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Q. And on the basis of Mr Wilkinson's evidence that involved a structural assessment. Do you accept that?

A. Yes.

5 Q. Now Holmes ascertained that there was this actual or potential design defect in the building. I say potential because there was an investigation as to whether additional reinforcing had been installed at the time of construction. It was not actually feasible for Holmes or its client, the consultants and the Canterbury Regional Council to do anything to the building unless the building was purchased by the Canterbury Regional Council. Do you follow that?

10

A. That's correct, yes.

Q. You can't repair somebody's building just because you think it's a good idea.

15

A. Yeah, I quite agree.

Q. So the missing element in your analysis in paragraph 21 is the actual owner of the building which in this particular case was the receiver of a failed 1980s development company. What do you say the obligation of each of the engineers was to tell the receiver?

20

A. Well for Holmes Consulting Group none at all. That's providing the design engineer was clearly accepting and not rejecting their advice. For the design engineer he clearly had to take some action to, well both investigate and ultimately correct the situation which he could only do through the owner of the building, or by advising the owner.

25

Q. Are you aware that throughout the period that we're talking about the building was unoccupied except for, you may have heard my friend Mr Mills referring to some work, people doing a fitout at a later stage. Did you know that?

30

A. No I knew that the majority of floors were unoccupied but that two of them on the evidence I saw was that they'd been occupied. If they were occupied by a fitout well that's not within my knowledge.

Q. So the building on the available evidence is not shall we say tenanted and then in 1991 it is reported in the *Christchurch Press* that the building

has been sold to a new owner and the original design company, Alan Reay Consultants Limited, then informs that owner of the defect in the building. Would you agree that that was a correct discharge of an engineer's duties?

5 A. Yes if, if the matter hadn't been resolved and corrected prior to that.

Q. Well the drag bars were installed subsequent to Alan Reay Consultants Limited informing the new owner. Were you not aware of that?

A. Not until today.

10 Q. No. So to be clear on the basis that that's the sequence that was a proper action in terms of proper conduct of engineers in your view?

A. Yes, yes under that circumstance. I personally believe that the matter should have been corrected at a faster timeframe than that contrary to the previous witness but in that it hadn't that would then be the right obligation.

15 Q. In paragraph 34 of your evidence you address the question of the obligation to tell the Council.

A. Yep.

Q. Did you know before hearing Mr Hare today that he had personally gone to see the Council's chief engineer Mr Bluck?

20 A. I had previously read Mr Hare's statement of evidence, yes.

Q. Yes but did you know that they'd actually had a meeting at which he had specifically asked what the Council knew of defects with the building?

A. I knew that he'd had a meeting and he'd, yes, to enquire as to whether the Council had any knowledge of defects, yes.

25 Q. Have you previously seen the note that Mr Hare made of the defects which Mr Bluck told him about?

A. Yes.

Q. You have seen that?

A. Yep. I, I think so.

30 Q. So having had that meeting Mr Hare would know that the Council was unaware of this design defect. You agree?

A. I think it would be reasonable that they would be able to believe they would be unaware even before the discussion because otherwise it would not have got a building permit.

5 Q. I think you've missed the point of my question. I'm saying that Mr Hare, as a result of the meeting, would know that the Council did not know of the defect.

A. Correct.

10 Q. So I put it to you in those circumstances Holmes Consulting Group should have told Mr Bluck of the defect which was found having themselves sought Mr Bluck's assistance in the matter.

A. Well I don't know that they sought assistance in that particular aspect of that matter but, and I'm also a little unclear on quite the sequence in relation to the investigation that he, that Alan Reay Consultants were carrying out on, on site, whether this was before or subsequent to that but he, they had reported it to Alan Reay and that's where the responsibility lay in my opinion.

15 Q. Well it's apparent that the matter was notified to Alan Reay Consultants Limited a very short period of time after the meeting with Mr Bluck. We may not have an exact date but it's a matter of a day or days and is it your view that although Mr Bluck had no knowledge of this matter Mr Hare and Holmes Consulting had no obligation to tell him even though they'd engaged with the Council about it?

