the way of ensuring that the fire does not spread into non-harvested areas is by achieving a mineral earth boundary?---That's right.

So you are familiar with that as a concept?---Yes.

15 I don't see any mention of that in your affidavit. Why not?---What, a mention of fire breaks?

Yes?---Basically because the studies we have done previously show that fire breaks are a relatively small proportion of the coupe.

20

Right. But just correct me if I am wrong, the only safe way that you are aware of, of restricting fire from spreading beyond the harvest area into unharvested areas is by way of a mineral earth break?---Yes.

25 Thank you. And you would expect that to be achieved by the use of machinery?---That is correct.

Most likely the blade of a bulldozer or perhaps the bucket of an excavator?---Yes.

30

But either way do I understand that the intention is to achieve a fire proof boundary by the removal of all flammable material on the earth?---That is right.

35 That inevitably must in some way disturb the surface - perhaps only a centimetre or so but it must inevitably disturb the actual soil itself?---I would think that that is a fair enough assumption.

40 Sure. For instance if one were achieving this mineral earth break with a bulldozer blade, there inevitably will be displacement of soil?---Yes, I imagine, as you said before, the top millimetre or whatever and places would be disturbed.

45 Sure. And in other places it may be substantially more than that, particularly if you have got rough country or an area where it is physically impossible to achieve that degree of precision with the application of the blade?---That's right.

Do I understand that that would have two consequences. Firstly, it would lead to greater areas of disturbance than you have factored into your calculations?---It may well do but as I just stated previously the actual area exposed by these fire breaks are relatively minor.

5

Right?---So as a proportion of the total per pit it would be quite small.

Do I understand though that in reality it would mean that the entire boundary of the coupe is likely to be cleared to a mineral earth?---Well, again you must remember that we have got these very rocky soils and I think there is - well, there is a photograph in my evidence there showing that in many places the surface rock content is greater than 80 per cent so there would be not much point really in doing much in the way of mechanical disturbance apart from just sweeping away large logs so the actual mineral soil disturbed would be negligible, if not zero, in many cases.

10
15

Can I just get you to focus on the question please? The intent of it would be that the entire boundary of a coupe would have this mineral break around it?---No, the intent would be to have - I am trying to factor in the very stony soils again - the intent would be to have, depends on - by mineral soil I imagine you mean the soil fracture less than two millimetres. The sand, silt and clay part or do you mean mineral soil to include rocks as well?

20

I am not sure what the intent of the relevant technical bulletin is, you see. I am not a forester - - -?---Right. Yes. Well, basically an intent is to remove as much flammable material as possible.

25

Sure?---Sure, yes, and that may well expose some mineral soil or rocks.

30

Or rock?---Or rock.

So long as there is not a substantial flammable body of material left?---That's right.

35

Now, of course that also introduces a dynamic that you have not taken into account because to the extent that there is soil disturbance that increases the risk of erosion in the short term?---It may well do. But again it depends on the degree of roughness of the surface.

40

And would you agree with me that to the extent that the boundary is around wildlife habitat clumps, strips or streamside reserves, that that mineral earth boundary is going to remain as a visible feature on the landscape for quite some years to come?---My experience with fire breaks - going back to fire breaks when they were first formed - is that it doesn't take that long for litter from surrounding vegetation to settle on the fire breaks and eventually this will break down and be incorporated into the soil so it is not a permanent process, it is not a static process. When these fire breaks are made you start getting leaf litter falling back onto these breaks from the surrounding forest.

45

Now, would you understand there to be a policy of maintaining those breaks as a clear division between reserved areas and regenerating areas?---That I am unsure of.

5

And do you have any understanding of a policy in relation to the retention of snig tracks - main snig tracks - in anticipation of them being used to access areas of the coupe or alternatively perhaps snig tracks at the next harvest cycle?---In most cases these snig tracks would be encouraged to regenerate.

10

Thank you, your Honour.

MR D. GUNSON: I don't wish to re-examine and Dr Laffan be relieved, your Honour?

15

HIS HONOUR: Yes. Dr Laffan, thank you for your evidence. You may be excused from further attendance?---Thank you.

20 <THE WITNESS WITHDREW

[2.42pm]

MR D. GUNSON: As foreshadowed by my learned friend, Mr Tree, your Honour, we don't have any further witnesses this afternoon. We could have but in fairness to my friend we would be taking a witness out of order and - - -

25

HIS HONOUR: Right. Who will give evidence tomorrow?

MR D. GUNSON: It is intended that Dr Sandra Roberts will give evidence tomorrow, your Honour.

30

HIS HONOUR: Dr Roberts, yes.

MR D. GUNSON: And we are still trying to determine who comes after her.

35

HIS HONOUR: All right.

MR TREE: It will be either Haywood or Grove, will it not?

MR D. GUNSON: It will be either Haywood or Grove, your Honour.

40

HIS HONOUR: Is Dr Roberts likely to be cross-examined for most of the day?

MR TREE: The estimate I have given my friend is about half a day but it could be a little longer.

45

MR D. GUNSON: I just confirm that. It will be Haywood or Read.

HIS HONOUR: Yes, all right. And any advance on the other matter raised?

5 MR D. GUNSON: Yes, I think we are moving towards a position, your
Honour. I think I can say that we will be in a position to provide our
submissions by 26 June and it is proposed that the intervener's submissions be
filed and served by 10 July, the applicant's submissions by Monday, 7 August,
the respondent's reply 21 August and Ms Mortimer, in her email to me
10 suggested that oral argument for two days in the week starting 28 August or the
week starting 4 September but I imagine that is very much subject to your
Honour's commitments at this stage.

HIS HONOUR: I know I am duty judge the week of 4 September. The week
15 of 28 August I believe, subject to checking, but I am fairly confident that I
have kept that free save for the Friday which I think is 1 September which is a
directions day so maybe the 29th, 30th and 31st or something like that, just
reserving a third just in case.

20 MR D. GUNSON: That only worries Mr O'Bryan, who hasn't had a speaking
role and we think he might want a long speaking role towards the end, your
Honour.

25 MR O'BRYAN: That second week will be adequate, your Honour, even if I
am on my own.

HIS HONOUR: One member of my staff - and I won't say who - did say
when we were walking off to have something to eat at lunch time that what I
should do is at the end of the evidence, invite counsel to address immediately
and give you 10 minutes each and five minutes for reply and give an ex
30 tempore judgment.

MR O'BRYAN: I am prepared to say I am game if you are, your Honour.

35 HIS HONOUR: I have just seen Kokoda. I am not that courageous although I
do believe in sacrificing mateship and endurance. All right. If there is nothing
else - what I will do is - I take it there is no objection to that sort of time frame?

40 MS MORTIMER: Well, it was proposed by us, your Honour, and my learned
friend had asked four weeks to do his submissions so that is what I started
with.

HIS HONOUR: And the parties are happy that I reserve the 29th, 30th and
31st?

45 MR D. GUNSON: Yes, your Honour.

MS MORTIMER: Yes, your Honour.

HIS HONOUR: And that they know now in advance and that those days are in their diaries too. I am pretty confident the only commitment I had was the Friday, which is 1 September, and if that is not the case I will let you know but I usually carry my diary in my head, much to the annoyance of my wife. The
5 Court will now adjourn until 10 o'clock.

MATTER ADJOURNED at 2.46 pm UNTIL TUESDAY, 16 MAY 2006

10

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NONE REQUESTED