

HEARING RESUMES ON FRIDAY 17 AUGUST 2012 AT 9.30 AM**GEOFFREY NIGEL BANKS (RE-SWORN)****EXAMINATION CONTINUES: MS SMITH**

5 Q. Mr Banks do you have your brief of evidence before you?

A. I do.

Q. I think we were up to paragraph 20 when we adjourned yesterday. So if I can get you to continue reading from paragraph 20 please.

10 A. Certainly. I would have been asked by Dr Reay to liaise with Holmes, but I cannot recall when this happened. Dr Reay was certainly involved at this time. I refer to ARC's letter to its broker dated 1st of February 1990. The letter is written by me and it says that if further information is required they are to contact me or Dr Reay. The content of the letter also suggests that ARC had carried out some enquiries and
15 investigations by this date and some of these were undertaken by Dr Reay, in particular contact with Mr Harding.

The Holmes report states that Holmes had:

- (i) reviewed a full set of architectural drawings and some structural drawings made available by Alun Wilkie, architect;
- 20 (ii) viewed the full design documentation, soils investigation and a complete set of drawings at the office of Alan Reay consulting engineer;
- (iii) spoken with Bryan Bluck at Council to discuss any concerns relating to the building permit and construction processes;
- 25 (iv) undertaken an inspection of the building (excluding levels 1 and 4).

Noting that its review was brief no materials testing was carried out and inspection was limited to accessible areas only, Holmes concluded that:
(1) the building is in a condition appropriate to its age and the
30 contractor-as-developer form of construction.

(2) the layout and design of the building is quite simple and straightforward and generally complies with current design loading and materials codes.

It was clear from the Holmes' report that investigations undertaken and in particular the statement that the building generally complies with the current design loading and materials code that Holmes did not consider there were areas of non-compliance other than the tying of the floors to some of the shear walls. The issue was expanded on in section 6.3 of the report. After noting that the shear walls appeared to have been generally well designed to the requirements of the correct design loading and materials codes Holmes states:

"An area of concern, however, has been discovered in the connections of the structural floor diaphragm to the shear walls. While this is not a concern on the coupled shear wall to the south of the building, connections to the walls at the north face of the building are tenuous due to penetrations for services, lift shafts and the stairs as detailed on the drawings.

"The result of this would be that in that in the event of an earthquake the building would effectively separate from the shear walls well before the shear walls themselves reached their full design strength".

As a result of Holmes' conclusions I was not asked to carry out a general review of the design nor would I have done so on my own accord. I am aware now that there are many aspects of the building that are being examined and questioned such as the flexibility of the building, detailing of columns and adjacent structure and non-ductile mesh and with hindsight those are the areas I would investigate now with the benefit of the latest 2012 codes and experience. However, at the time it was very specifically only the ties to two of the shear walls that caused any concern to both the Holmes' engineers and to Dr Reay and me. I relied on the Holmes' report and the issue identified in that report. Holmes had an excellent reputation and had particular expertise with multi-level building design. Having worked at Holmes for five years until 1986 I held Holmes in high regard and there was nothing in the

Holmes' report which caused me to question the conclusion it had reached. It was also clear in my later discussions with Mr Wilkinson that Holmes concern was limited only to the tying of the floors to some of the shear walls.

5 Q. Mr Banks if I can just stop you there for a moment. When you had a look at the plans to address this particular issue –

A. Yes.

Q. – was the issue easily identifiable from those plans?

10 A. Very easily. It would have taken me less than a minute to see that there was an issue.

Q. So in the context of that review, do you think then that that would have operated, or should have operated, as a red flag to you and that you should have undertaken a more extensive review of the whole building for example?

15 A. Well the area I was looking for was specifically the area I had discussed with Holmes which was the ties to those two shear walls. So that was the area I was focussed on.

Q. But what I'm suggesting is that given that that appears to be such an oversight and something that was glaringly obvious on the plans –

20 A. Yes.

Q. – would that not have alerted you as an engineer to think maybe I need to have a look at this building as a whole and see if there's any other errors like this?

25 A. I think that's a fair comment. One of the things I did do was look at the calculations that had been done for that area. It almost appeared to me as though there was a page missing or that the engineer had been interrupted in the work he'd been doing given that when you're designing a building you're often jumping around the calculations. So it seemed quite clear to me that I could understand that there was a
30 problem in this one area and that I could see that the calculations just had stopped short in that area. But there was nothing else that alerted me, particularly the fact that I'd read Holmes report, there was nothing else that alerted me to any red flags about the overall building design.

Q. Now if I can get you to carry on from paragraph 25 please.

JUSTICE COOPER:

5 Q. Well would the missing page have further justified the building that was built? The calculations that were missing, I don't really follow what you're saying there. I can understand somebody being interrupted in the course of carrying out calculations but are you saying that it was as if the designer had never gone back and done the missing calculations or that there was obviously a missing page to justify the building as it was built?

10 A. The, if I can just explain the page numbers in the calculations I think went up to 56 or 57 and then, and then jumped forward.

Q. 57?

15 A. Yes and the last page I think was assessing the, the connections to the north and the south walls but there were no calculations assessing the connection for a north-south earthquake to the other walls. Now I don't know whether those calculations had been done and were missing or just simply hadn't been done. It just seemed odd to me that calculations had been done for two of the walls, for the east-west earthquake, but
20 hadn't been done in the other direction.

Q. Well the scenario that, the explanation is that Mr Harding had been interrupted, I find rather hard to follow.

A. Mmm.

25 Q. Because surely if he had been interrupted by something he would have gone back and done it?

A. Yes well perhaps, just to expand on that. I think that the way an engineer undertakes calculations is often that you are working on a number of areas of the building at a, at a similar time so you're sort of jumping from one area to another and in that circumstance if you're
30 jumping backwards and forwards between multiple areas I think it is conceivable that he may have forgotten to come back to this area. It seems unusual –

Q. But gone ahead with the design as if he had calculated it. Is that what you're saying?

A. Well it looked as though that area just simply hadn't been designed. It had been drawn but it hadn't been designed.

5 Q. All right.

EXAMINATION CONTINUES: MS SMITH

Q. So if I can get you to read from paragraph 25 please.

0940

10 A. Certainly. Based on my observations of the drawings I had seen detailing of that area of the building, I agreed with the concerns that had been expressed by Holmes. I discussed and agreed with Dr Reay that this matter had to be investigated.

15 Q. If I can just stop you at that point as well. Just to pick up on a point that you'd raised is that you said that it was immediately apparent to you that this was an omission from the plans that you were looking at?

A. Well it was immediately apparent that there was a concern in that I could see the connection was tenuous and I couldn't see any reinforcing on the drawings.

20 Q. Do you think that the issue would have been evident on site for example during construction or inspection?

A. I think any competent engineer however inexperienced would have noted that there was very little connection, yes.

25 Q. Before we get to paragraph 26 were you going to explain the issue from your perspective, if I can just take you to maybe aid in that process to BUI.MAD249.0284.16. Perhaps if we can have the left-hand side enlarged which is a plan of the building and if it might assist Mr Banks you are welcome to use the pointer in front of you to explain these issues as you go through the next section of your evidence and in doing so if I can get you to read from paragraph 26 please?

30 A. Sure, I can summarise the area of concern as follows:

(i) On the north side of the building were four concrete shear walls oriented north-south. So those are these ones I am pointing at

here, 1, 2, 3, 4 which appear to provide the lateral resistance for the building in the north-south direction earthquake.

(ii) Whilst the two larger western walls, that is these two here, were adjoined by the floor providing a floor to wall tie for north-south loads there appeared to be very little connection between the two smaller walls to the east, that is this one here and this one here, due to the voids formed in the floor for the lift well and stairwell.

(iii) From the drawings it appeared that there were only a limited number of light 12 millimetre diameter reinforcing bars in these areas, those bars are referred to here, although their location was not clear and there were no larger ties to the floor.

(iv) It appeared therefore that the effectiveness of the wall system to carry north-south seismic loads may have been reduced without better tying of the two eastern walls to the floors. These walls are in gridlines D and D/E.

I had access to project documents in the ARC archives. I recall that included the drawings and calculations and some correspondence but did not include any direct computer output from the ETABS analysis. I do not recall seeing any structural specifications and neither could I see any record of this matter having been addressed during the construction.

There were no calculations I could find in the file relating to the connection between the floor diaphragms and the two walls in question.

I have reviewed the calculations again and they confirm my recollection. There is an index of calculations relating to seismic load analysis but it appears incomplete as S48 relating to wall 7 and 9 is the last entry. In fact the calculations extend in this section to S56 and S57. However these deal with the seismic loads for lines 1 and 4 of the building only, line 1 being the south wall and line 4 being this, the northern part of the core.

Q. So is that correct Mr Banks, when you have, you have actually pointed to the northern part of the core whereas line 4 is actually the wall that is back from that, is that correct?

A. I am sorry I just lost my place there...

5 Q. So paragraph 28 in the last –

A. Yes that is right, yes so my evidence should read, line 5, rather than line 4. There are no calculations that deal with seismic load in the north-south direction.

10 I do not know why the calculations were missing, but because they were I undertook my own calculations. My initial calculations were headed, “Diaphragm check,” and were done in order to understand the magnitude of load transfer which was of concern. In preparing those calculations I noted the loads set out on S56 of those original calculations. However I did not use these further as they did not
15 address the walls in question. The calculations also referred to computer output but I cannot recall finding any such output. I therefore undertook my own calculations with regard to these specific connections.

20 Q. Just at this point we might just bring those calculations up so that you can refer to them, so BUI.MAD249.0130.15 please. So were these the calculations that you undertook at the time?

A. Yes they are.

Q. If you need to refer to them Mr Banks, please do so.

A. Yes I will.

25 Q. If I can get you to read from paragraph 30 please.

WITNESS CONTINUES READING BRIEF OF EVIDENCE FROM PARAGRAPH 30

30 A. In respect of my initial calculations I have noted in section 2.1 on this page, entitled, “Previous calcs,” that my interpretation was that on page S56 of the original design, where the engineer had, “Checked line 1 and 5 walls only (level 5). 60% load to each. Used factored static design shear of 501 kilonewtons (storey), no overstrength.” This refers

to the south wall and the far north wall running in the east-west direction which have not been identified as being of concern.

Q. Now Mr Banks in that respect the Commission has heard evidence from Mr O'Leary regarding compliance or code compliance?

5 A. Yes.

Q. He's given evidence that the work completed in 1991 complied with the standard in a north-south direction but that it didn't comply in an east-west direction. Did you review this at the time?

10 A. I did actually review just a small component of it and if I could refer to – with the drawings I think it is S15 and S16.

Q. So that's MAD249.0284.16?

15 A. Now if I could explain it the reason I referred to, it wasn't because it was something that had been raised by Holmes. It was just something I came across when I started to look at the issue of the connection of these two easternmost walls. What I noticed was that on this drawing S15 when I look at the shear core in this region –

JUSTICE COOPER:

It is the toilet area.

20 EXAMINATION CONTINUES: MS SMITH

A. The toilet area, there are no openings showing on the floor plan however when I go to S16.

Q. Which is number 17 in the same series.

25 A. So when I go to this drawing and look at that same area on S16 there is actually a hole drawn in that area. So whilst my focus in the rest of my calculations were on these two walls, I just, I had noted that there was a difference and thought it was appropriate then just to check the impact of that hole. So what I was looking at was the connection of the floor in this area to the west of the hole to the wall.

30 Q. And what conclusion did you reach as a result of those investigations –

A. Well the conclusion I reached in my calculations was that that was okay but I was concerned to see firstly Mr O'Leary's statement that he

thought this area wasn't okay so I did ask him for a copy of his calculation on that area.

JUSTICE COOPER:

5 Q. Did you say or you didn't?

A. I did.

Q. You did?

A. Yeah it was suggested I speak to him so last Friday night I spoke to him and asked for a copy.

10 Q. Yes?

A. He said he wasn't prepared to release them, they were just back of the envelope kind of calculations but the following day I think he undertook some calculations of this area which he has, which he did forward through. Now, when I looked at those calculations I didn't agree with his
15 conclusions in this area for three of four reasons which I can expand on if you like.

JUSTICE COOPER:

Where are – have these calculations been made available to the
20 Commission?

MS SMITH:

They have Sir. I am not sure whether they have a number.

25 **JUSTICE COOPER:**

When were they made available?

MS SMITH:

On the 11th of August, or the following day.

30

JUSTICE COOPER:

The 11th of August?

MS SMITH:

Yes.

JUSTICE COOPER:

5 Q. I thought you said you spoke to Mr O'Leary last Friday?

A. Yes on the 10th.

Q. And then he did some calculations the following day?

A. Yes he did.

Q. And those calculations were made available to you on that day?

10 A. On the Sunday I think.

0950

Q. Sunday the 12th?

A. The 12th, and then I spoke to Mr O'Leary about it first thing on the 13th prior to him giving evidence.

15 Q. So when do you say Mr Mills –

MR MILLS:

It does look as though we (inaudible 09:50:23)

20 **JUSTICE COOPER:**

Mr Reid, do you know anything about this?

MR REID:

Yes Sir, they reported to the Commission on the 12th at the same time as they
25 reported to my friend. When the issue arose.

JUSTICE COOPER:

Yes. So these are they are they, now displayed?

EXAMINATION CONTINUES: MS SMITH:

30 Q. These are the calculations that Mr O'Leary undertook and forwarded to you?

A. Yes they are.

JUSTICE COOPER:

BUI.MAD249.058.2.1

EXAMINATION CONTINUES: MS SMITH

5 Q. Thank you Sir. Mr Banks do you want to address some of the issues that you have with the calculations that appear before you?

A. Yes there are just several issues there. The first is that he had referred to the slab being 150 millimetre thick so he's looked at this area through here. He's determined that the length of it is, if I use the pointer, 3750
10 minus 1400 which is two metres 350, which is actually the length of the slab by my calculations, but he hasn't included the length of the slab that extends into the wall which is another 300 millimetres. It's not a huge difference but it's a difference. So that's the first thing.

The second thing is that he's used a thickness of that slab of 150
15 millimetres when on the drawings it's 200 millimetres in that area.

The third thing was that he had, it's not on this page, I think it's on the next page, he'd referred to there only being one layer of 664 mesh in that area when in fact there are two layers.

And the final thing was that on the third page –

20 **JUSTICE COOPER:**

Let's go to page 3, so we need .3.

EXAMINATION CONTINUES: MS SMITH

A. Yes on this page, sorry I think it's actually the next page, he had –

25 **JUSTICE COOPER:**

Well let's find it, page 4?

EXAMINATION CONTINUES: MS SMITH

Q. No there's only three pages in the –

A. Okay, sorry. He had referred to the starters being deep, 12 millimetres
30 at 400 by his calculation. That meant there were only just under six of

those bars connecting that floor to the wall, whereas in fact the drawing shows 12 bars connecting the floor to the wall. So the net effect of all of those was that his conclusion that the connection between the floor and the wall didn't comply, I felt, was wrong and that it did comply. And certainly that was the conclusion that I had reached in 1990.

Q. So but in any event, just leading from your paragraph 30, the south wall and the far north wall running in the east-west direction hadn't been identified as a concern in any event?

A. No they hadn't.

Q. Can I get you to continue reading from paragraph 31 please?

WITNESS CONTINUES READING BRIEF OF EVIDENCE FROM PARAGRAPH 31

A. Certainly. I checked the Parts and Portions section of NZS 4203:1984. This was a method of considering the seismic loads applying to parts of a building. As I did not have access to the ETABS analysis I understood that this approach would have produced higher loads requiring far less stringent detailing requirements which would likely better suit retrofit work if needed. This approach was consistent with the commentary to NZS 4203:1984 which states that, "Ductility for the purpose of this clause was considered to be capable of being achieved with far less stringent detailing requirements and for the principal members of a structure required to dissipate significant amounts of seismic energy." This analysis gave a design seismic load for the entire floor at level 5 of 1241 kilonewtons, which was greater than the 501 kilonewtons referred to on S56 of the original calculations. And I would've considered, therefore, that the higher load I calculated was appropriately conservative for details with lesser ductility.

Q. Mr Banks, perhaps just a question on that point. I mean the difference seems quite stark –

A. Yes it is.

Q. – between those two calculations. Would that not have raised alarm bells with you or suggested that there might've been something wrong with those initial calculations?

A. No it, no it wouldn't. The initial calculations were based on the design of a ductile building and ductility is a way of I guess controlling the seismic energy going into the building by dissipating energy and I would've understood that the non-ductile approach would have yielded significantly higher design loads.

I wish to comment on this aspect of determining the design loads between the floor diaphragm and the shear walls. First, even as late as December 2011 in the New Zealand Structural Engineering Society Practice Note, *Design Of Conventional Systems Following The Canterbury Earthquakes*, it's acknowledged in section 9 that, "Little guidance is available for either the assessment of design actions, or the design of diaphragms or collectors." The authors then refer to a research paper dated 2010. I believe that this is an area that appears to have been overlooked for many years, and therefore subject to the individual judgements of engineers without much guidance, and suggests that more research is long overdue. Secondly, the Hyland January 2012 report at page 119 states:

"The Parts and Portions in the NZS 4203:1984 design provisions for connection of diaphragms to seismic lateral load resisting walls seem inadequate. They did not ensure that diaphragm ties were not a weak link, limiting the overall strength of the structure under severe seismic demands. The provisions did not appear to account for full displacement and strength demands, or higher mode response characteristics of the structural system".

I agree with Dr Hyland's comments now, but at the time I applied NZS 4203:1984 as it was the relevant standard of the day.

Q. Mr Banks, just at that point, there's been some comment and one of the things that the Commission is required to look at is the standards of course, but also this issue of best practice?

A. Yes.

Q. Your comment is that what you did complied with the standards.

A. Yes.

Q. Do you think that it complied with best practice?

A. Yes I do. I've earlier made a comment that at this time and the time I'd studied engineering I think it was felt that the study being done at the University of Canterbury in particular, but in New Zealand in general, was world leading. Now that may have just been because I was being taught by the people involved, I don't know, but that was certainly my impression. I've also heard others refer to "best practice" and I understand that in the Commission's terms of reference, "best practice" is defined quite clearly as the application of national standards or international standards or the standards of any other country. So certainly it would've been my understanding at the time that using NZS 4203:1984 was applying best practice because I wasn't aware of anything else that overruled that.

Q. So I think one of the witnesses that has made this comment is Dr Priestley?

A. Yes.

Q. And you'll be aware that he was one of the contributors to the 1984 standard?

A. Yes I think so, yes.

Q. But you were talking about best practice and standards, you'll be aware that in some cases there can be a lag clearly between the two can't there?

A. Well yes there can be but the standards are regularly updated, although I would say that in that period between 1984 and 1990 I'm not sure that there were any significant amendments, but certainly standards are updated reasonably frequently and I would assume they're updated when the issues that have come to light in the intervening period have been looked at, discussed and properly assessed, and then they become an amendment to the standard.

30 JUSTICE COOPER:

Q. Just so there's not any misunderstanding on this issue, the terms of reference describe best practice requirements as including any New

Zealand, overseas countries or international standards that are not legal requirements.

A. Mmm.

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5 Q. Now the provisions of the codes NZS standards are matters of legal requirement so that by the definition in the terms of reference as I understand it, we're looking at matters that one would apply as a matter of practice beyond what the code requires.

10 A. Yes and I guess what I'm saying is I wouldn't have been aware of any standards whether they were New Zealand standards or international standards at that time that were beyond what was in NZS4203.

EXAMINATION CONTINUES: MS SMITH

15 Q. And if you were, if there were other requirements in that period of time, would you expect those to be incorporated into our national standards when they were amended?

A. Yes, yes I would expect that. I mean the universities are constantly involved in research and I've been involved myself in the industry bodies liaising with the university as research is being done and I know that those things are incorporated in standards in due course.

20 Q. And so the 1984 standard I think the first amendment to that was in July 1992. Are you aware of any changes that would have impacted on the work that you had done in relation to these retrofit works and those amendments?

25 A. Look I can't remember specifically what those were but nothing comes to mind.

Q. Thank you Mr Banks, if I can get you to continue reading from paragraph 34 please.

A. The two walls themselves – if I could refer back to the drawing yes, 16.

Q. Yes 16, which is BUI.MAD249.0284.16.

30 A. The two walls themselves, so that's the two I'm referring to, this one, this one each side of the lift shaft, only carry a part of the total load in the

north-south direction in proportion to their stiffness. The majority of the load would be carried by the stiffer western walls, that's these two here.

Q. So that's around the toilet area?

A. Which had been indicated by Holmes were not a concern. In a scenario where an earthquake forced the floor towards the south, that's this floor area towards the south, I determined that at the highest floor level in the building, a 231 kilonewton tie was required for wall three (on grid DE), that's the outer wall, and 279 kilonewtons for wall nine (on grid D), that's the slightly longer one here.

I concluded that the lack of connections shown on the drawings for these two of the four walls did not appear to comply with the standards in place in 1990; in particular loading standard NZS4203:1984 including any amendments but as we've just discussed I don't think there were any, which was the applicable standard when the building was designed and when I was reviewing the connections.

I discussed the matter with Dr Reay who thought the potential point of weakness identified might have been addressed during the construction. I had not found any record of such remedial work in the archive files. Dr Reay also contacted Mr Harding but he was unable to recall any site instructions dealing with the issue. For that reason Dr Reay and I agreed that we should proceed on the basis that it had not been addressed during construction, and develop a remedial solution.

On 1st of February 1990 Dr Reay and I met Mr Young of KPMG Peat Marwick, the receiver for Prime West Corporation which was the owner of the building. I cannot recall that meeting or its purpose but I've seen a letter sent following that meeting which suggests that I was there. The letter records that Dr Reay and I:

- (i) advised that investigations were continuing as to whether or not steel ties were placed between the structural floor and some shear walls as a metal detector had indicated the presence of some steel;

(ii) advised that the cost of the remedial work would be approximately \$5000 and should take only one week's work to complete;

5 (iii) in view of the relatively modest cost for the remedial work, advised that it would be more cost effective to assume that the steel is

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not in place, as the cost of further investigating the matter would in all probability exceed this amount;

10 (iv) advised that there was reasonable agreement with Holmes as to the level of remedial work required, and that once carried out, there is no suggestion that their building not at a proper standard.

KPMG went on to state that:

15 *"To ensure that Holmes Consulting Group can promptly report to the Canterbury Regional Council that current design codes have been fully complied with, no doubt you will ensure that full agreement is obtained with them as to the level of work required".*

My recollection is as noted by KPMG that I contacted Holmes to identify the specific issue that they had and the level of load for which the floor
20 to wall tie should be designed. That that was the approach is also supported in my letter to ARC's broker dated the 1st of February 1990. On 2nd of February 1990 I phoned Grant Wilkinson of Holmes to clarify the extent of the concerns that had been referred to in the Holmes' report.

25 Q. Mr Banks if I can just stop you there. KPMG in its letter is saying that it wanted you to obtain full agreement with Holmes as to the level of work required?

A. Yes.

30 Q. Was that the purpose for your call to Mr Wilkinson or something different?

A. Yes that was the purpose.

Q. And when you say full agreement as to the level of work required?

A. Yes.

Q. Are you suggesting that Holmes had some responsibility for the design of the remedial solution?

5 A. Well at that stage I think Dr Reay and I accepted that if there was a problem that it was ARC that needed to fix it. Any responsibility for the design would have depended on who had engaged whom to address it but I think at that stage it was clear that we needed to sort out the problem.

JUSTICE COOPER:

Q. We being?

10 A. Being Alan Reay Consultants Limited. Even though Alan Reay Consultants Limited hadn't actually designed it, it was Dr Reay's former practice. There was no disagreement between Dr Reay and myself that we needed to resolve the problem.

Q. You were very conscious of that distinction at the time were you?

15 A. No I wasn't.

EXAMINATION CONTINUES: MS SMITH

Q. Continue reading the second sentence paragraph 40 "one aspect"?

A. Sorry 41?

Q. So paragraph 40 second sentence, one aspect.

20 A. Okay.

WITNESS CONTINUES READING BRIEF OF EVIDENCE FROM PARAGRAPH 40

A. One aspect discussed was my calculation of a maximum tie load at the top floor of 230 kilonewtons to one wall and 279 kilonewtons to the other. This figure corresponded closely to a figure of 300 kilonewtons advised by Mr Wilkinson which gave me confidence that my approach to determining the tie loads was appropriate. I proposed a conservative approach of using the higher figure of 300 kilonewtons for both walls at the top floor. Mr Wilkinson advised that Holmes had no concern with the other walls.

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Q. And on that respect did you specifically talk about other areas of the building or can you recall?

A. Well we, we had that discussion that Holmes had no concerns with the other walls.

5 WITNESS CONTINUES READING BRIEF OF EVIDENCE

A. When reviewing matters for the Royal Commission I have seen a statement from counsel assisting the Royal Commission that ARC made a quote “deliberate decision not to follow the suggested approach in the HCG report which involved strengthening the shear core diaphragm connection on all floors except level 1” and that the form of connection from the steel ties to the underside of the floor differed from that proposed by Holmes.

I respond to this as follows:

First, the Holmes’ report that I received did not recommend strengthening on all floors except level 1. It simply identified an area of non-compliance with current design codes and noted that the, that that item was under review with ARC. It also did not refer to a form of connection from the steel ties to the underside of the floor. I can only presume that the suggested approach referred to is the quote “plan” referred to on calculations prepared by Holmes marked SK-O1 dated 31st of January 1990. It refers to strip flanges with quote “detail typical to levels 1 to 5”. As I’ve noted I did not receive those details and therefore did not make any deliberate decision not to follow them.

Q. And just to be clear on that point Mr Banks, those calculations that you’re referring to are those that were completed by Mr Hare?

A. Yes, that's correct.

Q. And the detail that he prepared for costing purposes?

A. That's what I understand now but I didn't see those details at the time.

Q. Thank you.

30 WITNESS CONTINUES READING BRIEF OF EVIDENCE

A. Secondly the Holmes’ report was not specific as to the walls which were a concern or to the levels so I sought to clarify those matters with Holmes and the extent of their concern. I specifically discussed with

Mr Wilkinson his concerns as identified in the Holmes' reports and agreed how to address those concerns. Mr Wilkinson and I discussed how the loads could be reduced at the lower levels in accordance with the standard. That was, that was on the basis that reduced loads on the lower floors may mean that additional restraint may not be needed on those floors.

To explain this issue of loads reducing as you go down the building NZS4203:1984 required the highest design load at upper levels of the building reflected in the value K_x in clause 3.4.9.2(b). This value of K_x was calculated as 1.63 in my calculations and the corresponding tie load was 231 kilonewtons to the wall on grid D/E and 279 kilonewtons to the wall on grid D (rounded up a further 30% and 7% respectively to 300 kilonewtons) at the top of the building. As outlined on page 6A of my calculations the value of K_x reduced to 1 at levels 1, 2 and 3 resulting in a lower design load of 184 kilonewtons at those levels. That's including the additional 30% or 7% conservatism applied in the rounding of the top floor loads to 300 kilonewtons. The practical effect of this was that less remedial work, if any, would be required on the lower levels of the building.

I note that Mr Charles Clifton on table, in table 2 on page 7 of his report on November, of November 2011 shows that the diaphragm demand based on the actual ground accelerations was 2859 kilonewtons at all levels of the building. This differs from the standard I used in 1990 which reduced the loads going down the building. I also note that the load determined by Mr Clifton compares with a diaphragm demand of 1241 kilonewtons at the top of the building, and reducing to 761 kilonewtons at the lower levels calculated using the standard NZS4203:1984. On that basis the actual demand imposed by the February 22nd earthquake was 2.3 times the load derived from the standard at the top floor and 3.76 times the standard at the lower levels. The outcome of my discussion with Mr Wilkinson was recorded in ARC's letter to Holmes of 2nd February 1990. That is:

5 (i) the scope of possible non-compliance referred to in the Holmes' report is the connections between the walls on grids D and DE from levels 2 to 6 inclusive. (I used the word "possible" because at that time, whilst it was clear to me that the ties were needed at the upper levels, I had not yet looked at the reduction of loads at the lower levels).

(ii) The proposed remedial work, if required, would consist of two ties per floor, tying the walls to the floor diaphragm.

10 (iii) The agreed maximum tie load is 300 kilonewtons per tie and that this load would be reduced on the lower floors in accordance with the Parts and Portions section of NZS4203:1984.

This was what was done to determine the details and extent of the design required for the retrofit work rather than the retrofit work itself in accordance with the requirements of both Holmes and the standards relevant at the time. I asked Mr Wilkinson to contact me that day if his understanding of the position was not as I had outlined. My reference to Mr Wilkinson contacting me "that day" suggests some urgency. I do not know why there was any urgency but ARC was aware that receivers were dealing with the building and a potential sale. We did not have significant safety concerns as the building was vacant and not considered earthquake prone. To clarify at that time I recall "earthquake prone" referred to buildings with less than 10% of the new building standard and clearly that would not have been the case with this building. There was however certainly a view that any remedial work required should be done before the building was occupied.

25 Q. At that point Mr Banks did you make a conscious decision not to push on with this until such time as the building was occupied?

A. No certainly not. I think at that time we assumed that the process would continue to a conclusion.

30 Q. But by this time you've raised it with the owner of the building?

A. Yes, that's correct.

Q. And do you know what happened in the intervening period?

1015

- 5 A. There seems to have been a period through, from February, February/March I think through to April there were discussions with our insurers but there seems to be sort of a blank period through to early 1991, I think February 1991. Now I'm not sure why that was a blank period or why the process stopped. I can speculate -

JUSTICE COOPER:

No.

EXAMINATION CONTINUES: MS SMITH

- 10 A. – but I don't know.
- Q. Paragraph 46.
- A. Paragraph 46?
- Q. Yes.
- 15 A. I did not hear further from Mr Wilkinson. On 14th of February 1990 I telephoned John Hare. I'm not sure why I called Mr Hare but I think it likely that it was a follow-up call to Holmes because I had not heard back from Mr Wilkinson. We discussed the agreed design loads at each level, that a tie-only system was acceptable and that a reduced connection at level 1 may be acceptable if compensation was made at
- 20 level 2. At that stage I had not undertaken any more calculations looking at the lower levels of the building. I recall no further discussion with anyone from Holmes after this date.
- Q. If I can just refer you to your file note for a moment. It's BUI.MAD249.0130.14. So is the file note that you took of your
- 25 conversation with Mr Hare?
- A. Yes it is.
- Q. And you will have heard Mr Hare give evidence yesterday that when discussing matters with you he remembers expressing the view that caution should be exercised if it was ARC's intention to reduce the load
- 30 at level 1.
- A. Yes.
- Q. Do you recall him making that statement?

A. No I don't. If I could just make the point too that in those days prior to email I used to frequently be in the habit of writing things down. I think probably most engineers would be recording discussions they felt were important. So there aren't a lot of notes on this project but this was one of them and I think I, if Mr Hare had expressed reticence about that approach I would have recorded it and I certainly would have discussed it further with him.

Q. Thank you. Continuing on Mr Banks from paragraph 47 please.

A. I had no further involvement until early 1991. In the meantime I understand the property remained vacant. The owners of the building and the receivers, KPMG, were aware of the issue that had been identified by Holmes and with which ARC agreed needed investigation and retrofit work. I also understood at that time that Council were also aware. I'm not sure whether I knew that because of the reference to discussions Holmes had with Council, referred to in the Holmes report, or as something that arose in my discussions with Mr Wilkinson and/or Mr Hare.

In February 1991 ARC became aware that the building had been sold but I do not remember whether it was Dr Reay or I that found that out, or how we found out. As we did not know whether the new owners knew about the issue and because we assumed the intention was to occupy the building, we considered that it was our obligation to ensure the new owners were aware of the issue identified in the Holmes report. I have since seen a file note of a conversation I had with Peter Smith, ARC's insurer's representative, which says that, "What are our obligations, if any, to notify anyone re status of review to date?" That appears to suggest that I was asking whether we had to notify the new owners. That's not my recollection of matters. My recollection is that we considered it was our ethical obligation to advise the new owners but that we needed to obtain insurer approval before doing so. When we had become aware of the issue which Holmes had identified we had notified ARC's insurers of a potential claim. In such circumstances we were required to seek the insurer's approval before making contact.

Confirmation that we informed the new owner of the issue identified was provided on 9th of April 1991. I do not recall when that was done.