20 A. Certainly it would be quite improper for him to raise it with the Council at the time if he had not in fact informed Alan Reay at that time. That is the first line. After that –

25

**JUSTICE COOPER:**

Just a minute. It may not be apparent to the witness but isn't the evidence that at the time when Mr Hare spoke to Mr Bluck he was not himself aware of the problem that he subsequently discovered?

30

**MR RENNIE:**

That's correct Sir.

**JUSTICE COOPER:**

Yes.

5 **MR RENNIE:**

I put it on the basis that within a day or two he had become aware of it because he saw Mr Bluck I think, from memory, on the 29<sup>th</sup> of January and on the 31<sup>st</sup> of January he wrote a report disclosing the defect.

10 **JUSTICE COOPER:**

Yes.

**MR RENNIE:**

I don't think we can do better than that in terms of time.

15

**JUSTICE COOPER:**

No well it wasn't apparent to me that the witness appreciated that.

**MR RENNIE:**

20 I acknowledge Sir that there may have been that doubt and I'll simply put it again.

**CROSS-EXAMINATION CONTINUES: MR RENNIE**

Q. Let's assume that on the 29<sup>th</sup> of January neither Mr Bluck nor Mr Hare knew of the defect.

25 A. Okay.

1620

Q. And on that day Mr Bluck supplies his list of known issues about the building to Mr Hare. On the 30<sup>th</sup> or 31<sup>st</sup> of January 1990 Mr Hare becomes aware of the issue. Is it your proposition that neither he nor  
30 Holmes Consulting Group had any responsibility then or afterwards to tell the Council?

- 5 A. That is correct. At the time that he saw Mr Bluck he only had limited drawings so had identified that it was a possible problem. When he went to Alan Reay Consultants office and was able to look at the completed drawings he raised it with them and they still believed that it is, there was a possibility that in fact it had been corrected during so at that point it was still only a possible defect not an established defect. To be reporting it to the Council at that point certainly would be inappropriate and subsequent of that they received both the site investigation they partook in or witnessed the site investigation, they received the letter of 2 February and therefore the responsibility lay entirely with Alan Reay Consultants to report to the Council and indeed if the defect was confirmed or couldn't be, actually be disproved and remedial work was required then in fact they would be seeking a building permit.
- 10
- 15 Q. And your basis for that interpretation is solely your interpretation of the Institute's code?
- A. Yes my entire evidence is my opinion.
- Q. Of what the code is –
- A. Of the code.
- 20 Q. Yes.
- A. And also what I, how I believe reasonable and responsible engineers behaved in 1990 and subsequently.
- Q. Let us assume for the moment that you are right about the code, would you accept that the outcome that we've just discussed is not an outcome in the public interest and the code should be changed?
- 25
- A. Yes if that's – a similar question that was put to an earlier witness. I would also think that a clarification or something more definite than the, or even the current code of ethics has in place, would actually be beneficial. The point I would make though, it is a defect in relation to the code of the time of design not the current code.
- 30
- Q. Are you saying that the provisions of the current code differ and would produce a different result?

A. I think the substance of the current code is essentially the same as it was in 1990. It is four pages long, compared with one. It does use stronger language in describing outcomes but I think the obligations it sets are not very different.

5 Q. Would you accept that one of the risks which is well recognised in risk analysis is an ambiguity where there are two persons involved and each person thinks the other is responsible for the matter?

A. That such a situation can exist, yes.

### **CROSS-EXAMINATION: MR MILLS**

10 Q. Well I will try not to cover ground that has been covered but this is the expert who has been put forward on this issue I think there are some issues I ought to explore with him. And again Mr Robertson this is not for the purpose of pointing a finger but rather trying to get the best understanding possible of how this works and to take advantage of your  
15 knowledge of IPENZ ethics rules.

