IN THE HIGH COURT OF NEW ZEALAND
AUCKLAND REGISTRY

I TE KŌTI MATUA O AOTEAROA
TĀMAKI MAKAURAU ROHE

CIV-2014-404-000716
[2024] NZHC 32

IN THE MATTER OF	The GORE STREET APARTMENTS also known as "HARBOUR OAKS"
BETWEEN	BODY CORPORATE 366567 First Plaintiff
	AMER LIMITED & ORS Second Plaintiffs
AND	AUCKLAND COUNCIL First Defendant
	CLARK BROWN ARCHITECTS LIMITED (In Liquidation) Second Defendant
	(see over for further Defendants)

Hearing:	2-6; 9-13; 16-17; 23-27 & 30-31 May 2022 1-3; 6-10; 13-17; 20-21; 23-24 & 27-30 June 2022 1; 4-8; 11-15; 18-22 & 25-29 July 2022 1-5; 8-12; 15-19; 22-26 & 29-31 August 2022 1-2; 13-16; 21-23 & 27 September 2022 Further submissions on 28 September and 10 October 2022
Appearances:	G M Illingworth KC, D Powell, G Lewis, M Greenhalgh, S Zellman and N Prachankhet for the Plaintiffs C M Meechan KC, S Price, A Lloyd, C Fairnie, M Ferrier, I Kim, E Powell and G Duthie for the First Defendant Q Davies and E-J Tucker for the Fourth Defendant S-J Telford, E Tobeck and L Aspin for the Tenth Defendant (until discontinuance)
Judgment:	30 January 2024
Reissued:	26 March 2024

JUDGMENT OF WALKER J

This judgment was delivered by me on 30 January 2024 at 11.30 am
Pursuant to Rule 11.5 High Court Rules

Registrar/Deputy Registrar

PM DEVELOPMENTS LIMITED
(Struck off)
Third Defendant

EQUUS INDUSTRIES LIMITED
Fourth Defendant

MAPEI NEW ZEALAND LIMITED
(In liquidation)
Fifth Defendant

AQUASTOP LIMITED
Sixth Defendant

CHARLES NORAGER & SON LIMITED
(In Liquidation)
Seventh Defendant

HOLMES FIRE & SAFETY LIMITED
Eighth Defendant

FIREPEL KIDD LIMITED
Ninth Defendant

MACDONALD BARNETT PARTNERS LIMITED
(Discontinued)
Tenth Defendant

HOLMES STRUCTURES LIMITED
(Discontinued)
Eleventh Defendant

CHENERY CONTRACTING LIMITED
Twelfth Defendant

ZURICH AUSTRALIAN INSURANCE LIMITED
(Claim discontinued)

BROOKFIELD MULTIPLEX CONSTRUCTIONS (NZ) LIMITED
(In Liquidation)
First Third Party

DE BOER WATERPROOFING SOLUTIONS NV
(Discontinued)
Second Third Party

SUMMARY OF FINDINGS

[1] This summary is intended only as an aid to readers and is not part of the formal judgment.

Preliminary

[2] The Body Corporate has standing to claim the reasonable cost of repair in respect of claimed defects 1 to 12. The second plaintiffs are the proper plaintiffs in respect of claimed defect 13 which is limited to unit property and does not otherwise fall within s 138 of the Unit Titles Act 2010.

[3] Subject to [2] I find that second plaintiff assignees are entitled to claim the cost of repair for which they will be liable and for which the previous owners from whom they purchased will not be liable.

Claimed fire defects

[4] In relation to claimed defect 1, I find in favour of the plaintiffs against Auckland Council and Holmes Fire & Safety Limited ("Holmes") jointly and severally in respect of the unprotected steel elements beams B4 and B5 only. I dismiss the claim against Clark Brown Architects Limited (in liquidation) ("Clark Brown").

[5] In relation to claimed defects 2 and 3, I find against the plaintiffs on the basis that they have not established that these are actionable defects for which there is any liability.

[6] In relation to claimed defect 7, I find in favour of the plaintiffs against Auckland Council and Holmes jointly and severally. I find for the plaintiffs against Chenery Contracting Limited ("Chenery") only to the extent of the firestopping which it installed (and will hear further submissions as to that extent).

Claimed structural defects

[7] In relation to claimed defect 4, I find that Auckland Council breached its duty of care but the claim is time-barred under s 393 of the Building Act 2004.

[8] In relation to claimed defect 5, I find that the plaintiffs have not established that it is an actionable structural defect for which there is any liability. (Refer claimed defect 8).

[9] In relation to claimed defect 6, I find that the absence of grouting of bar sleeves on levels 19 and 22 only is an actionable defect but Auckland Council did not breach any duty of care. I therefore find against the plaintiffs in relation to claimed defect 6. I further find that this claim is time-barred under s 393 of the Building Act 2004.

Claimed external moisture defects

[10] In relation to claimed defect 8, I find in favour of the plaintiffs against Auckland Council, Clark Brown and Mapei New Zealand Limited (in liquidation) ("Mapei") jointly and severally to the extent of and limited to the membrane weatherproofing aspect on:

(a) corner balconies;

(b) narrow balconies with beam to column junctions where there is no waterproofing membrane in the beam to column gaps.

[11] In relation to claimed defect 8, I further find in favour of the plaintiffs against Mapei in respect of the waterproofing on the level 38 deck.

[12] In relation to claimed defect 9, I find that the plaintiffs have not established that it is an actionable defect so Auckland Council is not answerable for it.

[13] In relation to claimed defect 10, I:

(a) find in favour of the plaintiffs against Auckland Council and Clark Brown jointly and severally;

(b) dismiss the plaintiffs' claim against Equus Industries Limited ("Equus") and Mapei;

(c) dismiss Mapei's crossclaim against Equus and the Council's crossclaim against Equus.

[14] In relation to claimed defect 11, I find in favour of the plaintiffs against Auckland Council and Clark Brown jointly and severally.

[15] In relation to claimed defect 11 I find against the plaintiffs in respect of their claim against Equus and against Auckland Council's crossclaim against Equus.

Internal moisture defects

[16] In relation to claimed defect 12:

(a) I find that Auckland Council and Clark Brown breached their respective duties of care in respect of the bath edge detail but the claim is time-barred under s 4 of the Limitation Act 1950.

(b) The non-conforming shower screen issue is not an actionable defect.

[17] In relation to claimed defect 13, I find in favour of the plaintiffs:

(a) against Auckland Council and Mapei jointly and severally in respect of the lack of membrane upstands at the door architraves; and

(b) against Auckland Council in respect of floors without a fall to the waste in those bathrooms with a shower over the bath and in all bathrooms where the floor falls to the door threshold.

[18] In relation to claimed defect 13, I find against the plaintiffs in respect of the height of the membrane upstands.

Affirmative defences

[19] I dismiss the limitation defence pleaded under s 4 of the Limitation Act 1950 in relation to claimed defect 10.

[20] I uphold the limitation defence pleaded under s 4 of the Limitation Act 1950 in respect of claimed defect 12 and find that claimed defect 12 is time-barred.

[21] I dismiss the limitation defence pleaded under s 393 of the Building Act 2004 in respect of claimed defects 1, 2 and 9.

[22] I uphold the limitation defence pleaded under s 393 of the Building Act 2004 in respect of claimed defects 3, 4 and 6.

[23] The claims against Equus Industries Limited or Holmes Fire & Safety are not time-barred.

[24] Other than the cross claims expressly dealt with, I reserve for further submission any extant cross claim.

Remediation and quantum

[25] The plaintiffs approached the question of remediation and reasonable cost of repair on a global project basis rather than a defect by defect remediation basis. The Court's findings on liability mean that approach is inutile. The remedial costs claim requires adjustment to reflect the partial success only and consequent impact on the scope of interrelated repair work for which liability is found. This requires further submissions from the parties.

[26] I make findings on the following contested aspects of remediation and quantum:

(a) The plaintiffs are entitled to rely on, as admissible hearsay, the evidence of the tender submitted by the contractor.

(b) A contingency of 10 percent in the assessment of overall cost is appropriate.

(c) Prolongation is a separate consideration but care must be taken to avoid "double-dipping". The proved defects and their nature will inform the appropriate prolongation factor on which further submissions are required.

(d) An ANARP (as near as reasonably practicable) approach to remediation of claimed defect 7 is rejected.

(e) A professional fee sum of 15 percent on the as yet to be determined remediation cost of repair in respect of proven defects is appropriate.

(f) The hotel lost profit claims by Harbour Residences is dismissed.

(g) The three second plaintiffs who claimed compensation for loss suffered on the sale of their unit succeed in their claimed head of damages.

(h) The second plaintiffs who are natural persons are entitled to general damages in accordance with the plaintiffs' closing submissions, according to whether they are joint or sole owner occupiers or absentee owners. Second plaintiff assignees are not entitled to general damages. Owners of more than one unit are only entitled to one award. GST is not payable in respect of general damages.

(i) No betterment is established in respect of the replacement of the joinery at the podium and adjacent to the balconies.

(j) There is some betterment in relation to the level 3 canopy roof in respect of some but not all aspects of the proposed remediation. The

level of betterment is to be determined after hearing further from the parties.

(k) Any damages payable to the Body Corporate are on a GST exclusive basis.

(l) Any damages payable to the second plaintiffs in respect of claimed defect 13 and who use their apartment for short stay accommodation is net of GST. Damages payable to other second plaintiffs are on a GST inclusive basis save in respect of general damages.

(m) The affirmative defence of failure to mitigate in relation to claimed defect 10 fails.

[27] Some allowance for contributory negligence of purchasers of units after the March 2010 AGM minutes will be determined after hearing further from the parties for the reasons identified in the judgment. Provisional indications are given in the judgment in Part VI.

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PART I — PRELIMINARY MATTERS

[1] This colossal case concerns a 40 level apartment building in Gore Street, Auckland Central. The building has undergone many name changes in its lifetime. In this judgment I refer to the building as "Gore Street".[1] It was constructed between June 2004 and September 2006. At the time of its construction it was the tallest residential building in New Zealand. The owners of units in Gore Street say that while they thought they were buying into a well-constructed building of solid concrete construction, it suffers in fact from extensive building defects. As a result, they have been confronted with never ending problems, potential health and safety risks and now face enormous costs to remediate the building.

[2] The Body Corporate, unit owners (present and some past) and a hotel management company which manages a serviced accommodation business sue Auckland Council ("the Council") and parties involved in its construction. They sue in negligence. They say the defendants must meet the cost of repairs along with their consequential losses. The total quantum of the claim has been revised many times. At closing the total quantum was just over $157 million with most of that sum comprising the anticipated cost of remedial works.[2]

[3] The simplicity of the plaintiffs' proposition belies the complexity of a case which commenced in 2014 and was finally heard eight years later over the course of a five month hearing. Over 55 experts provided evidence comprising thousands of pages of technical material. In addition, there are just over five thousand pages of notes of evidence. The experts included fire and structural engineers, quantity and building surveyors, acoustic engineers, software modelling experts, conveyancing and accounting experts. A palpable feature of this case, relative even to other building defect cases, is the breadth of divergence between the parties' respective experts which persisted even after the experts caucused in a bid to reach common ground.

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1 The names by which this building has been known include "Harbour Oaks, "Harbour City Residences" and "Harbour City Oaks".

2 That quantum does not include Goods and Services Tax, if payable.

[4] There are 13 claimed defects, each pleaded at a high level of generality. These claimed defects are not limited to weathertightness issues but encompass alleged significant shortcomings in the fire safety and structural elements of the building. Broadly, the plaintiffs' experts say:

(a) If a significant fire develops in the tower of Gore Street there is likely to be damage to fire separation walls, rapid spread of fire and smoke and structural failures including in the staircases.

(b) The structural elements including staircases, weld connections, post-tensioned floors and solid balustrades are not designed and constructed to perform as they should in earthquake events. If a significant earthquake does occur there is a risk of structural failures, harm to occupants and significant damage to property.

[5] The claimed waterproofing failures are both external and internal, throughout Gore Street. The plaintiffs say:

(a) The corner apartment balconies are leaking into units below and the narrow apartment balconies are leaking into the concrete structure.

(b) The level 1 podium allows leaks into the concrete structure and carpark below and the level 3 canopy roof leaks at the junction with the balconies at the base of the tower causing decay damage to timber framing below.

(c) In the bathrooms, water discharges from baths onto and behind wall linings causing mould and other damage. In addition, the bathrooms do not adequately contain water resulting in damage to bathroom door thresholds, and flooring and carpets outside the bathrooms.

Scheme of this judgment

[6] In this introductory part I introduce the parties and their place in the proceedings. I also discuss the legal framework including an important gateway issue

as to which plaintiffs have standing to sue and the nature of the duties owed by a council as part of its regulatory function.

[7] I then turn to the claimed defects which are grouped as follows:

(a) Part II — fire defects.

(b) Part III — earthquake defects.

(c) Part IV — external moisture defects.

(d) Part V — internal moisture defects.

[8] The roadmap to dealing with the claimed defects generally proceeds in this way:

(a) Introduction and context.

(b) What is the alleged problem?

(c) Who is said to be responsible?

(d) Summary of respective cases in a nutshell.

(e) What is the physical state of affairs?

(f) How did the physical state of affairs come about?

(g) Is the claimed defect actionable?

(h) Did the Council breach its duty of care?

(i) Did any other defendant breach its duty of care?

[9] In Part VI I turn to the affirmative defences pleaded and finally remediation scope and quantum issues in Part VII.

Parties

Plaintiffs

[10] The first plaintiff is the Body Corporate. It has a duty to carry out repairs under s 138 of the Unit Titles Act 2010. It has led this litigation on behalf of the second plaintiff owners, engaging remediation building consultants to investigate Gore Street and prepare remedial designs. It also engaged quantity surveyors to undertake a procurement and tender process for proposed remedial works for which the Council granted building consent in January 2021. A contractor is appointed and is ready to commence work on 6 months' notice. The plaintiffs intend to proceed with remedial works as soon as funds permit. The Body Corporate has obtained the High Court's approval for a remediation scheme under s 74 of the Unit Titles Act.

[11] The second plaintiffs are the present or past owners of 400 units. They include owner occupiers, investors, the Auckland Sailor's Home charitable trust, and a hotel management company. The investor owners mainly reside in New Zealand but some live overseas. The Owners served 621 briefs of evidence. In their briefs they record the purchase of their units, their GST status, a list of chattels and, in the case of natural owners, the distress and anxiety they have suffered as a result of the claimed building defects. By consent of the parties, a cohort of Owners gave evidence and were cross-examined in a parallel process before the Deputy Registrar of the High Court. Their evidence was audio-visually recorded for the benefit of the Court.

[12] In addition to claiming damages representing the cost of remedial work, the Owners seek consequential loss damages (including alternative accommodation costs) and general damages to reflect the distress and inconvenience they have faced as a result of the claimed defects. The claim to general damages is $4.62 million. Additionally, the hotel management company which manages a pool of units on behalf of owners, claims anticipated loss of profits it says it will suffer during the planned remediation.

[13] The Owners purchased their apartments at different times. This is relevant to the pleaded affirmative defences. Some purchased in the period between July 2009 and July 2011, at a time when few purchasers obtained Body Corporate minutes before

purchase. After June 2011 Body Corporate AGM minutes were generally given to purchasers with pre-contract disclosure statements.[3] The plaintiffs say that it was only in 2013 that the minutes recorded anything of any significance. This is hotly contested by the Council. Owners who purchased after the court proceedings commenced bought with knowledge of the claimed defects. They took assignments of the vendor's claims. The Council disputes the effect of these assignments.[4]

Defendants

[14] With the exception of the Council, the defendants were all involved in the construction of Gore Street as designers, architects and engineers sub-contracted by the principal contractor, Multiplex Construction New Zealand Limited ("Multiplex") or as suppliers of product to sub-contractors.

[15] Multiplex is not a defendant in the proceeding.[5] It went into liquidation before the proceeding was commenced. Claims against some of the defendants have been settled and/or discontinued for the same or other reasons.[6] By the time of trial three defendant parties actively defended the claims — the Council, Equus Industries Limited ("Equus") and MacDonald Barnett Partners Limited ("MacDonald Barnett"). The claim against MacDonald Barnett (and crossclaim by the Council) settled during trial.

[16] The plaintiffs pressed claims against parties which filed a defence but did not actively defend the proceedings. This includes Holmes Fire & Safety Limited ("Holmes"), Mapei New Zealand Limited (in liquidation) ("Mapei"), Clark Brown Architects Limited (in liquidation) ("Clark Brown") and Chenery Contracting Limited ("Chenery"). The plaintiffs seek judgment by way of formal proof against those inactive defendants. As statements of defence were filed, the relevant rule is r 10.7 of the High Court Rules 2016. The plaintiffs must prove the cause of action so far as the burden of proof lies on the plaintiffs.

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3 This was required under s 146 of the Unit Titles At 2010.

4 In closing, the second plaintiffs provided a 95 page unit Owner analysis setting out the dates of purchase and documents seen by the purchasers.

5 Multiplex became Brookfield Multiplex Constructions (NZ) Limited.

6 The third and sixth defendants have been removed from the Companies Register. The claim against the seventh defendant was stayed upon liquidation on 31 July 2015. The claims against the ninth, 10th, 11th and 13th defendants were discontinued.

[17] Due to the absence of many parties, particularly Multiplex, there are significant evidential gaps. Those gaps have consequences. For the most part, the factual narrative, and some assumptions underpinning expert opinion, required a retrospective piecing together of contemporaneous material. That material was far from complete given the passage of time but also because of an apparent lack of record keeping.

[18] The plaintiffs sue the Council in negligence alleging a failure to exercise reasonable skill and care in performing its three regulatory functions — consenting, inspection and compliance — under the Building Act 1991 ("1991 Act") and Building Act 2004 ("2004 Act").[7] The claim against the Council spans all claimed defects but not all stages of the regulatory process are in issue in respect of each claimed defect.

[19] The Council accepts that it owed a duty of care to the second plaintiffs but denies that duty was breached in any respect. Save for that admission, it otherwise contests or puts the plaintiffs to proof on virtually all aspects of the claims. It does not seek to disprove the plaintiffs' case because it says that is not the role of a defendant. It does not accept that each pleaded "defect" exists and that the physical state of affairs at Gore Street results in a building that does not comply with the Building Code. It challenges the ability of the Body Corporate to sue for the cost of repairs, the reasonableness of the proposed scope of repairs and the estimated cost to carry out repairs. It argues that many claims were not brought in time and are therefore time barred under legislation. Other affirmative defences such as contributory negligence and failure to mitigate loss are also raised.

[20] The plaintiffs sue the architect, Clark Brown, for alleged negligent preparation of plans and specifications at the design stage in relation to six claimed defects. It sues Clark Brown for alleged negligence in the course of construction observation in relation to ten claimed defects. They claim the cost of remedial work, losses on sale (pro-rated), consequential losses (pro-rated), fees and general damages. Clark Brown filed a statement of defence in which it pleaded, among other things, a contractual limitation of liability.

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7 Auckland Council is sued as successor to the liabilities of the Auckland City Council.

[21] Equus is an importer and supplier of waterproofing products. It supplied torch-on membranes applied to the pool area/planter box on the level 1 podium and the level 3 canopy roof. It issued producer statements in relation to the installation of the membranes. The plaintiffs say that Equus undertook quality and assurance checks of the membrane installed by one of its approved applicators, Aquastop. The plaintiffs allege that Equus breached its duty of care by failing to identify the pool deck podium defects, issuing a producer statement in the terms it did and issuing producer statements for the level 3 canopy roof in light of the defective construction. The claims against Equus thus relate only to two claimed defects and their proposed remediation.

[22] Equus accepts that it owed a duty of care to the plaintiffs but disputes the scope of that duty and any breach. It actively defended the claims against it and pleaded affirmative defences including limitation.

[23] Chenery was engaged by Multiplex to undertake plumbing work including the fire sealing of penetrations. The claim against Chenery relates to one claimed defect only. Notwithstanding it faces one claim, the losses claimed against Chenery are in excess of $57 million.

[24] Mapei manufactures and supplies waterproofing products. It supplied product for the Gore Street balconies, the main terrace on the level 1 podium and the bathroom and shower floors. It also reviewed the installation of these membranes. The plaintiffs say that Mapei's breaches are causative of three claimed defects. They claim remediation costs of around $79 million in addition to consequential losses. Mapei is also in liquidation.[8]

[25] The eighth defendant, Holmes, was the fire engineer engaged in relation to the design and construction of Gore Street. It was involved with the project between 2004 and 2006. Holmes ceased trading on 1 April 2012 and was removed from the Companies Register on 3 October 2014. It was restored in 2018. The plaintiffs claim that Holmes failed to exercise due skill and care in preparing the fire designs, carrying out construction inspection and when issuing 'certification' in letter form (the import of which is contested). They sue Holmes in respect of the claimed fire defects.

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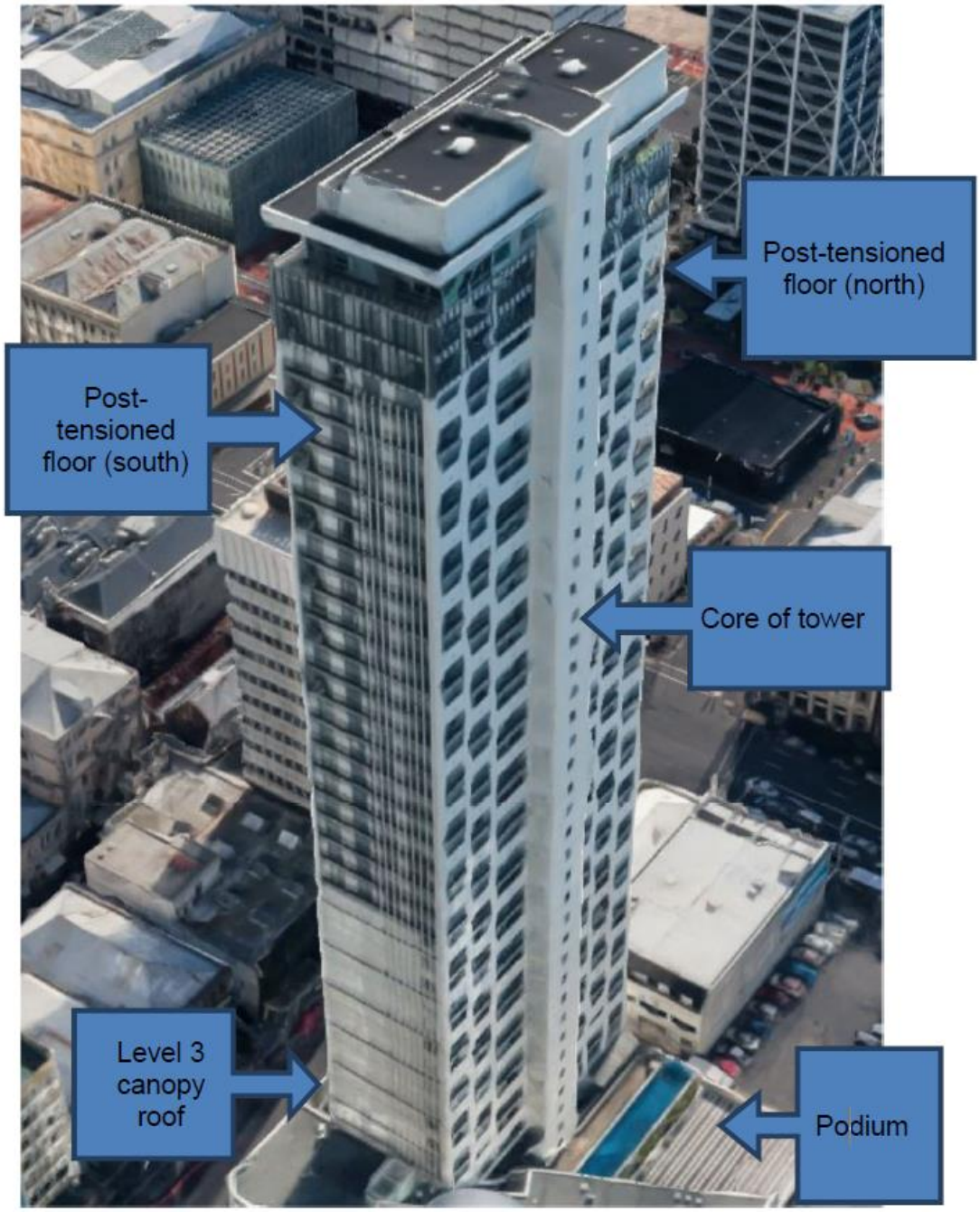
[8] The Court granted leave to continue the claims against Mapei on 6 May 2022.

[26] The plaintiffs reached a settlement with underwriters of an insurance policy held by Holmes. That did not however finally resolve the claims against Holmes. Holmes did not take any active role at trial although a principal of Holmes was called by the Council to give evidence and an expert fire engineer engaged by Holmes prior to that settlement also gave evidence on behalf of the Council. Crossclaims against Holmes were not pressed at trial.

[27] The 13th defendant, Zurich Australian Limited, was granted leave to withdraw on the first day of trial after settling the claims and crossclaims by and against it and the crossclaims against its insured, Clark Brown. That did not resolve the plaintiffs' claim against Clark Brown.

Gore Street

[28] Gore Street is a 406 unit mixed residential and commercial building. An aerial photograph of the building identifies some of its key features. The building's Core protrudes on its eastern face (being the lift/stair end of the Core) but does not protrude on the western elevation (the apartment end of the Core).



[29] There are 393 apartments and 13 commercial units. The commercial units are on the ground floor. There is a gymnasium, pool, lounge ("the Sailor's Lounge") and podium on level 1. The Auckland Sailor's Home charitable trust owns 43 apartments and the Sailor's Lounge. A hotel management company owns one of the commercial units and manages about 85 apartments as part of a serviced accommodation business ("Hotel Pool"). The number of apartments in the Hotel Pool at any one time fluctuates.

[30] The tower of Gore Street has a narrow rectangular aspect running from north to south. Along with the tower's reinforced concrete central Core, there are parallel reinforced concrete shear walls at the northern and southern ends. The shear walls develop into reinforced concrete frames from level 15 upwards. The eastern and western faces are constructed of reinforced concrete frames which include columns with alternating slopes tied horizontally into the concrete floor beams. This construction, in conjunction with concrete balconies in alternating bays, creates a honeycomb type appearance to the exterior of the eastern and western elevations.

[31] The concrete frame of the tower is commonly referred to as an "exoskeletal" structure, which means the structural beams and columns are also part of the weathertightness envelope of the building.

[32] Within the Core of Gore Street there is one apartment on each level together with the two staircases and lifts. The two staircases are within one stairwell and intertwine so that each stair flight is above and below a stair flight from the other staircase.

[33] The floor on each level of the Core comprises a concrete slab formed on proprietary galvanised steel decking supported by steel beams. The steel beams are connected by site welded steel cleats attached to steel embedded items in the concrete walls. The stairs are formed with a proprietary galvanised steel permanent formwork system called Stairform that is filled with concrete and reinforcing steel. The stairs have a common mid-height landing supported by two steel beams, two posts and the concrete wall.

[34] On either side of the Core there are apartments supported by post-tensioned floor slabs. These floor slabs are supported in the middle by two rectangular reinforced concrete fin columns which run the full height of the building. At the perimeter of the building the floor slabs are supported by the northern and southern walls/frames, the reinforced concrete beams and columns on the eastern and western elevations and the concrete walls of the Core.

[35] From street level to level 1 there is a podium structure which extends over the site and surrounds the tower on the southern, eastern and western elevations. The podium structure includes carparks, retail premises, a swimming pool, gymnasium and deck.

Construction timeline

[36] In 2003 and early 2004 the developer, First City Trust ("First City"), engaged Clark Brown, Holmes and structural engineers, Buller George Engineers Ltd ("Buller George") to produce plans and specifications for the construction of Gore Street.

[37] In early 2004 First City engaged Multiplex to apply for building consents and build Gore Street. On 10 June 2004 First City entered into a formal contract with Multiplex for the design and construction.

[38] On 2 August 2004 First City entered into a formal contract with Buller George by which Buller George was to provide structural design services, construction monitoring and provide producer statements (design and construction) in relation to Gore Street. First City novated Buller George's contract to Multiplex.

[39] On 14 December 2004 First City entered into a formal contract with Clark Brown whereby Clark Brown was to undertake design work, contract administration and site observations of Gore Street. First City novated Clark Brown's contract to Multiplex.

[40] In January 2005 First City entered into a contract with the structural engineers Holmes Consulting Group Ltd (Holmes Consulting) pursuant to which Holmes Consulting was to peer review the structural designs and calculations and provide a producer statement (peer review).[9] First City novated Holmes Consulting's contract to Multiplex.

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[9] I am told by counsel that Holmes Consulting has no relationship to Holmes Fire & Safety.

[41] On 10 February 2005 First City entered into a contract with Holmes by which it was to prepare fire designs, a scope of works and fire safety reports and liaise with the territorial authority and peer reviewer during the consent process. First City novated Holmes' contract to Multiplex.

[42] Multiplex (or other parties contracted to Multiplex) engaged various parties including:

(a) MacDonald Barnett as peer review fire engineers;

(b) VSL Australia Pty Limited ("VSL"), post-tensioned floor design consultants, to assist Buller George with the post-tensioning strand design;

(c) Post-Tensioning and Grouting Ltd ("PTG") as the post-tension floor contractors;

(d) Mapei as the suppliers of waterproofing systems for the bathrooms, balconies and podium;

(e) Equus as supplier and reviewer of waterproofing systems for the podium and level 3 canopy roof;

(f) Firepel Kidd Ltd ("Firepel"), as passive fire installation contractors; and

(g) Chenery to provide plumbing and drainage services and fire sealing of all penetrations.

Building consents

[43] In 2004/2005 Multiplex applied to the Council for building consents to construct Gore Street. The Council issued the following building consents:[10]

[10] For convenience I refer to the consents by the last three numbers of the "BLD" number only.

(a) Consent 301 — concerning the piling works, on 6 July 2004.

(b) Consent 302 — concerning the foundations, structure and underslab services, on 11 October 2004.

(c) Consent 303 — concerning the architectural and building services, on 15 March 2005.

(d) Consent 304 — concerning the post-tensioned floor slabs to tower, on 24 December 2004.

[44] Consents numbered 301 to 304 inclusive were issued under the 1991 Act. The relevant parts of the 2004 Act took effect on 31 March 2005. The transitional provisions in s 436 applied.

[45] After 31 March 2005 Multiplex submitted updated structural and architectural designs to the Council. These were under cover of a letter with the subject line "applications to amend consents 302 and 303". There is a factual dispute about the intention and effect of this letter and the status of the updated designs.

[46] Updated drawings were submitted on 7 June and 26 August 2005. These were stamped with Consent 305. On 24 November 2005 the Council issued Consent 305 with the notation "Amendment – update of architectural drawings".

[47] On 14 October 2005 further updated drawings were submitted and stamped with Consent 306. On 12 December 2005 the Council issued Consent 306 relating to the addition of two floors and the reconfiguration of the plant room.