Q. Mr Banks just to explore then a little bit further about your ethical obligations. Your evidence is that you or ARC had advised the owners at the time the problem was identified –

A. Yes.

Q. – of the issue and the work that was required to fix it. Is that correct?

A. Yes that's correct.

Q. So why then do you consider that it was your obligation to advise new owners of that very same issue?

A. Well I think in a technical sense we had complied with the letter of the IPENZ ethical obligations which is to advise the owner of the problem but in a practical sense I think if the owner had then on-sold the building and not told them about the problem that will clearly not be a desirable situation. So I don't think an engineer can say I've complied with the letter of the ethics but not actually take account of the outcome.

Q. And when you had discussions with the new owner do you remember whether they were aware of this particular issue before you contacted them?

A. My recollection is that they weren't aware, which was surprising.

Q. And continuing on thank you from paragraph 49.

A. There is a gap in the documentation between April 1991 and September 1991. I cannot remember what occurred during that period. I understand that Ibbotson of Pedofsky, Ibbotson & Cooney (the new owners' agent) says that the owners first became aware of the issue when it received a letter from ARC dated 11th September 1991 or through a telephone call from me shortly before that. I cannot remember either whether I made a telephone call or, if so, when that was. I've not been provided with a copy of the letter of 11 September 1991 and understand a copy is not available.

On 30 September 1991 a letter was sent to ARC from Mr Ibbotson regarding the issue. The letter noted that alteration and fitout of the

building was taking place and a full tenancy of the building by the ANZ Bank would apply from 1st of November 1991.

Q. Perhaps is we can just look at that letter for a moment, BUI.MAD249.0129.50. So this is the letter that they sent to ARC that you're talking about?

A. Yes it is.

Q. Mr Ibbotson will be giving evidence and has by a statement saying that the advice given by ARC was that the problem was of a minor nature. Is that your understanding of the advice that was given to them at the time?

A. Well clearly that was his interpretation of it. From an engineering point of view there was no disagreement with Holmes that it was a serious issue to be addressed but in the context of the size and value of the building perhaps the repair could be considered minor.

Q. So the repair might be considered minor but what I've asked you about is whether you gave advice that the actual issue itself was minor.

A. No I wouldn't have given that advice because obviously the issue was a serious one that needed to be addressed.

Q. And if I can refer you to paragraph 2 of that letter dated the 30th of September. This follows on from the discussion in the letter of the 11th of September which nobody has a copy of unfortunately but you'll see there that Mr Ibbotson on behalf of the owners is relaying back to you the advice that there may be an engineering design fault omission in the structure which could impact on insufficient loadings to meet the normal earthquake requirements.

A. Yes.

Q. So is it clear from that the nature of the advice that you had given to them?

A. Yes. The understanding there is exactly what I would have said.

Q. Paragraph 52 thank you Mr Banks.

A. I cannot remember precisely how ARC proceeded or what, if any, instructions were given but it seems from the documentation that we were liaising with Mr Ibbotson.

To progress the retrofit work we arranged for small holes to be drilled around the lift area and in Mr Ibbotson's terms a locating bar was used to try and ascertain whether there was any steel present. I cannot specifically remember arranging drilling to locate reinforcing but there is reference to the H12 reinforcing bars found in my calculations and also in the correspondence with Mr Ibbotson and CBD Construction.

If I could just add to that. I think there's also reference in CDB Construction's invoice to the repair of the areas where those holes were drilled.

We wanted to know for sure whether the issue of concern had been rectified during construction as Dr Reay had suggested may have been the case. The results were not conclusive although we did determine that there was some reinforcing steel present. I do not recall now whether that was at all levels or whether it was only on level 2 but in the calculations had assumed it to be present through all levels. This is referred to in my calculations on page 7A as two H12 bars to wall 9 on grid D and on

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page 9A as one H12 bar to wall 3 on grid D/E. These are the size of reinforcing bars that were indicated on the floor plans as being present but their location is somewhat imprecise on the plans. The bars were calculated to provide a small amount of tie load to each wall but much less than the calculated requirement of 300 kilonewtons. As a result I concluded they had a minor benefit only and retrofit design was required.

The calculations for the retrofit work were completed around 10 October 1991. The calculations at page 6A to 9A design the tension tie for wall 9 (on grid D) at levels 3, 4 and 5 and for wall 3 (on grid D/E) at levels 3, 4 and 5. The ties at each level and for each wall were different in accordance with the different load requirements at each level. They also accounted for the one or two as appropriate H12 bars although this had a minor benefit only. The results of these calculations are the retrofit angle shown on sketches CD 2 and CD 3.

In my calculations (pages 12A to 14A) I also checked that at levels 1 and 2 where the loads were lower the loads could be redistributed to the other walls. This was similar to the concept that had been discussed with John Hare previously. By way of explanation, the concept of redistribution is that loads can be reallocated to other parts of a building to some extent provided that that reallocation is accounted for. My calculations checked the effect of redistributing the load at the lower levels away from the walls on grids D and D/E to the other two walls, (ie the two larger walls on grid C and CD) in terms of the flexure and shear design of those walls, sorry in terms of the flexure and shear design of those walls and concluded that both were and concluded that both were okay as the other walls were capable of taking the load at these lower levels the calculations concluded that no additional ties were required at the two lower levels. This is the point that had been discussed with Holmes in 1990.

I wish to summarise why my calculations indicated that additional ties were not required at levels 1 and 2 as this has been the subject of a number of queries by counsel acting for the Commission. There was several considerations identified in the calculations:

Number 1. The calculation loads were less at the lower levels according to NZS4203:1984 and as agreed with Holmes.

Number 2. The design also took, took into account that there was in fact some reinforcing tying the slab to these walls, albeit a small amount. Page 7A states that two H12 ties were located to wall 9 (on grid D) and page 9A states that one H12 was located to wall 3 (on grid D/E). The reinforcement provided only a minimal tie however. As such this was not a major feature.

Three. The calculations checked a distribution of connection loads to the other two larger walls at these levels. In accordance with clause 1.2.5.1 of NZS4203 which states that quote, "some redistribution of seismic horizontal forces between elements is therefore acceptable". I note also, sorry I think going back to that reference that's a commentary reference not a, not a code clause reference. I note also that there have

5 been some acknowledgement of the ability to redistribute loads in discussion with Mr Hare in 1990 as recorded in my file note and it was concluded by calculation that flexure and shear in the walls was okay to accommodate that redistribution. In particular redistributing the load at a lower level had only a minor effect on the wall flexure whereas that would not be the case if the loads were redistributed at a high level.

JUSTICE COOPER:

Q. Now you read lower, you mean low?

A. Oh, sorry at a low level yes.

10 EXAMINATION CONTINUES: MS SMITH

Q. Mr Banks just at that point, some people might say well you've designed and determined at the top level that, or the top levels that ties –

A. Yes.

15 Q. – are required. Isn't it just easier and more conservative I guess to just apply that across the building as a whole and put ties at each level?

20 A. Mhm. Look certainly that's something I've, I've thought about just in going back and saying well why didn't I just carry on and put them in at the lower levels? And you're right it would have been easier, it would have actually been easier for me and in dealing with this now if, if I had.

25 My training as an engineer is not to just do things that are easy, it's to look where, where the strength is needed and to apply the strength where it's needed and that's what I felt I, I did in this case. The, the other aspect is that in, in doing that I wasn't working to the limit of the code, I wasn't aiming just to meet the code. I think there were a number of conservatisms in the design that were inherent already. One of those conservatisms was the rounding up of the loads I determined from the code by either I think 7% or 30% up to the 300 kilonewtons.

30 Another conservatism that I don't think I consciously thought of at the time but I've looked at now is that when both John Hare and I calculated those loads when we were considering the mass of the floor we included the weight of the walls themselves in that mass. Now the ties

weren't required to transfer the weight of the walls into the walls because the weight was already there. So that I've calculated is about another 11 or 12%. So when you combine the rounding up and that wall mass issue there's about 30% conservatism in the design already so
 5 yeah I think when you combine those two things that's, that's why I did it but certainly you're right it would have been easy to put them in at the lower levels as well.

Q. And if I can get you to continue reading at paragraph 58 please?

WITNESS CONTINUES READING BRIEF OF EVIDENCE AT
 10 **PARAGRAPH 58**

A. After I completed the calculations ARC prepared sketches of the retrofit work. As noted previously these were prepared by a draughtsman at ARC. I would have checked them before they were issued. They provided for drag bars fixed into the slab and into the two north shear
 15 walls at line D and D/E at levels 4, 5 and 6 with epoxy grouted threaded anchors.

On 10th of October 1991 I faxed the construction details ARC had prepared in February 1990 (CD 1 and CD 2) and 10th October 1991 (CD 3) to CBD Construction.

20 I note at this point that sketch CD 2 is dated February 1990 but shows the variation in fixings at each level which was not determined until October 1991 according to the calculations. I think it is likely that an earlier version of the sketch was prepared in February 1990 showing only the results of the initial calculations for the top floor and when the
 25 detailed calculations were undertaken in October 1991 the variation showing the final design at all levels was added. I have not been provided with any earlier copies of the sketch which might clarify this issue.

On 11th of October 1991 I wrote to the Ministry of Transport (Marine and
 30 Industrial section) to confirm an earlier discussion on 10 October 1991 that ARC wanted to install a structural steel angle in the lift shaft at levels 4, 5 and 6 as shown on CD 1, 2 and 3. As work was required within a lift shaft Ministry of Transport approval was required. I noted

that this angle was a structural tie only and was not supporting any additional services. Mr Rogers replied to me on 18th of October 1991 confirming that the details shown on CD 1, 2 and 3 were acceptable.

On 15 October 1991 ARC received a quotation from CBD Construction for \$46,333.50 plus GST.

5

Q. Mr Banks I think you've read 46,000.

A. Oh sorry, 46 thousand three –

Q. Four thousand 600.

A. \$4,633.50 plus GST to quote "supply and fix angle brackets as per details including remedial to floors broken out for investigation".

10

I wrote to Mr Ibbotson on 15 October 1991. I explained that ARC had removed a small area of concrete at the end of the walls adjoining the lift shaft and we had identified several reinforcing bars. I noted that while those bars provided the structural tie, a limited amount of additional remedial work was required in order to provide the seismic strength to meet the current New Zealand standards. I advised that remedial work was, was required on levels 4, 5 and 6 only. I enclosed a copy of details 3608 CD 1, 2 and 3 for Madras Equity's information. I advised that the work was estimated to take approximately four days to complete and a price of \$4,633.50 plus GST had been quoted by the contractor. I asked that they provide confirmation of acceptance of the quotation if they wished to proceed with the work.

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That confirmation was provided by letter

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dated 16 October 1991. They asked that the work be completed before the end of October 1991. They also stated that they assumed that the work proposed by ARC would ensure that the structural content of the building complied with all structural and earthquake loadings in every respect.

30

I replied by letter dated 17 October 1991. I advised that we had instructed CBD Construction to proceed with the remedial work and that the work on site was planned to take place during the next week. I advised that the proposed remedial work would give the floor to wall

connection the seismic strength required by NZS 4203:1984, but noted that a number of other codes to which the building was designed, including material codes, had since been amended and the original design might not comply with all aspects of those codes. I can't specifically recall what those changes, if any, might have been but can't recall anything major that would have changed between codes current in 1986 and those current in 1991.

ARC did not apply for a separate building permit for the retrofit work and I'm not aware whether the owner or builder did. My recollection of the early 1990s prior to the adoption of the Building Act is that the building permit process was much less structured than it is now. Recent attempts to obtain building permit records of older buildings such as this one from Christchurch City Council archives for post-earthquake strength assessments have indicated that many such records do not show all changes actually made to the buildings. This indicates to me that it was not common practice to apply for permits for all changes at that time. However, the requirements of the Building Act are now quite explicit and I would expect this type of retrofit work to be subject to building consent approval if it were done now.

Q. If I can just stop you at that point. I mean one of the things that might stick out is that you've communicated with the Ministry of Transport about the works that have to be done.

A. Yes.

Q. But haven't got in touch with Council. Do you have any comment about that?

A. Look I believe the communication with the Ministry of Transport was in response to a request from the contractor when he started work because in order to access the lift shaft he would have needed the lift installer to do some work stopping the lift and in order to do that he would have known that it would be needed to contact the Ministry of Transport. So my recollection is that it was in response to a query from the builder.

Q. And your evidence is that you would expect that this type of work would be subject to a building consent if it were done now but you've had some recent experience have you not which suggest that there might still be some confusion over this aspect?

5 A. Well I think probably more than confusion. I think I've got it wrong. It's been brought to my attention in the last three or four weeks that there is, in the exclusions, which I think is schedule 1 to the Building Act, there's a clause that refers to doing alterations within the building and where those alterations don't diminish the structural strength of the building
10 that a building consent is not required. Now that's, the reason I made the comment here was that when I look at the definition of building work it includes structural alterations but it seems that there is an exclusion and it's clause (ag) of Schedule 1 of the Building Act that excludes this and even further to that we're involved in a project at the moment which
15 is to strengthen, improve the bracing within a building, to improve its strength, and the local authority has said no building consent is required.

JUSTICE COOPER:

20 Q. Where's that building?

A. It's in Rangiora. So they've said that no building consent is required because it comes under this clause and even further to that, which surprised me even more, they said that it's the owner's decision as to whether that clause applies.

25 Q. It surprises me too I can tell you.

A. It surprised me.

Q. However, you're not here to talk about the Building Act are you? You're here to talk about the law as it applied in 1990 and 1991.

30 **MS SMITH:**

Indeed I think the point that Mr Banks was raising was that in terms of any recommendations that might flow out of this process maybe some clarification of that particular issue might be useful.

JUSTICE COOPER:

Right.

EXAMINATION CONTINUES: MS SMITH

5 Q. Paragraph 67 Mr Banks.

A. I recall that I went to the building and inspected the strengthening work on at least one occasion. The purpose of the inspection would have been to determine whether the intent of the design was being complied with. I cannot recall any concerns regarding the standard of
10 workmanship of the remedial work.

I have had no further involvement with this building other than advice to an architect regarding infilling of precast façade panel near the entry door sometime later. I think that refers to the early 1990s as far as I can recall.

15 Q. And just at that point, if we can just clarify a couple of issues in relation to the evidence given yesterday by Mr Hare. He's said in his evidence that the calculations that you undertook do not appear to have considered the impact of torsion. Do you have any comment about that?

20 A. Yes, yes I read that. Perhaps if we can have a look at the floor plan again, S15.

Q. 0284.16. Is that the one you're referring to?

A. Yes that's fine. So if I can just explain. The, the centre of the building is approximately where the arrow is at the moment and in a north-south
25 direction that's resisted by these four walls here.

Q. That's the tower section, yeah.

A. At the lower levels where I undertook the redistribution I was essentially saying that the load rather than being resisted by those four walls was largely being resisted by these two walls, but I believe in fact that the
30 centre of resistance of those two walls is not far off the centre of the load applied. So I don't believe there would have been any significant change in the torsional performance of the building in that area.

Q. Now one of the issues that we discussed with Mr Hare yesterday was he'd acknowledged that he hadn't undertaken any detailed calculations but he made a comparison as he was asked to do between the two details.

5 A. Yes.

Q. Now one of the issues was that his detail had called for the 80 mm holes to be drilled through the floor slab.

A. Yes.

10 Q. How did that compare to the design that you did and was ultimately constructed?

A. Look I'm conscious too that really Mr Hare acknowledged that he wasn't, that his wasn't a final design so I'm conscious that his details are not necessarily relevant to what was actually done but certainly in my design I'd attempted to impact the existing slab as little as possible. So
15 using the smaller holes that weren't core drilled and putting them at as large a centres as possible I felt was the appropriate way to do it. When I saw Mr Hare's detail earlier this year I can understand what, why he suggested that. He's talking about putting grout in from the top rather than drilling in from the bottom but to me drilling 80 millimetre, core
20 drilling 80 millimetre holes at 100 millimetres centres would have effectively cut through 80% of the mesh in the slab and cut through 80% of the Hibond. So for that reason it's not a detail that I would have used but I acknowledge that he may have been able to address those issues if, if his detail had actually been done.

25 Q. And if I can just get you to conclude Mr Banks on paragraph, from paragraph 69 of your statement please.

A. From my involvement in this enquiry I do know that this was a massive earthquake, far in excess of what the 1984 codes assumed, and I do know that the retrofit work I designed 22 years ago to the standards of
30 the day and many other aspects of the building would fall short of today's code requirements.

I do not know why the collapse occurred and I do look to the Royal Commission and its experts to determine that and to provide

recommendations that continue to shape how we as engineers work in order to prevent this ever happening again.

CROSS-EXAMINATION: MESSRS RENNIE AND REID – NIL

1045

5 JUSTICE COOPER:

Is it the Council's position that Mr O'Leary's calculations are incorrect?

MR REID:

10 No Sir, the position as I understand it is that Mr O'Leary and Mr Banks had a discussion, they couldn't agree on whether the calculations were incorrect and Mr O'Leary was made available for cross-examination this week, but my friend has chosen not to cross-examine him so the issue remains at large.

JUSTICE COOPER:

15 But you'll be asking the Commission to accept that Mr O'Leary's position is correct will you, when you make submissions?

MR REID:

Well that's his view Your Honour.

20

JUSTICE COOPER:

That's not my question, I know it's his view.

MR REID:

25 Yes Sir.

CROSS-EXAMINATION: MR MATTHEWS – NIL

CROSS-EXAMINATION: MR HANNAN

Q. Now Mr Banks you'll know that I represent Holmes Consulting Group and Mr Hare?

30 A. Yes.

Q. And were you here yesterday afternoon during the evidence of Mr Hare?

A. Yes.

Q. And Mr Wilkinson?

5 A. Yes.

Q. And Mr Robertson?

A. That's correct.

Q. Thank you. I'd like to just take you through briefly the chronology of your engagement with Holmes Consulting in this period at the end of
10 January 1990 and early February 1990, just very quickly so that it's all entirely clear. Now of course you don't know when Holmes Consulting Group was engaged to prepare this pre-purchase report but the evidence is that that was on the 24th of January 1990 and then Mr Hare's evidence was that on the 25th of January he telephoned Alan
15 Reay Consulting to arrange to come across and inspect documents, and I think you've said that you don't recall that you took that call?

A. Yes that's correct.

Q. But he did attend the offices the next day on the 26th and I think again you've said you have no specific recollection of having met with him or
20 spoken to him when he came across on the 26th?

A. I don't think that's correct. I think I said I met with someone from, or I may have met with someone from Holmes.

Q. All right, so you do have a recollection that you met with someone from Holmes Consulting on the 26th of January?

25 A. Yes I think the term meeting was, I was aware that he was in the office and I think I may have been introduced to him as someone who had raised an issue and that I would be dealing with it.

Q. Yes, then on the 29th of January you began undertaking some of your own calculations with respect to the issue which had been raised and
30 perhaps we can have a look at MAD249.0130.15. So that's some calculations by you dated the 29th of January and if we just page through those there seem to be three pages if we can go across to the next two pages. The next one will be .17, so we have .17 and then we

have .18 and those seem to be the three pages of calculations you did on the 29th of January.

A. I think if I could just add to that.

Q. Yes.

5 A. When I look at page, the next page of the calculations whatever that is, which is –

Q. So .20?

A. Yeah, sorry, so this one is also dated, oh that's dated 1st of February, yes that's correct.

10 Q. So –

JUSTICE COOPER :

There's confusion here now, you said .20 Mr Hannan –

15 **MR HANNAN:**

Yes, .20.

JUSTICE COOPER:

And what is displayed is .19, is there no .20?

20

MR HANNAN:

No sir, there is a .20.

JUSTICE COOPER:

25 That's it there?

CROSS-EXAMINATION CONTINUES: MR HANNAN

Q. Yes.

30 A. Yes that's undated, I think it would have been done in February or the 29th of January but I don't know. It's unusual for me not to date it, a document.

Q. So –

JUSTICE COOPER:

Q. It's got a page number on it, which is page 5, what's .19, page 4, and .18?

5 A. So I think it's probably the most likely it would have been done on the 1st of February.

CROSS-EXAMINATION CONTINUES: MR HANNAN

10 Q. So you do some calculations on the 29th and we've looked at those pages and then on the 30th you went to the Madras Street building with Mr Hare for an inspection of the building?

A. I think his recollection of that is clearer than mine that we went.

Q. Did you have any recollection of going there or –

A. Well I must have gone there but to be honest it doesn't stand out in my mind.

15 Q. All right, and then as we've just seen you did some further calculations on the 1st of February.

A. Yes, that's correct.

20 Q. Now you don't know this, but Mr Hare's evidence was that on the 31st of January Holmes Consulting Group was asked to supply its report as it stood at that time and it faxed a draft report to Schulz Knight on the 31st of January, again I accept you don't know that but then on the 1st of February you and Mr Reay went to see the receivers of the owners of the building didn't you?

25 A. I'm not sure if we went to see them or they came to see us but there was a meeting.

Q. Do you recall that meeting?

A. Not really no.

Q. And you don't recall whether they came to you or you went to them?

A. No.

30 Q. Do you have any recollection of who initiated that meeting?

A. No I don't to be honest. It may be in the record of the meeting but I can't recall.

Q. Do you have any recollection of being given a copy of the draft Holmes report at that meeting?

A. What I was given wasn't a draft report. It didn't have draft written on it but I certainly have recollection of being given the report and that would have been immediately before that meeting I suspect.

Q. Yes, I accept that what you were given didn't have draft on it.

A. No.

Q. And you weren't given a fax cover sheet which said here's a draft report?

10 A. No, well it certainly wasn't in the ARC files I was given.

Q. Now following that meeting, well it may not have been following the meeting, let me just say it again, on the 1st of February Alan Reay Consultants notified its insurers.

A. Yes.

15 Q. And you communicated with the insurers and sent the insurers a letter?

A. Yes in fact it seems that all of the insurance was a task that I undertook. It's a – that's what I would have expected to have done.

Q. And then on again the 1st of February Alan Reay Consulting received telephone authorisation from its insurers to agree inadequacies with Holmes, confirm loads with Holmes and to design remedial work?

20

A. Yes.

Q. On the 2nd of February Alan Reay Consulting received a letter from the receivers. Do you recall that?

A. No I don't but it may well be in the system.

25 Q. Do you recall having seen the letter at the time?

A. Perhaps if could I have a look at the letter?

Q. Yes. That's MAD249.0129.27. Now that is addressed to Mr Reay of course, not to you?

A. Yes, I'm not sure if I saw that letter.

30 Q. All right –

1055

A. In fact further to that sorry there's a stamp on the top left-hand corner. Normally if correspondence was forwarded to me it would have had my initials next to it.

Q. Top left or top right?

5 A. Sorry top right, yeah. I mean it may have been given to me. I may have seen it but I can't recall.

CROSS-EXAMINATION CONTINUES: MR HANNAN

Q. Now on the 5th of February Alan Reay Consulting received a quote from Blake Brothers for doing some remedial work.

10 A. Yes I've seen that quote. It didn't ring any bells and I think if we could bring that up. It, it – I think it was for core drilling which seemed unusual so.

Q. Yes that's MAD, MAD249.227.9 – 0227.9.

15 A. Yes it's for core drilling six holes, 40 diameter, 750 millimetres deep. I just, I can't imagine what that would have been for but presumably it was a result of some discussions had with someone at Alan Reay Consultants but it doesn't ring a bell with me.

Q. Yes. Then on the 8th of February you for Alan Reay Consulting sent a claim notification form and questionnaire to the insurers.

20 A. Yes.

Q. Well I won't take you to that. And then you have a discussion with Mr Hare on the 14th of February.

A. That's correct.

25 Q. Now I'll just take you to the, your file note of your discussion with Mr Hare, that's 249.0130.14, and if you just note there in paragraph 1 the agreed loads which are set out there, 300 at L5, 240 at L4, 184 at L3, 2 and 1.

A. Yes.

30 Q. Now if we can look please at document MAD249.13 – .0130.21 and those are calculations which you did. They seem to be dated the 10th of October 1991.

A. Yeah that's the point I was starting to allude to earlier in that I believe this was the amendment dated 10th of the 10th. It's calculation page 6A, and if you look very closely at the date it looks as though the original date's been rubbed out and the new date's been put in. So you can sort of see some numbers underneath there. So I think this particular page, only page 6A, there was a form of page 6A done originally, in 1990.

Q. So you think that these load figures which appear further down the page, the 300, the 240, the 184 at the various levels, you had in fact performed this calculation –

10 A. Yes.

Q. – prior to your conversation with Mr Hare -

A. Yes I believe so, yep.

Q. – on the 14th? Thank you. Now you were here during the evidence yesterday and you will have heard an exchange between His Honour and Mr Robertson in which there was discussion about the concept that as between Holmes Consulting and Alan Reay Consultants the baton of responsibility had been passed by the time that there was this concluding discussion on the 14th of February.

A. Mmm.

20 Q. And I take it from earlier evidence you've given today that you agree with that?

A. Well I certainly agree that Alan Reay Consultants had accepted that responsibility. As to whether Holmes might have had future involvement or responsibility I guess that would have been an issue between them and their client if they'd purchased the building but I'd certainly accepted that there was a responsibility on myself and Alan Reay Consultants to follow the issue through. So I was surprised to see the suggestion that that wasn't accepted in John Hare's evidence.

Q. At paragraph 41.2 of your brief of evidence you said that, you referred to a discussion with Mr Wilkinson of the concerns as identified in the Holmes report. You discuss agreeing how to address those concerns. You say, "Mr Wilkinson and I discussed how the loads could be reduced at the lower levels –

A. Yes.

Q. – in accordance with the standard.” That was on the basis that reduced loads on the lower floors may mean that additional restraint may not be needed on those floors.

5 A. Mmm.

Q. Now can we come please to your letter to Holmes of the 2nd of February? That’s MAD249.0005.5. That’s the fax version. Now you’d agree with me that this letter doesn’t mention the concept of, that additional restraint may not be needed on the lower floors?

10 A. What it refers to in the second paragraph is the proposed remedial work if required. So the “if required” is dependent on what’s in the building and what the loads are. So the second paragraph talks about whether or not the remedial work’s required, the third paragraph talks about the maximum load and the reduction and my recollection is that there was
15 discussion on that aspect with Mr Wilkinson.

Q. Yes not specifically though referred in the letter, the concept that you might omit ties for example on lower floors?

A. Well those, those two issues in combination I think infer that but, no, I haven't repeated it word for word.

20 **CROSS-EXAMINATION: MR MILLS**

Q. Now Mr Banks I'm just going to start with some issues that came up in the course of the supplementary evidence that was led with you and then I'll go back to some other questions I had intended to ask you.

Now if I've understood correctly what you said in response to some
25 supplementary questions that were put by your counsel you said that it took you less than a minute to identify from the drawings the problem that Holmes had identified. Is that correct?

A. Yes that's right.

Q. And you said that any competent engineer would have identified that. Is
30 that also your position?

A. No I think that answer was in relation to on-site while the work was being done.

Q. Do you think it's something that should have been picked up more readily on site by a competent engineer than looking at the drawings not on site?

5 A. No I think the two are different issues. The question was would it have been readily picked up on site and I think it would have been, but equally I'm saying that I picked it up in less than a minute –

Q. Yes.

A. – looking at the drawings. I'm not suggesting that, that I'm not competent.

10 Q. Yes.

1105

A. But equally, and I think others have said the same thing, that it was reasonably obvious that there was not a lot of geometrical connection between the wall and the floor in those areas.

15 Q. So can we agree that both on site and off site, looking at the drawings, that any competent engineer could've picked this up very quickly?

A. I think the only qualifier I'd put on that is that when I looked at it on the drawings the issue had already been raised with me so it was something I was looking for. So if the issue had been raised with
20 someone and they were looking for it, I think they would see it quite quickly. If the issue hadn't been raised and they were just going through the drawings it might not have been quite so apparent but it was still a relatively obvious issue.

Q. Do you agree with me that on this particular building, given the design of
25 it, that it was readily apparent that the way in which the frame of the building was connected to that exterior north core, I say exterior because it's sitting outside the main frame of the building, that that could be readily identified as an important part of the way that building worked?

30 A. When you say the "frame" of the building, what are you –?

Q. Well let me say the exterior line of the building, the north core sits outside it –

A. Yes it does.

Q. – you agree with that? You agree with me that a competent engineer looking at that design, just the plan of the design –

A. Mmm.

5 Q. – would quickly realise that the way in which that building performed was, that the way in which that north core was attached to the rest of the building was an important issue?

10 A. With regard to the two walls that I was looking at, yes I think with regard to the general layout of the building and the walls that's a separate issue. Are you asking was the layout of the building obviously a critical area of concern?

Q. No, I'm asking you and I must not be talking engineering speak sufficiently. I'm asking you whether a competent engineer looking at the building plans –

A. Yes.

15 Q. – and looking at how that building worked, and how it was put together from a structural perspective would recognise that that shear core at the north end was an important element of that structure?

A. Mmm, well I think that's exactly what Mr Hare and Mr Wilkinson did.

Q. Yes.

20 A. And hence they looked at that area.

Q. And so when you say that had you not been alerted already by Mr Hare and by the Holmes report to this issue of the importance of the connections and the inadequacies of the connections that you might not have got there quite so fast. You certainly would have got there quite quickly looking at the way that building was put together wouldn't you?

25 A. I think if I had been asked to review all of the drawings, when I got to those drawings that would have stood out for me as an issue.

30 Q. Now Mr Wilkinson, when he gave evidence and you said you were here so I assume you'll remember this, he described the problem, the defect that had been identified in the Holmes report, that you've also been talking about, as fundamental. A fundamental error. Do you agree with that?

A. Well first of all it was a potential problem, it wasn't known that it was actually a problem. I can't recall him using the word "fundamental".

Q. Well I can tell you that he did. Let's just assume for the moment the problem does actually exist?

5 A. Yes.

Q. If that problem actually exists would you describe the failure to design the building in such a way that that problem didn't exist as a fundamental error?

A. I would describe it as a significant issue.

10 Q. Would you accept the terminology that it was a critical structural weakness if that situation that had been identified was actually the situation?

A. Yeah, look the term "critical structural weakness" is a new term. Those words were not in use in 1986 or 1990 so I wouldn't describe it in those terms in the sense that those words are used today. But I would say that it's a critical issue.

Q. You've read, of course, the Holmes report. You're familiar with the description that is summarised in paragraph 6.3 of that report about how the building might collapse, literally come apart in an earthquake. You're familiar with those terms?

A. Yes I did read that.

Q. In today's terms would you describe that as a critical structural weakness?

A. Well when I read that my follow up, because it didn't seem consistent with what I had seen –

JUSTICE COOPER:

Q. Well, the question is whether you would describe it as a critical structural weakness. Could you answer that question, in today's terms?

30 A. The description that Holmes had given –

Q. No, no.

A. – would be described as a critical structural weakness in today's terms if (inaudible 11:10:58)

CROSS-EXAMINATION CONTINUES: MR MILLS

Q. And would you describe it in those terms today?

A. I would describe what they had written as a critical structural weakness, yes.

5 Q. And would you describe what you ultimately accepted was the failure in the building to tie together properly the diaphragm and the walls at that north end, would you describe that in today's terms as a critical structural weakness?

A. Yes if I was assessing the building now I would, yes.

10 Q. Now when you saw what had, what Holmes had identified, and as you worked through the process yourself of confirming that what they had identified was actually the position, what was your reaction to that in terms of surprise that it had been not done? How would you describe your reaction as it dawned on you that this problem existed in this building?

A. Yes, when I saw it in the first instance I was surprised.

Q. Yes.

A. Yes I was surprised.

Q. And that surprise, I take it, is because you wouldn't expect someone who was competent in designing a building of this kind to have made that error?

A. Not just that.

Q. Does it include that?

A. It includes that, yes. But further to that, this building had been looked at by many people by the time I had a look at it, so it surprised me that it didn't appear that the issue had been addressed.

Q. And who are those many people?

A. Well there were the people within the Alan Reay Consultants office, the designer, Dr Reay, the draughtspeople, there are the people at the Council, the inspectors, everyone who's seen the drawing there. There are the contractors on site, the contractors, the quantity surveyors pricing it. A lot of people had seen those drawings prior to myself and Holmes.

Q. Now just to be clear on this, it was your understanding that Dr Reay had looked at these drawings? You included him in your list of people?