First thing I just want to get a further view from you on is this question of the timeliness within which one would have expected Alan Reay's firm to have taken steps to deal with this critical structural weakness that was identified in the building and I think you said while you were being  
20 cross-examined by my friend Mr Rennie that you didn't altogether agree with what Mr Wilkinson had said on that timeline. What is your own view on that issue as in ethical obligation arising out of the IPENZ rules?

A. I think I agree with him when he said it wasn't a matter of urgency but I don't consider 21 months to be proceeding expeditiously.

25 Q. What would you consider proceeding expeditiously on these facts?

A. Well I think certainly in the circumstance of this building where the majority of building, floors sorry, were unoccupied, that alone would have triggered a good opportunity to do the work with minimum disruption of people in the building. So that's quite perhaps a bit aside  
30 from nevertheless you have got to do it anyway. I haven't analysed it but I would think, three to six months.

Q. I take it that you are familiar with the facts that are involved here and the way in which the Holmes report put the seriousness of the issue, that that identified?

A. Yes.

5 Q. I don't need to bring that to your attention?

A. No I have read the reports.

Q. Yes. And do you agree with Mr Wilkinson who agreed with me that this is properly described as a critical structural weakness in the building?

A. Yep.

10 Q. And we know now if we didn't know it before, that an earthquake can strike at any time and what the report was saying was this building could simply tear apart and collapse and would collapse fast?

A. Yep.

15 Q. So how does one judge this in terms of, you have said you said on two ethics issues for IPENZ, one in the 1990s, another one this year I think is your evidence. Would this be regarded as a breach of the IPENZ code of ethics do you think that it took 20 months after this issue was identified before it was attended to?

20

**JUSTICE COOPER:**

Just a minute, Ms Smith.

**OBJECTION: MS SMITH (16:26:45)**

25 **MS SMITH:**

(inaudible 16:26:45) been put to the witness because we don't have clarity over the evidence in terms of the period of delay and the reasons for that.

**JUSTICE COOPER:**

30 All right, well Mr Mills that may be a fair point so you can put it on a conditional basis presumably.

**MR MILLS:**

I think we do have clarity around the period I accept that we don't necessarily have an understanding of the reasons for that at least not a full understanding.

5

**JUSTICE COOPER:**

Is that right Ms Smith?

**MS SMITH:**

10 There's actually no evidence at all in terms of the reasons for the delay and who (inaudible 16:27:24) so I am happy for it to be put on that basis.

**JUSTICE COOPER:**

15 I thought you were implying that there was insufficient evidence of the extent of the delay.

**MS SMITH:**

No –

20

**JUSTICE COOPER:**

Just the reasons?

**MS SMITH:**

25 No, the point I am making is that we understand the period of the delay but we do not understand the reasons for that, for example if the owner had not progressed the work, we don't know.

**JUSTICE COOPER:**

30 Yes, so there may be reasons for the work not being progressed which have nothing to do with ethical obligations or their breach, is that what you are saying?



**MS SMITH:**

Well the question that I understand is being put the witness is why weren't the works progressed, but surely information and actions by an owner might have an impact on how an engineer might progress matters.

5

**JUSTICE COOPER:**

All right, well Mr Mills you have heard that discussion.

**MR MILLS:**

10 I did and I accept that and I thought it was to be put on two limbs that we didn't know the period of time and I understand that it is simply a matter of the reasons and I acknowledge that that must be correct, so it is probably difficult for Mr Robertson to give a view on this other than what he has given and just standing here now I can't actually think of a way of putting it to him that would  
15 lead to a very meaningful response I think.

**CROSS-EXAMINATION CONTINUES: MR MILLS**

Q. Now, you were also asked some questions by my friend Mr Rennie about the issue of reporting to the Christchurch City Council, do you remember he put it to you in the context of the meeting that Mr Hare had  
20 with Mr Bluck and accepting for the moment that it would have been premature for Mr Hare to have said anything to Mr Bluck at that point, which was your position I think. Do you think there would be circumstances in which it would be an actual breach of the IPENZ ethics rules for an engineer who becomes aware of a critical structural  
25 weakness in a building to not report it to a local authority?