[48] On 28 October 2005 further updated drawings were submitted and stamped with Consent 307. On 25 January 2006 the Council issued Consent 307 relating to the addition of "Winter Gardens" to the level 2 apartments.

[49] On 25 November 2005 Multiplex submitted additional information to the Council.

[50] In April 2006, the Council issued two further consents:

(a) Consent 601 — concerning the addition of a new floor, steel fins to the north and south sides of Gore Street and changes to the level 1 toilet areas.

(b) Consent 308 — concerning reconfiguration of level 38 from four apartments to one single penthouse.

[51] The consents straddled the 1991 and 2004 Acts. Consents numbered 305 and onwards were issued under the 2004 Act. Section 436 of the 2004 Act provides that the issuing of Code Compliance Certificates ("CCC") in respect of consents under the 1991 Act is to be treated as if the 2004 Act had not been passed.

[52] There were disagreements about which building consent and which Act applies to each area of work. However, in closing, the plaintiffs submit that for present purposes it does not matter whether the allegedly defective work was undertaken pursuant to building consents issued under the 1991 or 2004 Acts.

[53] On 28 September 2006, the engineer to the contract issued a practical completion certificate for the building work.

Construction

[54] In the period from June 2004 until September 2006, Multiplex and sub-contractors constructed Gore Street in stages.

[55] Various consultants and contractors provided producer statements in respect of their work including Buller George, MacDonald Barnett, VSL, Firepel Kidd, Equus and Chenery. Mapei provided performance warranties. On 29 August 2006 Holmes provided a form of "sign-off" letter to Multiplex.

Inspections

[56] Between July 2004 and September 2006 various council officers inspected some but not all aspects of the construction. Conditions in various consents stipulated that inspection was to be carried out by a third party. For example, Condition 35 of Consent 303:

> The installations of the cladding systems are to be inspected by the System manufacturer or other suitably qualified agent. These inspections are to be in addition to the inspections that will be required by Auckland City Environments and are to be of a frequency, which will enable the following Producer Statements to be provided:
>
> - A Producer Statement: - **Construction** is to be provided by the installer covering the installation, weathertightness and the interface with other component including joinery.
>
> - A Producer Statement - **Construction Review** is to be provided by manufacturer or other suitably qualified agent covering the installation, including [weathertightness] and the interface with other component including joinery.
>
> The Producer Statements are to be in an approved Auckland City Producer Statement format and are to be provided to the Building Inspector prior to the issue of the CCC.

[57] Condition 30 reads:

> Where membranes are being installed in wet areas, an inspection is required before applying the covering materials, i.e tiles, shower trays. Adequate curing time is to be allowed where these materials are to be covered over, in accordance with the manufacturer's specifications.
>
> Particular care is to be taken to ensure that all membranes are installed correctly with adequate upstands behind linings.

[58] The Council's records suggest that there were 477 inspections by different council officers.[11] Areas inspected included foundations, beams, columns, walls, bathroom waterproofing, floors, doors and wastes.

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[11] One of the Council inspectors served a brief of evidence stating that he had very little recall of the inspection process given the passage of time. He was not called to give evidence and his brief was admitted by consent.

Code compliance certificates

[59] On 5 October 2006 the Council issued CCCs for the construction of Gore Street.

Brief history of the claims and proceedings

[60] There is a long and complex history to this proceeding. In a judgment which is already unavoidably lengthy, describing its gestation and course would serve little purpose. I therefore set out the context shorn of unnecessary detail. The procedural background is well captured in earlier judgments.[12]

[61] In March 2014 the plaintiffs issued these Court proceedings. There have been five iterations of the statement of claim between 26 March 2014 and 29 August 2019. While the thrust of the case has not changed, the claimed "defects" have undergone significant revision. Some have been removed. Others have been added. I return to this point later in this judgment when dealing with the longstop limitation provisions of the building legislation.

[62] There have been multiple interlocutory judgments and pre-trial skirmishes. The Court has been called on to resolve evidential disputes pre-trial and even issues around expert caucusing. Three substantive trial dates have had to be vacated due to lack of readiness to proceed.

[63] At the end of the first week of the trial I conducted a site visit accompanied by counsel and in accordance with an agreed protocol.

The claimed defects

[64] There are 13 claimed defects in the current iteration of the pleading. These are pleaded in a conclusory way at a high level of generality. Parsing the evidence and submissions it becomes apparent that each relies on the cumulative effect of alleged "sub-defects" although these are not expressly pleaded. The claimed defects are:

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[12] *Body Corporate 366567 v Auckland Council* [2021] NZHC 491; *Body Corporate 366567 v Auckland Council* [2021] NZHC 1481; *Body Corporate 366567 v Auckland Council* [2021] NZHC 3578; and *Body Corporate 366567 v Auckland Council* [2022] NZCA 80.

(a) Claimed defect 1: Load-bearing steel-framed elements do not have adequate fire protection in breach of cls B1, B2, C2, C3 and C4 of the Building Code.

(b) Claimed defect 2: Heads of fire separation walls not constructed to maintain the integrity of walls in a fire event in breach of cls B1, B2, C2, C3 and C4 of the Building Code.

(c) Claimed defect 3: Inadequate steel-framed connections within the Core in breach of cls B1, B2 and C4 of the Building Code.

(d) Claimed defect 4: Scissor staircases do not have sufficient allowance for movement or ductile performance and scissor staircases/fire separation walls do not have sufficient isolation in breach of cls B1, B2, C2 and C3 of the Building Code.

(e) Claimed defect 5: Inadequate clearance between solid balustrades and adjacent columns in breach of cls B1, B2 and E2 of the Building Code.

(f) Claimed defect 6: Junctions of post-tensioned floors to building perimeter beams and wall structure defective in that the bars to tie the perimeter wall frames to the post-tensioned floor slab and tendon ducts have not been grouted in places in breach of cls B1, B2 and E2 of the Building Code.

(g) Claimed defect 7: Penetrations and openings through fire separations and construction of fire separation walls do not maintain integrity of fire separations in breach of cls B2, C2 and C3 of the Building Code.

(h) Claimed defect 8: Inadequate balcony waterproofing in breach of cls B1, B2 and E2 of the Building Code.

(i) Claimed defect 9: Column to beam junctions on exterior allow excessive movement and have no weathertight seal in breach of cls B1, B2 and E2 of the Building Code.

(j) Claimed defect 10: Inadequate application of membranes on level 1 podium in breach of cls B2 and E2 of the Building Code.

(k) Claimed defect 11: Defective membrane to level 3 canopy roof in breach of cls B2 and E2 of the Building Code.

(l) Claimed defect 12: Junctions between baths and tiles not waterproof and glazed screens do not contain water in breach of cls B2 and E2 of the Building Code.

(m) Claimed defect 13: Inadequate containment of water in bathrooms in breach of cls B2 and E3 of the Building Code.

Observations on the evidence

[65] I heard factual evidence from Hayden Ash, Chairman of the Body Corporate, Paula Beaton, Secretary of the Body Corporate and Harpreet Singh, the Facilities and Maintenance Manager at Gore Street. I also heard evidence from Edward (Ted) Jones, the Council officer responsible for processing the building consents and from Martin Feeney, the principal fire engineer at Holmes. A small number of briefs covering factual investigation matters were admitted under s 9 of the Evidence Act 2006.

[66] With those exceptions, the witnesses were primarily expert witnesses giving opinion evidence, often based on reconstructed timelines from contemporaneous material. An onlooker could be forgiven for thinking that this was "trial by expert". Of course, the experts' duty is to assist the Court and not to supplant the Court's decision making and it is for this Court to determine the issues between the parties.

[67] The expert evidence broadly fell into the following categories:

(a) Fire engineering.

(b) Structural engineering.

(c) Building and quantity surveying.

(d) Materials science.

(e) Remedial project management.

(f) Acoustics.

(g) Accounting, valuation and tax.

(h) Architectural drafting and regulatory practice.

[68] A persistent theme throughout the course of the trial (and pre-trial) was the Council's criticism of the plaintiffs' experts' briefs. It contended that the experts for the plaintiffs did not comply with their obligations in schedule 4 of the High Court Rules 2016. In particular, the obligation to state the facts and assumptions on which their opinion was based, the reasons for the opinions expressed, the examinations, tests and other investigations on which the expert has relied and any other material used or relied on. Pre-trial those challenges had been largely unsuccessful. This was not necessarily because they did not have merit but because of the difficulties in assessing such evidence out of context and in a pre-trial setting.

[69] Unsurprisingly, much of the expert evidence was technical and dense. Some was frankly impenetrable. No party sought to have an assessor appointed to assist the Court. It was clear that, by the time the case came to trial, the potential to appoint an assessor or prospect that the parties could agree on the choice of an assessor was dim. The parties ultimately agreed that the experts should not present their evidence concurrently, despite early encouragement from the Court that concurrent evidence was preferable.[13] As it transpired, the lack of concurrency impeded the Court's understanding of technical matters.

[70] At the outset of the trial it was agreed that evidential challenges would be signalled but not ruled on until the witnesses' evidence-in-chief had been given. In short, it would be admitted de bene esse until cross-examination. The challenges were

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[13] The plaintiffs sought such a direction pre-trial but did not press this in the face of the Council's opposition. Pre-trial conference Minute of Lang J dated 27 April 2022.

generally advanced on the basis the evidence was not substantially helpful — a fundamental requirement of expert evidence and/or did not comply with the "tripartite basis" rule required by the Code of Conduct of Experts under the High Court Rules. I issued rulings in respect of challenges to aspects of the evidence of Per Ake Olsson and Dr Gregory Baker, the plaintiffs' fire engineering experts.[14]

[71] The Council also challenged significant chunks of Dr Hyland's brief of evidence (among others) in keeping with their signals and various applications pre-trial. In response to my early rulings, the Council thereafter proceeded pragmatically on the basis that challenges to the evidence would be noted for the record and dealt with as matters going to weight. This was a sensible course which was agreed to by the plaintiffs.

[72] The plaintiffs' intended primary expert witness on regulatory matters and council practices was to be Peter Jordan. Mr Jordan was an inspector and then Manager of Environmental Health and Building Control employed by Auckland City Council. Mr Jordan provided a brief of evidence expressing his expert opinion on the performance of the Council.

[73] Regrettably, Mr Jordan was unable to give evidence at the trial due to ill health. Paul Moodie, a 40 year veteran of the building industry and former Team Leader of building inspections for North Shore City Council and Northern Compliance and Inspection Manager for Auckland Council stepped in to replace Mr Jordan. Mr Jordan's brief of evidence was converted to an affidavit. Mr Moodie gave evidence in chief confirming the correctness of Mr Jordan's evidence and was cross-examined.[15]

What is a defect?

[74] I begin with nomenclature. As Andrew J recently explained in *Body Corporate 406198 v Argon Construction Limited* [*Bianco Apartments*][16] "defect" is not a term of

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14 Oral ruling (No 3) of Walker J dated 10 May 2022; Oral ruling (No 4) of Walker J dated 13 May 2022; and Reasons of Walker J in relation to rulings No 3 and 4 dated 16 May 2022. Other challenges to the evidence of Mr Olsson were reserved to be addressed as matters of weight in closing submissions.

15 This matter was addressed at a pre-trial conference before Lang J.

16 *Body Corporate 406198 v Argon Construction Limited* [2023] NZHC 3034 at [55].

art. It is not defined in either the 1991 or 2004 Act. As the Council submitted before this Court (and Andrew J accepted in *Bianco Apartments*) one approach is to use the term in an untechnical way to mean "some error, shortcoming or imperfection in relation to an aspect of construction".[17] The qualification I add is that any "error" or "shortcoming" must be assessed through the appropriate temporal lens.[18]

[75] Materially, the existence of a shortcoming or an error is only the first step in the requisite analysis. Just because a defect in this sense exists does not mean that the physical state of affairs is not compliant with the Building Code, against which it must ultimately be measured before the plaintiffs can succeed in their claim. The physical state of affairs may not comply with consented documents and thus be a defect in one sense but still meet the requirements of the Building Code. If so, the defect is not actionable for reasons which will emerge.

The statutory framework

[76] The statutory obligations under the 1991 and 2004 Acts provide a framework for assessment of the common law duties. The scheme of the legislation is that building work is to comply with the Building Code to achieve the purposes of the Act. As Elias CJ stated in *Body Corporate 207624 v North Shore City Council (Spencer on Byron)* the scheme of the Act is to provide the owner with assurance of compliance with the Building Code.[19] This was affirmed by the majority of the Supreme Court in *Southland Indoor Leisure Centre Charitable Trust v Invercargill City Council*.[20] The statutory scheme is that the consented plans and specifications demonstrate compliance with the Building Code. The Building Code is a schedule to the Building Regulations 1992 which have survived the enactment of the 2004 Act.

[77] Section 49(1) of the 1991 Act authorised the Building Industry Authority ("BIA") to issue approved documents establishing compliance with the provisions of

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17 Adopting the working definition suggested in *Minister of Education v H Construction North Island Limited* [2018] NZHC 871 at [62].

18 *Body Corporate 406198 v Argon Construction Limited* [2023] NZHC 3034 [*Bianco Apartments*] at [56].

19 *Body Corporate 207624 v North Shore City Council* [2012] NZSC 83, [2013] 2 NZLR 297 [*Spencer on Byron*] at [14]–[16].

20 *Southland Indoor Leisure Centre Charitable Trust v Invercargill City Council* [2017] NZSC 190, [2018] 1 NZLR 278 at [60] and [81].

the Building Code. The BIA published acceptable solutions and verification methods under that section.

[78] The primary legislation, namely the respective Building Acts, the Building Regulations and the approved documents should be read as an internally consistent scheme. The Building Code itself sets the objectives (the social objective the building must achieve), functional requirements (what the building must do to satisfy the social objective) and performance criteria (qualitative or quantitative criteria which the building must meet in order to comply).

[79] Sections 49 and 50(1)(d) of the 1991 Act and ss 19 and 22 to 25A of the 2004 Act provide that where acceptable solutions and verification methods are followed, there is deemed compliance with the Building Code.[21] Acceptable Solutions set out common methods of design and construction and provide practical information on one way to meet the requirements of the Building Code. Verification methods set out methods to be applied in the formulation of more complex design solutions. Both often cite recognised industry standards which then become known as "cited standards".

Deemed compliance and the Building Acts

[80] The plaintiffs and the Council fundamentally disagreed on the extent to which full compliance with an approved document is required before there is deemed compliance with the Building Code. The plaintiffs contend that it is not possible to "cherry pick" aspects of a design from an acceptable solution and claim that a design or construction using that feature complies with the Code on a deemed to comply basis.

[81] This overstates the position. I prefer the Council's argument that departure from an acceptable solution requires assessment as to whether the departure will result in the relevant performance based criteria not being met. The acceptable solution remains the key touchstone of compliance. This is a more coherent and practical approach. I accept that the performance in functional terms of a proposed alternative

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[21] In this judgment I refer to acceptable solutions (lower case) other than when referring to a specific Acceptable Solutions

solution can be compared with the performance principles in the Acceptable Solution to show that the alternative solution will comply with the Building Code. One does not have to comply with an entire acceptable solution to achieve compliance on a deemed to comply basis. Rather, one can use parts of an overall Acceptable Solution and it is only that part that moves away from the acceptable solution that becomes an alternative solution. An acceptable solution or Verification Method can be used to demonstrate how proposed building work will comply as an alternative solution.

[82] This is supported by the guidance documents on the Ministry of Business, Innovation and Employment's website. That guidance provides:[22]

> Different ways to comply with the Building Code: states that "flexibility is a key advantage of performance based Building Code. The Building Code states, in general terms, how the completed building must perform in its intended use. It does not tell you how to do it. You can demonstrate Building Code compliance through different means. One means of demonstrating compliance is to follow an Acceptable Solution… MBIE publishes Acceptable Solutions… but it is not mandatory to use them.

[83] And, regarding alternative solutions, it states:[23]

> An alternative solution is all or part of a building design that demonstrates compliance with the Building Code, but differs completely or partially from the Acceptable Solution …
>
> In many cases, Acceptable Solutions … provide good guidance for assessing an alternative solution.

Standard of care

[84] Councils control all aspects of building work to ensure that it complies with the Building Code.[24] It is well established that councils owe a duty of care when performing their statutory functions of inspection and certification under the building legislation.[25] The Council does not deny that it owed a duty of care to the second

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22 Ministry of Business, Innovation and Employment "Different ways to comply with the Building Code" (21 March 2015) Building Performance <www.building.govt.nz>.

23 Ministry of Business, Innovation and Employment "Alternative solutions for compliance with the Building Code" (21 March 2016) Building Performance <www.building.govt.nz >.

24 It is Building Consent Authorities including councils under the 2004 Act and territorial authorities under the 1991 Act. For convenience I do not distinguish in this judgment but use the shorthand "councils".

25 *North Shore City Council v Body Corporate 188529* [2010] NZSC 158, [2011] 2 NZLR 289 [*Sunset Terraces SC Judgment*] at [51].

plaintiffs to act with reasonable care and skill in carrying out its functions. But the precise scope of that duty is one of the issues in this case.

[85] I accept the following established principles:

(a) The Council is not a "clerk of works". Its duty is to exercise reasonable care, not an absolute duty to ensure compliance.[26]

(b) The council's performance must be judged against the standards of the day and knowledge of the quality (or otherwise) of particular products used in the construction process. It does not take on any responsibility for ensuring, in fact, that all completed work complies with the Code.[27]

(c) The duty can be no higher than expressed in the legislation, namely, "[t]o be satisfied on reasonable grounds that a building consent should issue, to take reasonable steps in carrying out inspections and to be satisfied on reasonable grounds that code compliance should be certified".[28]

(d) Even if a council has acted with reasonable skill and care, it does not follow that there will be no defects in a building. That is a corollary to the nature of a council's duty.

(e) Councils frequently and appropriately may rely on producer statements where council officers are not qualified to make an assessment as to whether a design or work will comply with the Building Code. That must be particularly so where the subject matter is complex and the council reasonably does not have the expertise to make the requisite assessment.

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[26] *Body Corporate 188529 v North Shore City Council* [2008] 3 NZLR 479 [*Sunset Terraces*] at [183].
[27] At [183].
[28] At [221].

[86] The standard of care to be applied is that of a reasonably skilled council at the time. Common industry practice is not necessarily determinative. The Court is entitled to conclude that the standards of councils at the relevant time fell below the standard required by the law. As Young J stated in *Body Corporate 90247 v Wellington City Council* [*Glenmore Street*]:[29]

> However, it is not enough for an inspector to simply say "that's how we did it in those days". If what the inspectors were doing was inadequate, judged by a reasonable standard of the day, then it is no excuse to simply say "that's how we did it then"…

[87] In *Sunset Terraces*, Heath J said that territorial authorities were entitled to assume the work will be done in conformity with the consent by a competent builder and tradespeople familiar with the relevant technical literature. He added that questions of degree remained as to the extent to which it is proper to leave detail to a tradesperson to complete.[30] I respectfully concur that this assumption is generally appropriate as a starting point. But the assumption is at a high level of generality and it has to be tempered by context.

[88] The leaky building crisis, the Hunn Report and a BIA technical review of Auckland City's building control services are relevant to the decision making matrix. The decisions that building control officers have to make are not abstract or academic exercises. They involve judgement. The contextual matters inform the degree of care required. Mr Flay, an expert on regulatory matters for the Council, agreed that councils needed to take greater care in undertaking their statutory obligations in view of what was going on in the building industry.[31] This accords with common sense.

[89] Also relevant is the fact that this is a 40 storey apartment complex. Section 47 of the 1991 Act required the territorial authority in exercising its powers to have due regard to certain matters including the size and complexity of the building, its intended use and life and the reasonable practicality of any work proposed. On the other side

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29 *Body Corporate 90247 v Wellington City Council* [2014] NZHC 295 [*Glenmore Street*] at [157].

30 *Body Corporate 188529 v North Shore City Council* [2008] 3 NZLR 479 [*Sunset Terraces*] at [252], [399] and [403].

31 Mr Flay's evidence was that the Council was cautious in this instance, asking for a quality assurance system from Multiplex.

of the coin, the Building Code is a performance based code which imposes minimum standards. As Andrew J put it in *Bianco Apartments*:[32]

> …it is essential that the regulatory regime has integrity, and that the inspection regime is sufficiently robust so that public confidence in its effectiveness is maintained. One of the public policy reasons for the Council providing an appropriate degree of oversight is to promote good trade practices with a view to avoiding breaches of the requirements of the Building Code.

[90] All of which leads to the conclusion that there must be sufficient detail accompanying an application for consent as is reasonably required by the territorial authority.[33]

[91] A preliminary question (albeit one which dissolved by the end of trial) is whether the 2004 Act has brought about any change to the scope or nature of a council's duty. The position under the 1991 Act is well settled. The duty in tort "marches hand-in-hand with its statutory obligations" and is not any higher.[34] The duty at the code compliance stage was to act with reasonable care and skill to ensure compliance with the Building Code.

[92] In my assessment, the 2004 Act re-emphasises the consent phase of the building control process but does not change the nature of the primary obligation which is to ensure compliance with the building consent issued *so as* to achieve compliance with the Building Code. This is despite the difference in wording between s 64 of the 2004 Act and s 43 of the 1991 Act. The 2004 Act provides that councils are to issue a CCC if satisfied on reasonable grounds that work complies with the building consent whereas the 1991 Act provided that councils are to issue a CCC if satisfied on reasonable grounds that work complies with the Building Code.

[93] Mr Lewis adopted the homely analogy that, under both Acts, the Building Code is the destination, and the consent is the vehicle for getting there. The Supreme Court's

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32 *Body Corporate 406198 v Argon Construction Limited* [2023] NZHC 3034 [*Bianco Apartments*] at [135].

33 Building Act 2004, s 33(2). Section 34(2) of the 1991 Act empowered the territorial authority to require further reasonable information in respect of an application for consent.

34 *Body Corporate No. 207624 v North Shore City Council* [2012] NZSC 83 [*Spencer on Byron*] at [194]. The Supreme Court commented in relation to the 2004 Act that it did not apprehend any material difference but noted it did not have the benefit of argument, it was not strictly in issue and it did not make any determination.

statement in *Spencer on Byron* that the Council's common law duty under the building regime "marches hand in hand with" its statutory obligations remains apposite. The difference in wording in s 94(1) has not materially altered the march. The overarching goal of a council's regulatory function remains to ensure compliance with the Building Code to achieve the legislative purpose rather than any higher standard.[35] The scheme of the 2004 Act, including s 94 was not intended to bring about a change in the territorial authority's role and responsibilities.[36]

[94] The Council is statutorily obliged to issue a CCC if the building work complies with the building consent. It may also exercise a statutory power to certify code compliance even if there are departures from a building consent if the 'as-built' construction complies with the Building Code. This aligns with the statutory purposes of the legislation which, at its heart, is about building performance.

Consent stage

[95] Many factors will inform the extent of the duty at the consenting stage including the complexity of the development project and its particular characteristics, the extent of detail and clarity of the plans and specifications, whether the designs are acceptable solutions, and consistency with available technical literature. For instance, if the design proposes bespoke or novel systems one would expect greater detail in the plans and specifications so that a council has sufficient information to be satisfied on reasonable grounds that the requirements of the Building Code would be met. [37]

[96] A council may not have the expertise to review an aspect of design. In that instance, a qualified expert may have to provide an independent assessment because a council must have a proper informational basis to grant building consent. As Gilbert J said in *Body Corporate 326421 v Auckland Council [Nautilus]*:[38]

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35 As Chambers J stated in *Body Corporate No 207624 v North Shore City Council* [2012] NZSC 83 [*Spencer on Byron*] at [193] "…No one can be party to the construction of a building which does not comply with the building code. The duty in tort imposes no higher duty than that: for example the inspecting authority is not responsible for ensuring the building is constructed in accordance with the plans and specifications, which will inevitably go beyond building code requirements."

36 *Body Corporate 406198 v Argon Construction Limited* [2023] NZHC 3034 at [127]; and *Body Corporate 160361 v BC 2004 Ltd and BC 2009 Ltd* [2015] NZHC 1803 [*Fleetwood Apartments*] at [142].

37 See *Body Corporate 326421 v Auckland Council* [2015] NZHC 862 [*Nautilus*] at [152]–[153].

38 At [19].

> [90] Council knew that the cladding system proposed was a bespoke system that had not been used or proven on any other development. Having regard to the complexity of the building, its height and exposed location, Council ought to have insisted on greater detail showing how the critically important cladding system would meet the performance requirements of the Building Code. In the absence of these details, Council did not have sufficient information to enable it to be satisfied on reasonable grounds that the requirements of the building code would be met if the building was properly completed in accordance with the plans and specifications submitted with the application in terms of s 34(3) of the Act. Having issued the building consent without these details, there was no design against which inspections could be carried out by Council or anyone else.

Inspection stage

[97] Section 76 of the 1991 Act and s 90 of the 2004 Act deal with inspections by territorial authorities in the case of the former Act and by building consent authorities in the case of the latter Act. The meaning of inspection is not materially different between the two Acts. It is the taking of all reasonable steps to ensure that building work is in accordance with a building consent.[39] The reference to the consent reflects the point that the consent is the means to achieve the standards set by the Building Code.

[98] The Act requires that owners of a building apply to the Council for a CCC certifying that the building work was carried out in accordance with the building consent granted for that building work under the 2004 Act and (previously) certifying that the work complies with the Building Code under the 1991 Act.[40]

[99] There is an intrinsic relationship between the consent and inspection processes. As Venning J discussed in *Body Corporate 189855 v North Shore City Council* [*Byron Avenue*], the less detail the Council required at the consent stage the greater the onus on the inspector to ensure compliance at the inspection stage.[41]

[100] It is fundamental that councils need to put in place inspection systems which have the objective of giving effect to the Building Code. They should determine as part of the consenting process whether council inspectors or a third party will be

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39 *Palmer v Hewitt Building Limited* [2021] NZHC 1460 at [72].
40 Building Act 2004, s 64; and Building Act 1991, s 94.
41 *Body Corporate 189855 v North Shore City Council* HC Auckland CIV-2005-404-005561, 25 July 2008 [*Byron Avenue*] at [97].

inspecting the work because this will inform the schedule of council inspections. Conditions attaching to consents may require a producer statement from a third party. In the absence of a consent condition requiring a producer statement it is up to a council to set up its own inspection regime.[42] That regime must meet the needs of a particular development, informed by the criticality of the particular build aspect at issue, for instance waterproofing and timing imperatives.[43] It should be individualised rather than generic, just as the extent of the duty at the consent phase is determined by the characteristics of the development project.[44] As Heath J stated in *Sunset Terraces*:[45]

> …Those considerations demonstrate the importance of designing an inspection regime to meet the needs of a particular development in order to ensure that all aspects of the Code have been complied with.

[101] The CCC is a formal statement that the work is code compliant. The Council has no absolute obligation to ensure the work has been done to that standard.[46] Performance is judged against the standards of the day and knowledge of the quality (or otherwise) of particular products used in the construction process.[47] The question is whether a reasonably skilled and prudent building inspector would have been able to identify any or all of the issues/defects complained of.

[102] Once a building inspector identifies defects it has an obligation to take steps to have them addressed. It should also lead a competent inspector to further enquiry and a more detailed inspection.

Role of producer statements

[103] It is common ground that there are some defects which a council cannot be reasonably expected to identify in the course of inspection. Nevertheless, it still has a duty to ensure some verification of compliance before it may issue a CCC.

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42 *Johns v Hamilton City Council* [2022] NZHC 379 at [207].

43 It is self-evident that early observations of structural requirements are important.

44 In short, an inspection regime for a development of residential townhouses will look significantly different from an inspection regime for a 40 storey mixed residential/commercial development.

45 *Body Corporate 188529 v North Shore City Council* [2008] 3 NZLR 479 [*Sunset Terraces*] at [257].

46 *Weaver v HML Nominees Ltd* [2015] NZHC 2080.

47 *Body Corporate 188529 v North Shore City Council* [2008] 3 NZLR 479 [*Sunset Terraces*] at [183].

[104] The 1991 Act defined "Producer Statement":

> Any statement supplied by or on behalf of an applicant for a building consent or buyer on behalf of a person who has been granted a building consent that certain work will be or has been carried out in accordance with certain technical specifications.

[105] The 2004 Act does not refer to producer statements but they remain an integral part of the consent and compliance stages of a council's oversight. This is inevitable for resourcing and practical reasons. It cannot sensibly be suggested that a council retains the type of expert knowledge required to check compliance in matters such as structural or fire engineering.

[106] There are four types of producer statement. These are:

> PS1 design – a statement from a design professional in relation to the design and intended for use in connection with the issue of a building consent.
>
> PS2 design review – a statement from an independent design professional who has reviewed the design. This is also intended for use in connection with the issue of a building consent.
>
> PS3 construction – a statement from the party that carried out the construction works and intended for use in connection with the issue of a code compliance certificate.
>
> PS4 construction review – a statement from an independent design professional confirming that construction has been carried out in accordance with the design. This is also intended for use in issuing a code compliance certificate.

[107] I adopt the following principles from various cases which have discussed the use and limitations on use of producer statements:

(a) The extent to which a particular producer statement should be relied on in considering whether code requirements have been met depends on all of the relevant circumstances.[48]

(b) Those circumstances include the skill, experience and reputation of the person providing the statement, the independence of the person in relation to the works, whether the person was a member of an

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[48] *Body Corporate 326421 v Auckland Council* [2015] NZHC 862 [*Nautilus*] at [115] and [125].

independent professional body and subject to disciplinary sanction, and level of scrutiny undertaken and the basis for the opinion.[49]

(c) The decision to use a producer statement for a particular type of building work in lieu of inspections must be reasonable in the circumstances.[50]

(d) It would not be appropriate for a territorial authority to accept any producer statement without question.[51]

(e) Where the person providing the producer statement has a direct commercial interest in the outcome, it would be prudent for a council to engage a suitably qualified expert to peer review the producer statement.[52]

Who is the right plaintiff?

[108] One of the many contests in this proceeding is the question of the standing of the Body Corporate to sue the Council for the costs of remediation. Or, put another way, who is the right plaintiff? This has ramifications for the incidence of GST and the availability of the affirmative defence of contributory negligence.[53] These issues have yet to be settled at appellate level following repeal of the Unit Titles Act 1972 ("1972 Act") and its replacement by the Unit Titles Act 2010 ("2010 Act").