5 A. Yes I did, not because I specifically knew or he had said that he had looked at the drawings, simply because he was the principal of the company, the drawings had his name on them, I would have assumed that he had looked at them.

Q. And is that because in your experience in practice, working both as a principal and under a principal as a less experienced engineer, in your experience that would have occurred?

10 A. Yes that's right, yes.

Q. Now I think you've said in your evidence, and in the supplementary evidence that you gave, that your explanation for your concerns about this not triggering you to feel that you needed to make a wider inquiry than you made were influenced first of all by your regard for Holmes Consulting Group's competence?

15

A. Mmm, that was certainly one of them, yes.

Q. And then as I understood it, the second one was this issue that you raised, and there was some discussion with His Honour about this, about the, looking at the calculations you thought that the engineer might've just been interrupted in the process and did that lead you to conclude that perhaps it had been dealt with?

20

A. No, no it didn't. It led me to conclude that it might've been, well most likely it was an isolated issue.

1115

25 Q. I see.

A. There is a further issue that's come to light actually just in my reading of the evidence yesterday –

Q. Yes?

A. – and that is I refer to my inspection of the Heatherlea Apartments project. I believe that was a project of seven or eight storeys, that was designed by Mr Harding I think as well.

30

Q. And did you look at that at the time that you were thinking about these issues?

A. No, no I didn't but just in reading 'cos my recollection is one of the first things I did when I started work was –

Q. I am interested in your thought processes at the time?

A. Mmm.

5 Q. So we can set that to one side?

A. Mmm, sure, but my thought process at the time would have been that I had recently inspected another building of significance that Mr Harding had designed.

Q. And this is Heatherlea is it?

10 A. Heatherlea Apartments.

Q. So at the time that your –

JUSTICE COOPER:

Q. Where are the Heatherlea Apartments?

15 A. It is in Deans Avenue. It's right on Hagley Park.

CROSS-EXAMINATION CONTINUES: MR MILLS

Q. And do you know when that building was designed by him?

A. Well it was under construction when I started at the end of 1988.

20 Q. I see, so it wasn't experience that he had at the time at which he did the CTV building as I understand –

A. Probably, probably not because that is a fair period between those times.

25 Q. Yes, yes. So just to be clear on this, three things then you say at the time had a bearing on your thinking that despite your surprise at this error, despite your acceptance of it as a significant error?

A. Yes.

Q. That you – that it didn't trigger any concerns on your behalf that made you think perhaps you should look more widely because of these three factors you have just listed off?

30 A. No and probably the primary –

Q. Is the answer yes, that's the reason you didn't trigger any wider inquiries?

A. Sorry is that a double negative there. Could you repeat that again?

Q. The three points that we've run through that you listed and the decision you made at the time that no wider inquiry was triggered by this significant problem that you had seen in the building, was that because

5 of those three factors?

A. Yeah I don't believe I consciously made a decision not to review the total building. I think it's just that the course of events where I had a report of another engineer who had just done that plus the other factors meant that I followed on and did what I, what was the focus of the issue.

10 Q. So let's for a moment just take those factors out. You're asked to do an original review of this building and the first thing that you identify is this absence of inadequate connection between the floors and the wall at that north end of the building. Are you with me so far? You are doing an original review?

15 A. Are you suggesting that that would be the first thing I would come up?

Q. Yes it is, yes so you are doing an original review?

A. Yes.

Q. You identify that?

A. Yeah I am not sure that is the first thing I would have identified but...

20 Q. Bear with me for a moment that that is what you do?

A. Okay.

Q. Would that make you feel because of the nature of the – and the significance of this oversight that you've identified that you'd better look more carefully at this building?

25 A. If I had been engaged to review the overall building then I would have reviewed the overall building. I certainly wouldn't have stopped at one component of it.

Q. Would – let me ask you this again, if that is the first thing you came to, and you have described your reaction already as to your response when
30 you identified it at the time, if that was the first thing you had come to, you are doing the original review of it, would that have triggered you, would it have sufficiently triggered concern about the competence of the

engineer that you would have felt you better look more widely at the building design?

MS SMITH:

5 Can I just suggest that it's exactly the same question that's already been put to the witness. It is being put on the basis that he is doing a full review in any event, so he is going to do a full review of the building. It's an odd question to be putting in my submission.

10 **JUSTICE COOPER:**

So the objection is that it is odd?

MS SMITH:

15 Well first of all the objection is that it has been answered and second, or the premise that it has been put on is that as an engineer he is doing a full review of the building and he's been asked whether having identified an issue he would do a full review of the building.

JUSTICE COOPER:

20 Yes, Mr Mills?

MR MILLS:

25 Well, I don't think it has been asked and answered. The question I am interested in is he has said as I understand it, he had a reaction when he found this problem with the building –

JUSTICE COOPER:

He was surprised.

30 **MR MILLS:**

But it was muted in terms of how he responded to it because of these other factors that were in his mind.

JUSTICE COOPER:

Yes.

MR MILLS:

- 5 What I want to do is to take out those other factors and find out what his reaction would have been and what it would have triggered if he was doing it himself without these other factors, in other words he is doing the original review.

10 **MR BANKS:**

If I can –

JUSTICE COOPER:

- Well no, I can see the difference but it is very hypothetical isn't it, where are
15 you going with this?

MR MILLS:

- Well I don't think it is hypothetical with respect Sir in relation to the issues that have arisen in this case.
20

JUSTICE COOPER:

Well, but you – are they issues in which you wish this witness to be commenting or?

25 **MR MILLS:**

Well if it is not of assistance to the Commission I won't. I had thought it might be of assistance but if it is not I won't spend time on it.

JUSTICE COOPER:

- 30 You can proceed for a little while on this.

CROSS-EXAMINATION CONTINUES: MR MILLS

Q. Let me ask you again then. You are doing a review of the building. We have taken out the three factors that influenced you at the time?

A. Mmm.

5 Q. The first item you come to as you do your review is this issue about the north core floor connection. I want you to assume that you have the same reaction to that as you have already described. Would that have sufficiently alarmed you that you would have thought I'd better look more closely at the rest of the key design elements in this building?

10 A. I am not sure it would have alarmed me but it certainly would have been a factor that I would have considered in my ongoing review of the other components. So in other words, I might have said well look this issue obviously wasn't quite completed or there is a gap there that might have been sorted out during construction, I just don't know. So I would have
15 had that in my mind when I was doing the balance of the review.

Q. All right, let me add in then another factor to this. I take it at the time that you were doing the actual work back in 1990 that you were not told about Mr Harding's inexperience in relation to the design of multi-level buildings at the time he designed the CTV building?

20 A. No I was not.

Q. If you had been told at that time by Dr Reay, that this was the first multi-level shear core gravity supported building that he had done from scratch, in other words where he had been solely responsible for its design, would you have regarded that as relevant in your thinking as to
25 what kind of enquiry you would ought to now be making?

A. I think in the first instance I would have perhaps considered that relevant with regard to Holmes report. I think it would have been relevant perhaps to them to have known that.

Q. And why not relevant to you as well?

30 A. Well because if they had known it then I would have known it because it would have been evident in their report.

Q. Yes, and they didn't know it but Dr Reay knew about Mr Harding's experience. Would it have been relevant to you in the work you were doing for him to have told you that?

A. Yes I think it would have been relevant, yes.

5 Q. Now just one other thing that came up this morning I would like to ask you about. It came out of an exchange between yourself and His Honour. This is the careful distinction that you drew between Alan Reay Consulting Engineers who did the original design for the building and Alan Reay Consultants Limited which was the company that you

10 1125

were now working for. You said in an answer to His Honour it was not a distinction that occurred to you at that time, namely I take it back in 1990, '91?

15 A. Yes I'm, I'm recalling back 22 years but I can't imagine that it would have been a significant distinction even, even though I had known that a new company had been formed.

Q. Yes.

A. Obviously I, I was a shareholder and director of it at that time.

Q. Yes.

20 A. But certainly with regard to professional indemnity insurance and liability the actions of a former, of a director in their former role transferred to the new company anyway so I don't think I would have formed that distinction as a key issue.

25 Q. So when did it occur to you that for the purposes of giving your evidence it was an important distinction?

A. Well I don't know that it's an important distinction, it's just a, it's a, it's a fact and I think it just needed to be stated as such.

Q. When did it occur to you that it needed to be stated?

A. When I was making my evidence.

30 Q. Did Dr Reay suggest to you that it needed to be stated?

A. No, I've had no discussions with Dr Reay since this issue.

Q. None at all?

A. None at all.

Q. None at all. With his lawyers?

A. Not directly although I think his lawyers and Duncan Cotterill may have communi – well they did communicate on issues of past records.

5 Q. All right. Okay. Now some of the chronology the early chronology and the probably almost all of it has been covered with you by Mr Hannan and I certainly don't intend to repeat that but there a few points which I think came out which weren't in your original written brief or were a bit clearer than in your original written brief and I just want to make sure that we've got these embedded. The initial contact as I understand it
10 between John Hare or Mr Hare and your firm was with Dr Reay in a phone call. You've heard that evidence haven't you?

A. I'm not sure if that's the evidence that Mr Hare gave but it was certainly with the firm, I just am not crystal clear whether he contacted me or Dr Reay.

15 Q. Right. Well as I understand the chronology Mr Hare phones Dr Reay on the 25th of January in order to make arrangements to access the drawings and whatever anybody else at the firm is holding, and then he comes in on the 26th for a meeting to actually look at these documents and I think you said in your evidence initially that you thought you might
20 have been introduced to someone at that stage, remember saying that?

A. Yes and given Mr Hare's evidence it would have been Mr Hare.

Q. Yes.

A. That I was introduced to.

Q. And I think you said in response to my friend Mr Hannan that you now
25 say you do recall meeting with Mr Hare when he came in for that meeting?

A. Yes I, I think I did. I mean based on Mr Hare's evidence it would make sense.

Q. Yes. And I think you –

30 A. Sorry just, just on that point I don't believe it was actually a meeting. I think the purpose of Mr Hare coming to the office was to look at the drawings.

Q. Right.

A. It, it wasn't to have a meeting.

Q. Yes. And I think you also said that in response to my friend, to an answer from my friend Mr Hannan that you were aware at that point that there were, there was a problem and you would be responsible for dealing with it, is that right?

5

A. Yes, that's correct.

Q. Now had you been told about this by Dr Reay that there was a problem and you'd been dealing with it?

A. That would have been on that day.

10

Q. Yes.

A. He would have said, "Can you deal with this?"

Q. Yes, and do you think that was, and if you can't remember and I realise it's a long time ago, do you think that that would have been prior to Mr Hare coming in telling you that he would be coming in and that you'd have this responsibility or at the meeting or after he'd gone?

15

A. Look that's something that I just can't remember.

Q. Right. Now do you recall after you'd been told that you would be responsible for dealing with this issue getting any briefing from Dr Reay about the nature of the problem that you would be dealing with?

20

A. Not specifically a briefing. That's not really how we worked in, in the office.

Q. No.

A. We would –

Q. Put it in your terms?

25

A. Well we were often talking to each other about what was going on so if, if there had been a briefing it would have been a discussion.

Q. All right well put it in discussion terms. Do you recall a discussion with Dr Reay when you were initially being told that this was something you were going to take responsibility for, any discussion about what the nature of the problem was?

30

A. No I can't recall the discussion.

Q. So when did you first learn what the nature of the problem was that you'd been charged with?

A. I believe it was first when I made contact with Mr Hare on that day he came to the office.

Q. So the 26th of January according –

A. Yes.

5 Q. – to the chronology?

A. Yeah.

HEARING ADJOURNS: 11.31 AM

HEARING RESUMES: 11.47 AM

10 CROSS-EXAMINATION CONTINUES: MR MILLS

Q. Now Mr Banks before I go any further because it's been suggested to me there might have been a lack of some clarity in a question I put to you. I asked you, you will recall about whether it would have been relevant information for you to have known about Mr Harding's
15 inexperience. You recall my question on that?

A. Yes.

Q. I just wanted to be clear that you understood that having gone through that hypothetical question with you, I was asking you that final question about whether it would have been relevant to you to know if
20 Mr Harding's experience or lack of experience also in relation to the actual position you were in, in 1990?

A. Look I can't recall to be honest whether I was answering the hypothetical or the actual.

Q. I just want to make sure there's no confusion in the records, so I'm asking you that now, in 1990 given the other factors that you've
25 identified, if you had also been told about the actual level of experience of Mr Harding when he designed the CTV building, would that have been a relevant matter that might have influenced your thinking about what more you needed to do?

30 A. Yes it would have.

Q. Thank you. The meeting on the 26th of January, which you were at and where I think you now say you acknowledge you met with Mr Hare, he says in his evidence that at that meeting somebody said to him that provision might have been made during construction to deal with this issue. Do you remember him say that in his evidence?

A. I remember him saying it yes.

Q. Now if that had been said, would you have been the person who would have told him that?

A. My recollection is that that wasn't said at that meeting, that it was the – it followed a discussion between Alan Reay and myself.

Q. I see.

A. Where he said to me that the issue might have been dealt with during construction and that that would have been conveyed to Holmes following that.

Q. I see. And in that discussion with Dr Reay did he give any reason for why he thought it might have been dealt with during construction?

A. No I can't recall anything further than the gist of what I've said.

Q. So you don't recall anything other than him just saying, "I think it might have been dealt with during construction," or something like that?

A. I think that discussion was had after I had searched out the files, had a look through them, hadn't found anything in there and then the comment was just made that he thought it might have been sorted out during construction.

Q. I see, and in these various discussions that you've had with Dr Reay and your evidence suggests that there was an ongoing liaison with him during the course of all of this, what impression did you gain of Dr Reay's level of understanding of the CTV building design?

A. The focus of our discussions was clearly the issue of concern that had been raised. I can't recall that we had anymore general discussion on the overall building. I don't – it doesn't feature in my memory that we talked in any detail about that.

Q. But in relation to the issue you were talking about your understanding was that Dr Reay was knowledgeable about that issue?

A. Well only to the extent that he said he thought it may have been sorted out during construction.

5 Q. I see. Now in terms of the allocation of responsibilities between yourself and Dr Reay for dealing with this issue, you've said in your evidence haven't you that he had an oversight role and you were really dealing with everything else. Is that right?

A. Yeah, I think the oversight role was to the extent that he wanted to know what was going on with the issue and I was informing him of what was going on.

10 Q. Right.

A. But I accept that it was me who was doing the calculations, making the contact with the insurer. I think his role included making contact with the owner, that end of it.

15 Q. So there's nothing else that was said to be, "I'll do that, you're not to do that," other than dealing with the owner, that you recall?

A. That's right.

Q. And when you talk about oversight, was this oversight in the sense that if you needed any help from him or needed to discuss anything you would initiate that?

20 A. I think that would be fair comment. I mean I was also conscious of course that the design had been undertaken whilst he was there, not while I was there, so I felt it necessary to keep him in the loop as it was.

Q. But he wasn't approaching you on a regular basis to ask you about it?

A. Not as I recall, no.

25 Q. So if you had thought it appropriate to let the Council know about this issue that would have been a matter you could have done on your own behalf?

A. Yes it would have been a matter that I could have done.

30 Q. Now the first time that you received the Holmes report, I think you said again in response to a question from my friend Mr Hannan that you now think that you had got that immediately before the meeting with KPMG on the 1st of February?

A. Well I suspect that initiated the meeting with KPMG.

Q. I see. Do you remember when that report came in, whether it came direct to you or to Dr Reay and then to you?

A. I'm pretty sure it came to Dr Reay first, as most of the correspondence did at that time.

5 Q. And I assume you would have discussed that report with him when he brought it to you as I guess he would have done?

A. I assume I would have as well.

Q. But you don't recall anything specific about that discussion?

A. No I must admit I – it was 22 years ago, I'm not crystal clear.

10 Q. Sometimes things stand out so I'm just asking you for those things that might stand out all that time ago.

A. Sure.

Q. Now is it the case that at least for some time after the receipt of that report, that there continued to be a view being expressed by Dr Reay
15 that he thought this might have been fixed during construction?

A. No, I think that was a one-off discussion but certainly that discussion, given that we hadn't been able to locate any record of it having been done quickly led to the conclusion that we needed to assume that it hadn't been done and therefore deal with the issue.

20 Q. Yes. Now I'm interested in this language that you thought it was you and Dr Reay thought that it was appropriate or perhaps the best thing to simply assume it hadn't been done. I'm right aren't I that in fact every document that you looked at, drawings, calculations, they all said it hadn't been done?

25 A. Yes, that's correct.

Q. So what would it be that would leave you with some residual view that it might have been picked up and dealt with?

A. Well the fact that the building had a building permit.

Q. I see. So that's all?

30 A. Well that's the significant issue.

Q. That's all, that's all that kept that hope alive?

A. Well that issue and the comment from Dr Reay that he thought it might have been addressed during construction.

Q. But you've indicated that at least you don't recall anything other than that bald statement, that it might have been addressed?

A. Yes, that's correct. I think further to that Dr Reay contacted David Harding and he had advised Dr Reay that he couldn't recall anything that had been done.

Q. Yes, yes that's right isn't it because I was about to ask you about that because we have in the course of this enquiry as you know, because you've been the recipient of a number of them, counsel assisting have sent out a number of so-called information requests under the statutory powers of the Commission and one of them was sent to Mr Harding and I notice that in Mr Reay's evidence at paragraph 66, and I don't need to take you to it, he refers to phoning Mr Harding and then says that, "Mr Harding was unable to recall any site instructions," but Mr Harding's response to the information request was more categorical than that. He

1157 says he was asked had he made any alteration to install drag bars and his answer was, "I told him I had not". Now when Dr Reay reported back to you on his phone call with Mr Harding he would have reported back to you wouldn't he?

A. Yes.

Q. Do you recall how he put it to you in terms of what Mr Harding had said to him about whether it might have been corrected during construction?

A. No I can't to be honest I, I can recall the, the conclusion.

Q. Yes.

A. Was that we didn't know but I can't recall how it was put to me.

Q. So it was you, in terms on your memory of how you were reacting to this?

A. Yes.

Q. Did you come away from what Dr Reay said to you still thinking that there was a possibility that it had been corrected during construction?

A. Yes I think that would be fair.

Q. And what would be the basis on which you would make such a conclusion given that as you've just agreed with me there's nothing in the drawings, nothing in the calculations –

A. Mhm.

5 Q. – to suggest that?

A. Yes, well as I say the basis is that it's the sort of issue that could have been addressed during construction. What was unusual however is my recollection is there weren't any site instructions –

Q. Yes.

10 A. – in the file which would tend to indicate that no site instructions were done rather than no site inspections had been undertaken 'cos it would be unusual to have no site inspections undertaken. It seemed that the site instructions were missing. So there was that aspect plus also as I say the fact that the building had a permit would have suggested to me
15 that the issue would have been addressed.

Q. Would you expect it to have been shown on the Council permitted drawings if it had been addressed?

A. It could have been addressed by way of sketch or site instruction or some other form.

20 Q. But in the context where not in the drawings the contractors would be building from the drawings wouldn't they, unless they had had a specific site instruction?

A. Yes, that's correct.

Q. That site instruction would have come from Mr Harding?

25 A. I don't know.

Q. Well let me put it differently. The site instructions, any site instructions that were going to direct a change in the way in which the contractors did the structural construction –

A. Mhm.

30 Q. – that would have to come from a supervising engineer, wouldn't it?

A. Not necessarily. In our own practice we can have different engineers providing instructions, I mean normally we're communicating with one another.

Q. Yes.

A. But they're not exclusively issued by the engineer, one engineer allocated to the project.

5 Q. Were you aware that at the time when the CTV building was being built that the only two engineers in the firm were Dr Reay and Mr Harding?

A. I'm aware by way of the evidence I've seen, yes.

Q. Yes.

A. Yes.

10 Q. So any instruction to the contractors to do something that wasn't shown on the drawings that you were looking at would have to have come from one or other of them?

A. I would expect so yes.

Q. And Mr Harding had said he didn't give an instruction to that effect?

A. Mhm.

15 Q. And Dr Reay had never said he did?

A. That's correct.

Q. So on what basis would you continue to think that this might have been dealt with by a site instruction?

20 A. Well the first comment you made there was Mr Harding said that he didn't.

Q. Yes.

A. Well I didn't -

Q. You didn't know that?

A. That isn't clear -

25 Q. You were told that?

A. - on my recollection. That's correct.

Q. All right. It's not something you'd expect the contractors to do of their own initiative is it?

30 A. They might have raised it on their own initiative but certainly not, I wouldn't have expected them to have done it.

Q. Yes.

A. No.

Q. Now at least on my reading of your evidence, somewhere in January of 1991 you also come to the view that because of this issue that Holmes had identified with the diaphragm connection that the building was not code compliant?

5 A. That was 1990 I think.

Q. Yes.

A. Not 1991.

Q. Sorry did I say '91?

A. Yes.

10 Q. I'm sorry, 1990. You, you agree you came to the view in about January of 1990 that because of this issue the building wasn't code compliant?

A. I, I wouldn't be that precise. I think my view was that it would not have likely complied with the code in 1990 at that time, I wasn't – yes that would have been my view.

15 Q. So you did come to the view quite firmly that it was not compliant at least with the 1990 code provisions?

A. Well that appeared to be the case yes.

Q. Yes. And –

20 A. I think – sorry, the qualification there was subject to having a look and seeing if we could determine what was actually done.

Q. Yes. Yes. So unless there had been something done by a site instruction then your view it was not code compliant at least as of 1990?

A. Yes.

25 Q. And do you agree with me that there were no relevant changes in the code between 1986 and 1990 that would have affect this?

A. Well I think I've said I hadn't specifically looked at that but I would be surprised if there were.

Q. Yes, I think we have a, a response from you acknowledging that you did, weren't aware of any relevant changes –

30 A. Mhm.

Q. – that would be right?

A. That's right.

Q. Now Mr Hare says and I think, I'm not sure whether you agreed with this or not but Mr Hare says in his evidence that he recalls a site attendance on the 30th of January with you there where you were doing some metal testing and that at least when he was there you found nothing. Do you recall that aspect of his evidence?

A. Yes I do.

Q. And you agree that he's accurately described what occurred there?

A. Well I think I've said I, I, I can't actually recall being at that –

Q. Yes.

A. – but I accept that I would have been.

Q. Yes.

A. And from what he's said I would have had with me a reinforcing bar locator and I think in my evidence I've said that when we used the reinforcing bar locator it wasn't clear what reinforcing might have been there and that could have been because of the Hi-Bond flooring which was –

Q. Yes.

A. – also metal affecting the detector.

Q. Yes. You agree with me that standing back and evaluating the position in January 1990 with the information you had, that almost certainly there had been no correction made during the construction process and the situation really was one where there was the problem that Holmes had identified in its report that was the actual situation?

A. I – yeah, I think in, in all probability –

Q. Yes.

A. – that would have been the situation.

Q. Yes. So the decision to treat this as just a pragmatic decision to act as though it wasn't present you're, you're actually going further than that aren't you, you really think it probably wasn't present?

A. Mhm. Oh, I don't think it was a pragmatic decision, I think it was a, a sound decision based on the likelihood that it was needed.

Q. Yes all right thank you.

JUSTICE COOPER:

Q. Well did you think it was present or not?

A. Did I think the reinforcing was present?

Q. Yes.

5 A. Yeah, I thought well based on, on the evidence because I could see no evidence that it was there I thought it was likely not there.

CROSS-EXAMINATION CONTINUES: MR MILLS

Q. Now do you accept the proposition from me that in, in 1990 early 1990 when this is all on the boil?

10 A. Mhm.

Q. That the urgency to deal with this issue was principally driven by the warning from KPMG as the receivers that this sale that they had potentially with the option with the Canterbury Regional Council had better not collapse or fall over because of an issue about the structural integrity of the building?

15

A. I think that certainly would have been a factor yes.

Q. Do you agree with me that it was really the principal factor that was making this so urgent?

A. I think there were, from an engineer's point of view when a, a problem arises you want to deal with it and fix it.

20

Q. Yes.

A. But compounding that in this case the owner was a receiver who was trying to sell the building.

Q. Yes.

25 A. And clearly this issue may have affected that sale of the building.

Q. Yes.

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A. And so I think in the letter I wrote to Mr Wilkinson where I'd suggested he respond the same day I suspect that was because we may have considered there could have been consequential costs arising out of the issue.

30

Q. Yes and indeed that would be one of the reasons that right at this time you notified the insurers?

5 A. Well it's, it's something we would have done anyway. A notification of insurers is pretty much an automatic thing. If anyone raises a potential issue with you the first thing you do is notify your PI insurers, just as a matter of course.

Q. There is a reference in some of the, and there's quite a lot of documents with the interaction with insurers and brokers and others to the issue of consequential losses.

10 A. Mmm.

Q. Do you need me to take you to that or do you accept that that was an issue in your discussion with them, the possibility of that?

A. Yes it was raised, yes.

15 Q. Now you're handling you said the insurance issues. Would you have discussed that concern, that possibility of that sort of claim with Dr Reay?

A. I'm sure I would've.

20 Q. Now most of the correspondence that relates to the insurance cover continues to use the careful language of a possible deficiency in the building and words to that effect. I think you would have heard Mr Wilkinson say yesterday that that language is typical because of not wanting to have on the record an out-and-out acknowledgement that there's a deficiency of any kind. Do you agree that that's what was going on here with the use of that sort of terminology?

25 A. Yes I think it was largely for that reason but still recognising the possibility that we may have discovered something that we hadn't discovered there.

Q. Yes one lives in hope I suppose.

A. Well it was a possibility.

30 Q. Yes.

A. But, yeah, I accept that the word "possible" you know could have said probable or highly likely.

Q. Yes. So it's really an insurance term that's been carefully used.

A. I would say that that was the case.

Q. Now again I can take you to this document if you want me to but do you recall in your documents there's a claim notification that you filled in at one point?

5 A. Yes I think there are several –

Q. Perhaps I should bring it up. It's BUI.MAD249.0129.32 and then the page I want is 33 if I've got my record right. There's just one matter I want to draw your attention to there. Now if you could go to the next page. (I've been told to take care of the microphone when I move).

10 We'll just go back to the first page. Yes I just want to draw your attention to paragraph 3(a) where you put in the name of the claimant or potential claimant and you'll see that you've got two potential claimants or claimants. One is the receiver of Prime West and the other is Williams Construction. Was there any particular reason why you
15 thought Williams Construction might have a claim?

A. Well look I'm assuming I, I put that there in discussion with Dr Reay –

Q. Yes.

A. – and my understanding would have been that Williams Construction was the client of Alan Reay Consulting Engineer.

20 Q. Yes and would the, did you think through how that claim might arise? Let me put something to you, see if this was your thinking – was it that if Williams was sued over the construction of the building that they would say, we built to the drawings and we're looking to Alan Reay Consultants?

25 A. I can't recall what I was thinking when I wrote that in there but I would say that it's likely that I would have thought along those lines.

Q. Yes, all right. Now I want to take you now to a document that Mr Hannan took you to which is the letter that follows your first meeting I think it is with KPMG as the receivers and this is BUI.MAD249.0129.27.

30 I think there's two pages to that. If we could bring them both up at once that'd be helpful. Now as you know it refers to a meeting on the 1st of February and records that you were at that meeting and I take it you accept that, that you were there?

A. Yes I do, yep.

Q. And, so this is recording issues arising out of that meeting and it says in the first paragraph, "We record our understanding of the steps to be taken with regards to the alleged non-compliance," and, again, do I take it that that's the way you would have presented it to KPMG at that meeting?

A. Look I can't remember the meeting but I would imagine that in talking to an owner we would have been somewhat guarded in accepting responsibility when we weren't sure that that problem existed.

Q. Yes. Although you knew by the time of that meeting, and I think in response to the question His Honour put to you that it was likely it did exist. And then you say, "Investigations are continuing as to whether or not steel ties were placed," and so on. Don't you agree that in the context of what your view was at the time that that's not entirely a candid statement that you're apparently conveying or have conveyed to the owner?

A. Well bear in mind this is their statement and I'm not sure that I've seen this statement before but the continuing investigations referred to would be following on from the use of a reinforcing bar locator that didn't give clear answers and you'll see that we eventually had to break out some concrete to see the reinforcing.

Q. Yes.

A. So I would imagine that the further investigations would have related in discussion to the other ways of determining what the reinforcing was if any.

Q. And then it goes on and it says, "In view of the relatively modest cost you have advised it is more cost effective to assume the steel is not in place," and so on. Now you I think had already said to me a moment ago that as far as you were concerned the decision to do this work wasn't a pragmatic judgment. That reads very much as though the impression has been conveyed to KPMG that relatively modest costs, don't know whether it's a problem or not and, but it's just a pragmatic decision to act as though it wasn't there. Do you agree that's the

message that's going through to KPMG, at least on the face of this letter?

A. That seems to be the message, yes.

5 Q. And if that is what KPMG was told at that meeting would you agree with me it's not an entirely candid statement of what you understood to be the position at the date of that meeting?

A. Well bear in mind the "you" referred to here isn't me –

Q. Yes.

A. – it's Dr Reay.

10 Q. Well it's a meeting with yourself and Mr Geoff Banks so it's recording on the face of it the key messages that were delivered at that meeting. Do you agree with that?

A. Well it's from their perspective, yes.

15 Q. Yes. There's nothing in here is there that would indicate that they had appreciated the level of significance that you had identified in relation to this problem. Do you agree with that?

A. Yes, yes I do and I'd also say though that a similar letter received from Mr Ibbotson, when I saw it I responded to it to clarify those issues.

Q. Yes.

20 A. Now the fact that I haven't responded to this letter I think would suggest that I didn't see it.

Q. And so are you saying that if you had received this letter that you would have gone back and delivered a different set of messages?

25 A. It's, it's possible or likely if I felt that their understanding wasn't correct. For example, the approximately \$5000 I think in my estimates was actually between five and 10 or \$15,000.

30 Q. Yeah, let's leave the money to one side. It seems to be a side issue at least for the moment. In terms of the principal messages that I just took you to that are delivered in this, or at least are recorded in this letter which are reflecting back I think you agree the understanding that KPMG had from the meeting you and Dr Banks were at, I think you

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are agreeing with me it is not in your view an entirely candid message?

A. Well I think if I just go to what those messages are.

Q. Yes?

5 A. We are saying that investigations are continuing and I agree that that was the case because they were needing to continue and they did in fact continue. The message regarding cost I think is probably at the lower limit of the cost that had been discussed so whether we discussed a range and they only put the lower number in, I don't know.

Q. Yeah as I say I think we can –

10 A. Agreeing that it was more cost effective to assume the steel is not in place I think is a fair message. There is reasonable agreement with Holmes as to the level of remedial work required. I think that is a fair message and once carried out there is no suggestion that the building is not at proper standard. Well that was the message that I had corrected with regard to Mr Ibbotson just clarifying what that meant so..

15 Q. You agree with me that there is nothing reflecting back from the owner, a KPMG owner for these purposes that they have understood the significance of the issue to the extent that you accept you understood it?

A. I don't know that that's what they are addressing. They talk about alleged non-compliance with current design codes so –

20 Q. All right, well I think the letter can stand for itself in the end and we will make of it what we will but just one final point on that. There is a reference to agreeing to complete the engineering drawings et cetera on an entirely without prejudice basis, but then I see there it says, “both parties have reserved their positions with regard to who should bear the contractor's costs of carrying out the repairs.” Now what possible basis could there be for the cost of carrying out this work if it was required, being on anyone other than Alan Reay's firm?

25

30 A. Mmm, one of the basis – when something has been left out of a building design and that happens from time to time, none of us are perfect, in some cases it has also diminished the cost of the design so that when you come to put something back in you then need to compare that with the cost of what it would have been had it been done at the time

because it would have been reasonable for the owner to have paid for that at the time so –

Q. Are you seriously putting up the proposition that a building with a defect in it that had been identified which went to the stability of that building in an earthquake was something for which the owner now has to pay to get that corrected?

A. No I thought you were asking me a general question –

Q. No I am asking you about this letter and what is said in that paragraph which does not accept the liability on the cost being on Alan Reay's firm and leaves open and it is reflecting the discussion that apparently took place at the meeting the day before, it is left open the question of who should bear that cost?