A. Can I ask you to just to put the question again?

1630

Q. I accept what you have said here for the purposes of the question, that it was premature for Mr Hare to have raised with Mr Bluck when he met  
30 with him this issue about a critical structural weakness. I am interested in the way you think the IPENZ ethic rules work in terms of when there might be an obligation to report knowledge of a critical structural

weakness to a local authority, and I put it to you conversely, as could you imagine it ever being a breach of the ethics rules to not report a critical structural weakness to a local authority?

5 A. I don't think the rules as they stood then were actually tight enough in that respect and I believe and I said in my evidence that nevertheless, even though it says they should just make that party aware, it's not the way I believe I or other responsible engineers would behave. If you're, so the circumstance I believe you're putting to me would be where you believe that the matter is not being taken seriously or has been  
10 disregarded, even if it was taken seriously and that nobody was doing anything about it. Under those circumstances I don't believe my action would actually be to raise it with the Council, at least not in the first instance, but to raise it with IPENZ.

Q. And how would you expect IPENZ would deal with that?

15 A. Um, well they would advise whether they were going to continue with the matter and raise it further, in which case you may become a witness to them or whatever. Or if, or IPENZ would advise, you know, that's up to you. Now if it's up to you then the Council certainly would be the next body to whom I'd turn.

20 Q. Do you see a difficulty with an obligation on an engineer who becomes possessed of this knowledge about a critical structural weakness, conveying it to a Council when the engineer may have become aware of that information through a client who itself has declined to disclose that information further? In other words it's effectively been received in a  
25 situation of confidence, how would that be dealt with?

A. I contemplated that because I think there is conflict between the various sub-rules. To me the obligation to the public interest ultimately would take precedence. There is a clause about not disclosing confidential information so I don't think, having had the client say, "Well I'm not  
30 going to do anything further," then I think the engineer's first step would be to tell that client, "Well under these circumstances I feel obliged to raise it with the Council." I think he should at least give his client that

opportunity and I don't know what other sort of answer he might get to that but then he would raise it with either IPENZ or the Council.

5 Q. So even where it might be a breach of confidence which could lay that engineer open to actually a legal claim for breach of confidence unless they could raise one of the broad public interest exceptions to confidence, you say that there could be an obligation to report that to the Council?

A. There could be a circumstance under which that obligation arose where ultimately the public safety was the issue.

10 Q. In your experience is that an issue that's ever come before IPENZ for consideration?

A. I wouldn't have any idea.

15 Q. You see we've actually got a potential example of that pretty close to the situation that I'm putting to you on the facts here, because you said in response to a question from Mr Rennie that the obligation here would've been to report to the owner, and effectively the owner here was the receiver. Do you remember saying that?

A. No I think that he would report to the engineer, the design engineer and the design engineer would report to the owner is what I believe I said.

20 Q. Okay, I may have misheard you.

**JUSTICE COOPER:**

It was Mr Rennie's proposition.

25 **MR MILLS:**

Yes it was.

**JUSTICE COOPER:**

30 That the engineer becoming aware of the defect might have an intended obligation to report the matter to the owner.

**CROSS-EXAMINATION CONTINUES: MR MILLS**

Q. Yes and if the, if it was reported to the design engineer and the engineer who had become aware of this issue, who conveyed it to the design engineer but concluded the design engineer wasn't taking it seriously, again the next step would have been the receiver would it, on the facts here?

A. Um, no well –

Q. Or is it IPENZ first?

A. – well I would've gone, my own action would've been to raise it with IPENZ.

Q. I see, but as far as the original design engineer, that obligation would be to convey it to the receiver?

A. Yes.

1635

Q. Now you're no doubt aware that the first obligation of a receiver is to the debenture holder?

A. I'm not that familiar with receivership rules.

Q. Well I can tell you that this issue has – actually was explored with KPMG and that was precisely the response that was given that the first obligation of the receiver is to the debenture holder which raises a question about the adequacy of a – of the design engineer reporting it to the owner in those circumstances. Now I mention that only because you say that you think there are some difficulties with the interpretation of the IPENZ ethical rules. To me they seem to be – to have a significant number of unresolved conflicts in them and contradictory obligations. Do you agree with that characterisation?