[109] The plaintiffs advance argument on various alternative bases. First, they say that the Body Corporate may sue in its own right in respect of all claimed defects because each claimed defect falls within the ambit of the Body Corporate's responsibilities under s 138 of the 2010 Act. That is, they are all either within common property or affect building elements or infrastructure that relate to or serve more than

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49 At [115].
50 *Lee v Auckland Council* [2016] NZHC 2377 at [41].
51 *Body Corporate 326421 v Auckland Council* [2015] NZHC 862 [*Nautilus*] at [115].
52 *Body Corporate 160361 v BC 2004 Limited & BC 2009 Limited* [2015] NZHC 1803 [*Fleet Street*] at [165].
53 If the Body Corporate does not have standing to sue, meaning the second plaintiffs must sue instead, then it is the GST status of the second plaintiffs which arguably becomes relevant rather than the GST status of the Body Corporate.

one unit. They press for a holistic approach; that is the large number and widespread nature of the defects affects all units and parts of common property in one way or another.[54] In the alternative, they contend that the Body Corporate may claim in respect of the cost of repairs to common property.[55] In that case, the second plaintiff owners would then claim in respect of the unit property repairs on the basis of ownership interest.[56] The fall back is that if the Court decides the Body Corporate may not claim in respect of any property, then the second plaintiff owners must claim repair costs for both their unit property and for their interest in the common property.

[110] The Council submits the claimed defects relate to alleged damage to both common and unit property. It argues that whilst the Body Corporate "owns" common property and has repair and maintenance obligations, it is not owed a duty of care. It says the incidence of ownership does not define to whom the duty is owed. Rather, the past and present unit owners are the only parties owed a duty of care as they ultimately bear the loss. It is therefore only the second plaintiffs — and not the Body Corporate — who can sue, in respect of both unit property and common property. Alternatively, if the Court finds that the Body Corporate can sue, it can only do so in a representative capacity and only in relation to common property and not unit property.

[111] In my assessment, the issue of standing turns on the following:

(a) Do all the defects fall within the ambit of the Body Corporate's responsibilities under s 138 as affecting common property or building elements or infrastructure that relate to or serve more than one unit?

(b) Relatedly, do defects fall within s 138 if damage is located within unit property but repair affects common or adjacent unit property?

(c) To whom is a duty of care owed?

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54 It is arguable that the proposed remedial scope, if all defects are actionable, affects all unit owners in one way or another given that the repairs are to be undertaken as one project under a single contract.

55 The plaintiffs have costed repairs to common property separately for this eventuality.

56 *Body Corporate 366567 v Yang* [2022] NZHC 2240; and Sealed Order of the Court establishing a scheme pursuant to s 74 of the Unit Titles Act 2010 in relation to Body Corporate 366567, cl 6.

(d) Whether s 54 of the 2010 Act entitles the Body Corporate to claim in respect of the common property in its own right, on an unimpaired basis, rather than as representative of the unit owners?

[112] Appellate authority under the 1972 Act held that bodies corporate had standing to sue in respect of common property pursuant to a statutory agency created by s 13 of the Act but that the duties of care were owed to the unit owners.[57] The unit owners thus could sue for the loss they suffered as owner of their individual unit and as joint owner of the common property under the 1972 Act. The body corporate could sue only in respect of common property. The 1972 Act did not expressly provide that a body corporate might repair individually owned unit property when the repairs related to the integrity of or damage to common property. Materially, under the principles of agency, a body corporate's claim was only as good as each unit owner's claim, meaning that affirmative defences such as limitation, contributory negligence and *volenti* remained available.

[113] It followed that under the traditional pre-2010 Act approach, a past owner selling their unit with defects disclosed (at an impacted price) could sue for any loss on sale and any levied costs incurred to the date of sale. A past owner who sold without disclosing the defects could sue but losses would be limited to costs incurred to the point of sale only because there was no diminution in price. A current owner who purchased knowing of the defects would have no claim despite liability for future levies since they bought with knowledge at an abated price. And, a current owner who bought at an unimpacted price without knowledge can sue for the repair costs of common property. The body corporate was entitled to sell as the statutory agent of the current owners, subject to the same defences as are available to those owners.

[114] The question is whether, and to what extent, the 2010 Act has altered that position. It altered the obligations on a body corporate with regard to unit property and provides that common property is owned by the body corporate (but owners of units are beneficially entitled to it as tenants in common).[58] Whata J noted in

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[57] *North Shore City Council v Body Corporate 188529* [2010] NZSC 158, [2011] 2 NZLR 298 [*Sunset Terraces SC Judgment*] at [57]–[58]. As relevant, s 13(2) provided that the body corporate may sue for and in respect of damage or injury to the common property caused by any person.

[58] Unit Titles Act 2010, s 54.

Body Corporate 160361 v BC 2004 Ltd that the split of legal and beneficial ownership combined with the powers vested in the body corporate "support the basis proposition that the bodies corporate stand in the shoes of the unit owners for the purpose of these proceedings about the common property."[59] That observation suggests that not much has materially changed with the enactment of the 2010 Act for present purposes.

[115] However, the 2010 Act's stated purposes (particularly s 3(d)) speak to a change in focus from the individual owners to the collective interests of owners. This reflects the changing landscape — the shift from simple, small scale residential flats to large and more complex unit title developments.[60] The backdrop of the leaky building crisis exacerbated the problems encountered with the 1972 Act. The purposes of the 2010 Act read:

> **3 Purpose**
>
> The purpose of this Act is to provide a legal framework for the ownership and management of land and associated buildings and facilities on a socially and economically sustainable basis by communities of individual owners and, in particular,—
>
> (a) to allow for the subdivision of land and buildings into unit title developments comprising units that are owned in stratum estate in freehold or stratum estate in leasehold or licence by unit owners, and common property that is owned by the body corporate on behalf of the unit owners; and
>
> (b) to create bodies corporate, which comprise all unit owners in a development, to operate and manage unit title developments; and
>
> (c) to establish a flexible and responsive regime for the governance of unit title developments; and
>
> (d) to protect the integrity of the development as a whole.

[116] There is no equivalent provision in the 2010 Act to s 13 of the 1972 Act.

[117] A key provision in the 2010 Act is s 54 which provides:

> **54 Ownership of common property**
>
> (1) The common property is owned by the body corporate.

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59 *Body Corporate 160361 v BC 2004 Ltd* [2015] NZHC 1803 at [236].
60 See (5 March 2009) 652 NZPD 1714.

(2) The owners of all the units are beneficially entitled to the common property as tenants in common in shares proportional to the ownership interest (or proposed ownership interest) in respect of their respective units.

(3) Nothing in subsection (2) affects the interests among themselves of the owners of an individual unit.

[118] Section 138 reads:[61]

138 Body corporate duties of repair and maintenance

(1) The body corporate must repair and maintain—

(a) the common property; and

(b) any assets designed for use in connection with the common property; and

(c) any other assets owned by the body corporate; and

(d) any building elements and infrastructure that relate to or serve more than 1 unit.

(2) *[Repealed]*

(3) The body corporate may access at all reasonable hours any unit to enable it to carry out repairs and maintenance under this section.

(4) Any costs incurred by the body corporate that relate to repairs to or maintenance of building elements and infrastructure contained in a principal unit are recoverable by the body corporate from the owner of that unit as a debt due to the body corporate (less any amount already paid) by the person who was the unit owner at the time the expense was incurred or by the person who is the unit owner at the time the proceedings are instituted.

(5) For the purposes of this section,—

(a) a subsidiary body corporate is to be treated as the unit owner of the principal unit that was subdivided to create the subsidiary unit title development; and

(b) a reference in subsection (4) to a **principal unit** includes the common property and units of that subsidiary unit title development; and

(c) the duty to repair and maintain includes (without limitation) a duty to manage (for the purpose of repair and maintenance), to keep in a good state of repair, and to renew where necessary.

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[61] The legislative history of s 138 of the 2010 Act is set out in *Body Corporate 199380 v Cook* [2018] NZHC 1244, (2018) 19 NZCPR 522.

[119] The 2010 Act introduced the concepts of "building elements" and "infrastructure" to address the problem of defects within an individual unit that might affect another unit or the development as a whole.

[120] These terms are defined in s 5(1):

> **building elements** includes the external and internal components of any part of a building or land on a unit plan that are necessary to the structural integrity of the building, the exterior aesthetics of the building, or the health and safety of persons who occupy or use the building and including, without limitation, the roof, balconies, decks, cladding systems, foundations systems (including all horizontal slab structures between adjoining units or underneath the lowest level of the building), retaining walls, and any other walls or other features for the support of the building
>
> ***infrastructure*** includes pipes, wires, ducts, conduits, gutters, watercourses, cables, channels, flues, conducting, or transmission equipment necessary for the provision of water, sewerage, drainage, stormwater removal, gas, electricity, oil, shelter, protection from fire, security, rubbish collection, air, telephone connection, Internet access, radio reception, television reception, or any other services or utilities to or from a unit or to or from the common property

[121] Common property is also defined in s 5(1) of the 2010 Act to mean:

> ***common property*** means—
>
> (a) all the land and associated fixtures that are part of the unit title development but are not contained in a principal unit, accessory unit, or future development unit; and
>
> (b) in the case of a subsidiary unit title development, means that part of the principal unit subdivided to create the subsidiary unit title development that is not contained in a principal unit, accessory unit, or future development unit

[122] The Court of Appeal has articulated some principles arising from the scheme of the 2010 Act but has not squarely dealt with the standing issue and all its ramifications.[62] The High Court has expressed differing views however briefly and/or

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62 *Body Corporate S73368 v Otway* [2018] NZCA 612, [2019] 3 NZLR 759. This case principally dealt with the relationship between s 138(4) and s 126 in claims by bodies corporate against unit owners to recoup remedial expenditure. See also *Wheeldon v Body Corporate 342525* [2016] NZCA 247, (2016) 17 NZCPR 353 which dealt with the interpretation of s 138(1)(d) and the extent of a body corporate's obligation to repair and maintain building elements that relate to more than one unit.

in obiter remarks.[63] I set out the most relevant statements from the cases for present purposes:

(a) Section 138 of the 2010 Act provides for a body corporate's right to recoup the expense of discharging its responsibility for repair and maintenance of the common property and building elements that relate to or serve more than one unit in accordance with s 138.[64]

(b) The 2010 Act limits individual unit owners' obligation to repair and maintain their own unit; they have an obligation to repair and maintain the unit to avoid damage to building elements, rather than to repair and maintain the building elements themselves.[65]

(c) Under ss 84(1)(p) and 138 of the 2010 Act, not only can the body corporate maintain and repair unit property, but it is also required to do so where it is either a building element or infrastructure that relates to or serves more than one unit.[66]

(d) The mischief to which the 2010 Act was directed was difficulties that had arisen when defects within a unit affected other units or the common property.[67]

(e) The 2010 Act assigns to bodies corporate responsibility for building elements and infrastructure found within units and limiting owners' rights and obligations accordingly.[68]

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63 In *Body Corporate 455529 v Auckland Council* [2023] NZHC 3047 at [39] Gordon J referred to complex questions regarding whether the change in ownership under the 2010 Act was intended to change legal rights in tort, however did not have to decide these questions.

64 *Body Corporate 324525 v Stent (No 2)* [2017] NZHC 2857. In this case the body corporate plaintiff brought a claim against some apartment owners for unpaid levies which represented the cost of investigating building defects and remedial works. A claim had already been settled against the local territorial authority in relation to the water ingress issues but those owners had not participated in the claim.

65 *Body Corporate S73368 v Otway* [2018] NZCA 612, [2019] 3 NZLR 759 at [38] referring to s 80(1)(g) of the Unit Titles Act 2010; and *Wheeldon v Body Corporate 342525* [2016] NZCA 247, (2016) 17 NZCPR 353 at [38].

66 *Body Corporate 199380 v Cook* [2018] NZHC 1244, (2018) 19 NZCPR 522 at [67].

67 *Body Corporate S73368 v Otway* [2018] NZCA 612, [2019] 3 NZLR 759 at [45].

68 At [45].

(f) The legislation permits bodies corporate to act to prevent harm that has the potential to harm the common property, or any building element or any other unit.[69]

(g) It is the body corporate and not the unit owner who is authorised to repair building elements and infrastructure found within a unit because it is to the benefit of all owners in a development to have a watertight and structurally sound development.[70]

(h) The requirements of s 138(1)(d) will be satisfied if the relevant building element or infrastructure:[71]

(i) naturally attaches to another unit (as in physically adjoining units);

(ii) is causally relevant to another unit whether physically or economically (as in non-adjoining units);

(iii) is referable to another unit whether physically or economically (as in both adjoining and non-adjoining units);

(iv) is concerned with another unit whether physically or economically.

(i) As bodies corporate own the common property and the owners of the units are beneficially entitled to the common property as tenants in common, and the bodies corporate have all the powers of a natural person, this logically includes the right to sue in respect of damage to common property.[72]

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69 At [45].
70 *Wheeldon v Body Corporate 342525* [2016] NZCA 247, (2016) 17 NZCPR 353.
71 At [54]; referring to the High Court decision *Wheeldon v Body Corporate 342525* [2015] NZHC 884 at [85].
72 *Body Corporate 160361 v BC 2004 Ltd and BC 2009 Ltd* [2015] NZHC 1803 at [236].

(j) The split of legal and beneficial ownership and the powers vested in bodies corporate continue to support the basic proposition that bodies corporate are entitled to stand in the shoes of unit owners for the purpose of proceedings about common property.[73]

[123] After the trial of the present case, Andrew J decided *Bianco Apartments*.[74] This defective building litigation focused on weathertightness related defects on cantilevered balconies and podium common areas on the ground level. Faced with this issue of standing, Andrew J reviewed the legislative history and case law under the 1972 Act. He then analysed the obligations of bodies corporate under the 2010 Act and particularly under s 138.

[124] He concluded that the 2010 Act altered the former position by shifting the focus from unit owners to bodies corporate.[75] He examined whether the claimed defects fell within the scope of s 138(1)(d) of the 2010 Act and held that "it cannot seriously be contended that the Body Corporate has standing to sue in respect of loss or damage that falls outside its responsibility under s 138".[76] It did not have repair responsibility for unit property, except as provided for in s 138. Relying on the rationale identified by the Court of Appeal in *Wheeldon v Body Corporate,* his Honour stated:[77]

> [311] When applying the principles of *Wheeldon* to this case, I find that the cantilevered balconies…the subject of defect 1, fall within the scope of s 138(1)(d) of the UTA 2010. Given the widespread nature and extent of the defects, the construction of this building and the location of the balconies, I find that every balcony affects more than just the unit of which it forms a direct part. That conclusion is entirely consistent with the rationale for bodies corporate undertaking building-wide repairs of the kind at issue here, as identified by the Court of Appeal in *Wheeldon.* This is the very sort of case where it is not realistic for unit owners to arrange the repair work individually. The necessary building-wide repairs require co-ordinated and professional management.

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73 At [236].
74 *Body Corporate 406198 v Argon Construction Ltd* [2023] NZHC 3034.
75 At [303].
76 At [307].
77 At [311] citing *Wheeldon v Body Corporate 342525* [2016] NZCA 247, (2016) 17 NZCPR 353 at [55].

[125] Andrew J went on to hold that bodies corporate are entitled to sue in their own name and to recover damages falling within the scope of their s 138 responsibilities on the basis:

(a) This is consistent with the legislative policy of assigning responsibility to bodies corporate for building elements and infrastructure that relate to or serve more than one unit.[78]

(b) There are sound policy reasons for this, aside from obvious efficiency.[79]

(c) The nature of the loss, being economic loss arising from physical damage, falls on the general body of owners, no matter when they bought their unit, whether their own unit has damage, and whether or not they took proper care when buying or not.[80]

[126] I respectfully agree and endorse these conclusions and associated reasoning.

[127] Andrew J went on to observe that the more difficult question is whether contributory negligence defences can be advanced, and consequential quantum deductions offset, in relation to damage to units falling within the scope of s 138(1)(d). After analysing the nature of the duties of care, the type of loss at issue and the scheme of the 2010 Act, in the context of the broad discretion arising under s 3(1) of the Contributory Negligence Act 1947, his Honour said:[81]

> [318] Against that background, I am of the view that the defendants owed concurrent duties of care to both the Body Corporate and the individual owners. The Body Corporate has sufficient interest in the units and is required to repair and maintain damage that falls within the scope of s 138, even if the individual owner does not agree. Its interest is more than contractual. It is only the Body Corporate which can undertake the necessary remedial action to which s 138 applies. Its pocket is damaged as a result of the negligence of the defendants, even if it can recoup expenses from the individual owners. In principle, the affirmative defence of contributory negligence is available, and deductions can legitimately be made for contributory fault of either the Body Corporate or individual owners from any quantum sum awarded to the Body Corporate.

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78 At [312].
79 At [313].
80 At [313].
81 At [318] (footnote omitted).

Do the claimed defects fall within s 138(1)(d) of the 2010 Act?

[128] If the claimed defects fall within the ambit of the Body Corporate's mandate in s 138(1)(d), then the Body Corporate has standing to sue. The ability to recoup expenditure which it is statutorily obliged to pay out (albeit with recourse against the owners) is both necessary and coherent. It enables s 138 to do the work the legislature set out to enable. The rationale was articulated by the Court of Appeal in *Wheeldon* as follows:[82]

> Building-wide repairs that have implications for the structural integrity and aesthetics of the development require coordinated and professional management, which cannot be achieved if unit owners seek to arrange the work themselves.

[129] Trevor Jones for the plaintiffs reviewed the relevant unit plan to determine whether the defects are located within unit property, common property or both. The lodged unit plan defines parts of the building as common property or otherwise but may not always be determinative since it may not reflect the "as-built" reality. His evidence was that claimed defects 1, 2, 3, 6, 7, 9 and 10 are located within both common and unit property; claimed defects 4 and 11 are located within common property only; and defects 5, 8, 12 and 13 are located in unit property only. However, he also pointed out that in order to successfully repair defects 1 to 12, either adjacent common property or unit property will necessarily be affected. He suggested that only claimed defect 13 may be able to be repaired without affecting adjacent common property or any other unit property.

[130] A purely location focused approach is not consistent with a purposive approach to the legislation. Adopting the approach set out by the Court of Appeal in *Wheeldon*, it is self-evident that claimed defects 1 to 11 are either common property defects or defects affecting building elements that relate to or serve more than one unit. They are widespread and only building-wide repairs are practicable. All unit owners have a clear and identical interest in matters of fire, moisture ingress and earthquake integrity because of the significant potential consequences. Moisture ingress risk factors on balconies affect other units[83] as does claimed structural integrity

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82 *Wheeldon v Body Corporate 342525* [2016] NZCA 247, (2016) 17 NZCPR 353 at [68].

83 See *Body Corporate 406198 v Argon Construction Ltd* [2023] NZHC 3034 at [310]–[311]; and *Wheeldon v Body Corporate 342525* [2016] NZCA 247, (2016) 17 NZCPR 353 at [67]–[68].

impairments to columns because of inadequate clearance of balcony balustrades. The balconies are also an integral part of the aesthetic design of Gore Street.

Conclusion on standing

[131] I conclude that the Body Corporate has standing by virtue of s 138 to sue the Council in relation to claimed defects 1 to 11.

[132] That leaves the internal moisture defects (bathrooms) in claimed defects 12 and 13. These directly affect each unit property and are situated within the boundaries of each unit. The claimed defects in isolation have not been shown on the evidence to affect any other unit and their locations do not serve any other unit. However, according to the plaintiffs' remediation experts, the proposed (and contested) remedial scope for defect 12 will impact common property in the form of the riser ducts and/or adjacent unit property in the form of the inter-tenancy wall. If they are damaged during remediation then under s 138, the Body Corporate has a consequential remedial obligation. Given the widespread nature of the claimed defect, and if the proposed remedial scope includes what is reasonably required to remedy defect 12, I am inclined to consider that the Body Corporate has standing to sue in respect of this defect also.

[133] The same cannot be said in respect of defect 13. I consider that is a claim properly brought by the second plaintiffs only, rather than the Body Corporate.

[134] Although this decides the identity of the entity which may sue for the remediation cost, claims for general damages and consequential losses such as alternative accommodation costs can only be made by the second plaintiffs and not the Body Corporate.[84]

Is the Body Corporate owed a duty of care in relation to Gore Street?

[135] It is indisputable that the Council owes a duty of care in performing its functions when issuing building consents, making inspections, and issuing code compliance certificates to both original and subsequent property owners. Under the 1972 Act, the unit owners owned the common property as tenants in common and

[84] General damages are only claimable by owners who are natural persons and not corporations.

bodies corporate had the statutory ability to sue (as a representative) in relation to common property under s 13.[85] The question of whether the body corporate itself was owed a duty did not fall for consideration under the 1972 Act.

[136] Andrew J's response to this question is that the relevant council (and other defendants) owe *concurrent* duties of care to both the body corporate and the individual owners.[86]

[137] I respectfully depart from Andrew J's conclusion that the duty is concurrent. I consider that if the 2010 Act intended to so affect general principles of tort law, then it would have done so more explicitly and clearly. I agree with Ms Meechan KC's submission that the focus on legal ownership to establish to whom the duty is owed is misplaced because the legal ownership of bodies corporate is a statutory construct for a specific purpose. It is clearly the unit owners who ultimately bear the loss of owning or purchasing a defective building and separating the entity or person to whom the duty is owed based on whether the defect is on common or unit property lacks coherence.

[138] In *Body Corporate 346799 v KNZ International Co Ltd* (*Victopia*), it was held that because common property is vested in bodies corporate under the 2010 Act, the duty owed by defendants in respect of the common property is owed to the body corporate directly, as is the case with any other subsequent owners of property.[87] However, this conclusion arose in a particular context — the determination of the incidence of GST. It appears from the judgment that the duty of care issue was not argued because the case essentially proceeded by way of formal proof.

[139] In the same vein, I do not read the decision of Associate Judge Bell in *Stent,* where it was determined that a body corporate had standing to sue for damage to units within the body corporate's responsibilities under s 138 of the 2010 Act,[88] as resolving the question of to whom the duties are owed. Rather, it was focused on determining

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85 *North Shore City Council v Body Corporate 18829* [2010] NZSC 158, [2011] 2 NZLR 298 at [58].
86 *Body Corporate 406198 v Argon Construction Ltd* [2023] NZHC 3034 at [318].
87 *Body Corporate 346799 v KNZ International Co Ltd* [2017] NZHC 511 [*Victopia*] at [131]–[132].
88 *Body Corporate 324525 v Stent (No 2)* [207] NZHC 2857.

that the proceeding in that case (for unpaid levies against individual unit owners) was not ultra vires the body corporate.

[140] In summary, I am not persuaded that the duty of care is owed to the Body Corporate. Rather, the duty of care remains owed to the general body of owners whose interests coalesce in the Body Corporate under the legislation.

Does s 54 of the 2010 Act entitle the Body Corporate to claim in respect of the common property in its own right, on an unimpaired basis, rather than as representative of the Owners?

[141] I reach the same conclusion as Andrew J. The affirmative defence of contributory negligence is available, and deductions can legitimately be made for the contributory fault of individual owners from any quantum sum awarded to the Body Corporate, albeit by a different route. That is, the question of to whom the duty is owed has not altered under the 2010 Act.[89] Although the 2010 Act deems the Body Corporate as the owner of common property, it is for a specific purpose. Just as the rights of unit owners are derived from statute and are of a limited kind, as the Court of Appeal in *Wheeldon* noted, so too are the ownership rights of the Body Corporate derived from statute.[90] The statutory capacity in which it sues for remediation cost means that impairments such as the contributory negligence of the beneficial owners and its own contributory negligence still affect the claim.[91] For the sake of completeness, this analysis does not mean however that the Body Corporate is an agent and the Owners are the principals.

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89 I am also not persuaded that it is necessary to find concurrent duties of care are owed to reach the conclusion that the concept of contributory negligence still has a role to play given the wide discretion in the Contributory Negligence Act 1947.

90 *Wheeldon v Body Corporate 342525* [2016] NZCA 247, (2016) 17 NZCPR 353 at [36].

91 I have also considered whether this effectively provides a windfall for a defendant. Why should a defendant benefit from sale transactions after defects are known when the overall remediation cost remains the same no matter how the general body of owners changes? For instance, sale to a unit owner at a reduced price may mean that the unit owner should not be able to claim for the full remediation cost (having benefitted from the abated sale price) but the former owner would be entitled to sue for diminution in value anyway.

What is the impact of assignments?

[142] There are approximately 116 units where previous owners contemporaneously with sale of the unit assigned their rights to claim to the purchasers.[92] There are also three former owners who sold their units but did not assign their claims. Those three former owners instead claim the diminution in value compensation.

[143] The second plaintiff assignees proceed on the basis they are entitled to claim the cost of repair for which they will be liable and for which the previous owners from whom they purchased will not be liable. The Council says this is wrong in law.

[144] The Council argues that the assignments do not entitle the assignees to claim repair costs, only diminution in value. It says the assignees have no greater rights against the Council than their assignors at the time of assignment.[93] The assignors' loss was crystallised at the time of sale. If assignors sold at unaffected market value, they suffered no loss and certainly had no intention to meet the cost of repairs. As such, it was incumbent on the plaintiff assignees to particularise, claim and prove their economic loss.

[145] In view of my determination above that the Body Corporate is entitled to claim in respect of all claimed defects bar claimed defect 13, the materiality of this issue may be reduced, at least in respect of the claim to repair costs since the Body Corporate has standing as plaintiff.

[146] The validity of the assignments is not disputed.[94] Assignments of this nature accord with public policy. As Gilbert J held in *Nautilus*:[95]

> [283] By purchasing their units, which were known to have defects, the plaintiffs were accepting an obligation to contribute their proportionate share

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92 There were only 106 such assignments referred to in the plaintiffs' opening and schedule 5 of the amended statement of claim dated 11 March 2021. Refer Schedule III of closing submissions of plaintiffs. The assignments are recorded in either the agreements for sale and purchase or a deed of assignment or both.

93 *Body Corporate 326421 v Auckland Council* [2015] NZHC 862 [*Nautilus*] at [272]. See also *Dawson v Great Northern & City Railway Co* [1905] 1 KB 260 at [268]; and *Cole-Hamilton v Boyd* [1963] S.C (H.L.) 1 at P14.

94 Compliance with s 50 of the Property Law Act 2007 is not in issue. Notwithstanding that, plaintiffs' counsel advised the Court that the assignor in most cases remained in the claim in case there was any doubt.

95 *Body Corporate 326421 v Auckland Council* [2015] NZHC 862 [Nautilus].

> of unquantified repair costs. In taking an assignment of the vendor's rights against those parties thought to be responsible for those defects, they were obtaining a measure of protection against these costs. They were not buying their units to acquire a cause of action. Rather, they were buying the units and the vendor's rights of action in relation to the defects in those units.
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> [284] The alternative for these plaintiffs would have been to acquire the units at a greater discount leaving the vendors to sue for losses on sale. Either way, the claims would be pursued. I cannot see how it would be contrary to public policy to allow the assignments to stand, thereby ensuring that the amount potentially recoverable is more accurately aligned to the actual repair costs.

[147] The Court in *Nautilus* was not asked to address the question of what the assignees were entitled to claim under the assignment (and did not). But the council did endeavour in that case to establish with valuation evidence that the anticipated repair costs were fully recognised in the purchase price such that those plaintiffs would receive double recovery. Gilbert J was not persuaded on the evidence that the plaintiffs paid more or less than market value for the rights acquired but the point did not affect the validity of the assignments.[96]

[148] The plaintiffs spent little time on this difficult issue in closing submissions. As I apprehend their response, it has three elements. First, the contemporaneous timing. They submit that what is assigned is the vendors' cause of action at the point of sale and not the vendors' 'loss' after sale. (This point acknowledges that once a vendor sells at an unaffected price the vendor has no loss.) Secondly, they submit that the Council is unable to point to any 'strong authority' in support of is position. Thirdly, they say there are no policy arguments in favour of the approach the Council takes.

[149] The plaintiffs' policy argument is right. Without the ability to assign rights and entitlement to purchasers, the apartments would likely be unsaleable and owners would be locked into ownership which they do not wish to retain, or cannot afford to retain during protracted litigation. Relatedly, an affected value approach is unattractive given the recognised difficulty in predicting the costs of any remediation at time of sale and the risk of discovery of further defects.

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96 *Xu v AIG New Zealand Limited* [2018] NZCA 149 at [286].

[150] I am not persuaded that the insurance contract cases such as *Xu v AIG New Zealand Limited* are good analogies.[97] Those cases say that an assignor cannot assign a right to repair or the right to receive repair costs where they have sold and no longer intend to effect repairs. In *Xu* the owners of an insured home sold their earthquake damaged home. They had claimed under their policy before sale and sold their home while the claim was still unresolved. As part of the transaction the owners assigned their rights in respect of the insurance claim to the purchasers. One of the issues was whether the purchasers could reinstate the property and be reimbursed by the insurer under the assignment. The Court of Appeal said:

> [21] The only permissible assignment without the insurers consent of a policy of this type is the right to receive payment of an amount to which the insured is entitled under the policy (an accrued debt) or may become entitled on the happening of a contingency (a contingent debt). In either case, the right to receive the payment will only ever reflect the insureds loss covered by the policy. If the insured does not suffer the loss and it can be shown that it will never suffer the loss, there can be no right to payment under the policy (accrued or contingent) and accordingly no payment right to assign.
>
> [22] The Barlows have suffered the loss covered by the indemnity payment. They suffered that loss prior to the sale and their right to receive the indemnity payment for it had accrued and was validly assigned, as IAG accepts. However, the Barlows have not reinstated and will not reinstate. It is an agreed fact that they will never incur the loss occasioned by doing so. Their contingent right to payment of reinstatement costs was extinguished by the sale. It follows that they could not assign the right to receive such a payment. It is trite that the appellants as assignees can have no greater rights than the Barlows as assignors.
>
> [23] IAGs policy is entirely consistent with this analysis. The insured is defined as the Barlows, not the Barlows or their assignees. The replacement benefit is expressed to be payable if you restore your Home in other words, it is conditional on the Barlows restoring their home and incurring the cost. It does not indemnify an assignee for the cost it may choose to incur in restoring what has become its home following purchase. The general conditions include that you must not incur any expenses in connection with a claim without the insurers prior agreement. This reinforces that the benefits are personal to the insured and an assignee would not be entitled to incur reinstatement costs in connection with a claim and then seek reimbursement. IAG's policy also contains a general condition confirming that all policy conditions, where applicable, apply to your legal personal representative. Had there been an intention to confer benefits on an assignee, one would expect the scope of this condition to have been extended to assignees.

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97 *Xu v AIG New Zealand Limited* [2018] NZCA 149 upheld on appeal by the Supreme Court in *Xu v IAG New Zealand Ltd* [2019] NZSC 68, [2019] 1 NZLR 600.

[151] The Supreme Court (by a majority) upheld the decision but reframed the issue as whether the reinstatement clause could be exercised by the assignees.[98] Their decision turned on the personal nature of the reinstatement benefit which was limited to the insured and could not be assigned.[99]

[152] This analysis is not apposite in a building defect case where the assignment is of a tortious claim. In such a claim, it is well established that a duty of care is owed to the new owners independently and any right or entitlement to recover for loss is not personal.

[153] The Council argues that its position is best demonstrated by reference to a decision of the House of Lords sitting in the appellate jurisdiction from Scotland. In *G.U.S. Property Management Ltd v Littlewoods Mail Order Stores Ltd*,[100] property was damaged by subsidence caused by foundation works at an adjacent property. When the damage occurred the property was owned by Rest Property Company Limited ("Rest"), a wholly owned subsidiary of The Great Universal Stores Limited. The property was then transferred to another subsidiary, Gus Property management Limited ("GUS"). It was transferred at book value. Later, Rest assigned to GUS its claims in respect of the damage.