A. I think, I mean that is what they have written.

Q. Yes?

A. As I have said to you before, Alan Reay and I accepted that the work needed to be done and –

Q. Did you accept that Alan Reay's firm would ultimately be the one that would be responsible for the costs of that?

A. Well or our insurers and that is why we notified the insurers.

Q. Yes, but at least vis-a-vis the owner they are interested not in what the insurer behind Alan Reay's firm accepts, but what Alan Reay and you are saying to them about who is going to carry the costs of this, aren't they?

A. Well I am not sure that I said that to them.

Q. I take it you wouldn't have said that to them?

A. It's quite a legalistic statement –

Q. Well without prejudice is, but the question of who is going to regard themselves as responsible for this doesn't seem too legalistic?

A. Yeah it is not the sort of thing I think that I would have been dealing with on this. I have explained to you what my role was in this activity.

Q. I see, so dealing with the owner was Dr Reay's issue are you saying?

A. Well that was generally the case and in fact the letter was written to him but clearly I was at the meeting.

Q. There is another document I want to take you to and this – I think I have got the full reference here, it was just handed to me, is BUI.MAD249.0129.31. Now you will see that this is a letter from you that goes to Adam and Adam, the insurance claim and you will see that it appears to include the letter from KPMG or Peat Marwick as it is referred to there that we were just talking about and would you agree with me that it does confirm that at least by that date you had seen that letter and you were forwarding it on?

A. Mmm I think it is likely, yep.

Q. And you made no changes to it before you sent it on, you just sent it on?

A. Well that's what this is saying yes.

Q. Now as you know and it was raised in questioning from Mr Hannan there is then a long hiatus in dealing with this problem between February of 1990 and then in terms of actually doing anything with it to September of 1991, you agree?

A. Well there were – actually into it physically –

Q. Yes, that is what I am asking you, physically –

A. September 1991, yes.

Q. – it is not until September of 1991 so there is a 20 month delay between these two dates, but it is on the boil in February 1990 but activity on fixing it doesn't get underway again until September of 1991?

A. I think it was early in 1991 when it came back on the boil but the physical works weren't done until later in 1991.

Q. Yes. And do I take it in response to a question you answered earlier that at least to some extent it was your view that this problem had been passed on to the owner at that point by letting the receivers know about the existence of it?

A. Well the information had been passed on to the owner. I don't know that that meant that we weren't still interested in keeping track of what was happening to it, but it does seem extraordinary that there was a period of I think about nine months between that and any further contact then.

Q. Yes, well that was of course because the sale to the Canterbury Regional Council didn't proceed. That is the reason it goes off the boil isn't it?

A. I don't know.

5 Q. Yes. Now, your firm would have known, you would have known that the deficiency hadn't been corrected during this period because if it had been you would have been involved in doing the further work wouldn't you?

10 A. That is a likely scenario but I mean it is possible that Holmes had done something –

Q. Yes.

A. I think it would be likely though that we would have communicated with one another during that period.

15 Q. So you agree that during this period you knew that the likelihood was that the deficiency hadn't been fixed?

A. It is likely yep.

Q. And until it was fixed you would know that there was an ongoing potential risk to the occupants of that building if it was hit by an earthquake?

20 A. Well if there had been occupants, yes.

Q. It would have potentially been a risk to passers-by if it was hit by an earthquake?

A. It would have been a risk at a similar level to probably three-quarters of the buildings in Christchurch.

25 Q. Doesn't diminish the risk that this building posed to your knowledge, does it?

A. No of course not.

30 Q. And so do you say that during this long period we have just been describing that there was no deliberate decision made to do nothing. It was just left?

A. No from my recollection it just went off the radar, obviously we were doing other things and for whatever reason it didn't, it just didn't come up. Well I have no recollection of any discussion on it during that period.

Q. Now you've referred to the fact that you thought that the Christchurch City Council might have been informed about this issue. That is on the basis of the passing reference in Mr Hare's report, having discussed it with Mr Bryan Bluck, am I right?

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A. Yes that's right.

Q. And of course you wouldn't, I suppose, have been aware at the time, but I think you heard Mr Hare give evidence that he did not raise this issue with Mr Bluck?

10 A. Mmm.

Q. Given that you weren't sure whether the Christchurch City Council had been informed about this issue and with this long period of nothing happening where you thought it likely the problem hadn't been fixed, did it ever occur to you that perhaps the right thing to do would have been to tell the Christchurch City Council so there was some action on this?

15

A. Well of course the Christchurch City Council did know about the issue because Mr Tapper mentioned it in his evidence. So I had that information and I had a report saying there had been discussions with Holmes and the Council. The actual action on fixing it wouldn't have been taken by the City Council so –

20

Q. If it was a dangerous building they would've had powers of course?

A. If it was dangerous yes.

Q. So do you read that letter of Mr Tapper's which I assume is the one you're referring to, 22nd of August 1986 one, do you read that as identifying the problem?

25

A. Yes I do. That letter was in the ARC file I think.

Q. Yes, yes. That letter was in the ARC file that you looked at was it?

A. Well it was in the documents that were sent through to me and I'm pretty sure it was in the file at the time.

30

Q. So your recollection is you saw that letter at the time you were looking at this?

A. Yes.

- Q. The decision to take legal advice on this. Dr Reay says in his brief which is expected to be the evidence he'll give, that it was your decision to seek that verification by getting lawyers involved. Is that your view of why legal advice was taken, because you decided that legal advice was required to verify the obligations that you had?
- 5 A. Can you just clarify for me what you're referring to?
- Q. All right, let me take that then in steps. I'm trying to speed this too much. In 1991, after you and I assume Dr Reay but tell me if that's not correct, become alarmed about the news of the sale of the building. You became aware of this, the sale of the building from the article in *The Press*?
- 10 A. No-one had contacted us about remedial work.
- Q. Yes, and that was an issue that you discussed with Dr Reay at the time?
- A. Yes.
- 15 Q. And then do I take it that in order to get advice on what your obligations were and what the firm's obligations were, you thought that legal advice was required. Is that the position?
- A. No I don't believe so. I believe the situation was that we wanted to contact the new owner but knowing that we had lodged a professional insurance claim we had to contact our PI insurers before we could make that contact.
- 20 Q. Yes.
- A. And so my recollection is that it was the insurer who required or suggested or whatever that that advice be sought.
- 25 Q. I see, so you took legal advice because the insurers said, "You must take legal advice before you communicate to the new owners."?
- A. Yes, and there is a process of seeking communication.
- Q. What would you have done if you had been told by the insurers or in that legal advice that you were to do nothing?
- 30 A. I would've questioned that advice, because as I've said, I think whilst we had met the technical requirements under the code of ethics, I don't think it anticipated this situation and I think it would've been inappropriate not to contact the new owners.

Q. Can you just take you to a couple of documents on this and then I'll just bring this to an end because I don't think we need to protract it further, but can I take you just to first of all to correspondence with the new owners on the 15th of October 1991, and this is BUI.MAD249.0129.49?

5 WITNESS REFERRED TO SLIDE

Q. Now as I understand it, we have not been able to find the letter of the 30th of May, 30th September rather, but it's referred to there. Actually I might be wrong on that, no I think we do have the letter of the 30th. Now again this is a letter from you, this is after you've had legal advice isn't it?

10

A. (no audible answer 12:32:46)

Q. So you're proceeding now to communicate with the new owner?

A. Yes I assume.

Q. Yes well I can tell you that it was. The legal advice on the documentation was received no later than the 25th of May, sorry 25th of March 1991.

15

A. This is well after.

Q. It's well after it and so again there's an unexplained, unless you can explain it, long gap after getting legal advice before you actually make contact with Madras Equities?

20

A. Well I don't believe that's the case. This is referring to previous correspondence and I imagine we would've made contact as soon as we could've.

Q. Well then we better go back to the 30 September letter. I was hoping to jump over this, but that is BUI.MAD249.0129.50?

25

WITNESS REFERRED TO SLIDE

Q. Now you'll see that this refers to a letter of the 11th of September and that's the one we don't have? And would you agree with me that on the face of the letter we do have, the one in front of you, that it's the clear inference that it is a letter of the 11th of September that has brought to the attention of Madras Equities, or more accurately Pedofsky, Ibbotson and Cooney to whom the letter is sent on behalf of Madras Equities, that that letter is the one that has drawn to their attention an issue, being the

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issue that Holmes identified. That's the letter that brought it to the attention of Madras Equities. Just take a moment to look at it if you like?

A. Yes I will.

5 WITNESS REFERRED TO SLIDE – LETTER

Q. It would seem to me the second paragraph makes that clear?

A. Look I can't recall communication before that, or whether the letter of 11th of September would have been the first contact, but it does seem unusual to me, given that we wanted, we alerted our insurers that the sale had occurred, we then sought approval to contact them and received that approval. I'd be very surprised if contact hadn't been made after that point, whether it was by phone or whatever.

Q. You have no recollection of such contact?

A. No I don't.

15 Q. Do you agree with me that that second paragraph reads, "By reference to the 11 September letter, as indicated to you we are naturally concerned on behalf of the owners Madras Equities Limited that there may be an engineering design fault omission in the structure which could impact on insufficient loadings to meet the normal earthquake requirements." And that, would you agree with me, is a reference to the letter and then subsequent discussion following the letter of the 11th of September?

A. Yes it is.

25 Q. And no indication whatsoever in there that there's been any indication given to Madras Equities about this issue prior to the letter of 11 September?

A. Yeah, no.

Q. Do you agree that's the natural reading of the letter?

30 A. Yes I accept that and also I'd say that if I had been the one endeavouring to make that contact I think I would've made a file note of it.

Q. Now again, not dissimilar to the earlier correspondence we looked at in 1990 with KPMG as the receivers and in that capacity owners – I want to keep that up please. Can you just enlarge that again to where it was?

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5 That again you've given them so it seems an outline of the nature of the issue, and again if you look at paragraph four it refers to it simply as a possible problem and then the reference in the next paragraph down to the remedial work if required being relatively simple and then sets out at the next page there the suggested procedure, and again second
10 paragraph on that right-hand page the question of costs liability is still to be determined. See that?

A. Yes I do.

Q. So no change at all that I can see from the attitude that was being expressed in the letter that was written over a year earlier to KPMG. Do
15 you agree with me?

A. Sorry, attitude of (inaudible 12:38:18).

Q. Attitude towards the cost question and also the way in which the nature of the problem is being described in general terms as being, would you agree with me not overly significant?

20 A. Well I think this is identifying that the remedial work is relatively straightforward which proved to be the case.

Q. Do you agree with me that there's nothing in that letter again, same issues we went through with KPMG, there's nothing reflecting back in that letter Madras Equities understanding of what they had been told by
25 you, that reflects the level of concern that was set out in the Holmes report and which in earlier questioning of you, you accepted was effectively your view as well?

A. I think the second paragraph records that, there may be an engineering design fault omission in the structure which could impact on insufficient
30 loadings to meet the normal earthquake requirements.

Q. You agree with me that putting to one side the concerns about insurance issues, it would have been more accurate to say that as far as we are aware there is an engineering design fault omission in the

structure which is highly likely to impact or does impact on the loadings to meet earthquake requirements?

A. From a technical point of view that would be correct, yes.

5 **JUSTICE COOPER :**

What's the date of this letter?

MR MILLS:

This letter is the 30th of September 1991.

10

JUSTICE COOPER:

Q. And it's still being said at that point if I look at the first paragraph on the second page, that the matter has to be investigated. There's no acceptance that the problem exists because there's obviously been discussion with Madras Equities as to further investigate procedures to see if it does exist. Is that the position?

15

A. The investigation as I recall was actually undertaken in advance of the actual repair, so because there was a contractor on site, part of their work was breaking out some concrete to have a look at the reinforcing bars, so that's when it was done.

20

Q. So it was still to be investigated at this stage?

A. Yes.

CROSS-EXAMINATION CONTINUES: MR MILLS

Q. I'll take you to the document if you want me to, but do you recall that in addition there was at one point some consideration of whether legal action might be taken to recover from a staff member of Alan Reay's firm?

25

A. Doesn't ring a bell at all, no.

Q. Doesn't ring a bell with you, all right, well it's a matter of record. Now you also accept from me and I'll take you through the record if we need to, that ultimately the cost of doing this work was borne by Madras Equities, and at no stage in the dealings with Madras Equities over this

30

issue did you or Dr Reay or Alan Reay Consultants Limited ever say, of course it's our obligation and we'll pay for the costs of fixing this?

A. I don't believe that was said in writing, bear in mind that part of the cost was actually doing the design.

5 Q. I appreciate that.

A. And that was borne by Alan Reay Consultants.

Q. I appreciate that but there was a cost which is the \$4500 or so which Madras Equities was left to carry.

10 A. Well if they had not carried it, Alan Reay Consultants would have carried it.

Q. Well I can take you through the documentation but you agree with me that throughout the correspondence that went backwards and forwards which you were the author, it was constantly being said, the question of who's going to pay for this is being deferred?

15 A. Yes that's correct.

Q. There was never any indication, never any acknowledgement that that cost would be carried or met by Alan Reay's firm?

A. Not to the building owner.

Q. Yes correct.

20 A. As opposed to the insurer.

Q. Correct, and again I ask you and you may give me the same answer you gave me before, was there any proper basis on which the cost of this could be imposed on Madras Equities?

A. Well my –

25 Q. In your view?

A. Yeah, I think in my view at the time it was highly likely that the cost would fall to Alan Reay Consultants.

Q. Yes.

30 A. The fact that the owner actually agreed to pay for it could be a bit of a surprise.

Q. Well you say the owner agreed to pay for it, do you?

A. Well no I'm not, they owner did pay for it.

Q. That's right, well the owner paid for it, I'm going to put it to you because it was made clear throughout that Alan Reay's firm was not offering to pay for it and there would be an issue that they'd have to pursue if they wanted to get it?

5 A. Yeah, look I think in terms, again in terms of our dealings with our PI insurer, I believe we wouldn't have been approved to say that we would offer to pay for it.

Q. This was within the firm's deductible was it?

A. Probably, yes I suspect it was, but of course the ultimate amount wasn't
10 known.

Q. Well it was at the end when the bill was left with Madras Equities.

A. Well if there hadn't been any consequential issues, but really you know until that point you wouldn't have known what the (overtalking 12:44:36).

Q. I see, so in the end looking after the interests of the firm took
15 precedence I gather over what might be seen to be where the responsibility properly lay and that was not with Madras Equities?

A. Look I think the precedent was actually to fix the problem and we also had an obligation to handle it in a way that our insurer approved and that's the way it was done.

20 **CROSS-EXAMINATION: MR ELLIOTT**

Q. Mr Banks, I imagine that you looked at the Alan Reay file back in 1990 in the course of which you saw a letter from Mr Tapper. Do you remember seeing that letter do you?

A. Yes I do.

25 Q. Do you remember seeing any response?

A. No I don't, well I can remember that I didn't see a response.

Q. So you looked through the whole file?

A. Yes.

Q. Do you recall seeing a design certificate?

30 A. No I don't.

Q. And when confronted with what Holmes described as this vital area of non-compliance did you give any consideration to the method of design that Mr Harding had used to design the building?

5 A. Only in regard to the particular issue of that transfer of load from diaphragm to the walls.

Q. So you didn't give consideration to whether or not capacity design applied to the structure or not?

A. Well I would have been aware that it was designed in a capacity design environment, yes as part of that process.

10 Q. So what was your understanding at that time of what that meant?

A. Of what capacity design meant?

Q. Well the design of this building.

A. Well capacity design relates to looking at areas that can dissipate energy such as the flexural performance of the wall, considering the capacity and then feeding that back into areas such as the shear reinforcement in the wall. So the procedures for capacity design were

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well covered by the material standard NZS3101 and the loadings code.

20 Q. And an application of capacity design to this building would mean that one would consider, should consider the north core, the south wall and the diaphragm connection between those walls would it?

A. Yes that's, that's one way of, of doing that is if you've got all the information and data say from the ETABS analysis you can determine the connection loads between the floors and the walls and you can apply that over capacity to that connection to, to design it. That's one way of doing it but not the only way.

25 Q. Did you use the way you've just described?

A. No I didn't because I, I, I didn't have the ETABS data.

30 Q. Would you agree that the effect of capacity design on the design of this structure would be that the loads, the diaphragms and the diaphragm connections should have been capable of sustaining were required to be greater than the loads required to cause yielding in the plastic hinge regions of the walls?

- A. That's not a calculation I've done and it wouldn't necessarily be the case no.
- Q. But do you agree with the concept in relation to this building?
- A. Well I can't say whether those loads would have been higher or lower
 5 had that calculation been done, they could have been higher, they, they could have been lower.
- Q. Mr Mills has asked you some questions about whether you might have taken some more action to investigate the building as a whole. I'm just going to refer you to one or two other matters on, on that topic. Now
 10 you looked at Mr Harding's calculations did you?
- A. I looked at some of the calculations in regard to this diaphragm connection.
- Q. That's pages S56 and S57?
- A. I certainly did look at those two. Yes.
- 15 Q. And it would have been –
- A. Ah – sorry I think I, I think I referred in my calculations to S10 as well which was a summary of some of the calculation assumptions.
- Q. Yes because he refers to S10 on one of those pages doesn't he, S56 and S57. So it would have been evident to you from the calculations that
 20 he'd uses forces derived from the equivalent static method as opposed to those derived from the parts and portions section of the code?
- A. With regard to the diaphragm design yes that's correct, yep.
- Q. And the figure he arrived at for the required loadings of the connections to the north core in an east west direction was 300 kilonewtons for that
 25 whole connection wasn't it?
- A. Yes and I think he derived that by taking five, 500 and something kilonewtons and applying 60% of it to the north core.
- Q. And the figure that you arrived at in relation to that same area was 724 kilonewtons wasn't it?
- 30 A. Yes that's because I was using the Parts and Portions method which I, I would have thought would have been significantly higher load be, because of the detailing requirements.

Q. So it was evident to you that he'd used the figure of less than half of what you arrived -

A. Yes that's right.

Q. – at?

5 A. Yes but, but in using a lower figure he would have necessarily been required to detail to a higher level of ductility.

Q. And you would also have seen what Mr O'Loughlin picked up which was that he dropped a zero in his calculations of the capacity in relation to line 4?

10 A. I can't recall seeing that no. It doesn't stick in my mind as something I spotted.

Q. It would have been something that you spotted though if you'd read page 57 wouldn't it –

A. Well –

15 Q. – it would stand out?

A. – not necessarily, not necessarily because I had decided not to rely on his calculations because I didn't, they didn't give me the information I needed to look at the connection. So I, I then relied on my own calculations.

20 Q. All right well considering that on the face of it Mr Harding had used loadings of less than half of yours that as you say, said earlier he hadn't apparently carried out any calculations in relation to the north-south direction, that he had designed what appeared to be a very basic problem and that given that Holmes' report was stated to have been
25 brief, don't you agree that in those circumstances you should have looked more closely at his design of the building as a whole?

A. Well firstly I, I don't accept the, all the propositions you've put to me.

Q. I'm sorry.

A. The, the fact that his load was less than half, was, was no cause to
30 consider that there was a problem because he'd used a different method. So really the, the, the problem I identified was that it, it appeared that he hadn't designed that one aspect so, so it was that that caused me to look at that issue and that Holmes had looked at the

whole building. You say it's brief but they then outlined what they did, they looked at all of the structural drawings, they looked at the calculations, they did their own calculations, they reached a conclusion and the conclusion was pretty clear to me.

- 5 Q. Next I just want to ensure that we understand the differences between you and Mr O'Leary. This won't take long. I'll just refer you to the plan BUI.MAD249.0284.17. This is S16 from the permitted drawings.

WITNESS REFERRED TO PLAN

Q. And if the north core on the left could be enlarged please?

- 10 A. I'm sorry to refer to some of these issues I would need the whole drawing.

- Q. I'll take you to the relevant sections as required but I just want to work through them so we're enlarging just that north core. So you referred to two layers of 664 mesh whereas you say Dr O'Leary had referred to one and it's evident from that to the right of the upper section that two layers, or an extra layer is referred to. Is that what you're referring to there?
- 15

A. Yes that's correct, that's only, only in this area here.

Q. Thank you. Now secondly you said that there were 12 D12s but it appears that there are only eight detailed there?

- 20 A. Well as I said there were 12 bars. If you look at the, if we can blow up this area here. Sorry if we look at this note here it says, "eight D12 at 400 centres" in this region. Now in addition to that there's an H12 top and bottom so these are a higher grade bar as well in this position trimming the opening and in addition if you look at cross-section 1 you'll see that there are two bars within the, within the wall that are crossing that joint as well.
- 25

Q. Thank you, so that's how you reached 12?

A. Yes.

- Q. Thank you. Now thirdly you referred to differences between you about the thickness?
- 30

A. Yes.

Q. And are you saying he used a thickness of –

A. One hundred and 50 millimetres.

Q. - 150. And you used 200?

A. Well I, I didn't –

Q. You didn't know?

A. No, no I, I used a thickness of 150.

5 Q. Yes.

A. I was commenting on Mr O'Leary's calculations but I, I had also used a thickness of 150 but when I looked at section 2 –

10 Q. So if we enlarge the diagram on, go back to the original full version and then enlarge the diagram in the top right-hand corner. So the width there is shown as 200, on the left?

A. Yes and it, and, and the region we're looking at is sort in this region in, in here so over that region the thickness is 200. Mr O'Leary I think was focusing more further out from the wall which is this general area here where because of the Hi-Bond flooring the thickness is 150 millimetres.

15 Q. So the, where the 200 you, you are saying is applicable is at that junction point with the wall on the right of that diagram?

A. Yes.

20 Q. So when he said 150 in his calculations and you said 150 in your original calculations are you saying you were both wrong and that 200 is the correct figure?

A. Yes, that's correct.

25 Q. And finally you referred to this difference between 2.65 and 2.35 so if we can go back to the diagram on the left again, highlight that, if we just highlight the north bay, the, the toilet bay please but including the lines to the left with the numbers on it. Perhaps that's visible but you're referring to the distance along the right-hand wall in the top bay?

A. Yes.

30 Q. And if we look to the left where we have lines and measurements we've got a figure of 3.750 which seems to indicate the internal length, correct and 1400 so 1.4 metres in the area of the void. So is it correct that on the face of it Dr O'Leary has subtracted 1.4 from 3.75?

A. Yes. Yes.

Q. And arrived at 2.35?

A. Yes, that's correct.

Q. But what you are saying is that one should also include that extra 30 millimetres that being the width of the, the wall.

A. 300 millimetres.

5 Q. Sorry 300 millimetres?

A. Yes.

Q. That being the width of the wall?

A. Yes.

10 Q. I see. So just a verification of where that shows up in your calculations back at the time, that's BUI.MAD249.0130.18.

WITNESS REFERRED TO BUI.MAD249.0130.18

Q. Mr Banks is this the, the page of your calculations in which you check whether the connection to line 5 is okay as you describe it?

15 A. Yes so I've checked shear friction to the wall which is at the junction between the wall and the floor and you'll see this number here I've used 2.65 metres.

Q. So top you're indicating top right-hand corner you've said over 2.65 metres length?

A. Yes up there.

20 Q. And then you've duplicated that number in your calculations relating to shear friction?

A. Yes I have.

Q. And in relation to the stress demand of the diaphragm is that right?

A. Yes it is.

25 Q. If the figure of 2.350 was used that would change the outcome wouldn't it?

30 A. Yes it's, it's, it would change it to, well for shear friction you're actually considering the amount of reinforcing that crosses the joint in particular. So it would change the level of shear but it might not change the amount of reinforcement required to cross that joint.

Q. Well let me put it this way, if, if that figure was wrong, if your figure of 2.65 was wrong and the 2.35 was right, the effect of that would be that

you would have underestimated the area of steel required at that connection in your shear friction calculation?

A. I, I – well firstly it's a, that's an unusual hypothesis because I think the, the dimension is what the dimension is, but I don't know that it actually would have altered the amount of reinforcement needed because it's expressed in terms of millimetres squared per metre so the, effectively shear friction is resisted by a quantity of steel.

Q. But aren't you calculating your demand in that first line and 2.65 appears on the denominator?

10 A. Yes it does and that's because I'm, I'm working out an area in terms of square millimetres per metre. In other words as if that's an average across the, across the width.

Q. But if, if the denominator gets small doesn't the result get bigger so your demand calculation would have been higher?

15 A. Yes it does but that means then that you're ignoring the shear going through the, the wall part of that area.

Q. All right, well after lunch I'll just ask you to tell us why you say that 2.65 is correct rather than 2.35 and –

A. Can I, I mean I can show you now on, on one of the details but –

20 Q. If you're happy to and His Honour's happy to yes?

A. So if we go back to that plan of the floor it, it shows on the cross-section through the wall that the floor carries on through the, the wall thickness.

Q. I see so it's just the fact that the wall carry- you say you treat the wall as...?

25 A. Yes in fact if you look detail 1 up here you see the floor is extending through.

Q. Sorry the floor –

A. The floor is extending –

Q. – is extending –

30 A. – through the wall.

Q. – through the wall, so you treat the floor as being part of the wall?

A. Well for the purposes of shear I'm treating the floor as being all of the floor not excluding the bit that's in the wall.

MR ELLIOTT ADDRESSES JUSTICE COOPER

JUSTICE COOPER ADDRESSES COUNSEL

HEARING ADJOURNS: 1.03 PM

5

HEARING RESUMES: 1.46 PM**CROSS-EXAMINATION CONTINUES: MR ELLIOTT**

5 Q. Mr Banks, the final topic I wanted to address with you was this decision not to locate drag bars on levels one and two. I just refer to your calculations BUI.MAD249.0130.21. See that in front of you?

A. Yes I do.

Q. So on that page of your calculations you've calculated the required loads in the right-hand column there, correct?

10 A. Yes.

Q. And those calculations relate to both lines D and D/E don't they?

A. That's based on the agreement with Holmes that we would design for 300 kilonewtons on both those lines, yes.

15 Q. So according to those calculations the required loads at both lines D and D/E would have been 184 kilonewtons?

A. Yes that's correct.

20 Q. Or to put it another way an application of the Parts and Portions provision of the codes in relation to connections at point D and D/E meant that those connections should be capable of sustaining loads of 184 kilonewtons at levels one and two subject to your redistribution?

A. Well according to the Parts and Portions I have come up with loads that were either 7% or 30% lower but, as I say the agreed load was 300 so I used that as the basis of working down to the lower levels.

25 Q. Yes, but the reasoning that you give for then saying well we'll have no drag bars on those levels is by reference to the commentary to clause 1.2.5.1 of NZS4203?

A. I can't recall that clause but I –

Q. I think you said that in your brief and I'll just bring it up in front of you, ENG.STA.0018.21.

30 A. I'm happy to take it that that's what the clause I referred to. That would have been one of the reasons.

Q. Oh I see, well could we just highlight 1.2.5.1 together with C1.2.5.1 which is to the left of it. So that last sentence of the commentary section on the left – “some redistribution of seismic horizontal forces between elements is therefore acceptable” – that's the reference in your brief isn't it?

5

A. I think it is yes.

Q. And that commentary clause begins “In practice the determination of relative stiffnesses is fraught with difficulties”?

A. Yes.

10 Q. Now as I read your brief you're saying well you've used clause 1.2.5.1 to justify not having drag bars at levels one and two.

A. Well that's not the only aspect. I guess the reason I didn't put them in at level one and two was because I determined by looking at the difference, the impact on the walls that it didn't have a significant impact on the walls at the lower levels.

15

Q. I see, well just to give you the opportunity, are you saying that some application of clause 1.2.5.1 justifies what you've done?

A. Well what I'm saying is the commentary acknowledges that it's acceptable to do that.

20 Q. What about the clause itself, do you say there's something in there that justifies that step?

A. Well if I just read the clause, it says “the total horizontal force at any level shall be considered to be resisted by the various resisting elements”, so that was done by redistributing the individual horizontal force that, from wall to another wall. The total horizontal force was resisted, I say in proportion to their stiffness and I think the commentary is saying, well there are different ways in interpreting that distribution. They say considering the stiffness of the horizontal bracing systems or diaphragms as well as the stiffness of the vertical resisting elements and their foundations. I think in my calculations I had considered it according to the distribution of loads to the walls that had been – had come out in the ETABS analysis that Mr Harding had recorded that distribution and that was what I used as a starting point.

25

30

Q. You used that as a starting point to reach your figure of 148 kilonewtons don't you? That's how you get to that figure?

A. I'm not sure what the 148 kilonewtons is sorry.

5 Q. That's the figure that you've reached in relation to – I'm sorry 184 kilonewtons, that redistribution that you've just mentioned preceded the calculation of that figure didn't it?

A. The 184 was the reduction because of the height. It wasn't a result of the redistribution. 184 was what I considered, when I was considering how much load to redistribute to the other walls.

10 Q. All right, well so are you saying that for the purpose of this clause that the diaphragm connections lines D and D/E were a resisting element using the words of that clause?

A. Yes.

Q. So are you saying that they had a stiffness, I suppose you must be?

15 A. Well this clause says to consider the stiffness of the horizontal bracing systems which I take it to be considering the stiffness of the wall and the way I had done that in my calculations was to consider the way that loads had been distributed in the original analysis between the walls.

20 Q. The effect of what you did was that you ended up with connections at lines D and D/E incapable of sustaining 184 kilonewtons. Is that right?

A. That's correct, yes it is.

Q. So that's the effect of it. I just now refer you now to the applicable bylaw, it's a bylaw from 1990, ENG.CCC.0045.85.

25 **COMMISSIONER FENWICK:**

Q. (inaudible 13:53:05) 184 you've got on three levels?

A. Yes.

Q. Now I assume that when you got to level three, the top one, it was 184.

A. Yes.

30 Q. And you didn't bother to work out the ones below because they would have been a good lower than 184. Is that correct?

A. No, my understanding of the code was that, whilst we might normally consider a triangular distribution, I think in the Parts and Portions it was

triangular at the upper part and then the same load was applied at the lower levels.

Q. That's certainly true of the current one but I thought this one came down as well. I may be wrong, I had a feeling this one came down as well.

5 A. I'm pretty – I mean that would have been my first instinct when I looked at it, to think it had reduced all the way down but I'm pretty sure it limited that value of K_x to one, so it was 1.6 something at the top and then reduced to one at level, at the third level up and then dropped.

Q. And then dropped, right.

10 A. (inaudible 13:54:00).

CROSS-EXAMINATION CONTINUES: MR ELLIOTT

Q. Commissioner, that's the case in terms of the code. That is the case in terms of clause 3.4.9.1, so the ENG.CCC.0045.85 and if clauses 11.1.4 and 5 could be enlarged please. Mr Banks if you just read that please

15 to yourself.

A. 11.1.4 and .5?

Q. Yes.

A. Yes.

Q. This is an extract from the Christchurch City Council bylaw applicable at the time of your design, final design in 1991. Were you aware of this particular provision of the bylaw at that time?

20

A. To be honest when I was designing structures I wouldn't have had the bylaw on my desk. I would have had NZS4203 on my desk, given that 11.1.5 refers to that, so I'm not familiar with the bylaw but I understand what's in it.

25

Q. Do you see those words in 11.1.4(d) about avoidance of collapse?

A. Yes.

Q. And minimising the probability of injury to, or loss of life of people in and around the building. Is that a concept which you had in your mind when you were carrying out the design of the drag bars in 1991?

30

1356

A. Well I'm sure it would have been and that's the fundamental basis of NZS 4203.

Q. Just considering the drag bars that you –

5 **JUSTICE COOPER:**

Now this version of the bylaw. Which version is this because I've just noticed that in clause 11.1.5 the last reference in that clause is to the clause itself.

MR ELLIOTT:

10 Yes Your Honour. Well this is at tab 5 of the Commissioners' bundles and as I understand it this is the 1990, the Christchurch City bylaw, the Christchurch City Building Bylaw 1990 and the – it must be a typo. It must be a reference to –

15 **JUSTICE COOPER:**

Well it's interesting because in the other version that was attached to Mr McCarthy's evidence I think, yes, it was, the equivalent page is ENG.CCC.0044.123 and it's, there's an additional clause and at 11.1.6 and the cross-reference is back to 11.1.5 which one can make sense of, and this
20 version of the bylaw which is more congenial, the way it's printed, but Mr Laing said early on that this is the version that we should take as being the applicable one as I understood him. The difference, just on a quick look at it is, it's not easy to see.

25 **MR RENNIE:**

Sir if I can assist, I think the position is that 1.3 came out and became part of the general provisions of the bylaw between the two copies.