A. Yes I said as much under –

Q. Yes. Now on this question of conveying the information to the original designer and placing it on the original designer, my understanding of what Mr Wilkinson said is that at least for practical purposes he regarded Mr Banks as being the one that he was placing the obligation on. Now you know from the facts here that Mr Banks in fact was not the original designer, don't you?

A. Yes, well not the original engineer -

Q. Yes.

A. - but the designer was Alan Reay Consultants.

5 Q. Yes, so when you talk about the obligation under the IPENZ rules being on the – giving rise to an obligation by the reviewing engineer to report to the original designer, who in your view is that original designer here for those purposes?

A. Alan Reay Consultants.

10 Q. Yes. I take it your position is that the obligations that we're talking about here under the IPENZ rules are not triggered by subsequent information that might emerge about a building that was code compliant at the time, but where state of knowledge within the engineering profession develops so that there is then suddenly an awareness that a particular type of design is now identified as being a critical structural weakness.  
15 That doesn't in your view trigger any obligation on the original designer to go and take any reporting steps over that, and to make that tangible there've been issues coming out of the Royal Commission process, for example about the stairs issues in the Forsyth Barr, a question of diaphragm connections which is what we're talking about here in part,  
20 those may now be seen as giving rise to critical structural weaknesses which weren't seen that way originally. Does that trigger any obligations at all on the original designer?

A. Yes, yes, well it can do, it was going to depend on whether you're  
25 meaning, he becomes aware it's – that the codes have just changed and moved on, which happens progressively throughout society, or through time, or whether it is a particular critical issue and I can certainly think of cases where there have been critical issues discovered, where knowledge – engineering knowledge has taken a quantum jump.

Q. Yes.

30 A. And actions have been taken in that regard.

Q. And do you think that there is an ethical obligation on the original designer as that designer becomes aware of new information coming forward, that does identify that a building previously designed does have

a critical structural weakness in it. Does that trigger any ethical obligation?

5 A. I don't believe it triggers an obligation to trawl back through your archives to check whether such a situation may have existed. Therefore  
10 you are relying pretty much on the knowledge of the senior partners or senior personnel of the company involved to think back, and think, oh yes we did do that. If that situation arose and it would depend somewhat on the nature of the, whatever the issue was, there can be circumstances where they may say to our client, look, engineering knowledge has advanced. This is something that is applicable to your building. This would be the implication and then obviously there's going to be discussion between him and that owner as to what the next steps are and where it goes.

1640

15 Q. But no obligation under the ethical rules even though the original designer does become aware and does remember – I did that building, I'm now aware that what I did there has turned out to be a critical structural weakness, has caused failures in other buildings – doesn't trigger any ethical obligation to re-engage with the current owner I take  
20 it?

A. Again it's going to be a matter of degree. The subject of hollow core slabs has come up in this proceeding, not today –

Q. Yes.

A. – but from what I've followed –

25 Q. Yes.

A. – which is something that research has determined has a problem.

Q. Yes.

30 A. Now I don't believe that every building in New Zealand that has hollow core slabs has suddenly been reviewed or pulled out of their archives by the relevant engineers. Nevertheless it is a matter that engineers focus on and sometimes not what the design engineer but it may be as a result of a pre-purchase agreement or whatever it is that triggers it and those sorts of things do get reviewed, yes.