[154] GUS brought the equivalent of a tortious damages claim. Its first claim was that the value of the building in its damaged state at the time of the defendant's operations was significantly less than its value in an undamaged state at the same time. The claim was therefore the diminution in value, being the difference between those two values. The second alternative claim related to the cost of repair which the current owner, GUS, had accrued.

[155] The transfer at book value made no allowance for the diminution in value and the cost of repair was borne by the assignee. The tortfeasor argued that it followed that Rest had suffered no loss so GUS, as assignee, had no basis to sue. The claimant

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98 *Xu v IAG New Zealand Ltd* [2019] NZSC 68, [2019] 1 NZLR 600.

99 At [44] approving Cooke P's statement in *Bryant v Primary Industries Insurance Co Ltd* [1990] 2 NZLR 142 (CA). Glazebrook and Arnold JJ in dissent considered that the reinstatement benefit accrued when the loss or damage occurred and the fact the replacement benefit was conditional on restoration and the insured homeowner will not restore the property did not prevent assignment.

100 *G.U.S. Property Management Ltd v Littlewoods Mail Order Stores Ltd* 1982 SC (HL) 157.

succeeded at first instance but the decision was overturned on appeal. On appeal to the House of Lords, Keith LJ (with whom Diplock, Fraser, Roskill and Brightman LJJ agreed) held:[101]

> Where the property is disposed of in an arms' length transaction for the price which it is fairly worth in its damaged condition, the difference between that price and the price which it would have fetched in an undamaged condition is likely to be the best measure of loss and damage suffered.
>
> …
>
> But it may happen that the owner of the property disposes of it otherwise than by such a transaction. He may, for example, alienate it gratuitously. Again, ownership of the damaged property might have come to be separated from that of the claim to damages by operation of law… it is absurd to suggest that in such circumstances the claim to damages would disappear, as the Lord Ordinary put it, into some legal black hole, so that the wrongdoer escaped scott-free. There would be no agreed market price available to form an element in the computation of the loss, and so some other means of measuring it would have to be applied, such as an estimate of the depreciation in value or of the cost of repair.

[156] Lord Keith resorted to the repair expenditure as relevant to the scale of expenditure which it is likely that Rest as assignor would have been required to incur if they had continued to own the building to arrive at an estimate of the loss suffered by Rest.

[157] I do not read this case as standing for any principle that where diminution of market value may be available as a measure of loss, then it must be taken. Rather, I read it as acknowledging that the measure of damages will be fact dependent. Moreover, just like the case in hand, the claim by GUS was for a sum not expended by the assignor where cause of action and loss had been suffered by the assignor prior to the assignment. It is arguable in fact that the approach supports the plaintiffs' position that cost of repair is available to measure loss.

[158] The Council's riposte is that cost of repair was a means of estimating the assignor's loss only because there was no arms' length transaction whereas the sale of units at Gore Street were at arms' length. The Council says that is the only loss suffered by the assignors and therefore the only loss the assignees can recover. Materially, the Council submits, there is no unfairness or "black hole" which

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[101] At 177.

motivated the Court in *GUS Property Management.* The assignees fail to recover only because they have failed to prove their assignors' losses. They do not rely on any valuation evidence to establish the difference between the unaffected market value and what they received. Further, it says the assignments can only relate to the losses that had accrued at the date they took place based on defects known or reasonably discoverable at that date. It would not prevent the assignees suing in their own right to recover their own losses arising from defects discovered or only reasonably discoverable after that date. The only practical impediment would be the 10 year limitation defence in the Building Act.

[159] The proposition that claims would need to be divided between those "known" at the time of sale and those "unknown" to the purchasers/assignees at the time of purchase is unworkable and unattractive.

[160] To recap, thus far, neither the analogies the Council seeks to draw nor the policy argument take this issue very far notwithstanding the eloquence of counsels' arguments. It must also be borne in mind that New Zealand common law has forged its own distinctive path in the building defect/negligence context. It is well settled in this jurisdiction that successive owners are owed a duty of care and issues of accrual of a cause of action do not present obstacles.

[161] That leaves the first principles basis for the Council's argument. This has more heft but in the end, I find that there is no good reason why an assignee in this context should be prevented from claiming for repair costs just because he or she purchased with knowledge of the defects and with an assignment of a claim (and not an assignment of a loss). The principle that an assignee can recover only that which the assignor was able to claim but for the purchase had the objective of protecting a wrongdoer from being prejudiced by the assignment. It was not to enable a wrongdoer to rely on the fact of assignment to escape liability. There is no prejudice to the Council. I reject the Council's argument that no "black hole" would be created on its approach where an assignor receives an unaffected market price on sale and the purchaser faces the remediation cost. In my view the principle that assignees have no greater rights against the Council than their assignors at the time of assignment means

no greater rights against the Council than if the building had not been transferred to the assignee.[102]

[162] I conclude that there is no impediment to the plaintiff assignees claiming remediation and associated costs.

[163] I turn to the claimed defects.

PART II — FIRE DEFECTS

[164] It is appropriate to deal collectively with the claimed defects relating to lack of fire protection at Gore Street. The primary pleaded defects in this category are:

(a) **defect 1** — Load-bearing steel framed elements do not have adequate fire protection;

(b) **defect 2** — Heads of fire separation walls not constructed to maintain the integrity of walls in a fire event;

(c) **defect 3** — Inadequate steel framed connections within Core; and

(d) **defect 7** — Penetrations and openings through fire separations and construction of fire separation walls do not maintain integrity of fire separations.

[165] There are also fire protection aspects to claimed defect 4 — scissor staircases do not have sufficient allowance for movement or ductile performance and scissor staircases/fire separation walls do not have sufficient isolation; and defect 6 — relating to junctions of post-tensioned floor slabs to building perimeter beams and wall structure.

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[102] Hugh G Beale (ed) *Chitty on Contracts* (34th ed, Sweet &Maxwell, London, 2021) at 22-078, notes the principle that an assignee cannot recover more than the assignor could have done had there been no assignment "has given rise to particular difficulties in relation to building contracts and tort claims for damage to buildings." Citing *Offer-Hoar v Larkstore Ltd* [2006] EWCA Civ 1079, [2006] 1 WLR 2926 in which it was held that the cause of action is established, losses flowing from the related breach can be recovered as long as it would have been suffered by the assignor had they not transferred the property.

Fire safety clauses of Building Code

[166] The fire safety clauses of the Building Code at the time of design and construction of Gore Street were cls C1 to C4. These clauses adopted the standard hierarchy beginning with objectives, then functional requirements and finally performance requirements relating to Outbreak of Fire (C1), Means of Escape (C2), Spread of Fire (C3) and Structural Stability During Fire (C4).

[167] These claimed defects engage cls C2, C3 and C4 of the Building Code. They are also said to engage the structural clauses of the Building Code due to the interdependence of the clauses.[103] For instance, the plaintiffs' experts contend that the lack of protection to the steel beams in the Core means that there is more than a low probability that the steelwork will cause loss of amenity through undue deformation in breach of cl B1.3.2. According to the plaintiffs' case, the building elements do not comply with B1 from the time of construction, so it follows that cl B2 of the Building Code is also not met.

[168] The objective of cl C2 (Means of Escape) is to safeguard people from injury or illness from a fire while escaping to a safe place, and to facilitate fire rescue operations.

[169] The functional requirement in cl C2.2 is that buildings shall be provided with means of escape from fire which give people adequate time to reach a safe place without being overcome by the effects of fire and give fire service personnel adequate time to undertake rescue operations.

[170] The most relevant performance requirement is cl C2.3.3(d) which provides that escape routes shall be resistant to the spread of fire as required by cl C3 (Spread of Fire).

[171] The objective of cl C3 (Spread of Fire) is to:

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[103] Clauses B1 and B2.

(a) Safeguard people from injury or illness when evacuating a building during a fire.

(b) Provide protection to fire service personnel during firefighting operations.

(c) Protect adjacent household units, other residential units, and other property from the effects of fire.

(d) Safeguard the environment from adverse effects of fire.

[172] The functional requirement in cl C3.2 is that buildings shall be provided with safeguards against fire spread so that:

(a) Occupants have time to escape to a safe place without being overcome by the effects of fire.

(b) Firefighters may undertake rescue operations and protect property.

(c) Adjacent household units, other residential units, and other property are protected from damage.

(d) Significant quantities of hazardous substances are not released into the environment during a fire.

[173] In terms of the performance clauses, C3.3.2 and C3.3.3 provide:

C3.3.2 Fire separations shall be provided within buildings to avoid the spread of fire and smoke to:

(a) Other firecells;

(b) Spaces intended for sleeping, and

(c) Household units within the same building or adjacent buildings.

(d) Other property.

C3.3.3 Fire separations shall:

(a) Where openings occur, be provided with fire resisting closures to maintain the integrity of the fire separations for an adequate time, and

(b) Where penetrations occur, maintain the fire resistance rating of the fire separation.

[174] The objective of cl C4 (Structural Stability During Fire) is to safeguard people from injury due to the loss of structural stability during fire and to protect household units and other property from damage due to structural instability caused by fire.

[175] The functional requirement in cl C4.2 is that buildings shall be constructed to maintain structural stability during fire to:

(a) Allow people adequate time to evacuate safely.

(b) Allow fire service personnel adequate time to undertake rescue and firefighting operations.

(c) Avoid collapse and consequential damage to adjacent household units or other property.

[176] The performance requirements in cls C4.3.1–4.3.3 are:

> C4.3.1: Structural elements of buildings shall have fire resistance appropriate to the function of the elements, the fire load, the fire intensity, the fire hazard, the height of the buildings and the fire control facilities external to and within them.
>
> C4.3.2: Structural elements have a fire resistance of no less than that of any element to which they provide support within the same firecell.
>
> C4.3.3: Collapse of elements having lesser fire resistance shall not cause the consequential collapse of elements required to have a higher fire resistance.

Experts

[177] The plaintiffs' experts in relation to matters of fire engineering and related structural issues were:[104]

(a) Per Ake Olsson, a chartered professional engineer and director of a fire research consultancy with 30 years' experience in fire safety work. Mr Olsson modelled various fire scenarios to provide inputs to the structural engineering analysis.

(b) Dr Gregory Baker, a fire engineer and director of a fire research consultancy with 35 years' experience in fire safety with a research background.

(c) Alan Page, a passive fire consultant who investigated the firestopping of penetrations.

(d) Ronald Green, also a passive fire consultant in the fire protection and building compliance industry.

(e) Frank Wiseman, a passive fire consultant.

(f) Dr Clark Hyland, a structural engineer. Dr Hyland has decades of experience in structural engineering and was the plaintiffs' primary expert on all things structural.

[178] The Council's primary fire and fire related structural experts were:

(a) Dr Anthony Abu, Associate Professor of Structural Fire Engineering and Director of Studies (Fire Engineering) at Canterbury University.

(b) Charles Fleischmann, Professor of Advanced Fire Dynamics at Canterbury University.

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[104] Some of the experts shared common surnames. To avoid confusion I refer to those experts by first and last name without honorific.

(c) Johan (Hans) Gerlich, an engineer with Winstone Wallboards for most of his 30 years' experience and specialist in GIB wall systems.

(d) Daryn Glasgow, a fire engineer with 15 years' experience and previously an operational fire fighter and officer in the New Zealand Fire Service.

(e) Martin Feeney, a structural and fire engineer and principal of Holmes.

(f) Deborah Scott, a chartered professional engineer.

Context

[179] First, some context and definitions. The two basic objectives of fire safety design are to prevent ignition and to manage impacts of any fire that develops. The impact is managed by controlling the fuel, suppressing the fire, and controlling the development of the fire by construction methods and movement of people in the event of a fire. The overall fire safety design of a building comprises two types of systems — active and passive fire protection. Active fire protection systems detect fire and smoke, and control the spread of fire by the use of sprinklers. Passive fire protection involves the use of building elements and systems which resist the spread of fire and smoke between areas. These include imposing requirements on wall and ceiling lining materials, creating firecells to contain the fire and putting in measures to provide structural stability.

[180] Fire safety design is based on a holistic or multi-layered approach. The primary line of fire protection is the provision of sprinklers which detect and then act to suppress or control a growing fire. Smoke detection sensors are a secondary detection mechanism to provide earlier warning than sprinklers and initiate evacuation or to detect a fire should the sprinklers fail to operate. The passive fire and smoke-rated separations are also secondary levels of protection to contain and prevent the spread of fire, even in the event that sprinklers fail or operate in a less than optimal way.

[181] Gore Street has an automatic sprinkler system designed and constructed to NZS 4541:2003 (Automatic Fire Sprinkler Systems). This automatically detects and warns of fire as sprinkler activation will also activate the fire alarm system. The building is subdivided by various configurations of fire separations. For example, each floor in the tower is a separate firecell. Individual apartments are also separate firecells and separated from the common safe path corridor. There is a smoke detection system provided throughout the apartment levels which is typically configured so that a single smoke detector activation will only sound locally within the apartment of origin. If any other detection devices or sprinklers then operate the fire alarm will sound throughout the building. The ventilation system in the building is interfaced with the fire alarm system so it shuts down on alarm activation to prevent smoke circulation. The two safe path egress stairs are pressurised to mechanically supply air to the stairs creating a positive pressure environment. This prevents smoke on the floor of fire origin from entering the stairwell.

[182] A firecell is any space including a group of contiguous spaces on the same or different levels within a building, which is enclosed by any combination of fire separations, external walls, roofs and floors.[105] A fire separation is any building element which separates firecells or firecells and safe paths and provides a specific fire resistance rating.[106]

[183] A key element of fire design is the determination of the required Fire Resistance Rating ("FRR"). The FRR is defined as: [107]

> The term used to classify fire resistance of primary and secondary elements as determined in the standard test for fire resistance, or in accordance with a specific calculation method verified by experimental data from standard fire resistance tests. It comprises three numbers, giving the time in minutes for which each of the criteria stability, integrity and insulation are satisfied and is presented always in that order.

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105 Agreed Glossary referencing Compliance Document for NZBC C1, C2, C3, C4 – Fire Safety dated 1 June 2001 at 25.

106 Agreed Glossary referencing Approved Compliance Document for NZBC C1, C2, C3, C4 and C/AS1 – Fire Safety dated 1 June 2001 at 26.

107 Building Code Clause A2-Interpretation. A fire resistance rating of a building element is recorded as, for example, 30/30/30 where the first number is stability (ability to carry its fire design load during a fire), the second is integrity (ability to prevent the passage of flame and hot gases) and the third is insulation (ability to maintain the temperature on its unexposed face below that specified). The numbers are all in minutes.

Acceptable Solution and Alternative Solutions in fire safety

[184] The deemed to comply route to satisfy the C clauses was via the Acceptable Solution C/AS1. The active and passive fire safety precautions set out in C/AS1 were based on the building use and subdivision of the building into firecells, each with the application of FRRs to building elements.

[185] The alternative solution route requires that a building consent applicant demonstrate that the building will comply with the requirements in the Building Code. The import of this was contested during the trial. It suffices at this point to capture the plaintiffs' understanding which is that this route adopts a 'real' fire scenario approach rather than a standard fire test such that it would be incorrect to use an "F" or "S" rating (or FRR) calculated in accordance with C/AS1 to justify code compliance. In short, that those calculations are only valid within the Acceptable Solution context.

[186] The plaintiffs' experts say that a 'real' fire scenario is more realistic than the ISO 834 standard fire and requires a fire engineer to take a range of possibilities into account including fires which may fully develop to the point where they may threaten structural elements — so-called 'burn out' fires — despite the presence of sprinklers.

[187] A fire engineer will use fire modelling software to produce 'time temperature' or 'gas curves' showing temperatures during the various phases of a burn out fire. The structural engineer then determines how building elements will respond to the temperatures produced from the fire engineer's analysis.

[188] A typical course for fire design is that a fire engineer would determine the FRRs for building units following the methodology in C/AS1. The designer would then specify construction materials systems to achieve those FRRs. Provided that the construction followed the designs, the building was deemed to comply.

[189] The FRRs in C/AS1 were based on "standard fire resistance tests" cited in Australian and New Zealand standards, AS 1530 (Methods for Fire Tests on Building Material Components and Structures) or NZS/BS 476.22:1987 (Fire Tests on Building Materials and Structures). Those tests in turn were based on the international standard ISO 834 test which dates from the 1930's — a somewhat anomalous position given

that modern buildings tend to have different fuel types, fuel loads and ventilation conditions .

[190] The Acceptable Solution refers to the derivation of FRR by two types of fire rating. The first is a firecell rating, or F-rating. The second is a structural fire endurance rating, or S-rating.

[191] The F-rating is:

> The time in minutes for which it is intended to prevent fire spreading to another firecell within a building, or causing structural collapse within the firecell due to failure of any primary or secondary element.

[192] The purpose of the F-rating is to protect occupants who may have to remain in the building while evacuation proceeds, adjacent household units and sleeping areas, and firefighters.

[193] An S-rating is:

> The time in minutes within which a fire should not cause structural failure of primary or secondary elements, resulting in consequential fire spread or collapse, damage to other property, or an adjacent building on the same property which contains sleeping purpose groups.

[194] C/AS1 sets out a table for calculating the appropriate F-rating based on factors such as the purpose group or usage, comparisons with the occupant load and escape height for the firecells. In the case of Gore Street, the C/AS1 table specified an F-rating of F60, or 60 minutes. This is applicable to fire separations between apartments; between apartments and the safe path common corridor; and around the safe path egress stairs.

[195] The Council expert, Daryn Glasgow explained calculation of an S-rating in these terms:

> The S-rating is determined from a separate set of tables in the Acceptable Solution, which provide a simplified time for burnout of the fire cells in a building using an equation based on the Eurocode DDENV 1991-2-2:1996. This compares the fire load energy density (FLED) of a fire cell with a ration of ventilation area against floor area. Ventilation area is anything which can reliably provide air to a fire and includes non-fire resistant glazing. For the Gore Street building therefore, the S-rating would be determined by taking the

> FLED for an apartment fire cell, being 400MJ/m^2 and the worst case vertical ventilation area to floor area ratio, which is 0.14, and the ventilation area to floor ratio for horizontal vents of which there are zero. The table in C/AS1 specifies an S-rating of 50 minutes, which is then allowed to be halved for the presence of sprinklers resulting in a specified S-rating of 25 minutes.

Penetrations

[196] In every building, there are openings in what are otherwise fire separation walls or floors. Such openings may include construction joints, doors and windows. Fire separation walls also have penetrations including such things as combustible pipe penetrations, cable and conduit penetrations, mechanical duct work penetrations, metal pipe penetrations and structural steel penetrations. To maintain the integrity of the fire separation wall itself, those penetrations need to be sealed, or in fire engineering parlance "stopped".

[197] The objective is to prevent the passage of fire, smoke and toxic gases from one firecell to another. Ineffective fire stopping can lead to fire and smoke passing through penetrations in the separations, harming occupants or preventing or delaying them from exiting the building to a safe place. It may also hinder fire service operations.

[198] There are various methods of fire stopping penetrations through fire separation walls and floors. Some products such as fire collars, wraps and some sealants work by thermally induced expansion. Other methods use mechanical action to close the opening. An example is the fire-rated damper. A damper mechanically closes the opening once smoke is detected. It is normally used for ventilation duct work. A third category is passive products which stay in place during a fire. Examples are fire-rated batts, standard sealants or mortars which do not expand on thermal effect.

[199] Manufacturers of fire stopping products are required to have products tested by a registered testing authority to obtain an FRR. Technical literature produced by the manufacturer specifies details of the installation as tested and reference the test report from the registered testing authority.

[200] At the material time, para 6.17 of C/AS1 stated regarding fire stopping:

6.17.1 The continuity and effectiveness of fire separations shall be maintained around penetrations, and in gaps between or within building elements by the use of fire stops.

6.17.2 Fire stops shall have a FRR of no less than that required for the fire separation within which they are installed, and shall be tested in accordance with paragraph C7.1 of Appendix C.

6.17.3 Fire stops and methods of installation shall be identical with those of the prototype used in tests to establish their FRR.

[201] Cl C7.1 of Appendix C provides:

C7.1.1 Primary and secondary elements, closures and fire stops shall be assigned a fire resistance rating (FRR) when tested to:

AS1530 Methods for fire tests on building materials and structures – Part 4: Fire resistance tests of elements of building construction; or

NZS/BS476 Fire tests on building materials and structures – Parts 20 to 22. Test methods for determining the fire resistance of elements of construction.

C7.1.2 Fire stops shall be tested:

In circumstances representative of their use in service, paying due regard to the size of expected gaps to be stopped, and the nature of the fire separation within which they are to be used, and

In accordance with AS4072: Part 1, Service penetrations and controlled joints.

What is the problem?

[202] The consented documents for Gore Street included fire protections intended to achieve compliance with the Building Code. Expressed or pleaded at a high level of generality, the four claimed defects can be broken down into the following specific allegations:

(a) The steelwork in the Core — namely the steel beams supporting the structure — does not have passive fire protection such as fire-rated GIB boxing, cementitious spray or intumescent paint.

(b) Contrary to the manufacturer's technical requirements:

(i) there is no movement allowance of 15 millimetres between the top of the studs and the top channel of the fire separation walls;

(ii) screw fixings were used to secure the stud to the top channel preventing vertical movement and not permitting expansion of the stud in the event of a fire; and

(iii) there are not two strips of plasterboard installed between the top rail and the underside of the steel beams.

(c) Welds in the Core depart from specifications or are poorly done.

(d) Penetrations are either not stopped at all or do not meet the manufacturer's specifications.

(e) Fire doors to the apartments, stairwells and service cupboards have gaps between the bottom of the door and finished floor height exceeding the maximum 10 millimetre gap specified by the manufacturer.

Who is said to be responsible?

[203] The plaintiffs sue the Council and Clark Brown in respect of all claimed fire defects.[108] They sue Holmes in respect of defects 1, 2 and 7 and Chenery in respect of claimed defect 7. Of these defendants, only the Council actively participated at trial.[109]

[204] There is no dispute that the as-built construction does not comply with the consented documents in that the steelwork in the Core does not generally have passive fire protection such as fire-rated GIB boxing, cementitious spray or intumescent paint. The claim is that the Council breached its duty of care by:

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[108] The Court granted leave to pursue claims against Clark Brown on 27 September 2019.

[109] The plaintiffs settled a claim against MacDonald Barnett on the eve of trial. MacDonald Barnett participated in the trial in defence of a crossclaim by the Council until settlement of that crossclaim during the trial.

(a) issuing building consents notwithstanding insufficient details in the Clark Brown architectural specification for protection of the steelwork;

(b) failing to ensure at the inspection/CCC stage that suitable fire protection was properly applied to the steelwork in the Core at Gore Street;

(c) failing to identify at the inspection/CCC stage that the heads of fire separation walls, inside and outside the Core, did not comply with the consented Winstone Wallboard GIB systems manuals with the result that these walls did not have any allowance for movement and become load-bearing in the event of fire;

(d) failing to identify the defective welds;

(e) failing to identify that service penetrations were either not properly fire stopped or not stopped at all and that fire doors did not comply with the manufacturer's requirements; and

(f) issuing a CCC despite failure to obtain verification of compliance at the CCC stage .

[205] The plaintiffs contend that the Council did not have reasonable grounds to be satisfied the steelwork and related building elements would comply with the Building Code. Nor did it have reasonable grounds to be satisfied the building, as constructed, would comply with the consent or Building Code.

[206] The claim against Holmes, the specialist fire engineer designers, alleges failure to exercise skill and care:

(a) preparing fire designs and specifications, in particular the 10 March 2005 fire design, in its review of the fire design in early 2006 and the various fire reports it issued;

(b) inspecting the building works; and

(c) providing the "sign-off" letter dated 29 August 2006.

[207] The claim against Clark Brown alleges breach of duty of care by:

(a) failing to provide specific details to ensure all the structural steel had adequate fire protection to achieve compliance with the requirements of the fire reports;

(b) failing to ensure a specific design was prepared in respect of the heads of the fire separation walls;

(c) failing to identify the lack of protection to the steelwork;

(d) failing to identify lack of gaps above studs, incorrect fixings, defective welds and defective fire stopping; and

(e) failing to identify obviously defective welds in the staircases and fire stopping as part of its observation role.

[208] The claim against Chenery relates to the issue of producer statements to Multiplex when the fire stopping of 127 plumbing pipe penetrations was not in accordance with the requirements of the manufacturers and was defective.

The respective cases in a nutshell

Steelwork and fire separation walls

[209] At the heart of this part of the case is whether the failure to build in accordance with the consented documents so reduces performance in the event of a fire that there was no compliance with the Building Code at the time of construction. The plaintiffs focussed on:

(a) the lack of protection to the steelwork, creating a susceptibility of the steelwork to deflection; and

(b) the lack of an expansion gap at the top of the steel studs.

[210] Combined, they say these two issues result in the fire separation walls being susceptible to such extensive damage in a significant fire that there is no assurance of compliance with the Building Code. They say the structural fire modelling evidence by their experts establishes that the level of performance falls below the requirement of the Building Code; that no expert has established compliance by advanced analysis and no expert says the steelwork is Building Code compliant.

[211] The Council's foremost position is a wholesale attack on the plaintiffs' structural and fire engineering evidence — a gateway issue. The Council's experts say the fire scenario modelling was based on highly unrealistic, overly onerous and non-credible fire scenarios. Since the starting point was flawed, the modelling produced overly pessimistic outputs. The short point that the Council experts make is that the flawed Olsson analysis taints the structural analysis.

[212] Not content with challenging the inputs into the modelling, the Council is highly critical of the computer modelling evidence of Dr Hyland which it describes as unexplained but flawed and based on a misunderstanding of the import of beam deflections.

[213] As to the other key areas of contest, it says there were sufficient details in the consent documentation for protection of the steelwork; they rely on the letter of certification from Holmes for the issue of a CCC and deny that any lack of specificity in the consent detail caused the ultimate lack of protection of the steelwork. The Council notes that the Holmes 'certification' did not alert the Council to the fact that the 'as-built' lift-to-lobby and stairwell-to-lobby walls departed from the Holmes fire design reports.

[214] The Council accepts that the absence of consistent 15 millimetre gaps and the use of screw fixings are departures from the relevant GIB manuals but disputes that these result in a failure to meet the objectives of the Building Code. It does not accept that the lack of plasterboard strips at the top track is a defect because it is merely an option to accommodate deflections from live and dead loads. It denies any negligence on its part; says it was entitled to rely on the fire engineer's construction monitoring to pick up these types of details and even if it had picked them up itself it would have

relied on the fire engineer/manufacturer to confirm that the published FRR was not compromised. It notes that the manufacturer of the gypsum plasterboard, Winstone, would have advised that the FRRs were not compromised.

Staircase welds

[215] Claimed defect 3 relates to missing or defective welds in staircases. It is both a claimed fire defect and a claimed structural defect. More specifically, the steel framing within the Core at Gore Street is bolted to cleat plates which are site welded to cast-in plates embedded into the concrete walls. There is no dispute that there are many (even systemic) welding deficiencies. The plaintiffs say, and the Council disputes, that this construction issue should have been picked up by the Council during the inspection phase.

Penetrations

[216] In respect of the penetration/fire stopping issues the Council accepts that there are non-compliant penetrations and some degree of Building Code breach but say these vary in nature. The Council accepts that it ought to have picked up missing architraves in the service cupboards and gaps in the service cupboards and stair doors. (This is a relatively minor subset of the claimed defects.) It further says that only a limited scope of remediation is required rather than the wholesale remediation for which the plaintiffs argue.

[217] Much of the physical reality in respect of the claimed fire defects is not disputed. But the Council argues that the plaintiffs have not established breaches of the Building Code. On the contrary, it argues that the plaintiffs' approach to their claims is flawed and the criteria their experts have adopted does not represent what was required under the Building Code in 2004, or even now. It says, for example, in relation to claimed defect 1 that the construction, although not in accordance with the consented documentation, still complies with the intent and requirements of the consented fire reports and the performance objects of the fire safety clauses of the Code.

Council's affirmative defences

[218] Among the general affirmative defences pleaded by the Council is a long-stop limitation defence in respect of claimed defects 1, 2 and 3. The Council relies on s 393(1) of the 2004 Act on the basis that new areas of factual inquiry were raised for the first time in the third amended statement of claim dated 30 November 2018, more than 10 years after the issue of the CCC on 5 October 2006.

Claim against Holmes

[219] Holmes filed a statement of defence in which it pleaded reliance on s 4 of the Limitation Act 1950 and s 393(1) of the 2004 Act. As discussed above, Holmes did not actively defend the claims.

[220] The claim against Holmes proceeded by way of formal proof. It received little attention during closing submissions if for no other reason than the plethora of issues facing the Court did not permit it.

Claim against Clark Brown

[221] The claim against Clark Brown also proceeded by way of formal proof. Clark Brown pleaded a contractual limitation of liability in its contract with the developer.

Claim against Chenery

[222] This also proceeded by formal proof. Though the claim against Chenery was quantified at just over $57 million, the claim against it occupied just two pages of written closing submissions.[110]

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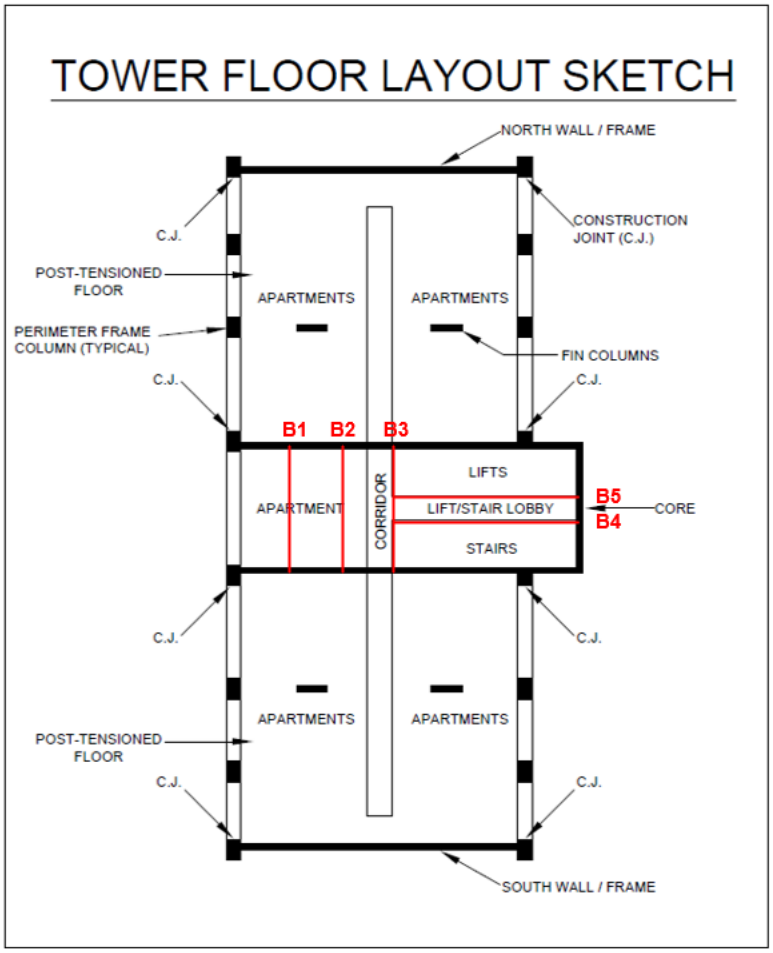
[110] This sum represents the plaintiffs' full quantification of claimed defect 7 including remedial work and consequential losses.