JUSTICE COOPER:

30 Came out or went in?

MR RENNIE:

No, came out Sir. Well it's in this version but in the 1990 version which of course is later the provision about (inaudible 1:59:18) was applied more generally in another part of the bylaw and it looks as if there was then a failure to renumber that clause to take account of the deletion so. I only mention that

5 because I looked at that at the time when I thought it might assist sir.

JUSTICE COOPER:

Thank you. So for our purposes it's obviously sensible to read the last clause as referring to the preceding clause anyway isn't it?

10

MR ELLIOTT:

Yes and I'm sorry I hadn't appreciated (inaudible 13:59:50).

JUSTICE COOPER:

15 No, that's all right.

MR ELLIOTT:

My question is directed really to that 11.1.4(d) which I think seems to be consistent.

20

JUSTICE COOPER:

Yes well in this one it's 11.1.5(d).

MR ELLIOTT:

25 I see.

JUSTICE COOPER:

No I just thought I'd raise that having spotted it, nothing to do with your question really.

30 **CROSS-EXAMINATION CONTINUES: MR ELLIOTT**

Q. Mr Banks.

A. Yes.

Q. I'm just going to ask you about the design given this context in the bylaw.

A. Yes.

5 Q. It's right isn't it that in an earthquake forces would have travelled along the diaphragms on levels 1 and 2 to every point of connection. That would have been the actual case during an earthquake wouldn't it?

10 A. Yes I think we have a series of concrete elements. The forces are actually coming from the ground up. So the earth's moving, moving suddenly, that's loading the foundations and the walls, and the walls are then trying to move the mass which is static when the earthquake starts, is sitting static, but the wall's moving and therefore trying to push the mass of the floors. But the way engineers look at it we analyse it sort of the other way round. We say the floor is imposing a load on the rest of it.

15 Q. But the diaphragm would have acted as a load path to the wall wouldn't it?

20 A. Well in an analytical sense but in a practical sense it's actually the other way round but yes the diaphragm acts as one of the elements and obviously there's a lot of, a fair amount of the mass of the building is the diaphragm itself.

Q. Well earthquake forces don't say, well there's no connection here, I'll just go over to somewhere else in the building where the engineers designed for the loadings to be sustained does it?

25 A. Well if the load can't be sustained at the point where there's a connection then, then it must, the load must be taken somewhere else.

Q. But given as you've already accepted that the, given the absence of drag bars there, the connection was not therefore designed to be able to sustain that 184 kilonewtons -

A. Mmm.

30 Q. – isn't it a consequence of that that it would fail when exposed to forces of 184 kilonewtons? Must be mustn't it?

A. Well I think, firstly the 184 is, is a number that's arrived at by analysis, making various assumptions and principally the assumption of the

stiffness of the wall. Now if there's very little connection between the floor and the wall then the connection may yield a bit, the reinforcing bars may move a little bit and then the load gets transferred to the other elements and that's what I imagine would have happened. That's the principle of redistribution.

5

Q. But when you were setting down to design this retrofit and considering whether you would locate a drag bar there at lines D and D/E –

A. Yes.

Q. – and levels 1 and 2 –

10

A. Yes.

Q. – and considering that you'd calculated the force of 184 kilonewtons –

A. Yes.

Q. – what were you saying would happen in the event that 184 kilonewtons of loading arrived at that point?

15

A. It would be taken by the two larger walls there, bearing in mind that those two larger walls, the transfer from the floor diaphragm to those walls would also have been diminished at those levels. Therefore there would have been extra capacity at that point.

Q. But it would fail at lines D and DE albeit the loadings could then be sustained as a whole at the other part of the connections. That's what you're saying isn't it?

20

A. I don't accept the word "fail," I'd use the word yield. In the same way that when loadings can be redistributed in a beam it causes some rotation of the beam to a small degree and then the load path, an alternative load path becomes the load path.

25

Q. All right. Well if your objective was as per the bylaw to avoid collapse and minimise the probability of injury or loss of life and you have a choice, drag bars at levels 1 and 2 or no drag bars at level 2. Which would have been more likely to satisfy that objective?

30

A. Well I think both satisfied the objective.

Q. You say equally likely?

A. Well they, they did given that 11.1.5 says complying with NZS 4203 shall be approved as complying with the requirements of that clause.

Q. And you're referring back there to the clause we've discussed earlier from NZS 4203?

A. Yes.

5 Q. You say that gives you the right, gave you the right to treat those connections as being likely to yield?

A. Well they would only have been likely to yield if that 184 had actually, if the actual structure had matched the actual analysis.

10 Q. There's been some evidence from Mr Harding that there was a philosophy within Alan Reay's office that was encouraged that if you couldn't justify something then you wouldn't do it. Does this decision not to put drag bars at level 1 reflect a similar philosophy at that time?

A. Could you just expand on that comment if you could?

Q. Well it's just a reference to Mr Harding so I can't give evidence.

A. Right, okay.

15 Q. But, "The philosophy we always had in the office that was encouraged that if you couldn't justify something then you didn't put it in."

A. Mmm.

20 Q. That's page 12, line 16 of the transcript from Wednesday which I don't think we have the full reference for yet. They were his words. So doesn't this decision not to put drag bars at level 1 reflect a similar philosophy?

A. I don't believe so in this case. I think the philosophy you're referring to is a general philosophy regarding efficiency of design so there were, the reputation of the office was to design buildings in an efficient manner.

25 1406

Q. And to no more than code?

30 A. Well, I think that was the perception but the reality is that it was more about buildability issues. I think the perception might have been less reinforcing in concrete wall panels but the reality was that the building systems enabled buildings to be built very efficiently. Now, I don't believe that's particularly relevant to this issue. This is a one off issue of designing a particular solution and it was designed with some conservatism along the way. I don't believe it was a solution that

focused on cost or whatever. I think it was focused on coming up with an appropriate solution.

Q. Would you accept that in order to comply with the objective in the bylaw I've referred you to, you should have installed drag bars at levels 1 and 2?

A. No I don't. And I also make the comment that Mr O'Leary even suggested I shouldn't have installed them at level 3.

RE-EXAMINATION: MS SMITH

Q. Just one point of clarification on the bylaw issue. If I could have Mr McCarthy's version of the 1990 bylaw back up on the screen if I could (ENG.CCC.0044, page 123). Mr Banks, you were asked some questions about clause 11.1.5(d) and I think your evidence was that the philosophy that is addressed in that clause was important to you in terms of the standards that you were applying at that time. Is that correct?

A. Yes, that's correct.

Q. At the very beginning of the bylaw, and I do apologise for this but I do not have page numbers of it, but clause 5 in the introductory section. Immediately after the contents section, there's a page headed "Christchurch City Council, the Christchurch City Bylaw Number 105(1985)." [page 11]. You'll see there if I can highlight clause 5 on that page please. I'll just get you to read that Mr Banks just to yourself.

A. Yes.

Q. So what that clause is saying is that, "Proof of compliance with the specification standards and appendices named in the second schedule is deemed to be an absence of proof to the contrary sufficient evidence that the relative degree of compliance required by this bylaw is satisfied." You see that?

A. Yes I do.

Q. And then if we can turn over three pages in that sequence please to the second schedule and you'll see there that that's the second schedule that was being referred to. Is that correct?

A. (No audible response 14:10:31).

Q. And if can get you to look sir on the following page in that sequence, if we can bring that up and you'll see there that seven lines down there's a reference to NZS 4203?

5 A. Yes.

Q. So what does that suggest to you?

A. Well it suggests to me that that standard is totally aligned with the bylaw requirements for design.

10 Q. And it goes further doesn't it to say that if you comply with that, then in absence of proof to the contrary, then you've complied with the bylaw?

A. Yes it does.

QUESTIONS FROM COMMISSIONER FENWICK:

15 Q. Can we have BUI.MAD249.0284.16 please and if we can have the floor plan on the left-hand side. Mr Banks, you checked the north-south direction and found the lack of attachment to those walls?

A. It was really only the issue of that duct that I checked. I didn't take it any further than that and it was simply because I'd spotted in looking at these other two walls that the duct was not there on this drawing but was there on the other.

20 Q. The point I wanted to raise was the excitation in the east-west direction. Now, there's the duct for the stairs and there's the duct for the lifts and so all the east-west direction shear, as I think you've indicated, has to go on the area between wall C and wall C/D?

A. Yes.

25 Q. That's the toilet area. Now, that shear of course comes in from the floor and is going to be resisted by the wall on line 5 together with the finger walls going the other way. Now, if one looks at that, the shear centre of that complex is around about a metre to two metres north of line 5?

A. Yes.

30 Q. If it warps, and it probably does, the centre will come back towards line 5. Now I think you said the forces you used were 700 kilonewtons was the contact connection force at that level?

A. Yes, that's right.

Q. So that connection force, if we're assuming that the minimum place where that can act, acts on line 5 and generates a shear which is constant virtually over that distance between line 5 and line 4?

5 A. Yes, that's correct.

Q. Which is about four and a half metres?

A. Yes.

Q. Giving you a bending moment of around about 3000 kilonewton metres or 3500 kilonewton metres if you assume that that north wall is not free to warp?

10

A. Yes.

Q. Did you look at the effect of that combined shear of 700 kilonewtons together with the corresponding moment of 3000 plus kilonewton metres?

15 A. No I didn't. The calculations I did initially were looking at just the issue of the shear at the interface.

Q. Yes.

A. I think the reason I didn't look at it is having had the interplay with Holmes, the focus was on the other walls.

20 Q. Yes.

A. I didn't, clearly in my looking at the shear friction, if I had been alerted to a general problem on all those walls, I would have followed those loads further back but from the evidence of my calculations, clearly I didn't do that in my final design a year later.

25 Q. I can assure you you're in very good company in not looking at it, but now if you had looked at it?

A. Yes.

Q. I don't know how good your mental arithmetic is, 3000 to 3500 kilonewton metres, look at this on the left-hand side of line 4, there's mesh, 664 mesh going over it and there is some 12 millimetre bars but those 12 millimetre bars don't extend too far so you can probably forget about them. Can you sort of do some mental arithmetic and say now, if you'd done that calculation would you have been alarmed?

30

A. I actually did that mental arithmetic recently.

Q. Right.

A. I thought it was useful to look at that. I think I came up with a flexural capacity of about 1800 kilonewton metres at that point.

5 Q. (Inaudible 14:15:20).

A. That's of course at the top floor and that would have been reducing down lower so clearly that particular mechanism, and I agree that that's the logical mechanism to look at, is looking as though it's overloaded. I think there may be several other mechanisms, for instance some of that moment may have been able to have be resisted by the two walls to the north and south of that piece of floor to some degree in terms of shear but that wouldn't have been the major issue.

10

Q. That would require the walls to be stiff out of plane wouldn't it which they –

15 1416

A. Well I'm talking more about a north-south, a north-south couple resisting part of that –

Q. Yes.

A. – east-west moment but –

20 Q. Yeah.

A. – I, I don't know that you would look at that being the dominant it would be one of the things if you modelled in, in detail.

Q. Yes. Now I agree the north-south couple but wouldn't that require the, the wall to bend out of the plane to transfer that couple, but never mind that's, that's, I know what you're meaning and I think it's a minor –

25

A. Yes I think it's –

Q. – when we look at the limiting –

A. Yes.

Q. – values that it's...

30 A. Yeah.

Q. Okay now wouldn't you have expected a designer to have looked at that action?

A. Yes I, I would have expected that if the designer had looked, had looked in detail that would've part of the –

Q. Yes.

A. – action.

5 Q. So if you had spotted that and I agree that you were directed in the other direction you might have been perhaps thinking, Oh I need to look further”?

A. Mhm. I think, I mean as I say the calculations I had seen were relatively minimal. It looked as though they hadn't been finished.

10 Q. Yes.

A. And I, I certainly would've expected given the scenario that that would have formed part of the –

Q. Yes.

A. – ongoing calculations yes.

15 Q. When one looks at the time history analysis we find the forces aren't 700 kilonewtons they're about 2500 kilonewtons?

A. That's right.

Q. About three times as big?

A. Yes.

20 Q. Which raises a issue for some concern doesn't it?

A. Yes.

QUESTIONS FROM COMMISSIONER CARTER – NIL

QUESTIONS FROM JUSTICE COOPER:

25 Q. Paragraph 66 of your statement you state that your recollection of the early 1990s prior to the adoption of the Building Act is that the building permit process was much less structured than it is now?

A. Yes.

30 Q. And the balance of the paragraph suggests that there or implies that you thought when designing these remedial works that a building permit would not be required?

A. Mhm.

Q. Is that the case?

A. I think, I think that's, that's generally the case.

Q. No, no I'm talking about this case?

5 A. Yeah I think in this case the issue wasn't, didn't enter my mind and wasn't discussed as to whether or not a permit was required.

Q. Can we just see paragraph, sorry ENG.CCC.0044.27.

WITNESS REFERRED TO ENG.CCC.00044.27

Q. Now clause 221 there says, "No person shall erect or commence to erect any building without first obtaining a building permit", doesn't it?

10 A. Yes it does.

Q. And then the question of whether a permit was required for these particular works would depend on the definition of building wouldn't it?

A. I think again Sir in, in my mind the building did have a permit. Now I understand that for separate work yes it would depend on the definition.

15 Q. So a building if we go to same series suffix 19.

WITNESS REFERRED TO SUFFIX 19 OF DOCUMENT

Q. It says in its opening words that it means anything or part of a thing constructed or erected and there follow some exclusions –

A. Yes.

20 Q. – which don't seem to me to be relevant but anything or part of a thing seems to me would extent quite readily to these drag bars wouldn't it?

A. Yes I, I think it would Sir. I think at that time though I would not have been very familiar with the detail of this bylaw but I accept that it's consistent.

25 Q. So well how, how did you decide whether or not to apply for a building permit for works that you were designing. If you didn't look at the bylaw, what did you look at?

30 A. I think it was, I mean it tended to be pretty obvious that we would design generally designing new buildings you prepare the documents submitted them to the Council and obtained a building permit. I think this particular circumstance where a building has a permit and then an alteration is made is not something I would have been familiar with.

- Q. You see another way of putting what you've said in paragraph 66 was that, would be that the system wasn't less structured at all. It just wasn't applied? Do you care to comment on that?
- A. My comment on, on the structure was more the, the detail with which
- 5 the process is defined, is much more significant now than my recollection of what it was at that time.

QUESTIONS ARISING - NIL

WITNESS EXCUSED

MR RENNIE CALLS**ALAN MICHAEL REAY (SWORN)**

Q. Now Dr Reay do you have available to you your composite statement of evidence in relation to the Holmes' report in retrofit issues?

5 A. Yes.

Q. Do you confirm you're Alan Michael Reay and would you read from the paragraph numbered 60 of the composite brief under the heading 1990 Report by Holmes Consulting Group.

WITNESS READS BRIEF OF EVIDENCE

10 A. In around January 1990 ARCL was contacted by Holmes who had been engaged to prepare a structural report on the CTV building for a potential purchaser of the building from the receiver of Prime West. Holmes alerted ARCL to a possible issue in the detailing of the connection of several shear walls to the floor diaphragms. Geoff Banks
15 reviewed the drawing and agreed there appeared to be an issue. As noted above Mr Banks had joined ARCE in 1988.

I had little direct involvement in the events that followed but I have a general recollection of issues and I have reviewed documentation relative to the events which was obtained from ARCL files and from its
20 insurance broker.

The receivers provided us with a copy of Holmes' report dated January 1990. Holmes identified a possible issue with the tying of the walls to some of the shear walls. Should be tying of the floors to some of the shear walls. Holmes otherwise considered that the building generally
25 complies with current design loading and material codes.

On the 1st of February 1990 Mr Banks notified the possible issue relating to wall ties to ARCL's insurance broker Adam and Adam Limited.

ARCL's insurance was arranged through the Consulting Engineers Advancement Society Incorporated and was underwritten by Indemnity and General Insurance Company Limited.
30

Mr Banks copied his letter to Mr Peter Smith at CEAS. Mr Smith was and is a structural engineer at Spencer Holmes Miller Partners Limited

and was a CEAS claims committee member appointed by Adam and Adam to oversee the file and provide advice to the insurer.

When making the insurance

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5 notification ARCL was not sure whether there was an issue or not and if there was an issue whether ARCL or ARCE had any culpability. ARCL informed insurers out of abundance of caution and to ensure that should extensive work should be required the necessary insurance cover would be available.

10 I contacted Mr Harding to enquire whether any site instructions were given to Williams in respect of the diaphragm connections. Mr Harding was unable to recall any site instructions and there was no reference to any such instructions on ARCL's file.

I recall that Mr Banks used an electronic reinforcing bar locator at one
15 level which indicated that some reinforcing was present but could not confirm the quantity.

As set out in Mr Banks' letter ARCL proposed to have further discussions with Holmes to agree the precise scope of the issue and the level of load for which the floor to wall ties should be designed. ARCL
20 also proposed to design the remedial works if it was concluded that the ties were not present.

Mr Banks and I met with the receiver of Prime West on the 1st of February 1990 to discuss the issues. A letter from the Receiver records the content of the meeting.

25 As recorded in that letter we were of the view that it would be more pragmatic to assume that the steel was not in place as the cost of further investigation into the matter would probably exceed the cost of the remedial works and the investigation could cause damage to the structure.

30 Mr Banks wrote to Holmes on the 2nd of February 1990 confirming the scope of the possible non-compliance and the proposed remedial works. ARCL'S insurer broker confirmed notification of the possible claim.

It appears from file records that ARCL obtained a quote from Blake Brothers Contracting Limited dated 5th of February 1990.

Mr Smith wrote to ARCL on the 12th of February 1990 recording the position. As requested by Adam and Adam ARCL completed a notification and questionnaire in respect of the possible professional indemnity claim. Mr Banks completed these forms.

A file note records a discussion between Mr Banks and Mr Hare on the 14th of February 1990. It appears that the discussion included agreed loads at various floors of the building. Mr Banks prepared calculations for the remedial works.

On the 9th of April 1990 ARCL completed an annual report form for CEAS which recorded that ARCL was still investigating whether there was a deficiency and if so, details of the remedial work. ARCL heard nothing more about the matter from the Prime West receivers, Holmes or anyone.

On the 4th of February 1991 there is an article in *The Press* about the sale of the CTV building by the receivers. Having read this article Mr Banks and I decided we should notify the new owners of the correspondence from the previous year. It appears that Mr Banks contacted Mr Smith at CEAS to verify the obligation that ARCL had to notify anyone regarding the status of the review conducted the previous year. Mr Smith suggested that Mr Banks engage either Austin Forbes (now QC) or Sam Maling from Lane Neave for a legal opinion before taking any steps.

ARCL engaged Lane Neave to provide the advice the cost of which was met by CEAS. ARCL submitted a further report on the claim to CEAS on the 25th of February 1991 which reported that the building had been on-sold and ARCL was seeking advice as to possible obligations to the new owners.

Following receipt of the advice sought from Lane Neave Mr Banks wrote to the new owners on the 11th of September 1991, although a copy of this letter is not held. CEAS also approved this course.

A reply dated 30th of September 1991 was received from Pedofsky, Ibbotson and Cooney. The owners agreed that steps should be taken as proposed by ARCL to ensure the building was compliant with the required design specifications standard.

5 Mr Banks prepared constructions drawings for the remedial works and sent the drawings to CBD Construction Limited. He also completed further calculations.

CBD Construction Limited submitted a quotation of \$4633.50 plus GST for the proposed remedial works. Mr Banks wrote again to Pedofsky, Ibbotson and Cooney on the 15th of October 1991 referring to the quote and advising the work would take approximately four days. Mr Banks also notified the Ministry of Transport in respect of the remedial works in the lift shaft.

The owners confirmed acceptance of the quotation.

15 Mr Banks wrote to Mr Ibbotson on the 17th of October 1991 recording that the work would take place the following week. The remedial work proceeded as proposed.

I do not believe that a permit was sought for these works, however I recall that Mr Bluck was aware that the works were being undertaken. For example see the reference. I believe that his view would have been that the works were part of the original job and that no permit was required. He probably would have asked to receive details about what was undertaken. I base this on my experience in dealing with Mr Bluck over many years. ARCL does not have its full file on these works so I cannot say whether there was any written correspondence with the Council over the works. The builder may have also sent details to the Council.

25 ARCL completed an annual status report on the claim which was submitted to Adam and Adam on the 4th of March 1992 and as recorded in Mr Banks' letter the remedial work had been completed. The building owner invoiced for the contractor and the contractor paid for the work. It recorded that Mr Banks had not had any contact from the building owner since the works were completed. ARCL never received any further

contact from the owner and was not asked to reimburse the cost of the remedial works.

5 I accepted at the time there was a potential deficiency. It was not possible to say if there was an actual deficiency. For the cost of the remedial works it seemed sensible to carry out these works rather than carry out further investigation to see if the building complied without them.

Involvement with the CTV building following retrofit.

10 ARCL had no further involvement with modification to the CTV building structure since the retrofit works were completed. We were not contacted following the earthquakes on the 4th of September or Boxing Day 2010 to undertake inspections or provide structural drawings.

15 Q. Thank you Dr Reay, and just for the record this is the fifth occasion on which you have read composite briefs, and do you confirm that they comprise the same evidence as that set out in the briefs of evidence that you initially filed which have now been broken out into these topics?

A. Yes, although I believe there was some amendment to the last brief I read.

20 Q. Yes, the last brief you read had some amendment to it, but other than that you've now given all the evidence which you have tabled with the Commission?

A. Yes.

25 **JUSTICE COOPER:**

To clarify that, what's meant by the last brief?

MR RENNIE:

30 The one immediately prior to that, the fourth composite brief Sir had some amendment to it in the light of evidence that Dr Reay had heard.

CROSS-EXAMINATION: MS SMITH - NIL

CROSS-EXAMINATION: MR REID

Q. Yes Dr Reay, can I just refer you please to paragraph 84 of your brief of evidence. Now you say there that you do not believe, firstly you do not believe that a permit was sought for these works and then you say,
 5 however I recall that Mr Bluck was aware that the works were being undertaken and then you refer to a document. Do you have any recollection yourself of speaking to Mr Bluck about this matter?

A. I haven't been able to remember any specific discussion with him, no.

Q. Do you recall having a discussion about whether the building should be
 10 – whether the drag bars should be permitted with anybody else around that time?

A. When you say anybody else –

Q. Well anybody in your office?

A. No I don't.

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Q. So do I take it then that what you say at the first part of paragraph 84 is entirely dependent on your interpretation of the document that you refer to?

A. Well and the fact that I did have discussions from time to time with
 20 Mr Bluck.

Q. Yes but you're accepting though that you can't recall any specific discussions on this occasion.

A. That is correct.

Q. Just have a look please at the document you refer to. It's
 25 BUI.MAD249.0130.6 and it's the third line down I think on the screen in front of you Dr Reay, the third paragraph reads doesn't it, "We have spoken to Mr Bryan Bluck, Buildings Control Manager at the Christchurch City Council, to discuss any concerns relating to the building permit and construction process. Now he's referring there on
 30 the face of the sentence, or the report is referring there on the face of the sentence to the building permit and construction process in '87 isn't it?

A. Yes I believe he is.

Q. So there's no indication in that document is there that the issue of whether a building permit for the drag bags was discussed with Mr Bluck at all is there?

5 A. No and conversely there isn't a, it doesn't say that there wasn't. It's silent on it.

Q. No but, the author, you're aware though that the author of the report is Mr Hare?

A. Yes.

Q. And you've read Mr Hare's evidence?

10 A. Yes.

Q. Yes and he confirms doesn't he that he, he didn't speak to Mr Bluck about the drag bar permitting issue when he had the discussions that he was referring to.

15 A. That's correct but he didn't, I don't think he said, well I think he claimed he didn't discuss the particular issue itself.

Q. Yes and says that he didn't raise the issue about whether a permit was required.

A. I can't remember reading that.

Q. Shall I take you to the particular –

20 A. No I'll accept that, if you say that.

Q. Well do you accept then there's no indication in the record in the evidence before the Commission that Mr Bluck was ever spoken to or anybody else at the City Council about whether a permit was required?

A. Going by that, no.

25 Q. Now in the second sentence of paragraph 84 you then say, "I believe that his view would have been," this is Mr Bluck, "I believe that his view would have been that the works were part of the original job and that no permit was required." Now given that you didn't speak to him about the issue you're speculating there as to what his view would have been,
30 aren't you?

A. Well it's based on my experience of dealing with Mr Bluck and from time to time when buildings were being constructed alterations would occur and if I thought they were alterations that he should be aware of I would

discuss them with him and sometimes he would say, send me a detail or he might say, that's minor, I don't need to know about that.

Q. And is that something that would typically occur during the construction process?

5 A. Either during or, it mightn't be at the particular time that something happened, it could be later on, months, a few months later or something like that.

Q. A number of months later when something arose before the completion of the project though. Is that correct?

10 A. Not necessarily. The project might have been completed.

Q. Well I'll just cut to the chase Dr Reay because what we're dealing with here is a situation where an issue has arisen four years later. Has a circumstances like that, are you aware of a circumstance like that ever occurring?

15 A. I can't specifically recall.

CROSS-EXAMINATION: MR HANNAN

Q. Dr Reay were you here yesterday afternoon when Mr Hare gave his evidence?

A. I wasn't present but I heard, I believe, most of it.

20 Q. And Mr Wilkinson?

A. The same.

Q. And Mr Robertson?

A. The same but possibly to a lesser extent.

Q. Right thank you. I'd just like to work through the sequence, the chronology, just in that little portion of time, the end of January, early February. I'll do it quickly, we've already worked through it with Mr Banks, so if I seem to be overly summary please just pause if you want clarification. But the first point of contact that you have in respect of this issue is when Mr Hare telephones Alan Reay Consultants and his evidence is that he believes that he spoke to you and that was on the 25th of January. Do you recall such a call?

25

30

A. I think he said he thought he spoke to me. He wasn't definitive.

Q. He said that he believes that he spoke to you?

A. Yes, yes, he isn't definitive. I do not recall.

Q. But as a result of that call in any event Mr Hare then visited the, your offices on the following day, the 26th. Do you recall that visit?

5 A. I wasn't specifically involved in meeting him. I think Mr Banks met him that day.

Q. Well Mr Hare says that he believes that he saw both yourself and Mr Banks.

A. Yes, I don't recall it.

10 Q. Mr Hare says that on that day he advised whoever he spoke to at Alan Reay Consultants about the design concerns that he had ascertained from his examination of what he'd seen so far. Do you recall whether you got it from him or through Mr Banks, having those design concerns raised with you?

15 A. They would have been raised with me because if he'd discussed it with Geoff Banks, Geoff Banks would have told me about it.

Q. Were you aware that Mr Banks went off to do an inspection of the building with Mr Hare on the 30th of January?

20 A. No I don't recall that. I know that he went and took a reinforcing detector to check the reinforcing but I don't know or don't recall at all that he met Mr Hare that day.

Q. All right. So you do recall that he went off to inspect the building?

A. Yes I believe he did, yeah.

25 Q. And you're aware that Mr Banks had started undertaking some calculations on the 29th of January?

A. I don't recall that.

Q. Would that have been something that he'd done at your request?

A. No it's more something he would have done as part of investigating the issue that had been raised with him.

30 Q. Now you didn't know this at the time of course but on the 31st of January Mr Hare sent his draft report to Schulz Knight and then on the 1st of February you and Mr Banks met with KPMG the receivers. Do you recall that meeting?

A. Yes I don't, I didn't consider it was a draft report. I was not aware it was draft. I have a recollection of a meeting.

Q. Yes can you recall where the meeting took place, at your offices or at the, at KPMG's offices?

5 A. No I can't.

Q. Can you recall who initiated that meeting?

A. No I'd be guessing that it was the receiver but I wouldn't know.

Q. Do you have any recollection of how you actually got the copy of the Holmes report that you did get. For example, did the receiver give it to you at that meeting?

10 A. I couldn't say for sure except that I don't believe Holmes gave us a copy.

Q. And on that same day, the 1st of February, Mr Banks sent a notification to Alan Reay Consultants' insurers?

15 A. That's what I understand.

Q. Yes and he would have discussed that with you before he did it wouldn't he?

A. I don't recall but I would have expected that he would have.

Q. Yes. Now if you followed Mr Hare's evidence of yesterday, I realise you weren't here but you've told us that you've seen it or seen some of it, you may have seen that Mr Hare said that he wasn't aware, can we have please MAD249.0129.2 and possibly if we can have both pages at once please?

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25 **WITNESS REFERRED TO MAD249.0129.2**

Q. Now Dr Reay this is the letter from Alan Reay Consultants to Adam and Adam 1 February. We've briefly mentioned that notification. You'll see in the third paragraph there a mention of "a potential purchase has an option until 28 February 1990 and has engaged Holmes Consulting Group to undertake a structural survey and present a report". So this was knowledge that certainly Mr Banks had at this time. Do you accept that?

30

A. I'm sorry you'll have to repeat that.

Q. Well you've seen the paragraph, it states that, it tells the, it tells Adam and Adam that a potential purchaser has an option, and my question to you is this, that Mr Hare's evidence was that at the time that he was engaged with Alan Reay Consultants either yourself or Mr Banks throughout this period in January and February that he was at no time made aware that there was such an option. Are you able to comment on that?

A. An option to what? I'm sorry I'm not, I'm not following you very well.

Q. If you look at the third paragraph?

A. Yeah.

Q. You'll see the statement in the second sentence. This is a statement made in a letter from Alan Reay Consultants to Adam and Adam that a potential purchaser has an option until 28 February on the building. This is clearly information that Alan Reay Consultants had at that stage.

Mr Hare has said that he was not aware of this. I take it you're not suggesting that you advised Mr Hare or anyone at Holmes of this?

A. Well I didn't, I don't recall being involved with Mr Hare.

Q. And similarly you wouldn't have told Mr Hare or anyone else at Holmes that an insurer was involved in the picture?

A. I, I think a specific requirement of our insurance policy is that we didn't do that.

Q. Yes, well I'll take that as agreement that you wouldn't have told Mr Hare. Yes thank you Dr Reay.

CROSS-EXAMINATION: MR MATTHEWS – NIL

CROSS-EXAMINATION: MR ZARIFEH

Q. Dr Reay can I start by referring you to the CEAS letter of the 9th of April '91 it's, 0129.38.

WITNESS REFERRED TO LETTER 9 APRIL 1991

Q. You see that letter?

A. Yes.

Q. Now the first paragraph refers to the enclosed opinion from Lane Neave Ronaldson. That's the legal opinion that you referred to as getting, you're getting, correct?

A. I presume so but I wouldn't actually know that it was exactly that.

5 Q. Well did you, I thought you said in your brief that you obtained legal advice from Sam Maling of Lane Neave?

A. Yes. But whether that's the exact advice that's being referred to I'm not sure.

10 Q. Right, did you receive other advice from Sam Maling of Lane Neave in relation to another building?

A. No.

Q. Right so is it likely to be the advice that you're talking about?

A. Oh, it's, it's likely to be.

Q. Well it's not likely to be any other advice is it?

15 A. Well not that I recall.

Q. Right. Now I don't want to ask you about the content of that legal advice because I understand that as you're entitled you're claiming privilege about that advice, correct?

20 A. That's my understanding that it's being handled by the company's lawyers.

Q. Okay. I want to refer you to the second paragraph where Mr Smith from CAS says, "We also advise that it is unlikely that the society would wish to recover from a staff member of your practice unless gross negligence was evident", see that?

25 A. Yes.

Q. Now had you indicated that you thought that a staff member of your firm may have been negligent?

A. No I don't believe so. I was, I may have asked for clarification of the, of the particular situation that existed.

30 Q. Right, what, what situation was that?

A. Well where a staff member had worked on it and then left.

Q. Right and the staff member was obviously Mr Harding? Is that who you are referring to?

A. I would think so at that time yes.

Q. All right and was your concern to do with the design of the building?

A. No it was just –

Q. The CTV building?

5 A. – a situation that I hadn't struck before and I don't believe and I might have sought clarification of it.

Q. Right as to whether the society would seek to recover from you in relation to Mr Harding's actions?

10 A. Well I'm not sure exactly what I asked but, yeah, I – no I'm uncertain really as to the background.

Q. When was it that you first became aware that there might be a, a negligence issue or potential negligence issue with Mr Harding's actions?