- Q. Yes. I think I'm hearing from you as you talk about these issues that you don't think the current, and I would have said 1990 and then asked you separately about current but I think you agreed with Mr Rennie that in substance there's really not much difference between them, that's right isn't it?
- 5 A. The language is stronger but I think the obligations are pretty similar.
- Q. Yes and am I hearing from you as you talk about these issues that you don't think that those current ethical rules are entirely satisfactory in relation to the issues we've been talking about?
- 10 A. With, with regard to an obligation to report further –
- Q. Yes.
- A. – I was relating that to the question that was actually put to a previous witness –
- Q. Yes.
- 15 A. – that I would support that there is, I would welcome a tightening up of the rules. Now quite what that tightening up might say –
- Q. Yes.
- A. – is for the future to determine, but myself I can see that there is a rule about what you do if your advice is neglected or rejected.
- 20 Q. Yes.
- A. And even that I think is weak because all it says is you make them aware of the implications.
- Q. Yes.
- A. And that by, because it says no more it implies that's all you've got to do.
- 25 Q. Yes, yes and based on the position you hold in the engineering profession and the networks that you have, have you any feel for whether that would be widely supported within the engineering profession, some revisiting of these IPENZ rules to deal with those issues more specifically?
- 30 A. I'm not currently on the SESOC Committee with respect to structural engineering but, yes, I believe the profession as a whole would like any ambiguity removed and to have a, a fairly clear set of guidelines. Now I

realise that the code of ethics applies not just to structural engineering, it's all fields of engineering and therefore to write up something absolute that's going to work in all circumstances would be a very difficult and probably a lengthy document which is not what we would welcome.

5 Q. Yes.

A. I think something more than four pages will then not get absorbed by the engineering practitioners as a whole but yes something that tightens up on what your obligations are under those sorts of circumstances, I think the professional would, as a whole, would not shy away from it.

10 Q. All right. Thank you very much.

### **JUSTICE COOPER ADDRESSES MR REID**

### **CROSS-EXAMINATION: MESSRS HANNAN AND ELLIOTT – NIL**

### **QUESTIONS FROM COMMISSIONERS FENWICK AND CARTER – NIL**

#### **15 QUESTIONS FROM JUSTICE COOPER:**

Q. Just in relation to your paragraph 21.4. In that paragraph you've listed the steps which if taken would mean the engineer was acting properly. 21.4, "Be informed as to whether the designer accepts responsibility for attending to the matter." That's quite a significant stage it seems to me  
20 listening to your evidence because at that point the reviewer has advised the person that he or she thinks is responsible and got the assurance that that person is appraised of the matter. Now wouldn't it follow from that that duties of reporting, whether it be to the Council or any other affected third person, would be the responsibility of the  
25 designer who has taken on board the issue?

A. Yes, yes it's the responsibility of the original designer in my view.

Q. And the person who, the reviewer who has fulfilled his duty at that point is entitled to say exactly that.

A. Yes I believe that in right to be informed I was more excluding the  
30 opposite where he's told to go and mind his own business.



Q. Yes well reaching a view based on reasonable grounds that the matter is being, has been understood. Now then I would have thought that the original designer who conveys that impression then has a correlative duty to actually take appropriate action in relation to the matter. Is that a fair comment?

5

A. Well I think to not do so would be negligence.

Q. Now what if there's no money to remedy the problem? What happens then?

A. Well obviously he can talk to his insurers but apart from that it doesn't alter the situation whatsoever.

10

Q. Yes.

A. You've got a defect, it needs correction, obviously if the owner says, well I'm not going to let you into my building that might be more of an obstacle than the money side, but money isn't part of the equation.

15

Q. If there's a delay whether for lack of money or for some other reason the duty of the reviewing engineer could hardly spring up again after that period of delay could it?

A. No and I believe I said they didn't, Holmes did not have a duty to police subsequent action or maybe I didn't relate that particularly to Holmes but in any circumstance the reviewing engineer does not have an obligation to police whether it's happening.