What is the state of affairs?

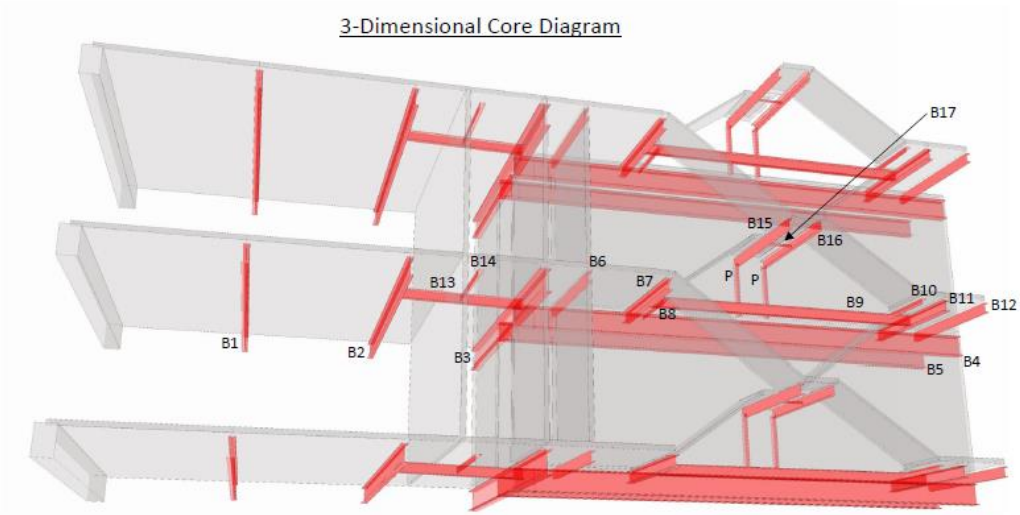
Load-bearing steel-framed elements and the heads of fire separation walls

[223] The load-bearing steel-framed elements are steel beams in the Core of Gore Street. The diagram below identifies the position of the main load-carrying beams B1 to B5.



[224] Beams B1 and B2 are within the apartment in the Core on each level. Beams B3 to B5 are in the corridor and lift lobby directly under the walls. Beams B3 to B5 are part of and support the fire separation wall system. Beam B2 also supports the fire separation wall system. Beams B2 and B3 are connected by beam B13 (not shown) all of which support the slab above. Beam B4 is positioned above the stairwell-to-lobby fire separation wall and beam B5 is positioned above the lift-to-lobby wall.

[225] For the sake of completeness below is a three-dimensional diagram showing the floor and a portion of the fire separation wall construction in the Core with the further beams not shown in the tower sketch above.



Note:

NAME	BEAM
B1, B2	310UB32
B3, B4	410UB59.7
B5	360UB44.7
B6, B12, B13, B15, B16	150PFC
B7, B11	200UB22.3
B8, B10	100EA6
B9	200PFC
B14	75EA5
P	75X5SHS (50x4SHS Actual)
B17	40EA5 (Not installed)

[226] Beams B6, B7, B11 and B12 support the stair landings. Beams B7 and B11 also support the inter-stair wall beam B9. Beams B8 and B10 support the bottom of the stair flights. Beams B13 and B14 support the slab around the vertical riser in the apartment. Beams B15 and B16 support the mid-height landings of the stairs. Beam B17 is a steel angle intended to tie beams B15 and B16 together, located within the fire separation wall. The posts (marked "P") supporting beams B15 and B16 are themselves supported by beam B4.

[227] The floor on each level of the Core comprises a concrete slab formed on galvanised steel decking supported by steel beams. The steel beams are connected by site welded steel cleats attached to steel embedded items in the concrete walls.

[228] The structural steelwork forming primary elements are beams B2 to B7, B9 to B10, B13 to B16, and the posts shown in the three-dimensional Core diagram above.

Primary elements are building elements that provide the basic load-bearing capacity to the structure.[111] Dr Hyland explained that primary elements include those providing support to other fire-rated elements within the same or adjacent firecells such as columns, beams, floors and walls.

[229] Dr Hyland's evidence was that the primary elements were required to have an FRR of 30/30/30 with the exception of beams B3, B4 and B6 supporting the stairwell which required an FRR of 30/60/60 if GIB plasterboard linings were used. Whether the rating for the stairwell was 30 minute FRR or 60 minute FRR was contested but I do not regard this as requiring determination for the reasons already discussed.

[230] The structural steelwork which constitute secondary elements in the floor are the beams B1, B8 and B10. In Dr Hyland's opinion, B1 required a stability rating only. It did not support any fire separation walls and so did not perform an integrity function; and it was not integral with a wall and so did not perform an insulation function.

[231] It is common ground that the beams were neither enclosed in GIB plasterboard as required by the GIB Fire Rated Manual nor protected with intumescent paint or a cementitious coating. Thus it is not disputed that the structural steelwork inside and outside the Core did not comply with the building consent. The live dispute is whether nonetheless the construction complies with the Building Code.

[232] The central allegation in claimed defect 2 is that there is no allowance for movement at the heads of fire separation walls so the integrity of firewalls in a fire event will not be maintained. This does not conform with the details for wall systems in the Winstone GIB manuals. The fire separation walls in the Core are between the stairwell and lobby, between the lift well and the lobby and between the apartment and corridor. These walls are constructed of steel studs with GIB plasterboard linings, except for the lobby to lift wall which has timber framing. The design intent was that they be non-load-bearing walls. The fire separation walls in the lobby are positioned below structural steel beams B4 and B5. The fire separation walls between the

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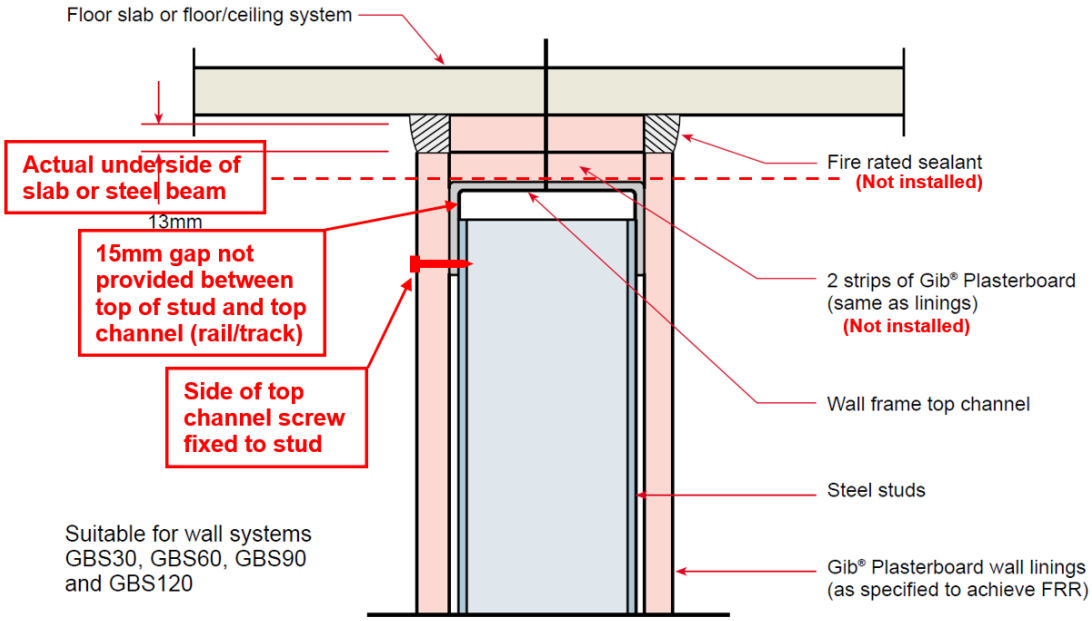
111 C/AS1, definitions, at 29.

apartment and the corridor are below beam B13 which is supported by beams B2 and B3.

[233] The movement gaps at the heads of these walls, as depicted in the GIB manuals, were referred to by the plaintiff experts interchangeably as "expansion gaps" or "deflection heads". I apprehend that these are in fact different aspects which the plaintiffs' approach conflates although this is not material to any finding. The Council expert, Mr Gerlich, is employed by Winstone Wallboards as an engineer. He works closely with the GIB performance systems manuals and was intimately involved with the testing of their development and revision. He referred to the expansion gap depicted in a typical GIB wall manual as a 15 millimetre gap between the steel stud and top channels which serves to let the studs expand during a fire scenario to minimise the risk of unpredictable compression and potential stud buckling.

[234] Mr Gerlich referred to the 'deflection head' detail in the GIB Fire Rated Systems Manual as the strips of plasterboard above the top channel and below the floor slab or floor ceiling system above. His evidence is that this detail has nothing to do with achieving the walls' stated FRR but is aimed at giving designers options for accommodating ambient or short-term deflections from live or other temporary loads. This GIB detail is illustrated below.[112] The plaintiffs' issues with the constructed heads of these walls are identified by the notations in red.

[112] GIB Fire-Rated Systems Manual (2001).



Welding issues

[235] Dr Hyland observed in or around 2018 that the workmanship on the welds on the web plate cleats to the concrete wall exposed in the stairwell was poor. The anomalies included an abnormal shape of the welds, missing welds, inadequately sized welds or other similar imperfections. That led to engagement of SGS New Zealand Limited which conducted an examination of 72 stairwell welds and visually scanned 127 stairwell welds. Evidence from Mr Kong of SGS was not challenged at trial. He found many instances of welding deficiencies. I accept this is a systemic issue throughout the building.

Fire stopping

[236] The plaintiffs' experts inspected fire stopping of approximately 480 penetrations and openings on 14 levels of Gore Street.[113] Their evidence is that, in almost all cases, they found the penetrations and openings were not fire stopped in accordance with the consented documents, in particular the "Penetrations in GIB Fire Rated Systems August 2003" manual.[114]

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113 In the period 2013 to 2016, investigation was carried out by Ronald Green and Frank Wiseman of Fire Group Limited and Olsson Fire. Subsequently, further inspection was carried out by Fire Research Group Limited.

114 Although this manual was in evidence, as best I can tell, the actual product manufacturer's technical information was not among the tens of thousands of documents before the court.

[237] Mr Olsson calculated that the failure rate of the penetrations and openings is higher than 95 per cent. He opined that the fire stopping "defects" are systemic. The Council did not challenge the accuracy of the plaintiffs' quantitative surveys but observed that the recorded qualitative issues fell along a spectrum. At one end, there were instances of a complete absence of fire stopping (about three per cent of the investigated penetrations). There can be no dispute that the absence of fire stopping does not meet the Building Code. At the other end of the spectrum are very minor issues such as one of four screws missing in the tabs on a fire collar. This variation in type and nature of fire stopping issues is integral to the Council's position which is essentially to put the plaintiffs to proof on almost every aspect of this claimed defect.

[238] The plaintiffs' experts also inspected all 630 of the fire doors in the building. The doors were tagged as manufactured by Best Doors Ltd. The plaintiffs produced a survey schedule recording the results of their inspections. The particular focus was the gaps under the doors and whether they complied with the maximum gap allowed of 10 millimetres as set out in the Best Doors technical datasheet. They found that 272 of the 630 doors had a gap greater than 10 millimetres. Of this number, 207 had a gap greater than 15 millimetres and 79 had a gap greater than 20 millimetres. These findings are not disputed. The battleground is over whether there is evidence that the fire stopping does not comply with the consented design or the functional code requirements.[115] The plaintiffs' experts say that the doors do not have an FRR if not installed in accordance with the prototype tested by the manufacturer and are likely to allow the premature spread of smoke and fire.

[239] There are also missing architraves in service cupboards. The Council does not dispute this or that there are gaps under fire doors to the apartments, stairwells and service cupboards which exceed that specified by the manufacturer.

How did it come about?

[240] Multiplex's building consent applications in the period between 2004 to 2006 were supported by fire safety design reports ("FDRs") prepared by Holmes. There were a number of revisions to these fire safety design reports between June 2003 and

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[115] The Council accepts that in the limited instance of no fire stopping it does not comply.

November 2005.[116] Materially, while some changes to construction are noted, each revised FDR is broadly similar and based on a modified application of C/AS1. The modification was specification of FRRs of 30 minutes for fire separations and structural elements rather than 60 minutes. I say, 'materially' as the actuality of the 'as-built' construction ended up being different. That difference was not captured by the FDRs.

[241] Mr Feeney was a principal of Holmes.[117] Called as witness on behalf of the Council, he described the FDRs as performance documents intended to be used by architects to go on to prepare drawings and specifications to achieve the performance requirements of the design.

[242] The FDRs described the design philosophy as "generally based on the Acceptable Solutions of the Building Code C/AS1 except where an alternative solution is specifically noted otherwise". The Council experts' view of what this meant for demonstrating compliance was philosophically and practically very different to that of the plaintiffs' experts.

[243] I accept that the fire design was an alternative solution insofar as it set the FRR of primary elements as 30 minutes by reference to the S-rating which was derived using a time equivalence calculation.[118] Mr Feeney accepted the design was an alternative solution in cross-examination. The Council consenting officer, Edward (Ted) Jones regarded it as such at the time. The FDRs acknowledge as much. While the original fire design in the FDRs deviated from C/AS1 in only one aspect, the 'as-built' construction departed from both C/AS1 and the building consent more significantly. I consider that the extent of that departure must inform the compliance approach even while C/AS1 serves as a guide.

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116 Holmes Fire & Safety "Fire Safety Design Reports" revisions A–E. Revision A is not relevant as it was only a draft and not issued.

117 The Council resolved its crossclaim against Holmes. The Council then called the witnesses that were to be called by Holmes, Martin Feeney and Deborah Scott, a fire engineering expert.

118 A time equivalence calculation determines the FRR that should be provided to a fire separation element or fire-resisting element to survive a full burnout of a fire in an area to which that element is exposed.

[244] The material FDRs prepared by Holmes begin with version B, dated 31 March 2004. The key advice for present purposes is contained in 6.1 which reads:

> All the primary elements of the structure are required to have an S-rating of not less than 30 minutes FRR on apartment levels and 60 minutes at retail level, unless specifically mentioned otherwise.

[245] The FDR recorded that the performance requirements of the Building Code will be satisfied based on the installation of the thirty listed fire safety systems including:

(a) Sprinklers throughout the building in all firecells and safe path corridors.

(b) Smoke detectors throughout the sleeping accommodation levels and safe path corridors.

(c) Manual call points connection to an automatic fire alarm system.

(d) A building alert system.

(e) An exit way pressurisation system in both stairwells in the building.

(f) Each floor of the building to be fire separated from each other. The floor system is required to have an FRR of no less than 30/30/30 FRR on typical levels. Primary structural elements are also required to meet this requirement unless specifically designed otherwise.

(g) An FRR of no less than 30/30/30 required between adjacent apartments on all levels.

(h) All penetrations within fire-rated partitions required to be sealed with approved fire resistant materials, and to achieve an FRR of no less than that of the element that is penetrated.

(i) A specialised installer of fire stopping materials (acceptable to the approving authority) to provide a producer statement certifying that penetrations in fire separations have been correctly identified, stopped and sealed in accordance with the fire stopping material manufacturer's requirements.

[246] Revisions C to E generally repeat the main points, along with the stated design philosophy, namely that the design is generally based on the Acceptable Solution. Each revision was provided to Council through a staged consenting process.

[247] It is apparent that the overall fire safety system is a composite of all these individual but interoperable systems. That is, systems designed to work together holistically. It is important not to lose sight of this in the assessment of the functionality or effectiveness of any one aspect of the overall fire system, such as protection of steel members.

[248] Holmes engaged Michael Simpson of MacDonald Barnett to peer review the fire design. MacDonald Barnett confirmed in writing that the "building design is in essence in compliance with C/AS1" and complies with cls C2, C3, C4 and F7 of the Building Code. Mr Simpson made one recommendation which he communicated to the Council in these terms:[119]

> As requested in your letter dated 14 June 04 we advise that fire ratings for this project were determined by Holmes Fire & Safety in accordance with the S rating requirements which are intended to show that fire separations will not be breached by total consumption of firecell fuel. Firecells with higher fire loads such as retail spaces have an S 60 rating. Apartments and carpark firecells are shown by Holmes Fire to be satisfactory with S30 ratings. In relation to the safe path stairs we suggested in our review that they be 60 minute rated, if Gib systems, [bearing] in mind their importance to overall building safety and also the acknowledgment from Gib that their systems may not stand a real fire of the stated duration. We note that revised plans show 60 minute rating of the stairways.

[249] Whether this meant a 60 minute rating of the stairs if GIB systems were used or use of 60 minute rated GIB board to increase the level of confidence of achieving a 30 minute FRR was disputed. The Clark Brown architectural plans indicated the

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[119] This was in response to a query by the Council dated 16 June 2004 requesting further information for the structural consent.

former. If that is correct, it became a building consent requirement. In the end, the materiality of that dispute fell away because the plaintiffs advanced their case on the basis that even a 30 minute FRR was not achieved in any event.[120]

[250] On 9 June 2004, MacDonald Barnett issued a producer statement (PS2 design review) in respect of the Holmes FDR (version B). MacDonald Barnett reviewed version E of the Fire Report and issued a PS2 in relation to that on 25 November 2005.

[251] Clark Brown prepared the architectural designs. The FRR for the steelwork is shown in those plans to be fire rated to 30 minutes. The walls were required to have an FRR of -/30/30. However in respect of the stairwell-to-lobby and lift-to-lobby walls, an interior wall legend showing all the GIB wall systems, references "GBS 60", "FRR -/60/60". This appeared to reflect the MacDonald Barnett recommendation for a 60 minute rating for the staircase walls. Clark Brown had acknowledged this change in a design advice notice to Multiplex on 23 April 2004 which said:

> …following the initial comments in the Fire Report peer review & consultation with Holmes Fire & Safety we will detail the walls around & between the scissor stairs as 60 minute FRR. These walls will now consist of 13 mm Gib Fyreline on both sides of a 63mm steel stud wall (GBS60). The doors from the lift lobby into the stairs are to remain -/30/30 sm doors as currently detailed.

[252] Three types of fire separation walls were specified in the Clark Brown architectural plans, each referencing a different type of GIB product and GIB specification:

(a) Intertenancy staggered steel framed walls. This wall type was used for the intertenancy walls on the post-tensioned floors and identified as P.01 on the Clark Brown drawings. P.01 referenced "wall construction/installation similar to GIB spec. STC 55 minutes, FRR -/30/30". The only staggered stud wall type in the GIB manuals that meets these requirements is the GBSA 60e in the GIB Noise Control Systems Manual.

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[120] Although the issue fell away, Mr Glasgow considered that the plaintiffs' incorrect assumption that the stair structure was required to achieve a 60 minute FRR resulted in an erroneous analysis using a significantly longer, therefore more onerous thermal insult on the structure.

(b) Intertenancy steel framed walls. This wall type was for the apartment-to-corridor walls both inside and outside the Core and identified on the Clark Brown plans as P.02. P.02 stated "wall construction/installation to GIB spec GBSA 30r2 — STC 55 minute, FRR -/30/30". This wall type is in the GIB Noise Control Systems Manual.

(c) Internal steel framed walls. This wall type was for the stairwell-to-lobby and lift-to-lobby walls inside the Core and identified as P.06. P.06 references "GBS60 Wall — STC 34 min, FRR -/60/60 in the GIB Fire Rated Systems Manual.

[253] The relevant GIB manuals warn of a need for strict compliance with details in the manuals to achieve the FRR of a GIB fire-rated system. The language is emphatic. It records that achieving the FRR depends on closely following the detailed specifications; performance of fire rated systems is sensitive to design detailing and construction practices and that it is of prime importance to pay strict attention to the details of design, construction and workmanship to avoid significantly degrading the FRR of the system.[121]

[254] All three of the express or inferred GIB manual references record the requirement for a 15 millimetre expansion gap at the top of the steel frame. They also specify particular fixings. By way of example, GIB Noise Control Manual (regarding GBSA 30r2) records:

> Stud spacing at 600mm centres maximum and placed to allow a 15mm expansion gap at the top of frame. The studs are held in place by the 'grip' of the channel runners. No other fixing is to be used.

[255] These architectural designs were consented under Consents 303 and 305. Consent 303 included the following material conditions:

> **14. FIRE DESIGN**
>
> The fire design report and peer review shall take precedence over architectural plans. Recommendations in the Fire Report and peer review must be followed. Refer to building consent BLD20040670302.

[121] GIB Fire Rated Systems Manual, August 2001.

…

20. FIRE ENGINEER TO INSPECT

On completion of the work, the Design Fire Engineer is to inspect and certify compliance with the intent and requirements of the fire report.

A Producer [Statement] "Construction – Review" is required before the CCC can be issued.

[256] Consent 305 which involved amendments to and updates to previous building consents required that it be read in conjunction with all previously issued consents including all conditions which applied equally. Further conditions included the following:

7. FIRE DESIGN

The fire design report version C dated 18 August 2005 is to take precedence over architectural plans.

…

Recommendations in the fire reports and peer review issued with building consent [302] must also be followed.

8. FIRE ENGINEER TO INSPECT

On completion of the work, the Design Fire Engineer is to inspect and certify compliance with the intent and requirements of the fire report and provide a Producer Statement "Construction Review".

9. PENETRATIONS IN ACOUSTIC WALLS AND FLOORS

Penetrations in acoustically rated walls and floors etc are to be sealed and finished to ensure that the rating of the wall and floor is not compromised.

[257] Consent 306 related to the addition of two floors to the top of the building and reconfiguration of the plant room. In relation to fire design, alongside the statement incorporating all conditions from the previous building consents it also states:

10. FIRE DESIGN

The Holmes Fire & Safety fire design report dated 12 October 2005 version D shall take precedence over architectural plans. Recommendations in the fire report must be followed.

The Holmes Fire & Safety fire design report dated 25 November 2005 version E has been peer reviewed by Michael Simpson of [Macdonald] Barnett [P]artners Ltd. Version E covers a number of amendments to the

> original peer review and amends version D to include proposed amendments which are not covered by this building consent.
>
> Conditions from previous building consents apply equally to this building consent.
>
> …
>
> **12. FIRE ENGINEER TO INSPECT**
>
> On completion of the work, the Design Fire Engineer is to inspect and certify compliance with the intent and requirements of the fire report and provide a Producer Statement "construction review".

[258] In Consent 601, there is further reference to inspection by the fire engineer including a statement that:

> Producer statements for systems shall be provided in accordance with the requirements of the "Auckland City Guidelines for the acceptance of Producer Statements" for the following systems.

[259] The Clark Brown architectural specification dated August 2004 (approved under Consent 303), provided two options for the protection of the steelwork in the Core. The first was fire-rated coatings. The second was "boxing in" with GIB. The plaintiffs contend that neither option was sufficiently detailed in the specification They criticise the Council for issuing a consent when the documents lacked information as to where and how steelwork protection was to be used to achieve the nominated FRRs. Geoffrey Bayley, an architectural draftsperson called by the plaintiffs, gave evidence that a prudent architect would prepare specific design details because a generic design solution may not be appropriate for all areas.

[260] The architectural specification did refer in the "Fire Rated Coatings" section to a specialist Holmes report. It was not attached to the specification. It transpired that the specialist report did not exist. Certainly Council did not request it. The plaintiffs argue that this compromised the Council consenting process from the outset. I accept that it would have been important had fire-rated coatings been employed. As that option was not utilised, its materiality is diluted.

A new alternative solution design — March 2005

[261] In late 2004, it appears Mr Feeney of Holmes was engaged by Multiplex to undertake a specific fire design for the steel structure. He proposed a design that would dispense with passive fire protection to the steel structure on the basis that beams or columns that are fully or partially enclosed in fire separation walls do not require passive fire protection as long as the integrity of the fire separation is maintained. Work was already well underway on the structure of the building by March 2005. On 10 March 2005, Mr Feeney advised Multiplex that:

> The steel beams and columns shown on the structural plans will support their long-term design loads throughout and after a fire to meet the performance requirements of the New Zealand Building Code Clause C4 and any realistic expectation by the owner, subject to the following stated conditions:
>
> - Compliance with the schedule of structure protection included below and the associated specification for protection
>
> - Integrity of fire separations must be maintained regardless of lack of passive fire protection needed for structural stability (i.e. wall linings must extend around structure as required to comply with the specification for construction of the fire separation[])
>
> - that the steel structure is constructed in accordance with the structural drawings and specification prepared by Buller George Engineers, especially the steelwork end connection details
>
> - that the sprinkler system is installed in accordance with the New Zealand Sprinkler Standard NZS 4541 …

[262] That schedule of structure protection relevantly provided: beams and posts in fire separation walls are to be protected by the walls themselves; beams above the apartments are to be protected by the GIB standard (non-fire-rated) plasterboard; and for specific fire protection to steelwork in minor respects only. This design was expressly stated to be an alternative solution in terms of compliance with the Building Act and "may reduce the level of property protection inherent in the Acceptable Solutions".

[263] This dispensing with specific protection in favour of reliance on wall linings and non-fire-rated ceilings to provide fire resistance was the first significant 'redesign' of fire safety for Gore Street. There is no evidence that any party informed the Council

of the revised alternative solution design and there is no reliable evidence that it was peer reviewed.[122]

[264] I pause to interpolate that the plaintiffs' case is that a peer reviewer would have identified the likelihood of significant deflections of the steel beams in a fire event and the need to address such deflections.

[265] By 1 February 2006, construction had reached level 29. At several inspections between 8 June 2005 and February 2006, Holmes recorded issues with the fire stopping of penetrations. In February 2006, Holmes identified that the plasterboard on the fire separation walls did not in fact cover steel beams. Multiplex had constructed all the fire separation walls between the lobby and staircase in such a way that the plasterboard did not extend to the underside of the slabs above so the plasterboard did not cover the steel beams on the lobby side.

[266] Holmes also identified that Multiplex had not installed deflection heads or strips of plasterboard between the deflection head and top channel as required by the GIB manual. Instead it had used the "Rondo" system. No data test sheets were available to Holmes despite request.

[267] Around this time Multiplex escalated the issue to Mr Feeney. The tone of the email exchanges suggests a level of frustration on the part of Multiplex about delay and consequential liquidated damages. It appears that Multiplex was reluctant to change the detail.

[268] Holmes offered to, and did, carry out specific analysis of the beam/wall detail as constructed. This was to establish whether or not it would be adequate for compliance as a less expensive option than retrofitting the construction already completed on the lower levels.

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[122] Mr Feeney gave evidence that the design was peer reviewed by Dr Charles Clifton, a HERA structural engineer who specialised in fire structural engineering. However, this evidence was supported only by an invoice referring to "Fee from the peer reviewer of the structural assessment". There was no written advice and no PS2.

[269] There did not appear to be any written reporting or assessment in the discovered documents from Holmes. However, a number of internal documents relating to that assessment by Mr Feeney were produced to the Court. This included a file note of a discussion between Mr Feeney and a colleague dated 2 March 2006.

[270] Mr Feeney in cross-examination accepted that the notation in that note "100 mm defln >> 12 to 13 mm ISO fire for exposed bare steel beam" meant deflection of beam B4 of 100 millimetres after 12 to 13 minutes of exposure to an ISO fire for an exposed bare steel beam. It referenced a conference paper at the Structures in Fire Conference held at the University of Canterbury in March 2002.[123] Ultimately, Mr Feeney undertook FaST modelling which considered the "beneficial influence of the plasterboard ceiling" to determine whether the beams would meet the required FRR.[124] This included time-temperature curves for apartment fire scenarios at Gore Street. Based on that analysis, he concluded that the maximum temperatures the beam would reach is less than its limiting temperature[125] and there would thus be adequate structural stability.

[271] The deviation from the Holmes redesign was put to Mr Feeney by plaintiffs' counsel. Mr Feeney said that the calculations on the note were "speculation", not an analysis of the likely deflection. He noted that the beams they are concerned with were only exposed on one side, which makes a difference to the rate of temperature rise and the maximum temperature to which the beam would be subjected. Mr Feeney also refuted the contention that the approach in the file note would lead him to recommend the beams on the lower floors be encased in the walls.

[272] Dr Hyland suggested that the FaST software used by Mr Feeney was circumscribed as it merely provides temperature and data to compare against "limiting temperatures" set out in NZS 3404:1997 (Steel Structure Standard).[126] He says that

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123 Mr Feeney confirmed in his evidence that the file note relates to elongation of the steel beam leading to deflection and that the analysis on page 2 of the file note was based on figure 13(a) in Peter Moss and others "Effect Of Support Conditions On The Fire Behaviour Of Steel And Composite Beams" (paper presented to Structures in Fire Proceedings of the Second International Workshop, March 2002) 175 at 188.

124 The discovered material also includes a FaST Holmes analysis dated around March 2006.

125 The "limiting temperature" being the temperature of the beam at the time its load-bearing capacity is exceeded and collapse may occur.

126 *Steel Structures Standard* (Standards New Zealand, NZS 3404:1997)

does not provide any assessment of the effect of fire on the structure, including the deflections of the steelwork and how this affects other elements such as the walls. His view is that the Holmes analysis made overly optimistic assumptions about the ability of the non-fire-rated ceilings to resist the spread of fire.

[273] On 10 March 2006, Holmes prepared an alternative stair/corridor detail with Fyreline GIB running up the stair side of the steel to the slab along with an associated sliding movement joint on the stair side. That detail showed the fire wall on the corridor side running up to the underside of the steel beam, with a GIB deflection head detail and 15 millimetre clearance. A handwritten note a few days later recorded that the "15 mm gap will not work. Do we really require 30 mm". The note suggested that a calculation is required to address whether the wall studs can carry the load of the floor above before buckling occurs and questioned deflection of the beam below.

[274] There is no evidence that these developments (the third alternative solution attempted), the further Holmes analyses or even the revisited fire design were communicated to the Council or MacDonald Barnett. The further iterations of the Holmes Fire Report, versions C to E, were expressed in the same general terms as version B, without any mention of the design or "as-built" deviations when submitted by Multiplex to the Council with the staged consents.

[275] Having apparently carried out further analysis of the corridor/stair wall and having provided an alternative detail (though there is no written record available showing the conclusions reached) Holmes issued a letter dated 29 August 2006 at Practical Completion on which the Council says it relied for the issue of a CCC.