A. Well it was a, an issue for the company rather than Mr Harding.

15 Q. When was it that you or your company first became aware that there might be a potential negligence issue with the actions of Mr Harding?

A. Well it was the same as when the company was aware which was when we were advised of the issue by Holmes.

Q. In January 1990?

20 A. Yes.

Q. Okay, and just talking about that advice John Hare –

JUSTICE COOPER ADDRESSES MR ZARIFEH

CROSS-EXAMINATION CONTINUES: MR ZARIFEH

25 Q. The Holmes' advice yes thank you Sir, John Hare's evidence is that he attended at your offices?

A. I think he came to our offices to, to obtain information drawings et cetera.

Q. Right. And he believed that he spoke to you and to Mr Banks?

A. Well I don't think he was that specific.

30 Q. Right but you say you can't recall?

A. I don't believe I was involved in the meeting, I certainly can't recall it.

Q. Right. So what's your recall that Mr Banks attends the meeting?

A. Well if it wasn't me it would have been Mr Banks.

Q. Right so are you saying you just can't recall it but it could well have been you that attended the meeting?

5 A. No I think it's unlikely that it was me. It was more likely to be Mr Banks.

Q. Would it not be more likely to have been you given that you had been there at the time the CTV building was designed and constructed?

A. Not necessarily. Mr Banks was a very competent engineer and familiar with the people at Holmes.

10 Q. Right but Mr Banks didn't have any firsthand knowledge of the building or the design did he? Whereas you did?

A. Well I don't know that that's necessarily right. I've already said that I wasn't involved directly in it.

Q. Oh, okay but even to a limited extent you had been there. Mr Harding
15 had been working there ostensibly under your supervision, certainly in your employment at that time, and not Mr Banks'?

1456

A. Yes. Given Mr Banks' experience and knowledge of Holmes I would
20 imagine I considered it quite appropriate that he actually dealt with them. He would have then, you know, discussed with me any issues.

Q. Right. So he finds out what the issue is from John Hare and then he reports it to you, Mr Banks?

A. Well, he would have told me what he thought the issue was as it was understood at whatever time it was that he met John Hare.

25 Q. So who would have told John Hare then that they thought that the issue might have dealt with at the time of construction?

A. I think I had that discussion with Geoff Banks, that it was possible that that had happened.

Q. When did you have that discussion?

30 A. Oh, I don't remember exactly but it would have been after obviously he told me about the problem and I believe I undertook to contact Mr Harding to see if I could find out if he was aware of anything that had happened on site that would assist us.

Q. But you didn't tell Mr Hare that then, or can you not remember?

A. I can't recall that and I don't believe I did.

Q. Right, and why do you not believe you did if you can't recall?

A. Well I don't recall having any discussions at all with Mr Hare.

5 Q. Right, so it was all left to Geoff Banks?

A. In terms of dealing with Holmes, yes, he took that on.

Q. And did he pass onto you then, Mr Banks, the concerns that he obviously had once the issue had been highlighted to him?

A. Yes, I believe he did.

10 Q. And so presumably you agreed with his concerns?

A. Yes.

Q. And we've heard reference to it being a fundamental issue, critical structural weakness, descriptions of that nature. You agree with all those.

15 A. Yes. Some of those were not the terminology used at the time but I have heard those words used.

Q. And when you looked at the structural drawings could you see the problem?

A. Yes I did.

20 Q. And like Mr Banks could you see it within less than a minute or something of that order?

A. Possibly not as quickly as Mr Banks did.

Q. But it was glaringly obvious as someone said?

25 A. Well it was evident that the sort or reinforcing you would expect there didn't appear to be there on the drawing.

Q. And do you say that you hadn't seen that obvious issue before that, before January, February 1990?

A. I hadn't.

Q. Hadn't seen it back in 1986 when the building was designed?

30 A. I hadn't.

Q. Do you think that you never looked at the structural drawings then?

A. I've already said that I did not review them.

Q. But it would seem to follow that if it was glaringly obvious that you wouldn't have seen the drawings at all?

A. Yes but it was obvious because somebody had written and said, "There's a problem here" and then you go and look at that specific point.

5 Q. And Mr Banks I think said the same thing but said that if it hadn't been pointed out to him and he was just looking at it, conducting a review himself, it might have taken him a bit longer but probably not a lot. You agree with that don't you?

A. Well that's what Mr Banks said.

10 Q. You agree as well that it wouldn't have taken too long to identify it?

A. I'm uncertain as to how long it would have specifically taken me.

Q. What I'm suggesting to you is that because it was an issue that was an obvious one, whether it took one minute or 60 minutes to observe or to see, it must follow that you never looked at the structural drawings if you hadn't seen that before. You never did any review at all of them?

15

A. Well that's what I've said already.

Q. So back in 86, you don't think you ever looked at any of the structural drawings that Mr Harding completed while in your employment in relation to CTV?

20 A. Well I don't recall doing so and I don't believe I reviewed them from that point of view.

Q. When you say, "review them from that point of view" –

A. A structural review.

Q. Right. Well, would you look at them for some other purpose?

25 A. Not that I recall.

Q. So you don't think you ever looked at them?

A. Well I don't recall looking at them.

Q. Right, so does that mean you could have?

A. Not in terms of a structural review.

30 Q. Well, when you saw it in January, February 1990 and it was obvious to you, did you have a discussion with Mr Banks about it, about this issue, this serious issue?

A. I would have discussed with him more around what the next steps were in relation to it.

Q. Did you think to yourself, “I wonder how that happened, that obvious but serious issue?”

5 A. I don’t specifically recall that.

Q. And did you tell Mr Banks anything of how that might have come about?

A. Well I doubt it because I wouldn't have known how it came about.

Q. Well did you tell him that David Harding designed it and that maybe looking at that obvious but serious error the trust that you had put in David Harding may have been misplaced?

10

A. No I don’t think so. It seemed to be a, not so much a calculation error but a blunder or an omission and at the time of course I had the Holmes report which identified that apart from that, that the building was generally compliant with the codes et cetera as they said.

15 Q. And are you putting that forward as a basis for not having to have any concerns about the rest of the building at that time?

A. Well, Holmes were the leading engineer in Christchurch at the time and they had designed other buildings that were of a similar structural characteristic and it gave me confidence that the remainder of the building was okay.

20

Q. And back then was John Hare the experienced engineer that he is today?

A. As I recall John Hare was very highly thought of, even back then.

Q. Just going back to Mr Banks then, so you didn't tell him that the building was designed by David Harding who had had no previous experience in designing multi-rise buildings of that sort?

25

A. Well I don't recall actually specifically telling Geoff Banks anything in relation to David Harding other than that it would have been evident that probably to him that David Harding was the person who had designed it because of course it had DH on the drawings.

30

Q. Well, were you here this morning when Mr Banks said that he was not aware of David Harding’s inexperience at the time he designed CTV?

A. Um, yes but I didn't quite understand the level of inexperience or what that related to because, particularly in this particular issue that we're talking about, um, it's really fundamental engineering, it's not really related to experience.

5 Q. So it's a fundamental issue that you got wrong?

A. Well it's a load path issue, applies to every building that you design.

Q. Well Mr Banks' evidence was that that was something that would have been relevant to him to know in terms of the enquiries that he was going to obviously have to make into this issue. Do you accept that?

10 A. Well, if that's what he said, that's what I accept he said.

Q. But you didn't think that it was something you should disclose to him?

A. Well I don't recall whether I did or didn't discuss that with him.

1506

Q. Well he says you didn't. So if you don't recall it do you accept that?

15 A. Well in the context he was asked he answered a question. I don't know.

Q. When you had this issue pointed out to you did it not give you cause to stop and think about three or so, four years earlier when David Harding had been left essentially on his own to design the CTV building?

A. No because there was no issue that I was aware of in David Harding's work in the time he was with me.

20 Q. Right but here a short time later you've got this fundamental error or issue being pointed out to you that related to that design. Did that not cause alarm bells to ring?

A. Not in the context in which I learnt about it and that context included the Holmes report.

25 Q. So you didn't consider that you should review the rest of the building and have a look at other details that he had designed?

A. No not in the context of what I knew at that time, no.

Q. Do you think in hindsight you should have?

30 A. If I was faced with the same information that I had then today I would probably make the same decision today.

Q. Really?

A. I'm not, I'm excluding the fact that there's been a collapse, but in terms of a report that says the rest of the building is compliant and the fact that I was unaware of any issues with Mr Harding's work it would tend to lead one to the same conclusion.

5 Q. Well would it not cause you to think that, if you cast your mind back obviously to 1986 and as you've said before in evidence you knew that David Harding didn't have any previous experience in designing multi-rise buildings, he was new to ETABS, and then this fundamental error is pointed out to you. I suggest that that should have caused you to stop
10 and think about the design and have a look at, perhaps for the first time according to you, at the structural plans that he had designed.

A. Well I don't agree because the issue was nothing to do with ETABS. The issue was nothing to do with whether he'd designed a six-storey building before or not. When he designed a four-storey building or the
15 other building that was nine storeys the same sort of, or a two-storey building, the same issue of load paths and transfer of forces applies.

Q. So you say that it was the Holmes report that gave you comfort that the rest of the building would be all right. Is that what you're saying?

A. Well not so much comfort. It was quite clear in the Holmes report that
20 the rest of the building was all right.

Q. And if you hadn't had that do you think that you would have had a review of the whole building then? Is that what you're saying?

A. I think it would have altered my approach to it.

Q. What, that might have given you concerns then about the rest of the
25 building?

A. Well it's hard to say in hindsight what one would have done but certainly the Holmes report was a key factor to me anyway in terms of whether it was necessary to investigate further.

Q. Right and had it not been for the Holmes report then because of
30 David Harding's inexperience at the time and this fundamental error you may well have had concerns about the rest of the building. Is that what you're saying?

A. Well it's hard to tell because errors do happen and sometimes people make what I would call a blunder. They forget to do something. That doesn't mean to, that's not necessarily inexperience. That's just a straight blunder. That's why I'm hesitant about saying, well, if I didn't have the Holmes report I would definitely have done something else. I can't say that for sure.

Q. The Holmes report though you knew was not a full peer review of the building and the design was it?

A. Well that's not as you read the report. The report was quite clear. They had come to a conclusion that the building was generally in compliance with the codes except for the item they identified.

Q. But the report made it clear as well that it was, they had a limited time to do their review and they'd looked at limited things, didn't it? Do you recall that?

A. Well looked at limited things in the sense of on-site inspections I think. The issue for me is that how can you write a report that says that certain things are okay if you haven't investigated them? How can you say it? So when you read in a report that those other aspects were okay then you expect that they have actually considered them?

Q. And done full calculations and all the things a peer review might have done?

A. Well considered them to the extent that gave them the ability to write the, what they did.

Q. But it was a report that was qualified by that limited nature. It specifically said, "Given these qualifications," didn't it?

A. Yes but then if they hadn't considered those items they wouldn't have been in a position to write and say that they complied.

Q. What I'm suggesting to you Dr Reay is that as the principal of the firm, as the person that was presumably going to be responsible if there was an error made, as the person who was the principal at the time the building was designed by Mr Harding was it not part of your obligation to have a look at the rest of the building for yourself and satisfy yourself that it was, there were no problems with it?

A. No I believe I was entitled to and did rely on the statement in the Holmes report.

Q. Mr Banks you said was likely to have met Mr Hare and passed it onto you, the concern, and then we've heard from him as to the things we did
5 and the liaising he had with Holmes, Mr Hare and Mr Wilkinson. He did that under your oversight, correct?

A. He, he kept me advised of what, what he was doing in relation to this issue.

Q. Right. His evidence at paragraph 14 was his role was focussed on the
10 more detailed aspects while Dr Reay had an oversight role. Do you agree with that?

A. Well I'm not sure what oversight means. He would have told me what was happening, if he had any concerns he would have discussed them with me and we would have agreed on what we were going to do.

15 Q. Right. So you oversaw what he did then?

A. Well no it was more of a joint situation rather than I would describe it as an overseeing situation in terms of any issues that he had.

Q. And he went onto say that, "As I was relatively new in the company and also new to the building I liaised with Dr Reay throughout my
20 involvement." Do you agree with that?

A. Yes well liaise is probably a better way of putting it.

Q. So he kept you appraised of what was happening and you discussed what should be done next. Is that correct?

A. He certainly, he kept me appraised of what was happening. If he was
25 going to go and do calculations he probably wouldn't have discussed that particular aspect with me, he probably discussed more insurance matters, that sort of thing.

1516

Q. All right, but it wasn't as if he was out there acting on his own, it was as
30 you put it, at least a joint approach?

A. He wasn't acting on his own, no, he was involving me where he saw he needed to.

Q. So you were aware of what was going on?

A. Very aware.

Q. And approved it presumably?

A. I don't think we just had any disagreement so what we were doing between us I think it was pretty clear.

5 Q. So you said a moment ago that you contacted Mr Harding.

A. Yes.

Q. And we heard that from Mr Banks, and that was to find out if the issue had been dealt with at construction stage, correct?

10 A. Well more to tell him that the – that we'd been told there was an issue and to find out if he had any information or knowledge that would assist us in understanding whether that issue had been identified and during his work on the project.

Q. But both Mr Banks and Mr Hare said that you had indicated that you thought that the issue may have been dealt with at the construction stage. Do you accept – do you agree with that?

15 A. No, no, that isn't how it was, I didn't know whether it had or not. All I said to – I would have said to Geoff Banks is that there is a possibility that there is something that's happened during the construction phase that we're not aware of. I will find out if that is a possibility.

20 Q. Right, so you're not saying that you recalled something or were aware of something?

A. No.

Q. And so you spoke to Mr Harding and you would have heard I think you were at the hearing, that the reply that Mr Harding gave to an information request, that he told you that he had not installed any drag bars in relation to those slabs and north core connections?

25 A. Yes I believe that's what he said.

Q. So that's what you recall?

A. Well I don't think I would have used the term drag bar back then.

30 Q. All right, well ties or whatever the term was.

A. Well connections or ...

Q. He told you that nothing was installed in that area that wasn't on the structural drawings?

A. I think he told me he couldn't recall anything. Not that there was definitely nothing, I think he said he couldn't recall is what he told me.

Q. So are you saying that his reply to that to the effect that he told you that he hadn't, that's wrong, you thought it was more vague than that?

5 A. Yes, my recollection is he said he couldn't recall anything.

Q. So what did you pass onto Mr Banks then?

A. Well – I would have passed on exactly that, that there is no recollection of anything being installed so we still didn't know for sure whether the problem had been sorted but it was increasingly unlikely that it was.

10 Q. Right, so Mr Banks' recollection that you still left open that possibility is right?

A. Well given that Mr Harding from my recollection was not absolutely specific, that possibility still existed that the issue had been sorted.

15 Q. Well if he was unsure, Mr Harding, did you ask him then if it had been dealt with, how it had been dealt with?

A. No he simply said he didn't know so that was the end of the conversation really.

Q. He didn't know or that nothing had been done?

20 A. He wasn't adamant that nothing had been done. He had no recollection of anything being done I think is how he put it. It wasn't absolutely specific.

Q. Did you look in the ARC records for any site instructions or sketches or anything of that nature that might have covered such a thing?

A. I'm sure I would have checked. I don't remember (overtalking 15:20:51).

25 Q. And there was nothing was there?

A. I believe there was nothing, that would have been why I rang Mr Harding.

Q. Right, there was nothing to suggest that anything had been done at the construction stage, correct.

30 A. Not within the records we had.

Q. Or in the recollection of Mr Harding?

A. That's right.

Q. Mr Jones, the foreman, did you ring him?

A. Well I can't recall.

Q. Because his evidence was of getting a call. He was a bit vague about the details but he wasn't aware of anything being done differently at the construction stage than was on the drawings.

5 A. Mmm, I don't recall talking to Mr Jones. I'm not saying didn't but –

Q. Could that have been someone else?

A. Well it would only have been either myself or Geoff Banks.

Q. All right, so this is going on, these enquiries are going on in the days immediately following Mr Hare's visit on the 26th of January?

10 A. Well I'm not, I'm not – I can't recollect the exact timetable for it.

Q. Well I'll just get a document brought up, 0129.2. That's the letter from Mr Banks to the insurer. In the last paragraph on that first page you'll see that that says, "We have contacted the engineer directly involved with the design and observation of the project (he's no longer employed by this practice). He was unable to recall any site instructions given on this item, and we have found no reference to it in written instructions we have on file." That's confirming what you've just told us?

A. I believe so.

Q. "We forwarded him a copy of the relevant drawings to help his recall and also attempting to contact the foreman involved". So did you send the drawings to David Harding?

A. Well until I read that I didn't recall that drawings had been sent to him to assist him.

Q. So is that something you could have done?

25 A. Oh either I or Geoff Banks or someone in the office could've.

Q. The next page, at the top there, refers to the electronic reinforcing bar locator. Correct?

A. Yes.

Q. So all of that obviously had gone on before the 1st of February of 1990, the date of that letter?

30 A. Yes.

Q. And Mr Banks said that with those enquiries and that investigation, the view was taken by the two of you essentially that it was better to

assume that there'd been nothing done and that remedial work should proceed. Do you agree with that?

A. No, I've just lost the –

5 Q. Well it's not in the letter, I'm just saying that was what he said that you and he had decided.

A. I would like to read the letter if we're referring to it please, thank you. So which particular part are you –

Q. Well I'm not. I'm just asking a question. Mr Banks said that, after those enquires and investigations had been made that.

10 A. Yes.

Q. That, you and he essentially decided that you should proceed on the basis that nothing had been done and that remedial work should be proceeded with. I'm not saying it's in the letter, I'm saying that's what he said. Do you agree with that?

15 A. Whether we'd come to that conclusion at this particular time or a few days later, I'm not sure but that is a conclusion that we came to.

Q. And so you proceeded to get a quote, we saw a quote from Blake Brothers I think for hole drilling, presumably for the bolts?

20 A. Well I don't know as Mr Banks doesn't know either why that quote was obtained, because it doesn't seem to be relevant to anything that was happening.

1526

Q. Right but it must have been obtained by one of you mustn't it?

A. It might have been a quote to do some intrusive investigation.

25 Q. Okay. But it related –

A. Which then never proceeded.

Q. Okay. Do you agree with Mr Banks that the matter was being treated urgently by you and he?

30 A. I don't know about urgently but it was something we were treating seriously and wanting to move forward with it at that time and were being asked to.

Q. Right and was that because you felt some responsibility for it and because it was serious?

A. Well that would be two matters that we would have considered and the third would be relatively to the owner who at that stage I think was the receiver or whoever was, was asking, you know, in terms of what they wanted to happen.

5 Q. Right and in relation to the sale of the property, do you recall that evidence was put to Mr Banks about the sale not being affected by this issue?

A. Yes and I think in that letter it talks about a two-month extension or something like that.

10 Q. Right and the letter from the receiver you might recall mentions that issue about the sale not being affected. Do you recall that being a consideration?

A. Well it's a consideration in terms of giving the matter some urgency which is what we were doing at the time. We were treating it seriously and wanting to, if there was a problem, to get the problem sorted.

15 Q. Right what I'm just trying to establish is was the reason that you were treating it urgently because of the sale and not wanting there to be any flow-on effect from that if it collapsed or was it because you took the issue seriously anyway and felt some responsibility for it?

20 A. Well it's a combination of factors. I don't think you can say it's either one.

Q. Okay. So you had Geoff Banks proceed to try and design remedial works, liaise with Holmes and then come up with a remedy?

A. Well I didn't. He, he proposed that as the way forward for that part and he, I agreed with him and he carried on and worked on it and dealt with Holmes.

Q. And did you have any involvement in the remedial design or the calculations that he did?

A. Not directly, no.

30 Q. What do you mean by that, not directly?

A. Well he did the calculations, I didn't.

Q. Did you check them?

A. No I don't believe so.

Q. Did you not think that you should?

A. No I relied on Mr Banks. He would have told me what he was doing and, more importantly, he would have explained whatever the principle was of what he was doing and that would be the key factor for me.

5 Q. And ultimately when they were installed and the ties or drag bars were not put on floors 2 and 3, did you agree with that?

A. I can't remember whether I was specifically involved in that. I have thought about it since, I –

Q. Do you recall knowing about it at the time?

10 A. Well I think I would have known about it. I can't say for sure but I believe I would have.

Q. What do you say to the proposition that was put to Mr Banks that, and I think John Hare voiced this opinion, that would it not have been (a) easier and (b) more conservative to simply put ties on all of the floors including those two, whether or not you strictly speaking needed them?

15 A. I think that there's two factors and one of them has been explained very well by Geoff Banks which is the load distributions and the redistribution and that. I think the other factor is that the particular two walls which didn't have the connections that we considered were required were
20 more flexible than the walls on the other two grids and as such the actual compatibility in the system would have probably been better served by only connecting the actual floors that you needed to, to the more flexible walls. So in principle there are benefits in what he did. So I wouldn't have, I wouldn't have seen it as a, as a particular problem as
25 long as he had calculated that the load path was available through the other walls.

Q. All right and just to be clear are you saying that these are the matters you've looked at since then?

A. I don't know to what extent I would have thought about that at the time
30 but I do know that I have been aware of for a long time, you know, the issue of compatibility between walls of different stiffness when you have a rigid diaphragm.

HEARING ADJOURNS: 3.32 PM

HEARING RESUMES: 3.47 PM

5 CROSS-EXAMINATION CONTINUES: MR ZARIFEH

Q. Dr Reay I was just asking you before the break about the activity that was going on on your part and Mr Banks's part in terms of doing the calculations, getting the remedial work, he doing the calculations and getting the remedial, or remedial design sorted, putting the notification in
10 to your insurers, meeting with the receiver, I think on the 1st of February where you both met Mr Young from KPMG and acknowledging that as you said you had a responsibility to try and resolve this serious issue. That was all going on in those days or weeks that follow the Holmes Consulting advice of the issue right?

15 A. Yes that's as I understand it.

Q. And then you say in your evidence that nothing happened, you didn't hear from the receivers. But that was for a whole year wasn't it, or longer?

A. In my recollection is that no-one actually told us that for example
20 Holmes didn't tell us that they were no longer involved and I don't believe the receiver communicated anything to us and I think for quite some time we carried on, we got some insurance approvals, and time went by and I think that we envisaged that people were work- either working out that they were going to buy the building or not buy it or
25 whatever was happening and to a degree we'd, well we had made sure, or we knew that the people who needed to know there was a problem knew there was a problem.

Q. And who was that the owners or the receivers?

A. Well the owner slash receiver and, and we knew that Holmes had been
30 dealing with the potential purchaser.

Q. All right but do you not accept I thought it was accepted by Mr Banks that the responsibility had been passed on to the original designer firm which was yours?

5 A. Well I wouldn't use the word "passed on". Mr Banks and I accepted that we had a responsibility but we didn't consider whether that Holmes for example had, had passed it on. They may still have had some but we weren't considering that.

Q. Right but whether that was the case or not your responsibility still existed didn't it?

10 A. Oh, I believe it did and –

Q. Right and nothing had been done to rectify the problem?

A. No at that stage we were, I, I, from – my recollection is we were anticipating that and expecting that the receiver would ask for the work to proceed once he had come to whatever arrangements he was coming to.

15 Q. What, and so you just left it indefinitely?

A. Well no, my recollection is that you know when I drove up Madras Street I would actually have a look to see if the building, if there was any activity happening in the building for example because I was concerned that if it started to be, if they sold it or whatever and started to get occupied I would have been concerned so I did, I can recall thinking you know you drive past a building and you think about an issue.

20 Q. Is that, in that in your brief? Which paragraph's that in?

A. No it's not in there.

25 Q. But that's something you recall doing is it?

A. Yes I can, well you drive past the building and you're thinking about oh there's an issue there and then the first thing you – I would think about is you know is it, is this building being occupied and I think towards the end of that year I think we were becoming concerned and then we learnt of course that it had been sold and that's –

30 Q. Okay, so you drove past regularly?

A. I wouldn't say regularly. I didn't deliberately drive past. It was when I was travelling up Madras Street.

Q. When you were travelling down Madras Street or up Madras Street you thought about the building and whether it was sold or occupied, correct?

A. Mainly, not sold so much as whether it was, someone was starting to do fit out work in there or something like that.

5 Q. All right so signs of occupation?

A. Mhm.

Q. And you were –

A. Or beginnings of occupation.

10 Q. You were concerned about that because clearly of what Holmes had said could well happen if there was an earthquake given that problem correct?

A. Well no just concerned from an engineering point of view that this work that we'd agreed ought to be done wasn't actually moving forward, that was my concern and, and it did hinge to a degree around whether you know the level, well the occupation of the building obviously because that was a key factor.

Q. Because of the risk?

A. But it yeah, but it wasn't at those days it wasn't a you know while there was an issue it wasn't an issue that drove one to think that thing's a calamity because of the relatively low level definitions of earthquake prone buildings.

Q. Right but I thought you said that when you did pass the building you were concerned about it?

A. Well I, no you just think about it and you think about well I wonder what's happening.

Q. Right but I thought you were concerned in case it had, there were signs of occupation?

A. Oh the word concerned applies to engineering every minute of the day. What I, all I was noting was that it would remind you about the building and you'd think about it.

Q. Right. And all I'm saying is the reason you'd think about it was because of the risk, potential risk?

A. Well it was only in my mind a risk if it, if it was occupied.

Q. Right.

A. And my understanding was it wasn't.

Q. Right. But it was presumably still on the market?

A. Well we didn't know.

5 Q. But there could have been workmen in there, real estate agents, you wouldn't necessarily know about that from driving past it would you?

A. Oh yes you would. You'd see the activity, you'd see the lights on, you'd –

Q. So when you -

10 A. – see signs.

Q. Were you keeping an eye out for that were you?

A. Oh when I'd drive past I'd just have a look and...

Q. Making sure there wasn't?

A. Well and, and –

15 Q. That it wasn't –

A. – just thinking "I wonder what's happening and oh yeah there's nothing going on there I wonder", you know and assuming that they're still trying to sort out whatever they're trying to sort out.

20 Q. Okay are you saying that you were keeping a watch on the building for that reason?

A. I wasn't keeping a watch on it, it was just when you drive past you're reminded.

25 Q. Right. Well would it not have been easier to get on to that retrofit work back in January, February, March 1990 when the building was definitely empty? Would have been easier to retrofit wouldn't it?

A. Well I don't think the status of the building changed right through 1990.

Q. So you do nothing. You don't approach the receiver and say, "Can we get on to fixing this fundamental error that Alan Reay Consultants made?" You do nothing of that sort do you?

30 A. We didn't, I don't believe we've con- well I can't recall contacting the receiver. We may have but I don't recall.

Q. No and there's no indication of that in the documentation is there?

A. No but if, if you were going to ring them up there may not be.

Q. Right. And you just happened to see it in the paper that it's been sold. So if you hadn't seen it in the paper you would have carried on presumably as you've described?

5 A. Oh I don't think so because I think, I mean Geoff and I would've discussed it at some point and we wouldn't, we wouldn't have let it run on indefinitely.

Q. Would you? So you're happy to let it run on for at least a year?

A. Well it wasn't a year. I, I – I mean Geoff's talked about it in the newspaper.

10 Q. Sorry?

A. Geoff talked about reading that it had been sold in the newspaper, I can't recall that?

Q. Well I thought you did that,

A. No I –

15 Q. He didn't talk about that?

A. Didn't he.

Q. He didn't know how. You're the one who said that you saw it, you and he saw it in the paper?

A. Yes.

20 Q. So on 4 February '91 there was an article in *The Press*?

A. Mhm.

Q. "Having read this article Mr Banks and I decided we should notify the new owners"?

A. Mhm. Yes well that may be the, the earliest we learnt.

25 Q. Well that's your evidence that I'm looking at?

A. Mhm. Well that's the, obviously the positive evidence that, that we had.

Q. But you say that towards the end of that year you and he would have discussed it?

1557

30 A. Well it would have come up at some point, I can't remember exactly but it wasn't something that we'd totally – that we just dropped and forgot about.

Q. What, because you were continually aware of your obligation?

A. Well I didn't forget that we had an obligation, if you put it like that.

Q. And as I say, if you hadn't read it in the paper you would have carried on as you had been?

5 A. No I think we would have got to a point where we would have said, well hang on, this can't go on any longer, but - well I didn't forget that we had an obligation, if you put it like that.

Q. And as I say, if you hadn't read it in the paper you would have carried on as you had been?

10 A. No I think we would have got to a point where we would have said, well hang on, this can't go on any longer, but – because nobody had actually told us that the negotiations or the arrangements or whatever they were had come to an end, we were sort of the – we were of the understanding that they were still working on it and that at some point the receiver would come back to us and say, “Well yep now’s the time to
15 sort this out.”

Q. What I'm trying to understand and maybe this is my lay person's point of view, but where an engineering firm has made this fundamental error, one of your employees as you put it made this error, where that's happened and it's been – you've been notified about it, wouldn't you be
20 keen to get that rectified knowing the potential risks?

A. Well yes but I would imagine that the time to rectify it maybe when other fitout work is happening in the building for other purposes so that the builders are there working. It – with a building that was as I understand it unoccupied, it did take some of the pressure off.

25 Q. Did you feel the pressure was off because it was unoccupied?

A. Well no I just said some of the pressure, I didn't say it was all off, it ...

Q. Were you not just hoping that it had gone away?

A. Oh certainly not, it was never going to go away.

Q. So why did you not then take a more proactive approach, as I suggest
30 would be expected of you?

A. I think we had and I think the issue sat with the receiver, the owner.

Q. So it was back to the receiver and because they –

A. To initiate the work, yes.

Q. Okay, so you see it in *The Press*, 4th of February 91 and you and Mr Banks discuss it, see it's been sold so what, you decide that you better do something about it then. You hadn't up until then but you'd better now.

5 A. Oh we decided we should make sure that the new owner is aware of the issue.

Q. But I thought you just said that you passed it back to the receiver, it was –

A. Well clearly it's now sold.

10 Q. Right.

A. And the status of it has changed, there's a new owner and we were concerned to make sure that the new owner was aware of the problem, because it seemed – it would have, seemed surprising to us if the new owner was actually aware of the problem I would have thought he would have approached us before he bought it and it was somewhat surprising to find the building had been sold and nobody had actually contacted us.

15

Q. So was it because you didn't get contacted that you thought you'd better go forward then?

A. Well it was just another sort of level of concern really.

20 Q. Well wouldn't it have been a lot easier right at the beginning to be more proactive than just sit round and wait and wonder what's happening?

A. Well it's 20 something years ago. I can't remember exactly the sequence but.

25 Q. Okay, well after seeing it in *The Press* you say that you then got legal advice as to your obligation?

A. The legal advice related to ensuring that our insurance remained intact. As far as we were concerned we had an obligation to make sure that the new owner knew.

Q. But you've seen the file notes from Mr Banks on the file?

30 A. Yes.

Q. And don't they record that you were seeking legal advice as to your possible obligations and I think in one he put, if any, now I accept that he couldn't understand why he'd written that but that was his record at

the time. Was that not what you were doing, seeking advice to see if you did have an obligation to advise?

A. No I don't believe it was obligations in relation to advising –

OBJECTION: MR RENNIE (16:01:57)

5 (inaudible 16:01:57) that question goes over the boundary because it asks what the advice was about.

JUSTICE COOPER:

That may be right, Mr Zarifeh.

10

MR ZARIFEH:

Well I'm referring to the memorandums that have been disclosed and are in the folders Sir as to seeking legal advice as to possible obligations to new owners.

15

JUSTICE COOPER:

Well Mr Rennie if there's a document that's in the record which actually – I mean Mr Zarifeh's question doesn't seem to go beyond what's already in evidence.

20

MR RENNIE:

It appeared to me Sir that the answer was likely to go over the boundary and in relation to the way the question was asked. The document is the record of what the matter related to.

25

JUSTICE COOPER:

Well would it be sufficient if Dr Reay was reminded that he's not obliged to disclose privileged legal advice.

30 **MR RENNIE:**

I'm sure that would meet it Sir. The other the basis for my issue was that he's actually being asked about a matter which is actually in the document and

he's – the question really invites an oral gloss on the document if I can put it that way.

JUSTICE COOPER:

5 Q. Yes, well he may want to give an oral gloss for all I know but Dr Reay just to remind you, you're not obliged to answer questions where to do so would disclose a privilege to which you or your firm are entitled. You understand that?