20

Q. So 21.4 was a sort of handover?

A. It's a passing of the baton.

Q. Yes. All right.

25 **QUESTIONS ARISING - NIL**

**WITNESS EXCUSED**

**JUSTICE COOPER ADDRESSES COUNSEL**

1650

**MS SMITH CALLS****GEOFFREY NIGEL BANKS (SWORN)**

Q. Mr Banks you can confirm that your full name is Geoffrey Nigel Banks?

A. I can.

5 Q. And do you have your brief of evidence in front of you?

A. Yes I do.

Q. Could I get you to read that from the second line of paragraph 1 please.

A. Certainly.

**WITNESS READS BRIEF OF EVIDENCE**

10 A. My only involvement with the CTV building was in the early 1990s. The building was not known as the CTV building then although for simplicity I will refer to it as the CTV building. I simply knew the building as 249 Madras Street.

My involvement occurred in a relatively brief period 22 years ago. I  
15 have not retained an intimate knowledge of all matters relating to the CTV building and the calculations in light of the time that has elapsed since my involvement and the many building projects that I have been involved with since. It was some weeks after the collapse that I realised I had undertaken work on the CTV building, and that was around the  
20 time I was contacted by Dr Hyland who was investigating for the DBH.

My evidence is to the best of my recollection. I am able to remember some matters and in other cases I have relied on documents produced at the time to aid my recollection. These documents have been provided to me by counsel assisting the Royal Commission and by Dr  
25 Reay. The purpose of having accurate file notes and calculation records is to ensure an engineer including the engineer who created the original record can come back years later and know that they can rely on there being an accurate record available for examination or review. I'm conscious however that some things may have occurred outside of  
30 that essential written record and that the record is also not complete. For example I have asked for copies of my diaries and timesheets as these would have contained records of meetings and conversations that

I had at that time. I have been advised by Dr Reay's lawyers that these no longer exist which is understandable given the passage of time.

5 Before going into the detail of my evidence I want to acknowledge that the CTV building is now the cause of anguish and heartbreak for a large number of people. I am deeply saddened by the terrible loss of life and many injuries the collapse as a result of the collapse of this building. I cannot know the grieve it has caused the families and friends of those who died and to those who were injured. I do not know why the collapse occurred and like all those involved I look to this inquiry to  
10 consider all the issues and to help ensure nothing like this could happen again.

I graduated from the University of Canterbury in 1980 with a Bachelor Degree (first class honours) in Civil Engineering. I am a chartered  
15 professional engineer and a professional member of IPENZ.

I studied at university under Professors Bob Park and Tom Paulay who were world experts in seismic design of concrete structures at that time, and Nigel Priestley who has given expert evidence. I can recall  
20 graduating with the latest copy of the concrete code NZS3101. Just on that point I think it may have been called 3101P at that time, which the university had a significant involvement with and with the book 'Reinforced Concrete Structures' written by Park and Paulay my impression at that time was that the University of Canterbury was at the forefront of reinforced concrete design for earthquakes.

25 I have been practising as a structural engineer for some 30 years. My experience covers a wide range of buildings from houses to low rise commercial buildings to a number of high rise projects. Most of that experience relates to the design of new buildings although I did design some strengthening of older buildings such as parts of the Arts Centre in  
30 Christchurch.

I worked as a structural design engineer with Holmes Wood Poole and Johnston now Holmes Consulting Group from around 1982 to 1986. I designed low rise commercial and public buildings and a number of

multi-storey buildings in the Auckland CBD. Much of that work was under the direction of Russell Poole, a senior director of the firm. Those buildings were mostly constructed using reinforced concrete frames but some would have had shear cores. I can recall one building was the  
5 Stock Exchange Tower in Queen Street but can't recall the specifics of all the building names and types.

I left Holmes in 1987 to start a new practice Cambridge Consulting Engineers with another engineer. CCE undertook the design of a number of low rise commercial buildings.