[276] At the time the Council issued the CCCs in October 2006, there was widespread non-compliance with the passive fire protection measures in the building consents because there was no specific protection to the steelwork in the Core and no movement gaps at the heads of the fire separation walls inside and outside the Core.

An actionable breach — does the physical condition of the steel beams in the Core and fire separation walls breach the Building Code?

Future performance claim

[277] Most tortious claims in the building environment involve physical damage or undue dampness to building elements caused by moisture ingress or an observable risk of future damage or undue dampness because of waterproofing inadequacies. In those cases, damage is said to occur when the defect is so obvious that the value of the property is diminished.[127]

[278] The claimed fire defects have not caused any physical damage to date. They are all directed at future and predicted performance, or predicted lack of performance, in the event of a significant fire. The building may (hopefully) never be called on to "perform". What then is the loss or damage to which the law of negligence will respond as a matter of policy?

[279] The plaintiffs' written submissions draw an analogy between the manifestation of a latent defect and the identification of a design or construction issue meaning there is no reasonable assurance that it will perform in accordance with the Building Code in a future event such as fire or earthquake. Here they say the system of assurance which underpins the compliance certificate regime has broken down.[128] As Tipping J stated in *Spencer on Byron:*[129]

> [45] In cases where negligent inspection has given rise to the potential for physical damage but no such damage has yet occurred, it cannot be the law that you have to wait for physical damage to occur before you are regarded as having suffered loss or harm. It is not determinative whether the loss suffered at the outset is characterised as financial or physical. It is measured by the cost of bringing the building up to the standard required by the code and thereby removing the potential for physical damage and the associated health and safety concerns. A duty of care should be recognised in respect of pre-emptive expenditure as well as expenditure necessary to reinstate or repair physical damage which has actually occurred.

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127 *Invercargill City Council v Hamlin* [1996] 1 NZLR 513 (PC) at 526.

128 *Body Corporate 207624 v North Shore City Council* [2012] NZSC 83, [2013] 2 NZLR 297 [*Spencer on Byron*] at [16] per Elias CJ.

129 *Body Corporate 207624 v North Shore City Council* [2012] NZSC 83, [2013] 2 NZLR 297 [*Spencer on Byron*].

[280] I accept this submission. In his oral closing submissions, Mr Lewis then submitted in response to questions that the plaintiffs were content to prove loss by establishing non-compliance with the Building Code on the balance of probabilities. However, after a short reflection, he advanced a different proposition. He suggested that another way to look at the future performance issue is to rely on the same statutory standard that a council is required to address at the code compliance stage. Since that standard does not import any warranty of code compliance, the plaintiffs should not have to establish the converse — that there is no code compliance. Instead, the plaintiffs must show there were not reasonable grounds to be satisfied that the construction will comply with the performance requirements of the Building Code.

[281] The Council did not have advance notice of this alternative approach and this articulation potentially elides breach at the CCC stage with the notion of loss. The submission was not fully developed. As I did not have the benefit of full argument on it by all parties I intend to adopt the approach in the plaintiffs' written closing submissions. That is, whether the lack of compliance with the consented plans and specifications also translates into lack of compliance with the Building Code.

Expert agreement

[282] Experts for the plaintiffs and Council agreed at the expert conference that the steelwork does not comply with the Building Code to some extent. The extent is not agreed. No expert claims that the steelwork complies with the Building Code.

[283] The Council's expert fire engineer, Mr Glasgow agrees that the steelwork in the Core of the tower is not adequately protected to achieve a 30 minute FFR and is therefore susceptible to deformation in a fire event. However, he has a different view on the extent of deformation, whether some beams needs to be analysed at all, the impact of this deflection on the fire design and the risk deflection poses to egress in a fire event.

[284] While Mr Glasgow disagrees that all of beams B2 to B17 require additional fire-rated protection he does consider that beams B4 and B5 should be protected to

achieve the FRR as specified in the original fire design.[130] As works to protect those beams would make beams B3 and B6 more easily accessible, he considers it would be reasonably practicable to carry out works to protect those beams also.

[285] Despite the expert conference, in closing submissions the Council maintained its position that the construction complies with the intent and requirements of the fire reports and the performance objects of the Code. It puts the plaintiffs to proof and contends that the plaintiffs' case is so flawed that it must fail.

[286] Experts for the Council do not agree that the construction of the fire separation walls results in a breach of the Building Code.[131] They say the firewalls are constructed in excess of the minimum requirements in that they either have two layers of standard plasterboard on each side rather than one, or standard plasterboard is replaced with a layer of Fyreline. They say that the internal wall temperatures to which the steel framing studs are exposed is therefore reduced and the thermal expansion less than that calculated by the plaintiffs' experts.

[287] There are three key questions in respect of claimed defects 1 and 2:

(a) Does non-compliance with the consented designs reduce performance of Gore Street in a fire event?

(b) If so, does that reduced performance result in breach of the Building Code?

(c) To what extent, if any, do the steel beams and fire separation walls fail to comply with the functional requirements and performance criteria in cls C2 to 4 and B1?

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130 The expert for the 13th defendant also agreed. As the 13th defendant settled the claim against it at the commencement of the trial, that expert was not called to give evidence. Nonetheless, given that the role of an expert is to assist the Court and his agreement at the conference is recorded and produced by consent, his agreement need not be ignored. The work product recording agreement at the conference did not explicitly spell out the extent of agreement but deferred to the written briefs. This was not a useful approach.

131 Again, the expert for the 13th defendant says the fire separation walls underneath unprotected structural steel beams do not comply with the Building Code. The expert for the 8th defendant agreed with the Council experts.

[288] A host of sub-issues nest within those key questions as will quickly become apparent.

Claimed defects 1 and 2 — reduction in performance?

[289] I readily accept that in this instance the failure to adopt the consented options for protection of the steelwork inside and outside the Core of Gore Street means that there is reduced performance in a fire event. I also accept that the construction of the fire separation walls which do not conform with the GIB wall systems manuals means that the walls are more susceptible to damage in a fire event than they would have been if the construction had conformed. This conclusion accords with common-sense. If further support is needed, it is found in the acceptance by the Council fire engineer, Mr Glasgow, that non-compliance with the consented GIB systems could have implications in terms of failure of the fire separation walls. Mr Glasgow said:

> If you were designing the building using the acceptable solutions and it had been constructed in accordance with the GIB manuals, then you wouldn't need to do this type of analysis, you would just put in a complying GIB wall with a protected steel beam and you wouldn't need to do or wouldn't need to assess the downward deflection of beams or slabs for that matter.

[290] He agreed in cross-examination that there is the potential for damage to fire separation walls from deflections in more realistic fire modelling.

[291] That is however merely a starting point because reduced performance does not necessarily mean that the construction is not Building Code compliant.

[292] It is incontrovertible that at certain temperatures unprotected steelwork will deflect/deform.[132] The mechanism is described by Dr Hyland:

> If a steel composite floor system is to be used the engineer will be aware that in the event of a fire the steel beam will heat up and try and lengthen (elongate) but it will be constrained from doing so by the connections at the end of the beam and to the concrete slab above. In the typical case of a single isolated

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[132] This was well known at the relevant time and supported by leading text, Andrew H Buchanan *Structural Design for Fire Safety* (John Wiley & Sons Ltd, United Kingdom, 2002). It was also discussed at the Structures in Fire Conference at the University of Canterbury in Christchurch in March 2002. Deflection is the bending or "sag" caused by loading. Allowable deflection is generally expressed as a fraction of the span and/or in millimetres. All structural members will deflect or flex under load. The amount of flex depends on the magnitude of the load applied, span of the member, and stiffness of the member.

beam this will cause the beam and floor slab to defect downwards as the temperature of the beam increases.

[293] He explained that non-load-bearing walls require an allowance for vertical movement at the head of the wall because of two thermal effects which typically occur together:

> a) The first is expansion of the studs due to being heated up. In this case the studs will expand and if the studs are unable to move in response to this expansion the studs will buckle or crumple at the top, and as the heat of the fire reduces it will contract and pull away leaving a gap between the top of the stud and the underside of the beam above. Alternatively the stud could bow out and this could lead to cracking of the plasterboard attached to the stud.
>
> (b) The second effect is due to thermal induced downward deflections of the beams. In this case the beams will, even with an FRR protection of 30/60 minutes, deflect downwards to a certain extent due to the effects of increasing heat from the fire and if there is no ability for the stud walls to accommodate movement at the top of the wall the beams will apply significant pressure to the top of the stud walls and will cause similar effects as described in (a) above.

[294] While the deformation thesis (in the abstract) is not contested by Mr Glasgow, how and to what extent the lack of protection is impactful at Gore Street is keenly disputed. The Council experts opine that thermal deflections and deformations were not even design considerations under the Building Code at the relevant time. This suggests that fire engineering science has advanced since the time at which Gore Street was constructed. This has to be borne in mind when reconstructing events and analysis with hindsight.

[295] The Council points to Mr Feeney's analysis in early 2006. It says that although this analysis had not been provided to the Council, it showed that Gore Street was Building Code compliant using the then available tools against the backdrop of then acceptable standards. It argues it is unnecessary to establish the correctness of that analysis because that would be to reverse the onus of proof. The fact that the responsible fire engineer had concluded that the "as-built" complied with the Building Code means that the plaintiffs' modelling and analysis is essentially futile in respect of any attempt to sheet home liability against the Council.

[296] Nonetheless, the Council also heavily criticises Mr Olsson's and Dr Hyland's evidence. Those criticisms go to both substance and form. The substantive criticism is that neither assessed Gore Street in the context of C/AS1 on which the fire design was substantially based. Instead, they took a "whole of building" performance-based approach in a fundamentally flawed way to test against a standard exceeding code compliance. They say that Dr Hyland's modelling was unexplained and flawed; the fire inputs from Mr Olsson's analysis were unrealistic; and the plaintiffs' experts were wrong to include consideration of deflection due to thermal insult as part of the analysis.

Does any reduced performance result in breach of the Building Code?

[297] Whether the plaintiffs have shown on the balance of probabilities that the reduced performance of Gore Street in a fire event means that the whole construction was not code compliant depends on which of the divergent views of the respective experts are to be preferred. That is, the contest between Dr Hyland, Mr Olsson and Dr Baker for the plaintiffs; and Mr Glasgow, Mr Gerlich, Professor Fleischmann, Dr Abu and Ms Scott for the Council.

[298] The specific Building Code breaches alleged are:

(a) Tower Core: Cl B1:

(i) *Clause B1.2*: The fire separation walls are building elements that have been constructed as load-bearing. They will not withstand the combination of loads they are likely to experience from the deformation of the steel beams above in the event a significant fire develops.

(ii) *Clause B1.3.2*: The lack of protection to the steel beams and absence of movement at the heads of the fire separation walls means that if a significant fire develops there is more than a low probability the steelwork and fire separation walls will cause loss of amenity through undue deformation in breach of cl B1.3.2. The loss of amenity includes damage to the fire

separation walls, the rapid spread of smoke and fire, and a range of structural failures in the staircases and the lobby floor.

(iii) *Clause B1.3.1*: There is also a breach of cl B1.3.1 in that building elements including the steelwork, fire separation walls, and elements in the staircases and lobby floor will rupture or collapse and the steel beams (and associated cleats and brackets) will become unstable, lose equilibrium, rupture or collapse.

(iv) *Clause B1.3.4(a)*: States due allowance shall be made for the consequences of failure. The consequences of failure in this case are serious. In considering the probability of failure, a conservative approach should therefore be adopted.

(i) *Clause B1.3.4 (e)*: States due allowance should be made for "accuracy limitations inherent in the methods used to predict the stability of buildings". Modelling the effects of fire on a structure is not an exact science. Therefore safety margins and a conservative approach are required.

(b) Tower Core: Cls C2 to 4:

(i) *Clause C2: (Means of Escape)*: Clause C2.2 states buildings shall be provided with means of escape from fire which give people adequate time to reach a safe place without being overcome by the effects of fire, and give fire service personnel adequate time to undertake rescue operations. Clause C2.3.3 states escape routes shall be resistant to the spread of fire as required by cl C3 (Spread of Fire). The fire separation walls at Gore Street do not give people adequate time to reach a safe place without being overcome by the effects of fire and give fire service personnel adequate time to undertake rescue operations.

(ii) *Clause C3 (Spread of Fire)*: Clause C3.3.2 states that fire separations shall be provided within buildings to avoid the spread of fire and smoke to other firecells.

(iii) *Clause C4 (Structural Stability During Fire)*: The function of the steel beams includes supporting the fire separation wall system, lobby floor and staircases. The beams do not have fire resistance appropriate to this function in that the deflection of the beams will lead to the fire separation walls being crushed and the collapse of structural elements in the staircases and lobby floors. As a consequence there is not adequate time for occupants to escape and the fire service to undertake operations. There are therefore breaches of cls C4.2 and C4.3.1.

As the fire separation walls are load-bearing, they are also structural elements in terms of cl C4.3.1. They do not have fire resistance appropriate to their function in that they do not have allowance for movement, making them load-bearing and vulnerable to crushing by deflections from the steelwork above. This allows the spread of smoke and fire.

Where penetrations occur (including service penetrations, fire doors and architraves) the fire separations walls and floors do not maintain the FRR of the separations, in breach of cl C3.3.3(b). This also results in a breach of cl C2.3.3(d) (Escape Routes) in that the escape routes (corridors, lobby and staircases) are not resistant to the spread of fire.

(c) Post-tensioned floors: Clause B1:

(i) *Clause B1.2*: The fire separation walls are building elements that have been constructed as load-bearing. They will not withstand the combination of loads they are likely to experience

from the deformation of the concrete slabs above in the event a significant fire develops.

(ii) *Clause B1.3.2*: The absence of movement at the heads of the fire separation walls means that if a significant fire develops there is more than a low probability the walls will cause loss of amenity as a result of being crushed in breach of cl B1.3.2. The loss of amenity includes the damage to the fire separation walls, the rapid spread of smoke and fire, and damage to the post-tensioned floors.

(iii) *Clause B1.3.1*: There is also a breach of cl B1.3.1 in that building elements including the fire separation walls and post-tensioned floors will rupture, collapse and/or become unstable.

(d) Post-tensioned floors: Cls C2 to 4:

(i) The fire separation walls on the post-tensioned floors do not comply with cl C3.3.2 as:

(1) The heads of the walls do not have allowance for movement, making them load-bearing and vulnerable to crushing by deflections from the concrete slabs above. This allows the spread of smoke and fire. This defect also results in a breach of cl C2.3.3(d) (Escape Routes) in that the escape routes (corridors, lobby and staircases) are not resistant to the spread of fire.

(2) The walls are not constructed in accordance with any tested system and do not provide "a specific fire resistance rating" so are not "fire separations". There is no stability rating for these walls, which is required as they are load-bearing primary elements, nor do the walls

have any integrity or insulation ratings (in walls with the defective penetrations the FRRs of the penetrations becomes the FRR of the wall.

(ii) *Clause C4 (Structural Stability During Fire)*: As the fire separation walls are load-bearing, they are structural elements in terms of cl C4.3.1. They do not have fire resistance appropriate to their function in that they do not have allowance for movement, making them load-bearing and vulnerable to crushing by deflections from the steelwork above. This allows the spread of smoke and fire.

(iii) Where penetrations occur (including service penetrations, fire doors and architraves) the fire separations do not maintain the FRR of the separations, in breach of cl C3.3.3(b). This also results in a breach of cl C2.3.3(d) (Escape Routes) in that the escape routes (corridors, lobby and staircases) are not resistant to the spread of fire.

(e) Throughout building: Clause B2:

(i) The steelwork provides structural stability to the building and is required to comply with other Building Code provisions for the life of the building being not less than 50 years (cl B2.3.1). The steelwork has failed to comply with cl B1 and cls C2 to 4 since the time of construction.

(ii) The fire separation walls are load-bearing, so they and the fire separation floors provide structural stability to the building. They are also difficult to access or replace and the failure of those elements to comply with the Building Code would go undetected during normal use and maintenance of the building. For all these reasons, the fire separation floors and walls are required to comply with the other Building Code provisions for

the life of the building being not less than 50 years. These building elements have failed to comply with cl B1 and cls C2 to 4 since the time of construction.

Sub-issues in relation to claimed defects 1 and 2

[299] To address the key questions, it is necessary to consider the following sub-issues: [133]

(a) Whether the "whole of building" performance-based approach undertaken by the plaintiffs is wrong.

(b) Do Dr Hyland's analysis and calculations correctly demonstrate that cls C2, C3 and C4 are not met?

(c) Was the Olsson fire scenario analysis in accordance with fire engineering practice and appropriate to test performance:

(i) Is it accepted practice to model fires on the assumption there is no intervention from any automatic sprinklers (apart from accounting for them by modifying the fire load).

(ii) Is a 'real fire' analysis appropriate in an alternative solution design.

(iii) Is it conventional (or appropriate) to address very unlikely events with high consequence — are these worst case scenarios or reasonable worst case.

(iv) Did Mr Olsson use appropriate software, inputs and modelling tools?

(d) Will the fire separation walls in fact perform as fire separations?

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[133] Many other issues were explored by the parties in comprehensive written submissions totalling over two thousand pages. Given an already lengthy judgment, I do not reference issues which are unnecessary to determine the claims and defences.

(e) Whether fire-induced downward deflection of beams was a design consideration in 2004 – 2006?

Whether the "whole of building" performance-based approach undertaken by the plaintiffs is wrong

[300] Identifying the consequences of a construction which does not comply with the consented designs is not only logical but necessary. A "whole of building" focus considers how building elements interact with each other. The alternative is a narrower focus on the fire rating of the component elements in isolation.

[301] Mr Feeney's evidence for example is that it is entirely appropriate to conduct an elemental analysis for the purpose of assessing the impact of fire to parts of a structure.[134] I took this to mean approaching the exercise by confirming that the steel beams in isolation comply with the structural requirements of the Building Code by reference to AS 1530: Part 4 (Methods for Fire Tests on Building Material Components and Structures).

[302] Having considered the weight of evidence, the better view is that what happens to particular building elements *as well as* other interdependent elements matters in a performance-based analysis of an alternative solution. This differs from the more prescriptive approach under C/AS1. It is clear not only that the original Holmes fire design was an alternative solution but that the extent of deviation from C/AS1 increased at each revision of the fire design and finally in terms of the as-built construction.[135] The first (consented) design may fairly be described as 'substantially based' on C/AS1 though that does not change its characterisation as an alternative solution. By the third iteration, this categorisation was no longer fitting.

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134 Mr Feeney was a witness in two capacities. First, as a witness of fact as the fire engineer responsible for the fire design at Gore Street. Secondly, to express expert opinion whilst acknowledging that he would not be regarded as impartial. He however confirmed his agreement to comply with the Code of Conduct for Experts and stated, "I have done my very best to approach these matters objectively, and to prepare and express my opinion evidence in the same way as I would have done if I had been engaged as an independent expert." The inherent difficult of doing so must not be underestimated.

135 In cross-examination, Andrew King, an expert structural engineer for the Council said that it is desirable and necessary at the design and ex post facto assessment stage to take a whole of building approach. Dr Abu agreed that cl B1 of the Building Code requires a whole of building approach but later qualified that by reference to when doing a full performance based assessment. This is consistent with Dr Baker, Mr Olsson and Dr Hyland. Dr Baker referred to establishing the FRR of an element is isolation is one step in the process.

[303] I favour the plaintiffs' experts' approach on this point. The better view is that the overall question must address how all established defects acting in concert will affect the performance of Gore Street in a fire event in the same way that the assessment of consequences ought to have regard to the holistic fire safety layers at Gore Street. A simple example can be given. The greater the level of protection to the steel framing, the less accommodation should be required for movement at the heads of the non-load-bearing walls to avoid the potential for those walls to become load-bearing, contrary to the design intent.

[304] Mr Glasgow agreed that in assessing the consequences of non-compliant construction it is necessary to consider the interaction between building elements when looking at cl B1 of the Building Code. Dr Abu, another expert structural fire engineer called by the Council also agreed that cl B1 requires a whole of building approach to be taken as well as considering what happens to particular elements. In addition, a well-known text on fire engineering, *Structural Design for Fire Safety* makes the point (with which Mr Gerlich agreed):[136]

> Real buildings are more than just a collection of elements, so the fire resistance of the whole building must be considered by considering the fire resistance of its component parts and their location in the building.

The Hyland/Olsson modelling evidence

[305] The plaintiffs' evidence about what is expected to happen to the steel beams and fire walls at Gore Street in a significant fire event is based on computer modelling undertaken by Dr Hyland but which depended on inputs from Mr Olsson.

[306] Dr Hyland is a structural engineer with decades of experience in civil engineering but less experience in respect of buildings similar to Gore Street. His evidence related to both the fire and earthquake defects. He was the principal structural designer for the proposed remedial work. The Council attributed the vastly divergent views of the structural experts to Dr Hyland's relative inexperience in key

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[136] Andrew H. Buchanan *Structural Design for Fire Safety* (John Wiley & Sons, England, 2002) at [6.7]. This straightforward proposition is not undermined by the submission that the Court should be cautious when selective text material is put to a witness on cross-examination. I generally agree with that submission.

facets of structural engineering pertaining to Gore Street. Dr Hyland was at times defensive in the witness box. His reluctance to concede points or to work with assumptions framed solely for the purposes of elucidating explanation interfered with his ability to explain the reasoning behind many of his conclusory opinions.

[307] The Council's primary expert witness on fire and structure modelling was Dr Abu.[137] He is also peer reviewer of structural fire engineering design for Auckland Council. The plaintiffs did not suggest that this lessened his independence. Nor can there be any realistic challenge to his expertise or experience which spans some 20 years.[138]

[308] Though Dr Abu's expertise includes the performance of structures under fire conditions (including review of alternative solution rather than acceptable solution designs) his evidence was narrowly focused on the Hyland modelling in relation to claimed defect 1. More particularly, his lack of confidence in that modelling due to lack of transparency. That limited purpose (and broadly theoretical) engagement meant that Dr Abu was not asked to attend any expert caucusing. He did not visit Gore Street. Nor did he have detailed knowledge of Gore Street's physical characteristics.

[309] Dr Hyland was dismissive of Dr Abu's professed difficulty interpreting the Hyland modelling. However, I consider that Dr Abu's evidence was measured and objective. He provided cogent and clear reasoning and I reject Dr Hyland's criticism.

[310] Dr Abu described a computer model as "just a prediction (even speculation) as to what will happen to a structure in a fire event based on the scientific knowledge and modelling capabilities available at the time". Dr Abu opined that modelling is more useful in design applications where overprediction is beneficial and in forensic applications when analysing real (actual) failures caused by fires. Accordingly, he considers that modelling is much less useful for accurately predicting the outcome of a future event. Despite these caveats, he agreed modelling was appropriate.

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137 Dr Abu gave his evidence by Virtual Meeting Room (VMR).

138 Dr Abu is a co-author of the second edition of the leading text in this area: *Structural Design for Fire Safety* – Andrew H Buchanan and Anthony K Abu S*tructural Design for Fire Safety* (2nd ed John Wiley & Sons, United Kingdom, 2017). Plaintiffs' counsel attempted to adduce extracts of this text from Dr Abu in cross-examination. This approach had shortcomings, most evidently when the extracts laden with technical concepts were put to Dr Abu shorn of full context.

[311] I pause to interpolate that, after hearing from the respective experts, I am left with the distinct impression that the reliability of predicted outcomes and events is inherently difficult in fire and structure analysis. It would be unduly exacting to rule out the efficacy of modelling on that basis alone (and the Council did not advance that extreme position). Modelling is clearly frequently used in fire design. In the litigation context, modelling assists to achieve practical justice.[139] But there are challenging issues associated with modelling from an evidential standpoint.

[312] I have no doubt that it is fundamentally necessary in this case. No witness suggested any credible alternative means of proof. Courts frequently engage in predictive exercises while being alert to factors which inform or undermine the accuracy of those predictions. In assessing the performance of the systems at Gore Street, I view the modelling evidence against that backdrop.

[313] I begin with an overview of Dr Hyland's analyses and conclusions because a fundamental plank in the Council's defence was its challenge to the probative value of his modelling. The challenge was multifaceted. It goes to both the approach and methodology as well as whether it met the requirements of the Evidence Act 2006 and procedural rules in its presentation.

[314] This section is necessarily a summary of what was a complex exercise. Any detail which is critical to understand the views reached will be incorporated if and when necessary.

[315] Beginning in 2017/2018, Dr Hyland analysed the predicted performance of Gore Street in a fire event. He utilised several methodologies. Almost all of this modelling evidence comprising thousands of pages of calculations and/or data was impenetrable. Even the Council's structural and modelling experts described it as 'opaque'. It was described, aptly, as 'black box' science. Each assessment generated multiple substantial reports, in some instances comprising thousands of pages of data.

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139 Refer to *Morrison v Vero Insurance New Zealand Ltd* [2014] NZHC 2344 citing *Equitas Ltd v R & Q reinsurance Company (UK) Ltd* [2009] EWHC 2787 (Comm) at [208] in relation to actuarial modelling and proof of loss under reinsurance treaties. On appeal, the Court of Appeal referred to "precedent in other areas where there are similar difficulties of proof of requiring something less than … scientific exactitude": *Vero Insurance New Zealand Ltd v Morrison* [2015] NZCA 246 at [38].

Reports were simply annexed to briefs without any detailed explanation of the methodology or, more critically, input selections while the brief itself was replete with conclusory opinion.

[316] The first in the series of analyses was an initial stability and deformation assessment of steel beams and posts. This used the method specified in clause 11.3 of NZS 3404:1997 (Steel Structure Standards) to rate the FRR stability of the steel beams by reference to the standard fire test deflection criteria.[140] This method calculates the minimum time that the beams can continue to support specified loads without exceeding the fire test deflection criteria which is the absolute amount that the beam can deform or the rate of deformation without the beam being deemed to have collapsed. The temperature of the beam at the time its load-bearing capacity is exceeded is referred to as the "limiting temperature". Dr Hyland's evidence is that these limits would still allow significant damage to attached structural elements. The calculation was applied to beams B1 to B5 located in the ceiling void. Based on his calculations under the standard the fire test limits were: 180 millimetres for beams B1 and B2; 150 millimetres for beam B3; 375 millimetres for beam B4; and 410 millimetres for beam B5.

[317] Applying these limits, beams B1 and B2 in the apartment were found to have an FRR stability of 20 minutes, beam B3 in the corridor an FRR stability of 22 minutes, beam B4 in the lobby 22 minutes and beam B5 18 minutes. This means that after 22 minutes, beams B4 and B5 may be expected to have deflections of as much as the calculated test criteria limits of 375 millimetres and 410 millimetres. Dr Hyland explained that this assessment addressed the stability of the specific beam analysed but not the connections of those beams to concrete walls and collateral damage.

[318] The second assessment was of coating thickness required to limit deformation of the steel framing using the ISO 834 standard fire curve. The objective was to determine the amount of fire protection required to limit the deformation of steel beams B2 to B5 supporting fire separation walls to deflections less than specified in

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140 *Steel Structure Standards* (Standards New Zealand, NZS 3404:1997) at cl 11.3.

AS/NZS 1170.0:2002 (Structural Design Actions).[141] (Beam B1 does not support a fire separation wall and so was excluded). Using a method from the ECCS Eurocode Design Manual,[142] Dr Hyland calculated the temperatures at which the steel beams would achieve the limiting (maximum allowable) deformations using a structural computer model of the floor system incorporating beams B2 to B5 and the floor slab. Dr Hyland's conclusion was that significant levels of vermiculite spray coating were required to achieve a 30/30/30 FRR to maintain the integrity of the fire walls supported by the beams.

[319] The third analysis was a finite element analysis. This is a sophisticated approach which subdivides a structural element into a larger but finite number of smaller or more simple parts prior to numerically solving the relevant series of equations that arise from the engineering model. This involved two stages. First, an analysis of the floor system as a single level using Abaqus software to determine the structural stability of the relevant building elements and likely levels of deformation and heat that would develop in the steel beams. The second stage was applying those results to analyse the effects of the fire on the stairs using Prokon software. These analyses were based on "real fire scenarios" as opposed to the ISO standard fire test used in C/AS1. Dr Hyland explained that this was to assess the built structure more accurately for compliance with cls B1 and C of the Building Code directly.

[320] The finite element analysis used inputs generated by fire scenario modelling caried out by Mr Olsson. Dr Hyland explained his use of the fire inputs in these terms:

> … Olsson Fire provided 7 gas time-temperature curves for 3 types of fire in the core, namely the apartment, electrical riser cupboard and lift lobby … These were "burn out" fire scenarios, being the reasonable worst case fire scenarios using a zone model method for multiple rooms and taking into account the effect of sprinklers, fuel load, ventilation and construction materials. I adopted the worst case fire curve for each scenario, … The effects of these fire scenarios are less severe than the parametric time-temperature cures developed for single rooms which were also provided by Olsson Fire. Both of these methods are appropriate for assessing the potential deformation of the structural steel, and I have selected the zone model temperatures since they give the least resulting deformations.

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141 *Australian/New Zealand Standard — Structural design actions* (Joint Technical Committee BD-006, AS/NZS 1170.0:2002).

142 ECCS Eurocode Design Manual, "Fire Design of Steel Structures 2nd edition (2015), s 4.6.

[321] This analysis also considered the effects of the incidental fire protection in the ceiling, floor, and stair construction. Based on the opinion of Dr Baker, a research engineer engaged by the plaintiffs, Dr Hyland concluded that the ceiling construction was likely to provide very little resistance given the workmanship deficiencies and inadequate penetrations.

[322] The result of the Abaqus analysis was expected large deflections of 120 to 232 millimetres in beams B1, B2, B4 and B5 for the lift lobby and apartment fire scenarios. Dr Hyland also concluded that the maximum deflections in the lift lobby fire scenario are effectively the same whether an allowance is made for resistance from the ceiling or not. His results showed that specific fire protection was required to beams B2 to B5 in order to maintain the required integrity and insulation of the fire separation walls they support. Beam B1 was excluded because it does not support a fire separation wall and the slab above it is able to provide sufficient strength.

[323] Among the conclusions from this method was that the projected deformation of beams B2 to B5 will exceed the acceptable limits by significant margins in both the apartment and lift lobby fire scenarios. For example, compared to the recommended deflection limits taken from the AS/NZS 1170.0:2002 (Structural Design Actions) Standard, the deflection of beam B4 will be 223 millimetres compared to an acceptable limit of 31 millimetres and in the apartment fire the deflection of beam B4 will be 88 millimetres compared to the acceptable limit of 31 millimetres.[143]

[324] This method also set out to determine the point at which the integrity of the fire separation walls is compromised by steel beam deflection (by reference to the deflection criteria set out in NZS 4203:1992 (General Structural Design and Design Loadings for Buildings)) and the effect on the scissor staircases supported by beams B3 and B4.

[325] The fourth method was an assessment of passive fire protection requirements using the slab panel method. This is a method of assessing the potential beneficial

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143 Other stated impacts from this method include the effect on the ability of the cleats to support the steel beams.

effects of concrete slabs above steel beams in the event of fire.[144] In essence, the method assesses the ability of a concrete slab to sustain its gravity, stability and maintain its integrity and insulation between two floors under severe fire loads where some of the steel beams supporting the slab may have lost structural stability.