A. Yes.

10 **CROSS-EXAMINATION CONTINUES: MR ZARIFEH**

Q. Well Dr Reay, I'll just get one of those documents brought up, 0.0227.5. So that's a form completed by Mr Banks, see his signature at the bottom?

A. Yes.

15 Q. And just above that signature under general comments, see it says, "Building has been on-sold, seeking legal advice as to possible obligations to new owners as instructed by I&G." Correct?

A. Yes.

Q. So all I was suggesting to you was that that recorded that you were
20 seeking legal advice as to possible obligations and I thought you said that's not what you were doing.

A. We were seeking legal advice but I'm not sure that the way that's put was, or the way that you're inferring it is actually the reason for the advice.

25 Q. Okay, well let's look at the next page, .6.

A. We – I should explain that we have an obligation under our insurance
policy not to commit the insurance company in any way that they don't
agree with, otherwise we become uninsured and it was essential to us
to remain insured, because we didn't know the extent to which the
30 problem, the extent of the problem for sure, or the extent of the
obligations that we may have had, so it's a normal situation to actually, if

you're going to advise someone of a problem that you do it in a manner that is satisfactory to an insurance company.

Q. Right, and the other one you'll see up on the screen is another file note Mr Banks made. You see the second entry or bullet point, "What are our obligations if any to notify anyone re status of review to date." See that?

5

A. Yes, he's specifically referring to the review to date there and he would have, Geoff Banks would have been thinking about to what degree we should be notifying that, not whether we should notify the people per se, but more to do with the way in which they would be notified.

10

Q. And what do you mean by that?

A. Well, Geoff Banks and I agreed that no matter what we needed to notify the new owner of the problem.

Q. Right.

15

A. But we had to do it in a manner that was satisfactory obviously to the insurance company. That's it.

Q. So why did you need advice from the insurance as to what your obligations if any were to notify them as to the status of it?

A. Well the obligations relate to the way in which you write things. It's not to do with an obligation to fulfil an ethical requirement.

20

Q. Right, so you think that he was meaning the way you would advise them, not the fact that you would advise them?

A. Well yes, very definitely because you may not know but the insurance company, CEAS, is actually owned by engineers and it's controlled by engineers, and so in terms of our dealing with the insurance company, we know that they're very well aware of what our ethical obligations are. We wouldn't need to ask them what they were.

25

1607

Q. So what about the next line then, "preliminary advice from insurance point of view is no further action."

30

A. I don't know what that means at that time.

Q. Well, it's the opposite of what you're saying isn't it? It's advice not to take any further action then?

A. Yes, I don't know what that meant. It doesn't add up to me. It doesn't mean to me that we weren't going to go and tell, to advise someone that there was an issue. We clearly needed to.

Q. Right, and you needed to do it urgently didn't you?

5 A. Well, when there was a new owner we did.

Q. Well there was a new owner by then wasn't there? 4th of February is when you found out and –

10 A. Well it said it had been sold but I don't know what the transaction dates were, whether it was bought for six months forward or whatever it was, I don't know.

Q. But the point is, as you yourself say, because there was a new owner there was some urgency to do something about it?

A. It was important to do something.

15 Q. Right, so then you go off and get legal advice I think around March of 91 and you say in your brief following receipt of the legal advice you notified the owners?

A. I beg your pardon?

Q. You say in your brief following receipt of the legal advice you got from Lane Neave you notified the new owners, Mr Ibbotson?

20 A. Well I don't know if the advice from Lane Neave related –

Q. No, no, I'm not asking about the advice. I'm saying following receipt of the advice from Lane Neave you said you then notified the new owners?

25 A. Yes I'm not sure because, you know, you've read one line but the next line says that "PS", which is Peter Smith, "to consider and advise." So whether he said something like, "There's no further action now, I'll consider and advise."

30 Q. Forget about that document for a moment. I'm reading from your brief of evidence that you read a moment ago, paragraph 78, "Following receipt of the advice sought from Lane Neave Mr Banks wrote to the new owners on 11 September 1991 although a copy of this letter is not held." Paragraph 78?

A. Yep.

Q. So that's your evidence?

A. Yes.

Q. That advice that you got was back in March of 1991. What were you doing between March and September of 91?

5 A. My recollection is that at some stage we asked the receiver who had bought the building.

Q. Right, and he told you?

A. Beg your pardon?

Q. And he told you?

10 A. Well I believe he eventually did and whether that was why there was a delay I'm not sure.

Q. Well, a delay of five or six months?

A. Um, I can't actually explain that length of that delay as to what was happening in the interim.

15 Q. But you're saying, we always knew we had that obligation, weren't so concerned because it wasn't occupied and when you passed by you were checking that and you then find out that it's been sold?

A. Mhm.

20 Q. So you need to act pretty quickly and you know your obligations you say, but you're required to deal with your insurers so you end up getting advice, March 91, and then you do nothing until September. That's not consistent with your evidence is it?

25 A. Whether that advice was the final advice we needed to do what we did, I don't know. I don't know in finding out from the receiver who had bought it, whether we were told what the programme was, I don't know. I can't explain the gap but it wouldn't have been something that we would have ignored until finally someone said, "Do something." It was us that actually initiated and told the new owners that there was an issue they should be aware of.

30 Q. And I'm not disputing that. What I'm putting to you is that there was this five or so month delay?

A. I'm uncertain as to the total, why that delay is there.

Q. So you can't explain it?

A. Well only in part in that I believe for some reason we chose to ask, I think we asked the receiver who it was and whether he had told them where there was a problem. I think that's probably where it started.

Q. And that took five months?

5 A. I have no idea what it took.

Q. Because it's not in your brief about any explanation?

A. No, well it's just my recollection now, what I recall.

Q. Why did you not offer to pay for the remedial work?

10 A. Well, if we want to maintain our insurance cover we have to follow the rules of the insurance company. For us to be in a position to do what we knew we needed to do, we needed to maintain the insurance cover, and to do that we had to write in terms of what was satisfactory to them.

Q. But it was only your excess wasn't it, \$12,000?

15 A. It doesn't make any difference. Who knows what the figure was going to finally be.

Q. You could have made a payment without prejudice, you knew that?

A. Well I didn't actually know that exactly, no. As I understand it we just follow what the insurance company says we need to do to maintain our insurance and if they tell us something, that's it.

20 Q. But Mr Banks was writing letters with the phrase, "without prejudice" in them?

A. Well obviously the insurance company was satisfied with what he was writing.

Q. What I'm querying is you saying you didn't know that you could do that?

25 A. Well, we follow what the insurance company says we can do. They make the rules, not us.

Q. Wasn't it the fit-out in September, October that triggered your action?

A. I'm not sure what actually triggered the action.

Q. But it could have been?

30 A. I'm not sure.

Q. I just want to ask you quickly about the, you've been asked about the lack of permit, that no-one from Alan Reay applied for a permit for this retro-fit?

A. We believe we did.

Q. And Mr Reid took you through that, I'm not going to take you through that again, but your belief that Mr Bluck would have known, you said in paragraph 84 that you believe that his view would have been that the works were part of the original job and that no permit was required, right?

A. That's how I think he would have handled it.

Q. So you're saying that on the basis of your experience of dealing with him?

10 A. Mmm.

Q. Not your recollection of this matter?

A. That's correct. I don't specifically recollect dealing with him specifically on it.

Q. And you say in fact, "I base this on my experience in dealing with Mr Bluck over many years?"

15 A. Yes.

Q. And did I understand you correctly that there have been other occasions when you had spoken to Mr Bluck and he was happy with you giving him an assurance about a detail or something that you could perhaps send in later?

20 A. Oh, if there was an alteration on the site, some change depending on the scale of it. It's something that I might have asked him about. Generally small changes were never discussed with the Council. If you modified some reinforcing or did something, that was never something that you were at a need to advise them of.

25 Q. But he was happy to take your assurance in those cases that you're talking about?

A. No, because – well if he wasn't advised of it there was no assurance, but, no, it would be a matter of saying to him, "Well this is a change here, how do you want it handled," and he may say, "Well, just send me a copy of it."

30 Q. But that was because of the relationship you had with him?

A. No. I think that was common with everyone.

Q. Certainly applied to you anyway?

A. Well, in terms of some things, yes.

Q. So just so I understand you correctly, you're saying you knew Mr Bluck so well from your dealings with him that you think you know what he would have thought about this job even though you can't recollect the –

A. All I can say is how I thought he might have handled it. It wasn't that I knew him that well. It was more the way he handled things.

Q. Right, but you're basing your comment and what you think would have happened on your experience in dealing with him over those years?

10 A. Yes, that's the best I can do.

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CROSS-EXAMINATION: MR ELLIOTT

Q. I only have two brief matters Dr Reay. Firstly, I think you were here when I questioned Mr Banks about the decision not to install drag bars in levels 1 and 2. You heard that evidence did you?

A. Yes I did.

Q. So just in fairness I want to put the same point to you so you have the opportunity to comment. I put it to him that the relevant bylaw set out the objective which you're familiar with of avoiding collapse and minimising the probability of injury to or loss of life and I put it to him that in order to comply with that objective drag bars should have been installed at levels 1 and 2. Do you accept that?

A. No I don't. No I consider that what he did was appropriate and complied with the code.

25 Q. Thank you and secondly just one or two questions on behalf of families of those who died. The other day you talked about what your standards were. Do you recall that you said some words about that?

A. Yes.

Q. You named various groups of people in this order – the engineer, architects, the client, the builder and then the community, at the end of the list, and in that respect you said the innovation of safe, attractive, quality constructions. Firstly, I take it the absence of reference to those

who occupy a building 40 hours of the working week was just an oversight?

A. I'm sorry I can't hear.

5 Q. I take it that the absence of any reference in that list to those who occupy a building that you design was just an oversight?

A. I'm sorry I'm still not with you on this one.

Q. All right well when you said these things –

A. Yes.

Q. – you referred to various categories of people –

10 A. Yes.

Q. – which I've listed but you didn't refer in that section to the occupants of a building.

A. Well except when I referred to the community really.

15 Q. I see so you include them in the community group at the end and you refer to safe in that context I think?

A. Yes.

20 Q. So the question, can you point to any particular safety features which were incorporated into the design of the CTV building for the purpose of minimising loss of life in the event of full or partial collapse and as has happened in this case fire?

A. Well compliance with the codes is, is to provide exactly that.

RE-EXAMINATION: MR RENNIE – NIL

QUESTIONS FROM COMMISSIONERS FENWICK AND CARTER – NIL

QUESTIONS FROM JUSTICE COOPER – NIL

25 **WITNESS EXCUSED**

MR RENNIE ADDRESSES JUSTICE COOPER

MR ZARIFEH CALLS**RUSSELL WARREN IBBOTSON (SWORN)**

Q. Mr Ibbotson is your full name Russell Warren Ibbotson?

A. Yes it is.

5 Q. Do you live in Alexandra?

A. Yes.

Q. And I think you retired in 2010 after 45 years as a chartered accountant and a partner of the firm Ibbotson Cooney Limited in Alexandra?

A. That's correct.

10 Q. Have you got your statement of evidence in front of you?

A. I have.

Q. Can I ask you please to read that to the Commissioners starting at paragraph 2 and unless the Commissioners require it I won't get you to refer to any of the documents but rather just to read through the brief, all right, starting with paragraph 2 thank you.

15

A. Thank you. Your Honour before reading my evidence on behalf of the previous owners and current owners of the CTV collapsed building I would like to take this opportunity of publicly expressing sympathy and our deepest regret to the families that lost loved ones, relatives and friends in this tragedy and I do that publicly on behalf of previous and

20

current owners. Thank you.

JUSTICE COOPER:

Thank you. I'm sure that will be appreciated.

25 **EXAMINATION CONTINUES: MR ZARIFEH**

Q. From paragraph 2.

A. On 18th of December 1990 I was appointed as one of the two directors for a company incorporated on the same date, Madras Equities Limited. Madras Equities purchased 249 Madras Street, the CTV building, with settlement taking place on 21st of December 1990.

30

I was a shareholder and director of Madras Equities Limited and manager of the property through to March 2010. Due to circumstances

beyond my control the official Companies Office website did not correctly record these changes taking place until some considerable time later. I had no further involvement with the property management of the CTV building after March 2010 and, effectively, ceased my directorship in Madras Equities Limited and financial ownership in that building at that time.

From December 1990 to March 2010 I was the building manager for the CTV building. My responsibilities in the role included financial management, liaising with tenants as required and attending to operational matters as necessary. I have been asked to give evidence to the Royal Commission about the CTV building.

Purchase of the CTV building by Madras Equities.

In 1990 two adjoining properties on the corner of Madras and Cashel Street were being offered for sale by Peat Marwick (KPMG) as the receivers of Prime West Corporation. One of the sites had the building on it which is now referred to as the CTV building. I refer throughout my evidence to the building as the CTV building. The other site incorporated an older style commercial building.

The shareholders of City Equities Limited, a Christchurch-based property company, entered into a contract to purchase both properties as nominee for a new syndicated entity. However, for the reasons outlined in a letter to UDC dated 6 November 1990 it was decided that a nominee company would be formed for the purpose of holding land and buildings in trust for a partnership.

On the 19th of December 1990 Madras Equities Limited was incorporated for that purpose. Matthew Brownlie and I were appointed as directors and each held 50 of a total 100 shares.

At the same date Madras Equities executed a deed of trust recording that the beneficial of the owners of Madras Street property would be a partnership on a custodian/trustee basis between Lionel Walter Hunter, David Curson Murray, David Stanley Duns, Matthew Francis Brownlie,

Kieran John Egging, Faye Lynette Egging, Clifford Arthur Egging and Jean Egging and myself. It was Madras Equities Partnership.

The purchase was made

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5 as a passive investment. The partnership included two chartered accountants, a lawyer, the principal of a substantial real estate firm and three experienced businessmen and company directors. Settlement of the purchase of the by Madras Equities took place on 21st of December 1990.

10 Over the succeeding 20 year period from 1990 to 2010 there were a number of changes to the original nine member partnership holding. This occurred solely in the normal course of business.

I held a one ninth ownership share in Madras Equities until March 2010 when I sold it to Egging Holdings.

15 Due to circumstances beyond my control this change of ownership was never officially recorded with the Companies Office website until the 6th of April 2011.

I had very limited involvement in negotiations relating to the purchase of the building. This was handled directly by representatives of City Equities Limited which I was not a shareholder of, but I was kept fully informed of these proceedings.

Due Diligence.

25 Due Diligence was carried out prior to Madras Equities purchasing the CTV building. This is standard procedure and there was nothing specific to the other building on the adjoining site that required this as it was envisaged that this building would be demolished to create additional car parking. In carrying out due diligence the Madras Equities partnership placed considerable reliance on the following matters:

30 (a) The CTV building was designed by Alun Wilkie Limited one of Christchurch's leading architectural firms whose work and reputation was well known to members of Madras Equities partnership.

(b) The engineering and structural design of the building had been completed by Alan Reay Consultants Limited ARC which was likewise highly regarded and very experienced in the engineering design and construction of a number of Christchurch commercial office buildings.

5 (c) The construction of the building was commissioned and carried out for a publicly listed company by an experienced and recognised construction company and would have been subject to standard architectural and engineering construction progress inspections and sign offs. I have asked by counsel assisting whether I had any
10 knowledge that the project was taken over by Union Construction part way through. I had no knowledge of that.

(d) The building itself was a new building and had only recently been constructed. This in itself gave every confidence that it was built and engineered in compliance with the code of the day.

15 (e) The building had been fully approved and signed off by the Christchurch City Council which gave further endorsement to the building both in respect of the integrity of the structure of the building and its compliance with all current standards. Prior to confirming the purchase of the, (f) sorry.

20 (f) Prior to confirming the purchase of the CTV building City Equities had also arranged for independent valuation assessments to be carried out by two separate reputable Christchurch valuation firms. These valuations were considered very satisfactory and raised no concerns in relation to the integrity or structure of the building.

25 Based on the collective factors the purchasers felt satisfied that there were no underlying issues with the property and this understanding certainly applied in relation to all negotiations that were carried out with KPMG regarding the purchase of the property. Because Madras Equity's partnership comprised responsible and experienced
30 professionals and business people I can emphatically state that the purchase would not have proceeded if there had been any indications of underlying issues or concerns with the structure of the building.

Holmes Consulting Report January 1990.

Madras Equities and the Madras Equities partnership were totally unaware and had no reason to suspect that there were any shortcomings or deficiencies with the building. At no stage was I or any member of the Madras Equities partnership advised by KPMG or anyone else that Holmes Consulting Group had prepared a report on the building in January 1990 and identified an area of critical structural weakness in the tying of the floors to the walls. Because of the nature of the partnership I am confident that if any other members of the partnership had become aware of this we would have all been advised. The complete surprise of the partnership when I first learned of the Holmes' report and its content is recorded in a letter I wrote to ARC dated 30th of September 1991 where I said quote, "At no stage were Madras Equities Limited or any other parties associated thereto advised of this possible problem by Peat Marwick in their capacity as receivers".

Advice on possible design fault by ARC and subsequent remedial work, 11th of September 1991.

The Madras Equities partnership first became aware of a possible design fault with the CTV building either by a letter of 11th of September 1991 by Alan Reay Consultants or possibly by Mr Banks of ARC in a telephone call I received from him shortly before this date. I've not been able to provide the Royal Commission with a copy of this, copy of the letter from ARC dated 11th of September 1991 but I am aware I received it as was acknowledged by my subsequent response to ARC dated 30th of September 1991.

My response on behalf of the partnership in my letter dated 30th of September 1991 refers to the remedial work quote, "If required" and the, quote "possibility that the apparent problem may not in fact be a problem". The advice given by ARC was that any problem was of a minor nature and that the remedial work if required would be relatively simple to carry out but could only be determined by an engineer's on site inspection. I was told that this would involved some testing work

including drilling to determine the extent of the reinforcing steel in the area that had been identified as the potential weakness.

JUSTICE COOPER:

Q. Four lines into that, or sorry, five lines into that paragraph you left out
5 the word “fully”, do you see that in the middle of the line, “could only be fully determined”? You omit -

A. Sorry –

Q. You omitted, you omitted –

A. Sorry Sir.

10 Q. – that word when reading it but I take it you want, you want it –

A. Yeah.

Q. – you want it to be included?

A. Yes I do Sir.

Q. Right oh, thanks.

15 A. Thank you.

EXAMINATION CONTINUES: MR ZARIFEH

WITNESS CONTINUES READING BRIEF OF EVIDENCE

A. In my letter of the 30th September 1991 I authorised ARC to further
investigate the matter and to take steps to ensure that the building met
20 the required design specification standard for earthquake and other
loading requirements. I noted that it was important that this issue was
rectified prior to the ANZ Banking Corporation commencing its tenancy
of the building on the 1st of November 1991.

In a letter dated 15th of October 1991 Mr Banks of ARC advised some
25 investigative work had been carried out in an area of the floor and a
small area of concrete had been removed at the end of the walls
adjoining the lift shaft. He advised that several reinforcing bars had
been quoted but that whilst these provided a structural tie, quote, “a
limited amount of remedial work was required in order to provide the
30 seismic strength to meet the current New Zealand standards.” He
advised that this remedial work was required at levels 4, 5 and 6 only

and would take approximately four days and would cost \$4,633.50 plus GST.

5 I immediately replied on behalf of Madras Equities Limited accepting the quotation and instructed that the work could be completed prior to the end of October 1991. The entire contract including supervision of this remedial work was handed by ARC. The correspondence reflects I both emphasised and understood that following the completion of this work the structural integrity of the building would be completely in accordance with all structural and earthquake loadings in every respect.

10 I received a further letter from Mr Banks dated 17th of October 1991 in which he confirmed that ARC had instructed CBD Construction to proceed with the remedial work and that the work was to take place during the next week. He stated, "We advise that the proposed remedial work will give the floor to wall connection the seismic strength
15 required by the current New Zealand loadings code which is the code that was also current when

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the building was designed, so that's code NZS4203:1984. We would note however that a number of other codes to which the building was
20 designed, including material codes have since been amended. An original design may therefore not necessarily comply with all aspects of these codes, those codes.

The issue was discussed with the other members of the Madras Equities partnership following receipt of the letter. It was not considered
25 necessary to obtain other independent structural engineering advice given that the building was effectively a brand new building and had been designed and engineered by recognised experienced and professional firms.

Regard was also had to the following factors.

30 (a) The assessment of ARC as the engineers who designed the structural of the building. The partnership regarded ARC as the best qualified party to assess any apparent shortcomings.

(b) The matter was raised as a possible problem only and was subject to further on site physical testing to determine what if any remedial work was required.

(c) The remedial work was described by ARC as being work of a minor nature which was subsequently reflected in the cost of the work of \$4633.50 plus GST. This figure did not give any cause for concern. Indeed it was not considered necessary to advise the incoming tenant, ANZ Banking Corporation of the issue since it had been described by ARC as being of a minor nature.

The matter was dealt with very promptly and it was assumed that any problem that did exist had been rectified by ARC and that the remedial work had ensured the integrity of the building was structurally sound in every respect and complied with the applicable code standards of the day.

Building permit for remedial works.

I have been asked by counsel assisting that there is no record of a building permit being obtained for the CTV building in respect of the repair work carried out and that counsel's position is that a permit was required. I have no knowledge of whether a building permit was sought for the remedial work. This was never raised with me at any point. The entire aspect of the remedial work was organised and supervised by ARC. If a building permit was required I would have expected ARC to advise this. The possibility that the Christchurch City Council needed to be advised of the situation never occurred to me. It had been presented to me by ARC as a very minor repair that normally would not have required a building permit.

Cost of repairs

The question of responsibility for the cost of repair was initially left open. This is recorded in my letter of the 30th of September 1991. It seemed clear to me from the 15th of October 1991 letter from Mr Banks of ARC that ARC was not immediately offering to carry the cost and I did not

want a dispute over this to delay the repair work, particularly as the partnership did not to run any risk of this affecting the ANZ Bank tenancy. Because of this concern I approved the recommended remedial work in my letter dated 16th of October 1991, leaving open the question of who would be responsible for paying for the work.

Madras Equities as building owner was subsequently forwarded an account for the repair work on the basis of a quotation given and duly arranged for payment.

The CTV building between 1990 and March 2010.

During the 20 year period from 1990 to March 2010 that I was associated with the building, both as a part owner and also as building manager, there were never any issues or concerns raised with me in relation to the structural integrity of the building. If any structural issues had been identified I have no doubt they would have been dealt with in a timely manner in the same way that the remedial work was carried out in October 1991.

The building had always been considered as being a “user friendly” building to work in with good features and was regarded as being cost effective and efficient as far as fixed yearly operating costs were concerned.

During the 20 year association I had with the building through to March 2010 there were relatively few maintenance or repair issues of any significance apart from what could be regarded as normal building maintenance. As I have stated I cannot recall any concerns being raised at any time I was acting as property manager as to the structural integrity of the building.

CROSS-EXAMINATION: MR MATTHEWS – NIL

CROSS-EXAMINATION: MR HANNAN

Q. Mr Ibbotson, I act for Holmes Consulting Group and I should tell you that the questions I'm going to ask you are not intended in any way as

raising any criticism of you or the partnership, it's just a little bit of information that is not perhaps entirely clear from your brief of evidence. You refer to at paragraph 17, 18 and 19 of your brief of evidence to, and in particular at paragraph 19 to the Holmes Consulting Group report of January 1990, and you refer at paragraph 19 to the complete surprise of the partnership when you first learned of the Holmes report and its contents, and you say that's recorded in a letter I wrote to ARC dated 30 September 1991.

A. Yes.

Q. Now that letter itself, the letter to Alan Reay Consultants dated 30 September 1991 doesn't itself name or refer to the Holmes report and I'm wondering whether in fact the situation here is that you may have been told by Alan Reay Consulting that there was a problem with the building but you were neither told of nor given a copy of the Holmes report at that time?

A. That is correct. At no stage to the best of my knowledge did any members of the partnership sight the Holmes report or inferred that such a report existed.

Q. All right, so just taking that on a little further just to be entirely clear then, is it correct to say that the first time that you learned of its existence was when the question of preparing evidence for the Commission arose?

A. I think that's correct as I would understand it.

CROSS-EXAMINATION: MS SMITH

Q. Just on that aspect Mr Ibbotson, do you remember how the matter was raised with you, how Alan Reay Consultants had explained that the issue had been identified?

A. I think as I have referred to in my evidence initially it was I think by way of a, perhaps a phone call from Mr Geoff Banks of ARC. It was certainly not until September 1991 that I or the Madras Equities partnership became aware that there was a potential or possible problem with the building.

Q. But when either you spoke with somebody from that firm or received the letter they would have explained to you did they how they came to know that there was a problem with this building or do you simply not – I accept that it was a long time ago?

5 A. Yeah, I'm sorry I can't recall specifically the extent, I think probably as is reflected in my correspondence, I was really for the avoidance of doubt, and part I suppose professional experience in situations, covering in detail what their correspondence had said to me, just making it quite clear what our understanding of the position or my understanding and
10 Madras Equities' understanding of the position was.

Q. And the point that you were making is that you were surprised that the owner who you'd purchased it from who had known about the problem hadn't told you?

A. Yes definitely.

15 Q. Just one point of clarification is that you've spoken about the remedial work being required being minor in nature and that was your understanding?

A. Mmm.

Q. And you're aware aren't you that that work was carried out?

20 A. Yes.

Q. You've indicated as well that the advice to you from ARC was that the problem was minor in nature as well?

A. Correct.

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25 Q. But you were aware though weren't you that some further work or investigation had to be done and was in fact done on the building?

A. Yes I think it was all part of the same situation because when it was first raised, and again it's very clear from the correspondence, it was put forward as a possible problem.

30 Q. That's right.

A. Rather than a definite problem.

Q. But it was clear in the communications and if we, your letter of 30 September, and you've said that, you know, you dutifully recorded back your understanding of things to ARC –

A. Yes.

5 Q. – you were aware that if that, those further investigations had revealed that there was a problem that that could impact on insufficient loadings to meet the normal earthquake requirements.

A. Yes I was. The concern of the Madras Equities Partnership was that there was a lease agreement which had been entered into with the ANZ
10 Bank. It was going to involve something like I understand 200 people moving into that building and Madras Equities and myself quite rightly considered we had a responsibility as building owners at that time to deal with a, particularly a structural or an earthquake problem, potential earthquake problem.

15 Q. So a potential earthquake as you describe it and as you've recorded in your letter, a failure to meet the normal loadings –

A. Yes.

Q. – couldn't be described as a minor problem could it?

A. I'm sorry?

20 Q. It wouldn't be described as a minor problem?

A. Well I'm not sure. The use of the word minor. I can't be emphatic on this but it may well have been, the fact I refer to it in subsequent correspondence back could have been referred to as a, something that was perhaps raised in discussions or raised in the letter of the 15th of
25 September.

Q. I suggest to you that it may have been raised in the context of the remedial work that was required but it wasn't actually raised in the context of the issue that had been identified. Do you accept that that's a possibility?

30 A. Yes I do. I think it was accepted, I accept it was in relation to the remedial work.

Q. Thank you Mr Ibbotson.

CROSS-EXAMINATION: MESSRS PALMER, REID, ELLIOTT – NIL

RE-EXAMINATION: MR ZARIFEH – NIL

QUESTIONS FROM THE COMMISSIONERS – NIL

QUESTIONS FROM JUSTICE COOPER – NIL

5 WITNESS EXCUSED

DISCUSSION TIMETABLING

BRIEF OF EVIDENCE OF ANDREW DICKSON ADMITTED BY CONSENT

10

BRIEF OF EVIDENCE OF LIONEL HUNTER ADMITTED BY CONSENT

BRIEF OF EVIDENCE OF MURRAY THOMAS MITCHELL READ BY CONSENT

5 MR MILLS:

I, Murray Thomas Mitchell of Christchurch, Structural Engineer, state:

I hold a Bachelor of Engineering, Civil (Honours) Degree. I am a member of the Institution of Professional Engineers of New Zealand. I have 42 years experience as a civil and structural engineer.

10 From 1971 to the present I have been employed by Opus International Consultants Limited and hold the position of Senior Structural Engineer. I am a past member of the Structural Engineering Society of New Zealand (SESOC). I

15 In 1998 or 1999 I was asked by Opus Management to provide comment on premises that Opus was considering leasing in Christchurch. I believe that I considered four buildings which had been short-listed as potentially suitable by Opus. One of these was the CTV building. The following is my recollection of the review that I carried out.

20 I was provided with structural drawings of the building and I carried out a desk-top review. I cannot recall the exact time that this review took but it would have been hours not days. As part of this review I examined the symmetry of the seismic load resisting system of the building and noted that it was asymmetrical. It had a shear core at the north end and a frame structure elsewhere. I considered how the columns and beams were reinforced and
25 whether these were in line with design standards and practices applicable at the time the building was constructed.

My review presumed that the design would have complied with the standards applicable at the time of construction since a building consent must have been issued and the design and construction would have been checked through
30 that process.

A desk-top review involves a qualitative assessment of the robustness of the building. It also involves a consideration of the likely mode of failure if the building was subjected to a seismic load greater than its design capacity.

Because the building's seismic structure was asymmetrical it would be more heavily loaded in an earthquake than a similar building with a symmetrical seismic structure.

I concluded that the interconnections between the floor diaphragm and the shear core were not as strong as I considered they should have been for an asymmetrical design such as this. The building also lacked structural redundancy, meaning that there were no alternative load paths available in the event that the primary load path failed. My conclusions were an initial view only.

Counsel assisting the Royal Commission has asked me how serious I considered the issue with the CTV building to be and would I characterise it as an actual or potential critical structural weakness in the building. "Actual Or Potential Critical Structural Weakness" was not an expression that was in use at the time of my desk-top review. However, to the best of my recollection of my observations and applying the expression put to me by counsel I would have characterised the building as having an actual critical structural weakness under seismic load.

I have also been asked whether I formed a view on what effect this weakness might have on the building if it was subjected to ground shaking in an earthquake. Again, looking back as best I can my view was that there was a significant risk that the building would be subject to premature and catastrophic collapse in a moderate earthquake. I repeat that my desk-top review was brief and lacked the detail of a full structural assessment.

Given the other leasing options available I did not consider that a more detailed assessment was warranted but having said this my concerns were such that I thought that the building should not be considered further.

I compared the building with others on Opus' short-list and in my opinion it did not compare favourably. For example, Te Waipounamu House in Hereford Street which Opus ended up leasing had a similar height to the CTV building and was originally built as the Reserve Bank building.

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Compared to the CTV building it was generously designed and had alternative load paths. It's overall strength appeared to be in excess of that which was

typical for buildings of its period. My advice to Opus management was to the effect that the CTV building should not be pursued as a leasing option.

In January 2012 I was provided with a copy of a 1990 Holmes Consulting Group report. I did not have a copy of the report when I carried out the
5 desktop review. Section 6.3 of the report deals with the issue of the interconnection between the shear walls and the floor diaphragms. This section summarises the same concerns that I had which I have described above. I have not retained a copy of the desktop review that I carried out and nor has one been found after a search of Opus' records.

10

JUSTICE COOPER ADDRESSES MR REID – DISCUSSION

JUSTICE COOPER:

The evidence of Mr Hutt will be taken into evidence and taken as read. I
15 reserve leave to the City Council to advise the Commission by memorandum if there is any issue in the conclusions set out in that brief. If that advice is to be given, it should be given by next Wednesday 22 August.

BRIEF OF EVIDENCE OF DAVID HUTT ADMITTED BY CONSENT

20

**MS SMITH NOW APPEARING FOR THE NEW ZEALAND FIRE SERVICE
IN RELATION THIS ASPECT OF THE HEARING**

MS SMITH CALLS

5 PETER JOHN WILDING (SWORN)

Q. Mr Wilding, can you confirm please that your full name is Peter John Wilding?

A. It is.

Q. And you're the National Manager of Fire Investigation and Arson
10 Reduction for the New Zealand Fire Service?

A. I am.

Q. And in that role you are responsible for the development and quality of
fire investigation training and processes in the New Zealand Fire
Service?

15 A. I am.

Q. Do you have your brief of evidence before you?

A. Yes I do.

Q. If I can get you to read that from paragraph 2 please.

A. I was deployed to Christchurch on the 27th of February 2011 as part of
20 the New Zealand Fire Service Incident Management Team and was
tasked to manage the safety of all New Zealand Fire Service operations,
that is whether teams were operating safe work practices. As part of my
role I visited incident sites where the New Zealand Fire Service
operations were being conducted including the CTV site.