10 Alan Reay Consultants Limited, ARC, was formed in 1988 providing a new corporate entity which continued the work of Alan M Reay Consulting Engineer, Dr Reay's former practice. I was invited by Dr Reay to join ARC late in 1988 after CCE had worked as sub-consultant for him on the Duty Free building in Cathedral Square. I was aware that  
15 Dr Reay had a PhD in seismic design and a strong reputation in the commercial building sector. I was employed at the end of 1988 and became a director on 31<sup>st</sup> of March 1989 and subsequently a shareholder. I remained at ARC for 13 years until late 2002 when I left and formed Structex. At, at the time I started in 1988 ARC was  
20 undertaking a range of work but the dominant project type was low rise commercial and industrial buildings, (that is one or two storeys high). However, I do recall doing construction monitoring on the Heatherlea apartment high rise building in Deans Ave.

25 The CTV building.

I had no involvement in the original design or construction of the CTV building as that occurred prior to my joining the firm. It was designed by Dr Reay's previous practice Alan M Reay Consulting Engineer not by ARC.

30 In 1990 I undertook work to investigate a particular aspect of the building that was thought to be deficient following a review by Holmes which I refer in more, which I refer to in more detail later. I designed

retrofit works which were undertaken in 1991 (the retrofit works). I designed the retrofit works to the standards at that time.

My recollection is that it was principally Dr Reay and I involved in matters relating to the retrofit work. My role was focused on the more detailed aspects while Dr Reay had an oversight role. As I was relatively new in the company and also new to the building I liaised with Dr Reay throughout my involvement.

I recall Dr Reay telling me that David Harding has done the calculation, had done the calculations for the original design. I have recently read John Hare's evidence that this was Mr Harding's first design of this type of building.

Q. Mr Banks I think you said John Hare's evidence in fact it was John Henry's evidence.

A. I'm sorry, John Henry's evidence.

Q. Continue at line 3 of paragraph 15 please.

**WITNESS CONTINUES READING BRIEF OF EVIDENCE**

A. At the time of my involvement I cannot recall being briefed on Mr Harding's experience with this type of building.

Mr Harding had left ARC just before I started and to my knowledge Dr Reay was the only engineer in the firm at that time with knowledge of the CTV building.

In terms of retrofit work sketches CD 1, CD 2 and CD 3 ((referred to in more detail later) were prepared by one of the drafting technicians. I undertook all calculations. Although Dr Reay may not have specifically reviewed the calculations he would have been aware of the remedial works I designed.

The Holmes Report.

In late 1990 I became aware that Holmes was looking at the CTV building, sorry in late January 1990 I became aware that Holmes was looking at the CTV building as part of due diligence being conducted by a prospective purchaser. I'm not clear exactly when my involvement began although it is likely to be around 29 January 1990 as that is the

date of my initial calculations. I may have been introduced to one of Holmes' engineers when they came to ARC to inspect the files but I cannot specifically recall that.

5 I recall receiving a copy of the Holmes Report dated January 1990. It refers to me being available for comment on aspects of the design. I do not recall commenting but I do remember having discussions with Mr Wilkinson of Holmes sometime later about the concerns raised and the remedial solution required. I did not receive the version of the Holmes Report which is included in the material before the Royal  
10 Commission; that is, the version which includes calculations and notes prepared by John Hare and a memo from Grant Wilkinson dated 1 February 1990. I did not receive those documents at the time. I know that because they post-date my initial calculations and they were also not included in the Holmes Report on the ARC file forwarded to me last  
15 year by Dr Reay.

1700

Q. Mr Banks, if I can just stop you there just to clarify that those calculations are the ones that we were talking with Mr Hare about this morning which included his design of the drag bar?

20 A. Yes that's correct.

Q. If you can continue on please.

A. Also if I had seen them at the time I would have likely reviewed the calculations undertaken by John Hare as opposed to undertaking my own. Other than those additional documents the reports are identical. I  
25 was provided with a 10 typed pages concluding with section 7 condition report.

Q. Mr Banks, if we can just bring that report up and have a quick look at it, MAD249.0130.1, and this is the report that you're referring to?

A. Yes it is.

30 Q. When you received this report was there anything to suggest to you that the report was in draft or it was incomplete in anyway?



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