[326] Dr Hyland's overall conclusion from the four different methods was that in the event of a burn out fire developing in an apartment or the lift lobby of the Core, the lack of protection to the steel beams is likely to lead to excessive deformation of the beams well within the 30 minute periods which the fire design required. In the event of a fire in the electrical riser, the cleats of beam B3 and potentially B4 will be overloaded.

[327] He opined that in the event of deformations from above (from the steelwork inside the Core and concrete slab outside the Core) the fire separation walls will be crushed. This would allow the premature spread of smoke and fire.

[328] Dr Hyland carried out further assessments in 2019 in which he modelled localised fire scenarios in the staircases and lift well to verify whether the proposed coatings to remediate would lead to compliance with the Building Code. He found that beams B7 and B11 would lose the ability to support the stair flights 9 minutes after a fire starts on the stair landing and beam B5 would deflect and crush the lift-to-lobby wall in 13 minutes if a fire started in a lift.[145]

[329] In late 2019, Dr Hyland, along with Dr Baker undertook testing of the GIB walls at the BRANZ testing facility. A specimen intertenancy wall was crushed by a small amount before being exposed to a standard fire (after partially reforming the wall). This was to reflect the downward deflection of the floor slab above. The BRANZ testing indicated that even with deflections that were significantly less than those expected for the post-tensioned floors (and the Core) at Gore Street, the walls would be compromised. In the event of a fire load from above, the fire separation walls were likely to have very little load-bearing capacity.

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144 The slab panel method was developed by the New Zealand Heavy Engineering Research Association ("HERA") in the late 1990s/early 2000s.

145 The lift fire scenario is no longer relevant.

[330] In 2020, following discovery of the Holmes time-temperature curve analysis, Mr Olsson provide further fire scenarios. Using these inputs, and ABAQUS and Prokon software, Dr Hyland undertook further structural analyses. He found that in a fire, the deflections of the steel beams would be significant enough to cause damage to the fire separation walls and cause structural failures in the staircase and the lobby at the early stages of a burn out fire. He used the FaST software used by Holmes to undertake an assessment "that a prudent fire/structural engineer could have undertaken in about 2006". The results were similar to the earlier modelling.

[331] Dr Hyland also used Mr Olsson's further fire scenarios to analyse the performance of the floor, ceiling slabs and stud walls based on the 7 to 8 millimetre failure point identified in the BRANZ testing. Like the earlier modelling, this analysis predicted that at 11 minutes of the fire starting, the concrete slab on the post-tensioned floors will deflect downwards to such an extent that the intertenancy walls will rupture, allowing smoke and fire to spread.

[332] Finally, in late 2020 further modelling was undertaken of the lift wall due to a different construction, showing that deflection of the beams B3 and B5 in that section would cause the timber studs to buckle and GIB linings on the wall to be crushed.

[333] The plaintiffs contend that all of the structural fire modelling exercises indicate significant deflections of either steelwork or the concrete floor slab, and that the range of results is consistent with the analysis recorded in Mr Feeney's file note dated 2 March 2006 regarding beam deflection.

[334] Dr Hyland's remediation proposal is to both limit the deflection of the steel beams and provide allowance for this more limited deflection at the heads of the fire separation walls. Of several options to achieve this, the plaintiffs' preferred option is to expose and then box in beams B2, B3, B4, B5, B13 and B14, install deflection heads of two different sizes and to coat stairwell beams to limit temperature.

Challenge to Dr Hyland's modelling

[335] There was nothing superficial about Dr Hyland's approach. On the contrary, the selection of different methodologies as a form of cross-checking of results spoke

to a comprehensive and in-depth approach. However, the conclusions were vigorously attacked by the Council experts. There were three primary lines of attack:

(a) The approach to fire inputs was highly unrealistic.

(b) The modelling was unexplained and flawed.

(c) The approach to downward deflections misunderstands the design requirements.

Whether the inputs to Dr Hyland's modelling from analyses by Mr Olsson are unrealistic or unduly onerous

[336] Dr Hyland's analysis fundamentally depended on the base inputs (fire curves) from a fire engineer. Mr Olsson and his team carried out the task of producing those fire curves.

[337] Mr Olsson holds a Bachelor of Science in Fire Engineering from the University of Lund, Sweden and a Master of Engineering in Fire Engineering from the University of Canterbury. He has worked in the field of fire safety since 1993, extensively overseas, and from 2014 in New Zealand. Consequently, his New Zealand experience is more recent and relatively more limited than the Council's counterpart experts. He described his particular technical skills as including fire dynamics, heat transfer, structural fire engineering, egress modelling and human behaviour in fire.[146]

[338] Mr Olsson was engaged in his role as director first of Olsson Fire & Risk, then as director of GHD Limited and finally director of Fire Research Group Ltd (FRG). For convenience I will refer to those entities together as Olsson/FRG and the reports

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[146] Before Mr Olsson gave evidence, the Council recorded a number of objections to his brief of evidence. These fell into two categories. The first was objections which needed to be determined prior to cross-examination. The second comprised objections which could instead be addressed as matters of weight in closing submissions. The objections related to unexplained expert opinion and inadmissible evidence in exhibits infringing the High Court Rules 2016, Expert Code of Conduct and Evidence Act 2006. Mr Olsson's evidence was admitted de bene esse and the objections determined before cross-examination after hearing from the parties. I issued a ruling upholding some objections and declining other objections, see (Results) Ruling (No 3) of Walker J dated 10 May 2022. My ruling, while declining to exclude certain paragraphs, also expressly limited the Council's obligations to test certain statements that did not relate to fire engineering analysis.

generated under Mr Olsson's supervision as Olsson/FRG reports without distinguishing unless strictly necessary.

[339] Mr Olsson provided the fire engineering input into the Hyland modelling analyses by determining the fire scenarios.

[340] Mr Olsson explained that in 2017/2018:

> We undertook fire modelling to derive gas-temperature curves as opposed to applying the ISO standard fire test in C/AS1, as it appeared there was an attempt to build the Gore St[reet] structure on the basis of an alternative solution. This is known as a '*real* fire' scenario and it provides the most realistic method of determining whether the alternative solution would comply with the performance requirements of the building code.
>
> …I first needed to determine the "burn out design fire". In this context "burn out" means "exposure to fire for a time that includes fire growth, full development, and decay in the absence of intervention or automatic suppression, beyond which the fire is no longer a threat to building elements to perform load bearing or fire separation functions or both…In layman's terms this means a fire which has run out of fuel but the structure is still standing.

Olsson/FRG fire engineering advice reports

[341] Olsson/FRG produced four reports. The first Olsson/FRG fire advice dated 1 June 2017 (FEA001) determined the maximum gas temperature on a typical floor from a number of fire scenarios using input parameters from C/VM2 (version at 1 July 2014).[147] The overall intent was for use by Dr Hyland to inform what steel will do when exposed to these maximum gas temperatures.

[342] Mr Olsson selected two of three available options from C/VM2 for modelling a "burn out design fire":

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147 This was described as a partial C/VM2 assessment only. C/VM2 is a framework for fire safety design or pathway to demonstrate compliance with the C clauses of the Building Code. However, it did not exist in the relevant period having been first published only in 2012. It sets out a structured approach for fire engineers to demonstrate compliance and describes a series of design scenarios and design fire characteristics. It also specifies input parameters and assumptions for the design of pre and post-flashover design fires and full burn out design fires. These include design values for matters such as the fire load and the fire load energy density (FLED) of a given space.

(a) using a parametric time versus gas-temperature formula to calculate the thermal boundary conditions (time/temperature) for input to a structural response model; and

(b) constructing a heat release rate versus time structural design fire to ultimately determine suitable thermal boundary conditions (time/temperature/flux) for input into a structural response model.[148]

[343] FEA001 described the design approach in these terms:

> The proposed approach is to determine the challenging fire locations, which will produce the highest temperature within the corridor, therefore more likely to have the biggest impact on the primary steel sections.
>
> …
>
> This assessment will provide the worst-case gas temperature derived from the results and analysis of the modelling. This temperature will then be used to input in a different structural model in order to investigate the primary steel structure's behaviour in the event of fire.

[344] FEA001 specifically refers to the definition of a "challenging fire" scenario under para 4.9 of C/VM2 in which "a fire starts in a normally occupied space and presents a challenge to the building's fire safety systems and threatens the safety of its occupants". Three challenging fires were 'designed': fire in a typical bedroom (CF1); fire in the electrical cupboard (CF2); and fire in the corridor directly under the primary steel beam (CF3).

[345] Materially, FEA001 states:

> As per C/VM2, when using the inputs to model the adequacy of structural elements, effects of the sprinkler protection shall be ignored. This will therefore be ignored for the purposes of this assessment.

[346] It is also relevant to note that the typical bedroom chosen was one "likely to generate the highest temperatures" being located directly opposite to the corridor of interest. The door was modelled fully open "to ensure gases can reach the section of

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[148] C/VM2 defined the heat release rate or HRR as the rate of thermal energy production generated by combustion. Mr Glasgow acknowledged that a scenario analysis for the full duration of a burnout fire is a more sophisticated and complex approach than simplified calculation methods such as time equivalence calculations.

the corridor to be assessed". While it is not clear whether this means the door to the apartment or the door to the bedroom of the apartment, the intent is clear.[149] That is, it was modelled that way to maximise the gas temperature.

[347] In respect of the choice of a fire in the corridor, FEA001 records:

> Although the corridor has been designed to be a safe path, implying that as such, it would generally be accepted that the risk of a fire within this space is not only low, but would also have limited consequences due to the limited fuel (FLED) available. However, it is our understanding that a fire in this space would be critical for this assessment and could possibly generate temperatures higher than CF1 & CF2, and it was noted that the probability of a fire in this space is increased by the cleaning trolleys. Therefore, it is proposed that this fire scenario is also assessed for completeness.

[348] Notwithstanding the acknowledgement that it is generally accepted that there is limited fuel load within a corridor, the analysis uses a FLED of 400 MJ/m^2. This is the same FLED used for sleeping spaces.[150]

[349] Mr Olsson said in evidence:

> Clause 2.3.3 of C/VM2 discusses the modelling of post-flashover fires and states that for full burnout fire design "calculations of fire resistance shall be based on burnout without sprinkler intervention, except that the design FLED may be modified as described in Paragraph 2.4.1 where sprinklers are installed … Paragraph 2.4.1 includes a table 2.3 which sets out a multiplier of 0.50 for a sprinklered firecell or a multiplier of 1.00 for a sprinklered firecell where the structural system "is unable to develop dependable deformation capacity under post-flashover fire conditions". Dr Hyland advised the Gore St structure does not have dependable deformation, for the reasons set out in his brief of evidence. Accordingly, we did not reduce the FLED on account of the sprinkler system.

[350] The maximum gas temperatures of each of the models were then provided and summarised for input into the structural assessment of the primary structural elements by Dr Hyland.

[351] The second Olsson/FRG fire engineering advice report (FEA002) dated 27 June 2018 adopted the same approach and content save that it also modelled a

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149 FEA001 refers to the "door within the bedroom unit" fully opened which will assume the door failed or left open. I infer this means the fire door to the apartment since this is the door which is designed to close automatically.

150 FLED is fire load energy density.

modified FLED based on the 1991 Eurocode.[151] It noted that as it was based on the Eurocode, this is outside the accepted compliance pathways under the Building Code.[152] A FLED based on the Eurocode at 300 MJ/m^2 is lower than the FLED utilised in the first iteration of the advice. The result was revised parametric gas temperature curves with significantly lower peak temperatures.[153]

[352] Olsson/FRG prepared a third fire engineering advice report (FEA003) dated 5 September 2018. This provided calculations and fire curves for the post-tensioned floors areas by modelling two apartment fires with a FLED of 400 MJ/m^2 and 300 MJ/m^2 as above.

[353] Olsson/FRG also prepared a fourth fire engineering advice report (FEA004) dated 14 March 2019. The fire curves were extended to show temperatures up to 120 minutes and a new fire curve was modelled for a fire starting in a smaller apartment unit.

[354] Subsequent analyses by Olsson/FRG in 2019 and 2020 (supervised by Mr Olsson) were also provided to Dr Hyland.[154] The 2019 design advice included calculations for fire scenarios in the stairwell and lift well in the Core to enable Dr Hyland to determine appropriate protection to the steelwork for remediation. The 2020 modelling undertook two types of analyses of post-flashover fires. The first generally used C/VM2 principles. The second followed a risk-based or probabilistic procedure using 'Monte Carlo' simulations. This is a technique used to understand the impact of risk and uncertainty by modelling the probability of different outcomes

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151 The Eurocode is the structural design standard developed in 1970 for use in the European Union.

152 Mr Olsson stated that the Eurocode parametric fire curves were available at the time of the design of Gore Street and was a well-established method for deriving temperatures for structural calculations.

153 The peaks of each fire curve in FEA002 were: 805°C, 324°C and 623°C for the CF1, CF2 and CF3 fire scenarios. FEA001's peaks were: 1006 °C, 733 °C and 899 °C.

154 The 2020 modelling was undertaken by Dr Wade, another director of FRG under Mr Olsson's supervision. Dr Wade did not give evidence. The Council objected to the report generated (FRG report Post-Flashover Fire Modelling dated July 2020) on the basis that it was not prepared by Mr Olsson and comprises hearsay. It argues that Mr Olsson does not purport to adopt the contents of the reports as his own testimony and there is no basis to do so in any event. I declined to strike the report (and other similar reports) from Mr Olsson's evidence. Although the reports were prepared by others they appear to have been contemporaneously reviewed and approved by Mr Olsson or alternatively were prepared under his supervision. I reject the submission that this is "classic hearsay" as Mr Price put it. It is commonplace for experts to give evidence relying in part on examinations, tests or investigations carried out by others. Where conducted under supervision, as Mr Olsson stated in his evidence, I am not persuaded there is even a hearsay dimension.

based on random variations of the multiple inputs used in the modelling.[155] As Mr Lewis put it in the plaintiffs' closing submissions:

> The risk-based analysis made various assumptions including the frequency of reported fires, the probability of sprinklers being effective (95%), the probability of a reported fire developing into a structurally significant fire and the probability of the door being effective.

[355] Finally, Mr Olsson's fire analysis also included assessing whether the Holmes design allowed sufficient time for occupants to escape the building as required by the C clauses of the Building Code. He pointed out that this analysis is only required under an alternative solution approach and not under C/AS1 since that only requires compliance with stipulated FRRs.

[356] Mr Olsson's analysis compared the timing of the effects of the 'reasonable worst case' fire scenarios with the estimated time required for occupants to evacuate the building. He calculated evacuation times using the current C/VM2 on the basis of a staged evacuation by the stairs and assuming 1327 occupants. The conclusion was an evacuation time of 32 minutes assuming FENZ triggered a full building evacuation within 15 minutes of being alerted and a time of 120 minutes if no such evacuation was triggered.

[357] Mr Olsson opined that the evacuation times calculated under C/VM2 are "somewhat optimistic" given current research into evacuations of a building of Gore Street's size and nature. He further stated the results of Dr Hyland's analysis indicate a heightened risk given his view that the fire separation walls are likely to be crushed by steel deformation, and the high-rise nature of the building increases speed of smoke spread up the building.

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[155] A "probabilistic model" is a methodology to determine statistically the probability and outcome of events. PD 794-7:2003 26 June 2003, page 4,2.1.22. A Probabilistic model is defined in IS):13943:2008(E) a "fire model that treats phenomena as a series of sequential events or states, with mathematical rules to govern the transitions from one event to another and with probabilities assigned to each transfer point."

Sensitivity of the fire inputs

[358] It is readily apparent (even to a non-expert) that the structural fire modelling is highly sensitive to:

(a) the severity of the fire scenarios including assumed fire loads and door open/shut assumptions;

(b) allowance (if any) for sprinklers; and

(c) allowance (if any) for non-fire-rated plasterboard ceilings.

[359] The Council experts criticised the use of C/VM2 and the manner of its application. Mr Glasgow's view is that C/VM2 is a methodology for design of buildings with many conservatisms and simplifications because its aim is to demonstrate compliance by a suitable margin. He says that it is not appropriate for use in determining how an "as-built" feature will perform in a fire and results in an overly conservative and excessively onerous set of thermal inputs.

[360] The experts generally agreed that scenario analysis is appropriate. Also appropriate is the use of "credible" or "reasonable" worst case scenarios. However the Council experts are critical of Mr Olsson's scenario selections.[156] They also identify ostensible errors in Mr Olsson's application of the modelling 'rules' under C/VM2.

[361] Mr Glasgow went so far as to say that:

> …the approaches taken by Dr Hyland and Mr Olsson (and their resulting conclusions) are not consistent with New Zealand standards or conventional fire engineering (as at 2004–2006 or now)…
>
> and
>
> …if adopted, then the consequences would be that buildings constructed in accordance with Compliance Documents, New Zealand standards and industry norms at the time would nevertheless be considered deficient.

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156 Mr Glasgow agreed on cross-examination that it is the reasonable worst case fire, not the most likely fire, that must be used for design.

Is use of C/VM2 appropriate?

[362] Mr Olsson's reference to C/VM2 is not problematic merely by dint of it being published later than the design of Gore Street. It would be a different matter if it was being relied on to establish a breach of duty of care as opposed to whether any breach caused loss or damage, or non-compliance with the Building Code.[157]

[363] Weighing the competing expert opinions, I consider (on the evidence presented) there is no bright line between design consideration and diagnosis of as-built performance. Professor Fleischmann accepted that identifying compliance and fire design involved a similar exercise. This proposition is inherently logical. It is also supported by para 1.1 of C/VM2 which states its purpose as being "for the specific design of buildings to demonstrate compliance with NZBC C1–C6" and para 1.3 which reads:

> The design process outlined…will vary when using this Verification method for assessing Code compliance of existing buildings.

[364] Mr Olsson's evidence is that there are elements of C/VM2, particularly in relation to structure analysis, which formalised at a high level past structural fire engineering practice. He acknowledged there are other elements of C/VM2 which are very much more about design.

[365] I conclude that an approach which draws on C/VM2 to test compliance is appropriate. This is consistent with the quoted passages from C/VM2. Mr Feeney accepted the correctness of that proposition at a general level.

[366] Although a valid approach, I accept that there are "many conservatisms and simplifications" in C/VM2. This is because its aim is to demonstrate that the design will comply with the Building Code by a suitable margin. The margin is not likely capable of quantification. But it is reasonable to infer that the safety margins reflect the inherent uncertainties in modelling. That means there is in-built potential for overly conservative and unduly onerous sets of thermal inputs as a result.

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[157] It would not be appropriate for instance to assess whether Holmes breached its duty of care.

[367] I am also satisfied that the probabilistic or risk-based assessment is a valid approach. A probabilistic method is in contrast to a deterministic model. The difference is explained by Dr Abu in an article he wrote in 2014:[158]

> The three models [fire hazard model, thermal model and structural analysis model] are deterministic (i.e. single values for input parameters are used in the model calculations), but the different input parameters are generally random in nature. Deterministic models provide only a single variant of the actual range of possible behaviour for any given fire. The simplifying assumptions in the behaviour models may result in predictions that are overly conservative and cost more to construct or are unconservative and may cause structural failure.

[368] Although the probabilistic method was not commonly used in building design in New Zealand as opposed to in the Eurocode and American and Australian building codes, Mr Olsson's explanation for its use in a novel compliance assessment was cogent. That it might be uncommon does not mean it is not accepted within a relevant community of experts to be appropriate.[159] Further, one of the Council's experts, Professor Fleischmann, acknowledged it was an accepted method — a "reasonable tool" although not the "best tool" in his opinion.

Conclusions as to Mr Olsson's fire analysis

[369] I conclude that Mr Olsson has established the appropriateness and reliability of his fire analysis methodology. However, it is also clear that the reliability of the outcomes generated stand or fall on judgements taken as to the reasonable worst case scenarios. The weight of the expert evidence persuades me that the results generated in the fire curve modelling are excessively conservative. I accept the Council's argument that it would have been more appropriate to use fire scenarios which are more representative of the actual fuel loads and fire risks present, as well as the performance and effect of fire systems set up to protect Gore Street. I also accept that the result is that the deleterious impact of the lack of steel protection and absence of

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158 Dr Anthony Abu "Risk-based structural fire design" *Build Magazine* (New Zealand, October/November 2014) at 53.

159 The Court of Appeal's review of the obligations of experts in *Prattley Enterprises Ltd v Vero Insurance New Zealand Limited* [2016] NZCA 67, [2016] 2 NZLR 750 at [102] specifically refers to "allowances" for innovation.

expansion head at the wall junctions is significantly overstated.[160] I set out my reasons.

[370] Various indicia show that the design scenarios did not represent "credible" or "reasonable" worst case scenarios. Rather, they were aimed at producing the highest peak temperatures achievable in a worst case scenario. Three examples suffice:

(a) In the fire scenario for the apartment fire, Olsson/FRG's fire analysis assumed that the fire-rated door was open "to ensure gases can reach the section of the corridor to be assessed". This is despite the fire-rated door being designed to close automatically. (Fire doors within fire separations are an important part of the overall fire safety strategy.)

(b) The fire-rated door between the riser and adjacent safe path egress corridor was modelled fully open. This is a locked door in the ordinary course opened only for inspection and servicing.

(c) Modelling a fire in the corridor on the basis that a single cleaner's trolley might be the fuel load but using an apartment fuel load.

[371] As to the selection of a fire scenario in the stairs, I accept Mr Glasgow's evidence that:

> Conventional fire design assumes no fire events occur on the safe path stairs as the internal surfaces of the stairway firecell are non-combustible, and there is not (nor permitted to be) any fire load within the stairway. Therefore, there is no design condition for a fire in the stairway, and such a condition would violate the principal design requirement of providing a safe path for occupant egress and firefighter access.

[372] I have not overlooked the Council's own expert evidence from Professor Fleischmann. He referred to British reliability data taken from a British Standard "*Application of fire safety engineering principles to design of buildings*".[161] His view

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[160] The only evidence supporting Mr Olsson's approach was from Dr Baker who in very general terms agreed the methods adopted by Mr Olsson are consistent with the "reasonable" or "credible" worst case fire scenarios used in New Zealand at the relevant time.

[161] Application of fire safety engineering principles to the design of buildings (British Standards Institute, PD 7974-7:2003).

was the passive barriers have higher probability rates of failure than active fire safety systems when assessing fire risk. He described the door as the weakest link in most passive barrier systems. Doors provide a large opening in the barrier where smoke and flames can flow freely if the door is left open and doors can be wedged open with ease. Professor Fleischmann's interpretation of that 2003 data is a 30 per cent chance that a door will be blocked open and a 20 per cent chance that a self-closing door fails to close correctly on demand. (I do not read that as distinguishing between partial failure or full failure.) I note too an inconsistency in the body of the Standard at cl 7.1.13 as it refers to available data suggesting that up to 23 per cent of fire doors are blocked open.

[373] I am not satisfied about the relevance of an email from the New Zealand Fire Service ("NZFS") to Multiplex dated 16 May 2006 which refers to a "high incidence of safe path corridor smoke detector activation due to inadequate ventilation from the kitchen rangehood causing occupants to open their apartment door". This relates to other buildings, not Gore Street. The email refers to para 4.10 of C/VM2 and the failure of key safety systems including fire closures. However, that section is headed "Robustness check". The required outcome is to demonstrate that if a single fire safety system fails, *where that failure is statistically probable*, the building as designed will allow people to escape and fire spread to other property will be limited.

[374] Professor Fleischmann commented that the bedroom fire scenario assumed that sprinklers *and* the fire-rated apartment door have both failed (the door left propped open or failed to close properly). This he says is contrary to C/VM2 for "challenging fire scenarios". The criteria/description of the challenging fire design scenario states "the fire engineer shall assume that active and passive fire safety systems in the building will perform as intended by the design". He makes the same criticism of the modelling of an electrical riser fire. He is particularly critical of modelling of a fire in the corridor because of its low risk profile.

[375] Dr Abu and Mr Glasgow agree. Dr Abu's evidence was that in this scenario the real fire scenario will be a lot less as the Olsson/FRG analyses do not account for the effect of sprinklers.[162]

[376] I do not accept the plaintiff experts' purported justifications for discounting the various active and passive fire safety systems present at Gore Street. C/VM2 provides for halving the FLED in a sprinklered building if a building can develop dependable deformation capacity.[163] Halving the FLED would have a very significant lowering effect on the temperature outputs used in the engineering analysis. The commentary to C/VM2 explains that construction types expected to develop dependable deformation capacity include reinforced concrete and composite steel/concrete elements.[164]

[377] Mr Olsson did not do so. He relied on advice from Dr Hyland that the as-built structural system is unable to develop dependable deformation capacity under post-flashover fire conditions. I understand Dr Hyland to be saying, in simplistic terms, that materials that should have been ductile (and be expected to be ductile) have been constructed in a non-ductile way so will not develop dependable deformation.

[378] The Council fire engineering experts disagreed with Dr Hyland's assessment of dependable deformation. Ms Meechan KC submitted that Dr Hyland is an outlier in this respect and his approach deviates from the C/VM2 methodology. Mr Glasgow's evidence is that unexpectedly high or unacceptably high deformations do not justify classifying structural elements as *unable* to develop dependable deformation. On the contrary, the very fact that Dr Hyland is able to model or calculate the deformation of these elements tends to show that their deformation is 'dependable'.

[379] The plaintiffs' rebuttal is first that Mr Glasgow has less experience relative to the other fire engineers. He was not practising as a fire engineer in the relevant period and does not carry out alternative solution fire design or structural fire design. His

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162 Evidence was received by consent that the design of Gore Street included sprinklers in the lift shafts.

163 At Table 2.3.

164 Commentary for Building Code Clauses C1-C6 and Verification Method C/VM2 at 77.

evidence therefore fell outside his domain expertise. They suggest his removal from his original brief of modelling he and Dr Abu undertook, without adequate explanation, invites an adverse inference because that modelling indicated significant vertical deflections in the beams in a fire event.

[380] I accept that when it comes to alternative solution structural fire analysis some aspects of Mr Glasgow's evidence may be of more limited assistance. However, the combination of practical 'on the ground experience' in fire engineering in New Zealand, combined with more recent academic qualification added rather than detracted from his expertise overall. I found him to be a straightforward witness. He appropriately accepted propositions put to him on cross-examination. He did not engage in advocacy in the witness box. He was responsibly prepared to walk back from a statement in his brief which, with hindsight, he agreed overstated the position.

[381] I conclude that the approach to dependable deformation is open to interpretation. It requires the exercise of expert judgement by a structural engineer rather than a fire engineer when the analysis is forensic rather than design oriented. I therefore agree that Mr Glasgow's evidence on this issue falls outside his domain expertise.

[382] The plaintiffs submitted that I should accord little weight to Mr Feeney's evidence although did not go so far as to suggest that his opinions were inadmissible evidence. Mr Feeney was in a unique position. Clearly one of the most experienced experts in this field, he was a principal of Holmes and the main fire engineer responsible for Holmes' advice to Multiplex during the design and construction of Gore Street. The plaintiffs criticised Mr Feeney's role in the fire design and in particular the fact that Holmes issued fire reports versions C to E without disclosing the new design or departure from the consented documents. They say that he is therefore neither independent nor impartial as an expert witness.

[383] Mr Feeney's domain expertise is highly relevant. He was a co-author of C/VM2 and the associated commentary. His view is that a structural or fire engineer would apply a F_m value of 0.5 because the building materials should be regarded as

providing a level of inherent ductility.[165] When Dr Hyland's thesis was put to Mr Feeney on cross-examination however he commented that he was not familiar with exactly how Gore Street was built and whether or not there would be modes of failure that were non-ductile.

[384] I am not able to finally determine which of the respective opinions on the application of the F_m value from C/VM2 is more appropriate. I observe only that the commentary can be interpreted as describing a presumption that can be displaced. My tentative view is that Mr Feeney's approach is apposite in the design context while Dr Hyland's approach has merit in testing compliance. It would be odd in the latter context to ignore the physical reality in favour of an unmet design expectation. However, I do not find it necessary to reach a decided view. Instead, what I take from this contest is the most important aspect: Mr Olsson's use of an F_m factor of 1 injects further conservatism in the analysis.

[385] The C/VM2 challenging fire scenarios state that it should be assumed that active and passive fire safety systems in the building will perform as intended by the design. Therefore, I agree that to assume both that the fire door to the apartments has failed *and* the sprinkler system has failed is an ultra-conservative approach.

[386] The lift and lift lobby fires were evidently chosen because they "will produce the highest temperature within the corridor and therefore are more likely to have the biggest impact on the primary steel locations." Mr Glasgow pointed out that typically safe path corridors are required not to have any permanent fire load to avoid a fire occurring in these common egress spaces. The Olsson/FRG advice acknowledged this but used a FLED representative of a typical apartment. Mr Olsson in cross-examination said this was also the minimum FLED level in C/AS1 for safe path corridors. He also suggested that this scenario can arise where someone is moving furniture in and out of the building and temporarily stores it in the lobby. But this is

[165] Ductility in this context describes the ability of a structure or member thereof to undergo repeated and reversing deflections beyond the yield deflection while maintaining a substantial proportion of its initial maximum load carrying capacity. Global ductility relates to the structure as a whole. Member ductility relates to an individual member or members.

to cherry pick between values in C/AS1 and C/VM2.[166] The combination of choosing this scenario in the first place along with the adoption of that FLED is further evidence of the intent to maximise the thermal insult.

[387] In sum, the onerous and unrealistically conservative fire modelling has affected the structural analysis undertaken by Dr Hyland in such a way that I am not satisfied that the modelling has produced sufficiently reliable results on which to assess code compliance.

Structural modelling

[388] There is a second reason why I find that the plaintiffs have not established on the evidence that remediation of beams B2 to B5 is necessary because of a lack of code compliance.

[389] As discussed above, I found Dr Abu to be an impressive witness and his evidence helpful. The two overarching themes of Dr Abu's evidence were:

(a) The Olsson/FRG fire scenarios set out to generate the worst possible conditions without any concessions for items which will contribute to reduce fire severity.

(b) The reliability of Dr Hyland's modelling results cannot be tested.

[390] Dr Abu opined that the Hyland modelling has likely significantly overpredicted the response of Gore Street to a fire event. Dr Abu's evidence is that the use of a lobby fire in particular distorts the Hyland modelling. It produced the highest temperatures and became the focus in Dr Hyland's analysis of the performance of the steelwork in the Core.