25 I visited the CTV site on my arrival into Christchurch on the 27th of
February and a number of times after that date.

I have been asked to give evidence to assist the Royal Commission with
it's inquiry in relation to the collapse of the CTV building. Counsel
assisting the Royal Commission has asked me to comment on why a
30 fire investigation was not conducted to determine the possible cause of
fire which occurred at the CTV site.

In the course of preparing this statement I have reviewed the witness
statements of Margaret Aydon, Thomas Hawker, Penelope Spencer,

Michael Williams, Stephen Gill, Alan Edge, Matthew Ross, Graham Frost and Dr Robert Heywood as they make comment about the fire. I have also received information from some New Zealand Fire Service personnel who were charged with fire suppression at the CTV site on the 22nd and 23rd of February 2011.

My qualifications.

I have been employed by the New Zealand Fire Service for 25 years as an operational fire fighter. I have held various ranks during that time. In 2004 I was appointed Deputy Chief Fire Officer for West Auckland and in 2008 I was appointed National Manager of Fire Investigation and Arson Reduction with the rank of Assistant Regional Commander.

I currently respond to major incidents as an executive officer which helps to maintain my operational management experience. I'm a member of the United Fire Brigades Institute through examination. I have been responsible for determining cause and origin of fires for the last 16 years. I have completed the New Zealand Fire Service Investigation training as well as Crime Scene Investigators Fire Investigation training course in the UK delivered by the Home Office Forensic Science Service.

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Q. And if I can just stop you there Mr Wilding. You said that you'd completed the New Zealand Fire Service training. That's specifically the New Zealand Fire Service Investigation training is it not?

25 A. That is correct.

Q. If you continue reading from, "I am also..."

A. I am also a member of the Institute of Fire Engineers UK for examination which is an internationally recognised qualification within the fire industry, and the recipient of the Godiva Award for the highest performing international candidate.

As the New Zealand Fire Service representative I sit on the Australasian Fire Authorities council, fire investigation coordination group, an organisation that promotes fire investigation best practice and process

and the exchange of information relating to the fire cause and origin across fire agencies throughout Australasia.

I have developed and delivered fire investigation training to New Zealand Fire Service specialist fire investigators on national courses run throughout the country for over the last four years. I have also delivered fire investigation training to New Zealand Fire Service personnel and to police at the New Zealand Police College. Police attend New Zealand Fire Service fire investigation training courses and we also run specific police courses to help them understand our functions and needs at incidents so that their actions where possible do not compromise our fire investigations. It also assists us in supporting police investigations at possible crime scenes. I have previously given evidence on fire investigation in the District Court in New Zealand and have recently been called as an expert witness in the Niue High Court.

Fire investigations.

The New Zealand Fire Service was established by the Fire Service Act 1975. The Act sets out the powers and duties that the New Zealand Fire Service has and provides that it is under the control of the New Zealand Fire Service Commission. Section 86 of the Act provides that the Minister may at the request of the Commission or a National commander appoint a person to hold an enquiry into a fire. This is something different from a fire investigation and I understand there would be more likely to occur when the National Commander considered that it would be in the public interests to hold an independent enquiry into the actions and performance of the Fire Service at a significant incident. I am not aware of an enquiry having been held previously.

The only other provision in the Act that refers to fire investigation is section 29(2) which provides that the power to access land and buildings may be used for post incident investigation to determine the cause of any fire or hazardous substance emergency. It does not however require a fire investigation to be carried out. Other than that

there is nothing in the Act which specifically refers to a fire investigation or which requires the New Zealand Fire Service to investigate fires to establish cause. However the Act provides that it is a matter of prime importance for the Commission to take an active and coordinating role in the promotion of fire safety in New Zealand. In promoting fire safety section 20(2) of the Act requires the Commission to be concerned to reduce the incidence and consequences of fire. The New Zealand Fire Service carries out fire investigations to support the Commission's role in reducing the incidence and consequences of unwanted fires rather than pursuant to a specific legislative requirement. It does so on the basis that by learning about what starts fires, what contributes to their growth, how they can be effectively controlled and the level of damage they cause, the New Zealand Fire Service can develop strategies and actions to reduce the chances of them happening again.

The New Zealand Fire Service National Commander is responsible for the operational activities of the New Zealand Fire Service. The National Commander does that in part by issuing operational instructions under section 27(a) of the Act. New Zealand Fire Service personnel are required to obey and be guided by those operational instructions as well as other legislation and policies relevant to the New Zealand Fire Service.

The operational instruction relevant to fire investigation is operational instruction P3, fire investigation and reporting of the operational instruction series. All investigations as to the origin and cause of a fire are carried out pursuant to operational instruction P3.

Operational instruction P3 details the requirements for fire investigation and describes the consequent reporting requirements, in particular it requires that all fire incidents attended by the New Zealand Fire Service are to be investigated to establish cause. It does not prescribe the nature of the investigation however that must be undertaken, the type of investigation depends on the scope, severity and complexity of the incident.

The responsibility for carrying out a fire investigation rests with the National Commander but delegated to the first arriving officer at a fire scene. The most common fire report is the Station Management System, SMS, incident report, that includes a basic determination of origin and cause. This is a simple report completed by the reporting officer selecting options from a drop down menu. SMS information about fire cause is examined weekly by the Fire Research and Investigation unit, and I will make a note that I've actually, in my brief there, have my title rather than my unit's name – to look for trends as such as unsafe installation or operating practices, faulty equipment, unsafe fire behaviour or deliberate fire setting. The larger complex or serious incidents are usually investigated by specialist fire investigators who are New Zealand Fire Service staff based in each region who have undergone advanced training in fire investigation. That is because operational instruction P3 requires a specialist fire investigator to attend and investigate certain fires including those relevant to the CTV site where fires where fatalities occur, fires in buildings where built-in fire safety features have failed or not performed to known or expected standards, and/or fires of significant consequence.

JUSTICE COOPER:

Q. Just pausing there, what is the – was there an alteration you wanted us to make to that paragraph. Fire investigation and arson induction unit, do you want to change that?

A. Yes Your Honour, that should read the fire research and investigation unit.

Q. Fire research and investigation.

A. The confusion between my title and the unit's name.

EXAMINATION CONTINUES: MS SMITH

A. Paragraph 18, although operational instructions, and that should read P3, requires a fire investigation to be carried out. There are a number of other important matters including legislative and policy considerations

which might defer the lay or prohibit a fire investigation from being undertaken.

The most important consideration is risk to New Zealand Fire Service personnel. The New Zealand Fire Service's obligations under the Health and Safety and Employment Act 1992. A fire scene is a place of work and as an employer the New Zealand Fire Service is obliged to eliminate, isolate or minimise any hazards in that place. In some cases that can be done by certain control measures such as protective equipment, shoring up structures et cetera. However in some circumstances the New Zealand Fire Service will decide not to commence or complete an investigation if it is too dangerous. We will not for example commence an internal examination of a structure if the safety of our staff will be compromised by entering an unsafe site to gather evidence. Usually where a fire cannot be investigated for safety reasons the cause will be listed as undetermined with the reason for no investigation stated.

Paragraph 20. Other important policy considerations are the safe person concept, and dynamic risk assessment. These illustrate that there are limits to the level of risk that New Zealand Fire Service personnel are expected to accept and times when personnel will and will not risk their safety.

The safe person concept governs everything we do. It provides that in a highly considered way fire fighters will take some risk to save saveable lives. They may take some risks to save saveable property but will not take any risk at all to try and save lives or properties that are already lost. The dynamic risk assessment model also supports the safe person concept.

In addition to those legislative and policy considerations, where it is unlikely that the cause of the fire can be determined for any useful learning to be gained, the New Zealand Fire Service may elect to discontinue an investigation, that is because the purpose of an investigation is to establish the cause and origin of a fire. Fire investigation relies heavily on maintaining an undisturbed fire scene.

Evidence left by the effects of fire such as burn packings, smoke layering and other directional indicators are used to determine where a fire started. That area is then investigated to find the point of origin and then the possible ignition sources in that location. If the scene has been significantly disturbed then it is unlikely that we would obtain any

5 1717

useful information about the cause. The more variables there are the greater the degree of uncertainty and likely inaccuracy. Any conclusion, conclusions drawn are likely to be helpful. As such unless we are certain of the cause of a fire the cause will be recorded as “undetermined”.

10

Q. Mr Wilding perhaps at this point if I can take you to operational, P3 which BUI.MAD249.0572.1

WITNESS REFERRED TO BUI.MAD249.0572.1

15 Q. So this is the operational instruction and is relevant to fire investigations, is that correct?

A. It is.

Q. And is your evidence that it is a living document so it's being updated as and when required?

20 A. That's correct, there's new technologies and new issues that emerge that require us to amend our, our operational instructions.

Q. Can we have page 7 in that series please. Now you'll see at the bottom of that page it refers to post-incident analysis reports. What's the purpose of those reports?

25 A. In addition to determining what has started a fire, the Fire Service recognises there's value in learning about how a building performed, how the fire suppression and detection systems operated and how people behaved so that we can inform the community which is part of our legislative mandate.

30 This, this section within the P3 was added some time after, in fact I think May 2012, this latest amendment, I think if you read, I refer you to the bottom of the page, the latest amendment. I actually had drafted this and had it as a draft operation instruction with our national manager of

standards at the time of the February earthquake and its adoption into our procedures was actually delayed because of the earthquake.

Q. So to be clear on that point this part of the operational instruction was not part of the operational instruction on the 22nd of February.

5 A. That's correct.

Q. 2010. Mr Wilding if you can continue reading at paragraph 23 please.

**WITNESS CONTINUES READING BRIEF OF EVIDENCE AT
PARAGRAPH 23**

10 A. A fire investigation was not undertaken at the CTV site because there was a lack of available specialist fire investigators to undertake the investigation.

I have spoken to the senior fire risk management officer for Christchurch. He, along with other on-call specialist fire investigators was committed to response functions and management roles for the first
15 11 hours after the earthquake and was not available to undertake a fire investigation. Following his 11 hours of duty he went home for a short break and then returned to assist the incident management team.

Although the Royal Commission is focused on the CTV site from a New Zealand Fire Service perspective it is important to remember that at the
20 time we were dealing with a devastating event across a wide area of damage, a number of critical sites across the city and a high number of persons reported missing. Resources were focused on all rescue efforts as well as responding to fires around the city during this time.

The New Zealand Fire Service operations at the CTV site were focused
25 on rescue, fire suppression to aid rescue and later assisting with body recovery. Throughout those phases the building was unsafe and could not be accessed for fire investigation purposes as it meant, as it was being delayed.

The collapse pattern meant, of the building meant that it was unstable
30 underfoot and significant aftershocks were being experienced. Even in the second week after the earthquake when I was on site we were still experiencing aftershocks of magnitude 3 and 4 which caused further movement in already compromised structures. To carry out an

investigation within the structure remains on this occasion, remains on this occasion would have put New Zealand Fire Service fire investigators at unaccepted, unacceptable physical risk. I refer again to the safe person concept and the dynamic risk assessment in particular.

5 The nature of the collapse meant that only a guess could have been made as to the cause of the fire. When we are investigating the cause of a fire we work progressively towards determining the area of origin, the point of origin and then towards finding a credible ignition source. At the CTV site this would have been impossible. Walls had come down, 10 the building had completely lost its integrity and everything had been moved about. The fire was reported as being deep seated. As a result and due to the nature of the collapse it would not have been possible to determine, even to determine an area of origin.

The later delayering of the building during the rescue and body recover 15 phases prevented any likelihood of gathering useful evidence about where and how the fire started. We have not looked at alternative sources of information such as the video footage or photographs because they are normally of limited value. To put this in context for the CTV building those sources may have given us a broad area where the 20 fire was located but it would not assist us in determining a point of origin or a credible ignition source for the fire. As I have stated a fire investigation relies heavily on maintaining an undetermined fire scene. Undisturbed sorry fire scene.

From early in the response there was a great deal of disturbance on the 25 fire scene at the CTV site. The extensive 'quake damage, coupled with the delayering and deconstruction that was necessary as part of the rescue operation and later the recovery operation meant that the scene was significantly disrupted from an evidential view point. As a result the New Zealand Fire Service considers that it would not have been able to 30 draw any credible and reliable conclusions about the origin and cause of the fire.

A reason for undertaking a fire investigation is to comment on the performance or availability of fire safety features in the building. The

fire safety features include automatic sprinklers, safe egress routes and alarm system rely on the structural integrity of the building as well as the maintenance of services to the building.

5 The fire safety features of the CTV building were immediately and catastrophically rendered useless by the earthquake and therefore any potential for learning was taken away. The New Zealand Fire Service consider that the fire at the CTV site started during or after the catastrophic building collapse but beyond that we have no credible information available to establish the cause.

10 The SMS report that refers to the incident type as “structure with fire damage” goes on to include some details about the fire. It notes various details about the possible heat source and the first object ignited and concludes that the indicated cause was earthquake. The information included in this section of the SMS report was the officer’s best guess
15 provided in order to complete the data fields but there was no way having regard to the nature and extent of the collapse that he could have definitively determined the first object ignited or the heat source.

Q. Can I just you at that point and maybe we could have a look at that SMS report which is BUI.MAD249.0574.1

20 **WITNESS REFERRED TO SMS REPORT**

Q. So this is the SMS incident report that you’re referring to?

A. It is.

Q. And you’ll note there that the incident type is listed as structure fire with damage which you’ve explained. You’ll see in the first section though it
25 says report completed Wednesday 9 March 2011. Do you know why the report was completed on that date?

A. It was, I’ve spoken to the officer who completed the report and he and a team of others in the region were attempting to close or complete reports for over 6000 incidents that had been generated during the
30 ‘quake period. The only information that he had available to him was the incident log which is the first pages of this report. He had no further information so it really was a best guess.

Q. And sorry if you can continue paragraph 24 from “While an earthquake”.

**WITNESS CONTINUES READING BRIEF OF EVIDENCE FROM
PARAGRAPH 24**

A. While an earthquake may create an environment where a fire may start the 'quake itself does not ignite combustibles therefore technically the
5 cause of this fire should have been listed as undetermined.

As a fatality was recorded in this report it was automatically referred to a specialist fire investigator Mr Graham Davies on the 29th of March 2011. Mr Davies added a notation in the report that the fire, the building collapsed in the earthquake and that no investigation was carried out.

10 Two further SMS reports and the numbers are listed were generated by the New Zealand Fire Service computer system for this event on the 22nd of February and were completed by two other fire crews from different stations. They recorded the event as an earthquake and as a structural, as a collapsed structure. As such there was no data fields
15 presented in either of these fields, of these reports which would have enabled the reporting officers to refer to the fire.

Q. And so just to be clear on that point, is that a case of them not filling it in or simply there's nothing on the form because of the way that the event had been described to enable this part to be filled in on the form.

20 1727

A. Your latter explanation, the report's automatically generated and if you select either of those options you don't get fields that talk about a fire situation.

Q. Paragraph 26 thank you.

25 A. It is common when dealing with large emergency incidents for the computer system to generate multiple event logs as different callers may refer to slightly different address points. However, these are usually collated by the communications centre staff into one event for one incident. In this case they were not because of the significant
30 number of emergency calls being generated at the time.

The New Zealand Fire Service has received no evidence to suggest that the fire started before the earthquake. There were no 111 calls prior to

the event and the automatic detection system was not triggered. Fire appliances self-deployed to the CTV site.

In the course of preparing this statement I have reviewed the witness statements before the Royal Commission of those who were in or around the CTV building at the time of the collapse or shortly after. There are a number of differing reports as to where the fire started and where it was located. They have also –

Q. Mr Wilding that should be “when the fire started,” is that correct, “and where it was located?”

10 A. Sorry it does say, “when the fire started and where it was located.” They have also stated its location at various points in the building making it difficult to be certain as to the fire’s exact location and cause. However, several of the statements indicate that the fire was most prevalent in the north to north-west area of the building and also around
15 the tower. New Zealand Fire Service personnel who crewed the first two appliances to arrive at the CTV building recall seeing a fire at the site and particularly in the area around the base of the tower, up the face of the tower and in the centre of the building.

New Zealand Fire Service are not aware of the cause of the fire or the
20 fuel source. The New Zealand Fire Service does not hold any records about the hazardous substances present at the CTV building. However, the New Zealand Fire Service understands that there may have been a nine kilo LPG cylinder in the building. The New Zealand Fire Service is not aware of where in the building such a cylinder may have been
25 stored. While flammable gas will obviously ignite if present with a credible ignition source it would be pure speculation to suggest that this was the initial fuel source and the New Zealand Fire Service will not speculate on fire cause.

There would have been a huge range of potential ignition sources and
30 considerable fire loading as with any commercial office building.

I have also seen the comments made by Graham Frost as to the potential for cars parked in the building to be a source of ignition and fuel the fire. Vehicles catch fire but, again, it is just one of a huge range

of potential sources and it is impossible on the basis of information available to determine whether that was the source of ignition. The reference text that the New Zealand Fire Service uses for fire investigation which is the National Fire Protection Association 921 Guide for Fire and Explosions Investigation states that it is, “Improper to opine a specific ignition source that has no evidence to support it even though all other hypothesised sources were eliminated.” That is the case here.

CROSS-EXAMINATION: MESSRS PALMER, REID, MILLS, ZARIFEH - NIL

10 CROSS-EXAMINATION: MR ELLIOTT

Q. Mr Wilding thank you for coming here and giving that detailed evidence. I'll just refer you firstly to the document attached to your statement which Ms Smith referred you to. It's BUI.MAD249.0572.7. This is page 7 of the attachment.

15 A. I'll just wait for it to come up, yes I can see it.

Q. And you were referred to that section down the bottom there which begins, “The Fire Service Act obligates,” et cetera and I think you made a comment that this part of the document was added after 2011, in fact in 2012.

20 A. That's correct.

Q. Is it right though that the obligations which are referred to there from the Fire Service Act would have been in existence in 2011?

A. The mechanisms that we had as an organisation were not present and I'll refer you back to the very beginning of P3 which is this document which refers to the purpose. If we can look at page 1 of the document, the purpose of fire investigation.

25 Q. Yes.

A. So page 2.

Q. So you're looking for the next page?

30 A. Yes please.

Q. That's 0572.2.

A. At the very first line, "All fire incidents attended by the fire service are required to be investigated to establish cause," and if we look down the bottom of that page under definitions the cause means the means by which a possible fuel source is brought into contact with a possible ignition source to start the fire. That was the focus of our fire investigations and it was the, I actually conducted a review of our fire investigation processes in 2008 and '09 and concluded that we needed a more comprehensive investigation of fires, hence the development of the PIA process.

10 Q. I see but I think from what you've said the fact is that some consideration was given to investigating the fire but the decision was made not to do so?

A. By the time we had the opportunity, well there were several issues stacking up. Initially operational requirements where the focus was on life, preservation of life and then on recovery and in, in both of those priorities there was considerable disruption of evidence and de-layering and deconstruction. So by the time we got to a point where we could actually carry out a fire investigation the scene was so compromised there was no fire investigation done.

20 Q. So you're referring there to the reasons you've given in paragraph 23 of your evidence aren't you?

A. That's correct.

Q. It would be possible I suppose even now to interview people with some knowledge of the building to identify possible ignition sources and fuel sources in the building?

25 A. Yeah I believe I've, well I've referred it to a number of times in my brief that this was a commercial office building with several floors. There would have been hundreds if not thousands of potential ignition sources. That would provide no useable information. We had electrical sources, we had numerous types, heating, lighting and many other types, and that's just electrical and there's many, many more. So people could tell us what potentially could have caused the fire but that's valueless.

30

Q. And you know that without having actually looked at that sort of evidence here just because of the type of building it was likely to have been?

5 A. Any building, in fact a house, it doesn't need to be a multi-storey building but a multi-storey building will have multiple sources of ignition. Anything that will initiate, provide sufficient energy to initiate a fire with the fuel.

10 Q. So if you were to try and map out where potential fuel sources or ignition points were you're really saying that map would extend across every part of the building and every level of the building?

A. That is correct.

15 Q. And so if one was to carry out the, an investigation of the sources of information you've referred to such as video footage or photographs or witness' statements I imagine that that could yield some indication about where the fire may have started and where it burned? That would be right?

20 A. No I don't believe it would have been. You had a pancake scenario. You could have had horizontal fire travel coming out one end of the building when the fire was at another end of the building. So an external view would have really been unhelpful to us. It wouldn't have led us to other conclude that a fire started at some stage in the building. It wouldn't have even given us a start time because it would have taken time to develop and then travel. So when, there's a difference in being able to identify possible ignition sources and to identify the ignition source and that's what's important for us if we were to get learning from this.

25 Q. I see. So the reference in paragraph 23.4 where you say, "We've not looked at alternative sources of information," et cetera, but then you go on to say in paragraph 23.5 that you consider that it would not have been possible to draw conclusions. The question I was going to ask you, well how can you say that it wasn't possible without having looked at those sources of information in paragraph 23.4. Perhaps you've answered that already?

30

1737

A. I think I have.

Q. So is it the Fire Service's position that it's not possible to derive any learnings at all from this situation?

5 A. I would put to the Inquiry that it would be impossible to determine what caused the fire.

Q. But what about any other points of learning such as whether there are or could have been potential safety features that could have been incorporated into the design or construction that might have helped
10 minimise injury or death?

A. At the time we didn't have the investigation processes to do that. Even now, we've got the PIA process, the Post Incident Analysis process which relies on a series of triggers and this building collapse would have met some of those triggers but you'll notice even in the operational
15 instruction, in fact allow me to refer you to that again. I think it's on one of the last pages of the operation instruction, P3, page 8.

Q. BUI.MAD249.0572.8.

A. The very last note. Up above it you'll see bullet points which are triggers where a specialist fire investigator was to notify a fire engineer.
20 Then if you follow that process there is to be a discussion around what learning that could potentially be gained. At the bottom it says, "Note. Contacting the on-call fire engineer does not generate an automatic response of a fire engineer to an incident." We need to be sure that we will get some benefit out of doing that and I think you've seen images of
25 this site where there was just absolute devastation and total collapse. So to suggest that we would be looking at sprinkler systems or something like that, the system would have just been rendered absolutely useless. It was on that basis we decided there would just not be worthwhile putting time into trying to do further investigation.

30 Q. I appreciate your point about the risk to safety in terms of people being on the building during subsequent earthquakes. What about the possibility of keeping some record, photographic record, during the

delaying process. Would that have yielded some information of any use?

5 A. If you've seen the images you just had a massive rubble pile. It's very different to extracting a member of the, a girder, concrete member, and then putting it aside to examine later. If we're trying to look at patterns of fire going up walls which no longer exist or it's in multiple parts, photographic evidence would be very difficult.

Q. And it would be possible wouldn't it to distinguish between ignition point and fuel source, wouldn't it?

10 A. Can you explain that?

Q. You've referred to ignition points as potentially the electrical connections and so on but they wouldn't be a fuel source would they?

15 A. Well there's two different things you're talking about. Fuel sources are combustible, something that will burn. An ignition source is something that will provide heat to ignite the combustible. I'm not sure what you're question is.

Q. Well I'm just asking if there's a distinction between the two and I think you're saying there is, and so you could narrow down the number of fuel sources that would have been within that building I take it?

20 A. Not really because everything from flooring to walls to ceilings and all furnishings inside. There's very little that won't burn short of concrete and steel. There would just be no way a credible fire investigation could identify what started the fire. A lot of things would have burnt without a doubt but fire would have transferred from one to another and our job in investigation is to try and trace that back. We had a scene where that was just not possible.

Q. So you're really saying it's not possible not only to not distinguish the ignition point, but to distinguish how it continued to burn, where it burned and what caused it to continue to burn.

30 A. It could have burnt down, along and up or down the other way. There's just no way – and if you look at the state of the building in those photographs, the pile of debris such as it was, there was just no way to trace that.

Q. And in these points this is the reason why you can't give any definitive position about whether Mr Frost was correct or not about the cars being a fuel source, is that right?

5 A. There is an enormous number of potential fuel sources so it would be speculation to say one or the another and as I've referred to on my last page of my brief. It's actually – the document which we use as our guiding reference and fire investigation in the New Zealand Fire Service and in most modern fire services in the world refer to this document. It's improper to suggest an ignition source, opine a specific ignition source
10 that has no evidence to support it even though all other hypothesised sources were eliminated.

Q. And just finally, are there any safety features of which you're aware that might have been incorporated into the design or construction that might have helped to minimise the risk of injury or death in some way here?

15 A. You're asking?

Q. I'm asking if you know of any potential safety features that may have been incorporated?

OBJECTION: MS SMITH (17:43:00)

CROSS-EXAMINATION: MR ELLIOTT

20 Q. Were there any safety features that could have been incorporated into this, or potentially other buildings, to help to minimise the risk of injury or death due to fire and I'll say in either a partial or full collapse of the building?

A. I think your question is one around fire engineering which is outside of
25 my brief. I did talk to the Director of Fire Engineering for the New Zealand Fire Service, Dr Paula Beever and we both agreed that due to the level of destruction, attempting to examine what was in place in that building was not going to yield anything because of the level of destruction. What might be able to go into buildings is something I can't
30 answer.

RE-EXAMINATION: MS SMITH – NIL**QUESTIONS FROM COMMISSIONER FENWICK - NIL****QUESTIONS FROM COMMISSIONER CARTER - NIL****QUESTIONS FROM THE JUSTICE COOPER:**

5 Q. Just one question about these documents I suppose they are that you referred to in paragraph 20, the Safe Person Concept and the Dynamic Risk Assessment. Are they part of operational instruction P3 or are they independent of that?

10 A. They are independent of it. They're part of our operational instructions and they describe the way our staff are to assess risk in order to determine whether they should undertake any action or not. I understood it was going to be attached as part of evidence. I'll just if I can – section 21, it's referred to there. Sorry, my brief in paragraph 21, they Dynamic Risk Assessment model should be attached to that.

15 Q. The Dynamic Risk Assessment model also supports the Safe Person Concept. So perhaps we could have that document up, BUI.MAD249.0573. That's that.

20 A. That's the flow chart and you will see there's a process they follow and at the bottom it's either they should proceed with the task or there is actually a recognised and accepted action, do not proceed if –

Q. Yes. This is a flow chart which is summarising material which is stated more extensively in a couple of documents I take it?

A. Which is the Safe Person Concept Your Honour, which should also be attached.

25

MS SMITH ADDRESSES THE COMMISSION

QUESTION FROM JUSTICE COOPER CONTINUES:

A. There is the over-riding principles of the Safe Person Concept, are actually stated in 20, 20.1, 2 and 3. It's obviously much expanded on that but it talks about the levels of acceptable risk.

5 1747

Q. Yes, all right. Thank you. Thank you for coming. You've had a bit of a wait today and so thank you for sitting late with us.

WITNESS EXCUSED

10 **JUSTICE COOPER:**

Mr Mills, has –

MR REID:

(inaudible 17:47:20) that relates to the brief of evidence for Bill William Dray, so that is a matter that was dealt with by the Council and has been provided to the Commission. He is the individual who considered the demolition consent application for the next door building so that's been provided and I'm not sure how the Commission wants to deal with that but perhaps that can also be taken as read.

20

JUSTICE COOPER:

Well is that what's suggested, is that what you're suggesting Mr Reid?

MR REID:

25 Yes Sir.

MR ELLIOTT:

Your Honour I think the brief arises from my request. This relates to the decision to grant the permit to demolish next door. We received it, I'm sorry I haven't read it yet myself and I don't think my colleagues have seen it. I suspect we could – if the Commission was willing to receive it I don't imagine

30

there'll be any questions arising from it, although I am conscious that other counsel might not have seen it either.

JUSTICE COOPER:

5 Mr Palmer, do you know about this?

MR PALMER:

I know Sir, but I had a view with the basis that we have time to review it.

10 **JUSTICE COOPER:**

Well I'm not going to receive it unless it's by consent and we can't have consent, so do you want to take that further Mr Reid, you'll have to just confer with counsel and work out how that is to be done.

15 **MR MILLS:**

(inaudible 15:49:06).

JUSTICE COOPER:

Yes.

20

MR MILLS:

Then when we resume for the closing or whenever.

JUSTICE COOPER:

25 Yes, well I had nursed the fond hope that we would finish the evidence today so it's not – I'm not very pleased to have a loose end such as this, however so be it. Now has there been agreement as to process for exchange of submissions?

30 **MR MILLS:**

I think sufficiently to give it that description. There's been some moving of dates of course as a result of the fact that we didn't expect to sit today but I did mention it at least to Mr Rennie that the likelihood now was that the

submissions, closing submissions from counsel assisting would come in Monday week and the likelihood then would be that the hearing dates for the closing submissions be delivered from counsel assisting and from the affected parties who wish to deliver closing submissions would be the week following

5 and probably the Wednesday, Thursday but there's a little bit of discussion needs to take place with the Chief Executive of the Commission about dates, but that ...

JUSTICE COOPER:

10 I had a discussion with her in which I was told that the suggestion was that we hear the closing submissions on Wednesday and Thursday, 5 and 6 September.

MR MILLS:

15 If you've had that confirming discussion. I hadn't had the confirming discussion, but that's certainly what I had in mind.

JUSTICE COOPER:

Well I'm content with that.

20

MR MILLS:

So we'll formalise this including the order of address and so on and we'll advise affected parties of that.

25 **JUSTICE COOPER:**

Well I was planning to make an order. If the affected parties' submissions are a week following those of counsel assisting, is that what's intended?

MR MILLS:

30 That is what's intended yes, we would have ours in on the Monday and then ...

JUSTICE COOPER:

That would be Monday the 27th, so it seems that one always ends up between two months when one's doing this sort of exercise without a calendar, but – Monday the 3rd. Can we hear them on the 5th and 6th? Not much time is it?

5 **MR MILLS:**

Are you thinking two days isn't much time?

JUSTICE COOPER:

No I'm sure two days will probably suffice, but we would be starting effectively
10 two days after submissions have been completed but that's all right.

MR MILLS:

I'm not pressing out of desire to have it on that tight timetable but you're well aware as I am of the schedule the Commission's running to and one way or
15 another we'll just have to try and accommodate this as counsel at any rate.

JUSTICE COOPER:

Does anyone wish to say anything about this subject?

20 **MR PALMER:**

Just that if we're going to involve Mr Rennie in this Sir he's got some long term commitments out of New Zealand after the 8th of September.

JUSTICE COOPER:

25 Well we have long term commitments in New Zealand Mr Palmer and I'm inclined to think they should have preference.

MR PALMER:

I realise that Sir but I was just saying that senior counsel's only available up to
30 the 8th.

JUSTICE COOPER:

It must have been the way you started out to say that Mr Palmer, so that's convenient for him?

MR PALMER:

5 Yes Sir.

JUSTICE COOPER:

Well what do you say in those circumstances is yes, that's acceptable Your Honour and then there's no need for that kind of misunderstanding.

10

MR PALMER:

That's acceptable Sir.

JUSTICE COOPER:

15 I now order submissions from counsel assisting will be filed on or before the 27th of August. Those of any other affected parties wishing to make submissions by the 3rd of September, and we will hear them on the two days commencing 5th of September. Can I rely on counsel to ensure that those who might be affected by the orders just made are aware of them, those who
20 may not be here at the moment?

MR MILLS:

Can we just ask you one other matter before you go and that is whether the Commissioners have any view on the order in which they want closings
25 presented. I've had a brief discussion about it with Mr Rennie, with no others but it's conceivable the Commission might have a view, if you want to think about it.

JUSTICE COOPER:

30 I don't have a view at the moment. It may be that – I think I prefer to leave that to counsel to work out and I would resolve any differences of view. Is that acceptable?

MR MILLS:

Yes, I don't think there will be any differences of view, I think it will just follow the normal course in the High Court where we'll address last.

5 JUSTICE COOPER:

I think that would be consistent also with the nature of the inquiry and also in this case of course other parties would have had the benefit of seeing your submissions in advance. I will leave it on the basis that counsel can agree an order but I will resolve any differences that there may be. So it only remains
10 for us to thank counsel for their assistance and indeed all those who have been involved in the preparation of the evidence that has been so comprehensively called before us and we look forward to a continuation of that assistance when the hearing resumes for submissions.

15 HEARING ADJOURNS: 5.56 PM

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