[391] I pause to note that, during the hearing, the plaintiffs signalled an objection to the admissibility of Dr Abu's opinion evidence. They submitted that the 'significant

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[166] C/VM2 does not have a designation of a FLED for escape routes but I understand that the lowest design value of FLED is also 400.

overprediction' proposition was not put to Dr Hyland in cross-examination.[167] There is no substance to this criticism. The criticism of the fire scenario inputs was squarely put to Mr Olsson. Given that the basis for "overprediction" was primarily the Olsson/FRG inputs, this sufficed. Dr Hyland was also fully on notice of the Council's expert evidence and the Council's criticisms of his evidence and modelling — specifically, that the Council regarded his evidence as inadequately reasoned, and unexplained. This was part of the considerable pre-trial sparring on issues of admissibility. All parties were consequently 'on risk' as a result of positions taken in those hearings. Dr Hyland had sufficient opportunity to respond in the consolidated version of his brief of evidence and in his extensive oral supplementary evidence-in-chief. Lastly, Dr Hyland was given an opportunity to comment on Dr Abu's criticisms in cross-examination. His response to that invitation was that "it hasn't made any change to what we've done because of for [sic] some good reasons". Those reasons were not explored in re-examination.[168]

[392] The essential part of Dr Abu's evidence was that the functionality of the Abaqus software utilised by Dr Hyland is such that the reliability of its output can only be assessed with a clear understanding of the choice of "properties" or inputs selected by the user. Properties includes the geometry of the structure, element types and heat transfer conditions. While this is true of all computer-aided calculations, it is not necessarily the case that an Abaqus reviewer can identify those inputs, or, equally importantly, the rationale for them. Yet the level of accuracy can only be as good as the design assumptions, the input data and the analytical methods. This contrasts with other commonly used software packages in this field where the properties are pre-set and not modifiable. That removes or manages the sensitivity stemming from user choices, logic errors and set-up errors.

[393] I accept the Council's submission that the relevant inputs and the rationale for them were not adequately explained in Dr Hyland's evidence. The following exchange between Mr Price (cross-examiner) and Dr Hyland (responding) was telling:

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167 The plaintiffs invoked s 92 of the Evidence Act 2006.

168 The Council also argues that no duty arose under s 92 of the Evidence Act because nothing in Dr Abu's evidence contradicts Dr Hyland's evidence. That is an overly literal interpretation of "contradiction".

Q. And presumably you had reasons behind each of these choices that you selected?

A. Yes.

Q. And are those reasons set out in any of the modelling data?

A. These are just output requests, so these are what we've used to – these are the – gives us the input for our tables that we've, you know, where we've presented the results.

Q. I think that might be a "no" answer, because that –

A. Sorry, just say that again. I'll try and give you a –

Q. Were the reasons that you had in your own thinking, in choosing these options, set out somewhere in the modelling data?

A. No. No.

Q. Were they set out somewhere in your brief of evidence?

A. No.

Q. Were they set out in a document referred to in your brief of evidence?

A. No. No.

Q. If we then continue through to figure –

A. I would say that that's – this is very much a background thing. It's – you can, you know, you can click whatever you want here and you'll get different outputs and you can – it gives you a lot of flexibility to interrogate the model, see the stress and the strains, get a really good understanding of the behaviour, so –

Q. That's rather the point isn't it, Dr Hyland? That in order to understand what you are producing from this, because of the flexibility about what you can do with it, one needs to understand what you have done with it. Do you agree or disagree with that?

A. Not really, 'cos you can go to the output file and you can do these – as long as we've selected enough options then there's a myriad of things that he could do or we have been able to do to interrogate the models and extract data like the PEEQ strains, the displacements along beams at different times. It's incredibly powerful and what, you know, it's – I don't think we've put any limits on what he can really get out of this if he wanted to.

Q. But we're not here to talk about what he can get out of it if he wanted to, we're talking about trying to understand the evidence that you have given –

A. Yes.

Q. – for the purposes of this court proceeding. Do you understand?

A. Yes. So we've given him the output files, output databases, that are exactly what we have used to populate our tables and our – those graphical plots. So they're all just being extracted about that. He doesn't – well I don't need to talk to him, but it's all there for anyone to extract what we've done is – and you can see the reasoning for it in terms of the use of the software. If you're a competent user of the software you can see what is being done and you could get the data out that we've got out. So I haven't, look, I haven't – I wasn't briefed to provide a training manual for Dr Abu.

Q. I don't think we're asking for a training manual for Dr Abu. We're asking for coherent explanations as to your reasons, assumptions, and tests, which [forms] the basis of your evidence. If I understand correctly, your answer to this is: "The information was there for Dr Abu to find for himself if he were to use the modelling data you provided."

A. Yes indeed, it was.

[394] If explanations for the inputs were in the thousands of pages of data, they were buried such that review was practically impossible. In cross-examination Dr Abu was not taken to any of the information which Dr Hyland said was in his evidence and which Dr Abu had said he needed to review the models. Nor was he shown how the inputs and rationales could be deduced from the data provided. These factors support my finding.[169]

[395] The Council argues that code compliance does not require that fire-induced downward deflections of steel beams need to be restricted to avoid damage to fire protection walls during the post-flashover stage of a fire. The contrary proposition underpins Dr Hyland's approach, including his proposed remediation solution.

[396] Mr Gerlich stated:

> Downward deflection of the floor above due to fire would be an unusual design consideration within an Acceptable Solution framework. During more than 30 years in the passive fire protection industry, I have never previously encountered a design scenario considering the crushing of wall partitions as a consequence of it. It is not something that FRRs, or any of the details in the GIB®Noise Control or Fire Rated Systems manuals referred to by Mr Olsson or Dr Hyland are intended to accommodate. As I explained earlier, the 15 mm gap detail in various GIB® specifications is designed to accommodate stud

[169] The plaintiffs say they made an offer to Dr Abu to attend Dr Hyland's office to observe a demonstration of use of both the Abaqus and Prokon modelling in response to judicial encouragement to find pragmatic ways to overcome the stated difficulties and assert that Dr Abu never requested an explanation of Dr Hyland's inputs. The Council's response is that this ignores the point of evidence and the burden on the plaintiffs.

> expansion. It is not designed to compensate for downward floor deflection from above.

[397] As I understand the Council argument, it is that the scenario of structure exposure to fully developed fire conditions in a sprinklered building is an ultimate limit state ("ULS") event. A ULS is reached when the building ruptures, becomes unstable or loses equilibrium. The performance criterion in that event is structural stability rather than limited structural deflection.

[398] Both Mr Feeney and Ms Scott made similar comments in the context of prescriptive solutions where solutions involve conventional passive fire protection, not alternative solutions. I accept the view of the Council experts that downward deflection of the floor above in fire conditions would be an unusual consideration within a C/AS1 design framework and not something that fire resistance ratings of walls is intended or expected to accommodate *in that framework.* However, I am not persuaded this is determinative in an alternative solution which, "as-built" as opposed to 'as designed', departs so significantly from C/AS1.

[399] I also accept the evidence of the Council experts that the design purpose of a deflection head detail is an allowance for ambient loads rather than downward deflection from thermal insult.[170] This must be so since the allowance normally afforded by the deflection head detail is much less than the expected midspan deflection for a steel beam heated to temperatures in the relevant range. I do not see however why the design intent of a deflection head detail means that its behaviour in the event of thermally induced downward deflection is to be ignored.

[400] I turn to factors which lend support to the plaintiffs' case.

Dr Abu's own modelling

[401] Dr Abu's first (superseded) brief was not limited to the critique of Dr Hyland's modelling. It referred to a structural modelling exercise he undertook using Dr Hyland's Abaqus model to model apartment and lobby fires. He also carried out further modelling of the apartment and lobby fires using Vulcan software.

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[170] I refer intentionally here to deflection heads rather than expansion gaps.

[402] In the first instance, Dr Abu used the same inputs as Dr Hyland and ECCS thermal properties for the GIB ceiling. ECCS properties are the effects of unrated plasterboard ceiling beneath the beams using properties derived from European studies of thermal properties of gypsum boards. Dr Abu then compared the results to Dr Hyland's reported results. His conclusion from this exercise was that although Dr Hyland's modelling contains numerous flaws, the results he achieved in terms of the values reported were broadly comparable and therefore, Dr Hyland's results were not unreasonable.

[403] Dr Abu's view is that those fires used by Dr Hyland were very unrealistic and the thermal properties for the unrated GIB ceiling underreported the delay that the non-fire-rated ceilings would provide. He particularly criticised the lobby fire scenario for distorting the results on two bases. First, any fire emerging from an apartment into the lobby would have to overcome the effect of the sprinklers to grow large enough. Secondly, the assumption of a lobby fire of a similar size is unreasonable since there should be limited fire load in the lobby as a safe path.

[404] Dr Abu then investigated alternative and more realistic scenarios to find the most probable structural behaviour of the Core of Gore Street under fire conditions. He used a localised fire in the lobby scenario and asked Mr Glasgow to develop two representative fires for the analyses — a long and short fire. He described these as "approximations that 'envelope' all the short-sharp or long-cool fires that may develop in the lobby, then take the hottest temperatures of the potential fires that may develop to create representative fire curves." He explained that, as only one of these constituent real fires would occur at any given time in real life, these scenarios are "still an overestimation of the real scenario" yet more realistic than the Olsson/FRG scenarios.

[405] There were two further differences. Dr Abu used data from international literature on the thermal properties of gypsum plasterboard instead of the ECCS properties used by Dr Hyland. He also based the Vulcan analyses on horizontally unrestrained boundary conditions. This means that the floor experiences horizontal

movement in addition to the vertical deflection caused by applied loads and thermal exposure.[171]

[406] The results of the Vulcan modelling Dr Abu's models predicted significantly smaller deflections than Dr Hyland's results as shown by the illustrative table below:

Model Name	Boundary Conditions	Un-rated plasterboard	B1 Vertical (mm)	B1 Horizontal (mm)	B2 Vertical (mm)	B2 Horizontal (mm)	B3 Vertical (mm)	B3 Horizontal (mm)	B4 Vertical (mm)	B4 Horizontal (mm)	B5 Vertical (mm)	B5 Horizontal (mm)
Hyland Default CF3	BC3	ECCS	10		11		50		223		231	
Vulcan UK CF3 DG Short Unp	Free	UK	10	< 1	11	< 1	17	3	111	40	107	47
Vulcan UK CF3 DG Long Unp	Free	UK	10	< 1	11	< 1	17	3	52	34	50	38

[407] The analysis identified that unprotected beams B4 and B5 reach peak deflections of 111 millimetres and 107 millimetres respectively at 13 minutes, after exposure to the short fire. Those beams reached maximum deflections of 52 millimetres and 50 millimetres respectively within 30 minutes of exposure to the long fire. This compares to Dr Hyland's analysis showing beams B4 and B5 reaching 223 and 231 millimetres, respectively.

[408] Materially, Dr Abu stated that the resulting deflections are well within acceptable design limits based on the ULS limiting deflection of span/20. He concluded:

> The results …are substantially different from Dr Hyland's with significantly smaller peak vertical deflections than he reports, reflecting the more realistic fire scenarios and thermal properties for the GIB ceiling. These vertical deflections (indeed Dr Hyland's peak vertical deflections) are well within acceptable design limits based on the ULS limiting deflection of span/20.
>
> …
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> …beams B1 to B3 are 5.7 m long, meaning that they are permitted to deflect by up to 285 mm without exceeding the limiting deflection during a ULS fire

[171] According to Dr Abu, Vulcan modelling is unable to predict the exact movement of bolts through holes or cleat deformations.

> scenario. B4 and B5 are each 9.2 m long, meaning they are permitted to deflect by up to 460 mm. This reflects the fact that the property damage is expected in this type of event, including structural damage, provided that the risk of the building collapsing is at an acceptable level.

[409] However, Dr Abu also identified that the horizontal displacements are problematic in beams B4 and B5 and concluded that (without considering the positive contribution of sprinklers):

(a) Beams B4 and B5 should have been protected to keep their horizontal deflections low and limit the lateral deformation of the connections. He recommended a 30 minute rating on beam B5 and a 60 minute rating on beam B4 with commensurate protection to their connections.

(b) Beams B1 and B2 can remain unprotected as they are contained in the apartment. A fire in the apartment would be contained as a result of the fire-rated wall assembly to its boundaries.

(c) Beam B3 could also remain unprotected using the true properties of unrated gypsum plasterboard as this beam is mostly likely to be boarded up as part of the fire-rated corridor wall construction.

[410] Mr Illingworth KC tested these conclusions on cross-examination. Dr Abu conceded that if there was a large fire in the corridor and for any reason the wall that separates them failed there "is something to consider". He also acknowledged that if beam B3 is exposed as a result of the failure of a fire protected wall and the fire was significant enough then he would have to review his opinion. In other words, the results assumed a properly constructed gypsum ceiling.

[411] Finally, Dr Abu carried out analyses on sprinkler-controlled fires which (conservatively) assumed that the sprinkler would cap the heat release rate rather than put the fire out, and protected beam scenarios using the short and long lobby fires provided by Mr Glasgow.

[412] All of the Vulcan analyses were said to be set up to be conservative, albeit more realistic than Dr Hyland's analysis. Dr Abu concluded that vertical deflections could

be up to 111 millimetres but deflections of this order are to be expected in the ULS/accidental/fire limit state.

[413] The key takeaways from Dr Abu's original modelling are the overriding sensitivity of the modelling to the severity of the design fires, the significant impact of sprinkler activation and that there are deleterious effects at the end of beams B4 and B5. The analysis again underscored that the reliability of Dr Hyland's modelling is highly dependent on the reliability of the fire analysis undertaken by Mr Olsson.

[414] The plaintiffs submitted that the fact that Dr Abu's first analysis ignored sprinklers showed that it was appropriate to do so to test effectiveness of passive fire protection. However, Dr Abu debunked this suggestion on cross-examination. In answer to that proposition he said:

> I'll disagree with that. The reason why I did my analysis without the positive contribution of sprinklers earlier was just to see how I would – if I followed Dr Hyland and Mr Olsson's suggestion that sprinklers should not be considered, then what would I expect the structure to reasonably do. That was the reason why I did not consider sprinklers for those earlier analyses.

What is the significance of Mr Feeney's analysis of the "as-built" construction?

[415] The Feeney analyses in 2005 and 2006 were never provided to the Council at the CCC stage. Indeed, the Council was oblivious to the third iteration of the fire design. The so-called "design" was retrospective in that it was an assessment of the fire safety attributes of the as-built construction. The Council submitted that Mr Feeney's assessment establishes code compliance. (Although not expressly put this way, I infer the argument is also that it would have provided the Council with sufficient grounds to issue the CCC even if it was now shown to be wrong since the Council would have no obligation to look behind it).

[416] I do not accept this submission. Although Mr Feeney stands by his assessment made in March 2006, I also consider it speculative to say that the Council would not be under any duty to make further inquiry. It would have been faced with an "as-built" construction which did not conform with the consented documents. It is much more likely that the Council would have (indeed should have) sought a fully-fledged PS2 in those circumstances, having been alerted to the inconsistency. That would have

required a more comprehensive analysis by Holmes. This is notwithstanding that Condition 14 of Consent 303 elevated the Fire Design Report and peer review of the fire design report — over the architectural plans and said their recommendations must be followed. Condition 20 required that the design fire engineer inspect and certify compliance with the intent and requirements of the fire report *and* a PS "construction-review" is required before the CCC can be issued.

[417] There is no evidence that MacDonald Barnett reviewed Mr Feeney's analysis of the as-built structure and the circumstances in which that came about make that unlikely. There is no cogent evidence of any peer review of the amended design although Mr Feeney faintly suggested that there was some oversight by Mr Clifton.

Conclusion in relation to claimed defects 1 and 2 — have the plaintiffs established loss/damage by showing that the construction does not comply with the Building Code?

[418] The 'as-built' construction is not an Acceptable Solution approach. Neither is it orthodox. In my assessment, the build (and design) process went awry as a consequence of decisions by the contractor. The plaintiffs were faced with a monumentally difficult task in seeking to show non-compliance. They have fallen short for the most part. While it is apparent that no expert has shown that Gore Street is code compliant, the evidence before the Court does not establish breach of the Building Code in respect of all structural beams in the Core.

[419] However, there was agreement at the expert conference that there is some Building Code breach in respect of defect 1. In a case of such technical difficulty where the experts views were so divergent on almost all issues, this agreement has heft. I therefore find that it has been established on the balance of probabilities that the lack of protection to beams B4 and B5 means that they are not code compliant. This is consistent with the evidence of Mr Glasgow, the agreement of the expert for the 13th defendant and the modelling undertaken by Mr Glasgow and Dr Abu recorded in Dr Abu's first brief of evidence.

[420] The commonsense reason for beam B4 requiring protection is its location over the stairwell wall in the core. I am satisfied that the integrity of the fire separation between the safe path stair and the safe path corridor/lobby is critically important.

[421] Beam B5 is situated over the lift wall in the corridor in the core. Because of the construction of the fire wall to the underside of the beam, deformation of the beam could affect the fire separation between the lift shaft and adjacent safe path corridor/lobby. This is also important.

[422] Protection of beams B4 and B5 is also consistent with the original Holmes design intent.

[423] I prefer the evidence of Mr Glasgow and Mr Gerlich for the Council that the actual wall construction provides more thermal protection and insulation to the studs inside the wall than is normally the case, thus reducing the internal temperature of the wall cavity. Mr Gerlich's evidence is particularly compelling given his extensive experience in the development of GIB fire rated systems. (I do not accept that the reputational interest of Winstone has tainted his evidence which I found substantially helpful). Dr Hyland's structural modelling has not been shown to reliably indicate the extent of thermal expansion, chiefly because of the onerous fire inputs selected. Therefore, I am not satisfied that the absence of a full 15 millimetre gap together with screwing of the top track of the stud frame will cause premature integrity failure of the fire wall. The fact that Dr Hyland's predicted deflection massively exceeds that gap in any event supports my view.

[424] In sum, the plaintiffs partially succeed in establishing that claimed defect 1 breaches the Building Code and is an actionable defect. Their claim in respect of claimed defect 2 fails.

Claimed defect 3 — defective welds leading to breach of the Building Code?

[425] The experts differ as to whether the defective welds are able to meet demands placed on them during an uncontrolled fire or a ULS seismic event. I accept Dr Hyland's evidence that in an uncontrolled fire any deformation will place extra load on the steel plates and cleats supporting the steelwork in the stairwell and Core floors.

However, he did not analyse the actual capacity of the connections compared to the demands they would need to accommodate.

[426] Dr Jacobs, a structural engineer called by the Council to assist on this and other structural issues, concluded that the strength of the bolts is similar in strength to the 4 millimetre welds. Thus, the fact that the welds are 4 millimetres rather than 6 millimetres as specified in the literature does not influence the overall strength of the connection in tension.

[427] That evidence leads me to conclude that the plaintiffs have not established that claimed defect 3 results in non-compliance with the Building Code. Claimed defect 3 is not therefore an actionable defect.

Claimed defect 7 — do the defective penetrations breach the Building Code?

[428] Penetrations and openings in fire-rated walls and floors need to be correctly fire stopped to maintain the integrity of fire separations. They are not. They clearly do not conform to the building consent and consented fire report. It is incontrovertible that poorly installed penetrations have the potential to compromise the FRR. Mr Olsson gave evidence that the defective passive fire construction presents particular life safety risks for the occupants due to the high rise nature of Gore Street; the large number of occupants at potential risk; and the time it would take to exit the building.

[429] Whether they are actionable defects for present purposes depends on whether there is widespread non-compliance with the C clauses of the Building Code.

[430] A convenient starting point is that the joint expert statement recorded:

> **3.1 At the time**
>
> The experts agree that the as-built construction in relation to Defect 7 did not comply with the relevant Code clauses (see the version of the Building Code clauses in exhibit …) in the period 2004 to 2006 as further detailed in the evidence.

[431] The only agreed Building Code clause breach recorded in the joint expert statement is cl C3.3.3(b). For convenience, I set out cl 3.3.3 again:

Fire separations shall:

(a) Where openings occur, be provided with fire resisting closures to maintain the integrity of the fire separations for an adequate time, and

(b) Where penetrations occur, maintain the fire resistance rating of the fire separation.

[432] The Council submits that this issue requires an assessment of whether, and the extent to which, the objectives in the C clauses of the Building Code have not been met. It argues that the plaintiffs have not tried to establish in their evidence that:

(a) As a consequence of the fire stopping/penetrations occupants will not have adequate time to reach a safe place without being overcome by the effects of fire.[172]

(b) The various walls through which penetrations have occurred do not resist the spread of fire and limit the generation of toxic gases, smoke and heat to a degree appropriate to the four identified factors in clause C3.3.1.[173]

[433] None of the Council's experts disputed the plaintiff expert evidence that the service penetrations are not constructed in accordance with the manufacturer's tested systems. Nor could they.

[434] The challenge is the variability between the nature and/or extent of the deviations. No expert evidence was led to say that even minor deviations from the technical specification caused a complete lack of performance. The plaintiffs did not lead evidence to show that any departure from the manufacturer's specifications means that an FRR was not actually achieved in practice. Neither did the evidence cogently show what actual performance could be expected given the deficiencies in installation or what FRR the products used were shown by testing to achieve. Instead, the plaintiffs advanced this part of their claim on the basis that the physical state of affairs meant no code compliance because *any* installation deficiency results in the fire stopping and firewall having no FRR.

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172 Building Code, cl C2.
173 Building Code, cl C3.

[435] The purpose of fire stopping penetrations is to maintain the FRR of the fire separation. This is explicitly stated in material such as the Penetrations in GIB Fire Rated Systems manual.[174] The introduction states:

> The continuity and effectiveness of fire separations must be maintained around penetrations. Where a difference exists between the FRR of the penetration seal or closure and the FRR of the GIB Fire Rated system, the lower FRR governs.

[436] C/AS1 provides that fire stopping installation should have an FRR no less than the fire separation:[175]

> 6.17.2 Fire stops shall have a FRR of no less than that required for the fire separation within which they are installed, and shall be tested in accordance with Paragraph C7.1 of Appendix C.
>
> 6.17.3 Fire stops and methods of installation shall be identical with those of the prototype used in tests to establish their FRR.
>
> 6.17.4 The material selected shall be approved as appropriate for the type and size of the gap or penetration, and for type of material and construction used in the fire separation.

[437] Mr Olsson's evidence misstated para 6.17.3 by effectively replacing "their FRR" with "an FRR". That led to his conclusion (supported by Mr Green) that if a fire stopping product is not installed in an identical manner to a tested prototype, it would have no FRR.

[438] If Mr Olsson intended to mean no fire resistance in fact, that is difficult to accept. On a plain language reading of the clause, the consequence of non-identical installation of the fire stopping mechanism (including the doors) is that it does not have its published FRR. It is not necessarily the case that it has no FRR. Rather, depending on the nature of the defective installation, some fire resistance is likely to be retained albeit there could be no assurance of what that rating is.

[439] The plaintiffs did not lead evidence about the FRRs of typical fire collars or other stopping methods. For instance, whether they might offer far longer resistance than 30 minutes when correctly installed and therefore still offer at least 30 minutes if

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174 *Penetrations in GIB Fire Rated* Systems, CBI5113, August 2003.
175 C/AS1.

the non-compliance is relatively slight. Nor did the plaintiffs' experts qualitatively analyse the various permutations of inadequate installation (because their position was if the penetration was not installed in accordance with any tested system it did not have an FRR).

[440] For the Council, Clinton Smith gave evidence of his experience of using intumescent sealants (a form of fire stopping). He stated that they are normally tested between 120 to 180 minutes so that even a badly applied 180 minute tested product should be able to perform for 30 minutes. The plaintiffs argue that this anecdotal evidence fell well outside his domain expertise. I have to agree.

[441] Ms Meechan's cross-examination of Mr Olsson exposed his overstatement of the position but also the point as to lack of assurance. She asked Mr Olsson about a FirePro M707 fire collar with an FRR of 3 hours when tested to AS 1530 (Methods for Fire Tests on Building Material Components and Structures) and intended for gaps of up to 50 millimetres. When asked whether use of this product for a gap of 51 millimetres would mean an FRR of zero, Mr Olsson acknowledged that it would probably have a level of rating but he could not say how much. He said:

> The difficulty with that example and generally with fire, passive fire products, are that some of them are highly optimised and some of them could fail if one or two screws are missing. And in reality, if they are not installed in accordance with a tested system and/or the assessment, because sometimes there is assessment that, sometimes there are assessments from the testing authority that expand the use of the product in a range. But without having expert knowledge or being in the manufacture of that particular product, it is almost an impossible question to answer… in my view, if I'm not an expert manufacturer of that particular product and you are the design engineer at the same time, I would say it would have some fire ratings, but the difficulty, who is going to sign that off.

[442] The Council experts maintained that the effect of sub-standard fire stopping on compliance with fire safety provisions of the Building Code cannot be assessed in isolation. They said that the mitigating impact of many of the other key fire safety provisions present in the building should be assessed and accounted for. This is, with respect, a red herring. It is reasonable to infer that the requirements of the C/AS1 and the GIB manual take those matters into account and the FRR has already been reduced due to the presence of other factors.

[443] There is a second line of argument advanced by the Council. The Fire Safety clauses of the Building Code were amended in 2012. The Council argues that the current version of the Building Code is relevant because any remediation is to be assessed under present-day requirements. The changes included introduction of a probabilistic qualifier to the functional requirement provisions of cl C3. It now reads:

> **C3.1** Buildings must be designed and constructed so that there is a *low probability* of injury or illness to persons not in close proximity to a fire source.
>
> **C3.2** Buildings with a building height greater than 10 m where upper floors contain sleeping uses or other property must be designed and constructed so that there is *low probability* of external vertical fire spread to upper floors in the building.
>
> **C3.3** Building must be designed and constructed so that there is a *low probability* of fire spread to other property vertically or horizontally across a relevant boundary.

[444] The Council experts Ms Scott, Mr Glasgow and Professor Fleischmann maintain that there is no evidence that the defective penetrations cause Gore Street to be non-compliant. They say that, on a holistic assessment, the passive fire deficiencies do not present any more than a very low probability of any of the stipulated safety considerations. Thus, though it is accepted that the penetrations ought to have been stopped correctly at construction, there is no failure measured against the *current* Building Code.

[445] Although the Council's written submissions suggested that the touchstone of "low probability" was relevant both to the overall assessment and also to remediation, in oral closing submissions, Ms Meechan stepped back from that proposition.

[446] On reflection, it is arguable that when talking about future events such as claimed fire defects, it is the current Building Code which is all important to establish loss in a liability sense. However, as it was not argued that way, I say no more about this.

[447] Professor Fleischmann's opinion was that the existing passive penetration defects may eventually allow the fire to spread between units but long after the occupants would be expected to have evacuated. Further, that the walls will still

provide some protection, assuming the apartment door is closed. If the door is not closed, the penetrations would make no real difference since the primary vulnerability would be the open door. His conclusion is that the penetration issues are minor when considered in conjunction with the highly reliable sprinkler system at Gore Street and other fire systems. Indeed, he went so far as to say in his evidence-in-chief that:

> Based on the information I have been provided regarding the fire safety features at Gore Street and my expertise as a fire engineer, I believe that the occupants at Gore Street are safer from fire than I am within my current home.

[448] Clinton Smith referred to recent BRANZ testing undertaken on typical penetrations that were deliberately poorly formed.[176] The report came about after passive fire protection was identified as an issue that must be addressed in building undergoing alterations. A series of commonly found non-compliant residential fire stopping configurations were fire tested to provide data on how actual construction may perform in a fire. According to Mr Smith, the overall test results appeared to show that in the 30 minute tests, 85 per cent of the poorly formed penetrations still performed the insulation requirement, and 94 per cent performed the integrity requirement.[177] While none of the test specimens in that report necessarily correlated with construction at Gore Street, I accept that the report supported the Council's submission that non-compliance with the manufacturer's technical literature does not mean that the fire stopping has no FRR or even less than the required FRR of the fire walls.

Conclusion on penetrations and the Building Code

[449] It is clear that there are instances of breach of the Building Code. The more difficult assessment is where and to what extent given the variability of non-conformity. There must be a vast number of permutations of the claimed defect. Whilst acknowledging the evidential difficulties, it seems to me that this is a particular area where assurance of compliance is paramount. The way in which C/AS1 is framed (and the GIB manual) support a strict compliance approach, for good policy reason.

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176 BRANZ Study Report SR410 (2018): Assessing the risk of non-compliant fire stopping and smoke stopping in New Zealand residential buildings undergoing alterations. Acknowledged members of the stakeholder group and contributors included Ronald Green, an expert for the plaintiffs, and Mr Gerlich. Dr Baker was a named author.

177 I calculated slightly higher percentages based on the report.

Currently, the investigation (and agreed position of the experts) means that the plaintiffs have none. I am not satisfied that when the systems are considered holistically any identified deficiencies present no more than a very low probability of injury or illness to occupants remote from the fire source but disagree that this is the test by which to assess whether this defect is an actionable defect. I have had regard to the Building Code as it existed at the time rather than following amendment in 2012, although the new landscape will be relevant to remediation.

[450] Overall, I prefer the evidence of Mr Green, Mr Olsson and Mr Page as to the consequences. I consider there is systemic non-compliance with the Building Code in respect of penetrations in apartment intertenancy walls and apartment floor slabs, the rubbish room, lift shafts, common corridor walls, risers, rubbish room, communications cupboards, carpark, services cupboards, and basement plantrooms (including missing architraves in the service cupboards). I am not satisfied on the evidence that the fire door gaps on doors other than the stair doors have been shown to be in breach of the Building Code.

[451] Claimed defect 7 is therefore an actionable defect in the above respects only.

Did the Council breach its duty of care in the issue of building consent?

[452] I go on to deal (as relevant in view of my findings above) with the question of the Council's performance and to ask whether the Council caused or materially contributed to the existence of the state of affairs.

[453] The question of whether consent ought to have been issued by a prudent council arises only in respect of claimed defect 1, and claimed defect 7 in relation to the fire doors.

[454] It was clearly anticipated that specific drawings and designs would be developed following the fire engineering report. When MacDonald Barnett issued a PS2 in respect of the Holmes Fire Report revision B, there were no detailed designs. There was no indication that MacDonald Barnett had reviewed any detailed designs. Condition 10 of Consent 302 explicitly anticipated (and required) that the

recommendations be incorporated into the architectural documents to be submitted for the building consent covering the next stage of the project.

[455] The consented specification dated August 2004 referred to two *options* for protection of steelwork.[178] The plaintiffs argued neither option had sufficient details for consent to be granted. The first option was use of cementitious coating (fire-rated coating) on beams. That specification method was stated to be contained in a report from Holmes titled "Holmes Fire & Safety Design Review of Fire Protection to Structure Report". This report was not attached to the specification. The Council never requested it as part of the consenting process. It transpired that it did not in fact exist.

[456] I do not accept the plaintiffs' proposition that had the Council requested this report, it would have discovered that Holmes was proposing a new alternative design dispensing with protection to the steelwork. While that is possible, it does not logically follow. It is speculative.

[457] I agree that the detail around the "box-in" method was generic. It incorporated by reference the GIB Fire Rated Systems Manual. This provided quick reference solutions. It also specifically noted that engineered or tailored solutions could be designed with the use of software written by MacDonald Barnett. To the non-expert it seems surprising that a building of nearly 40 storeys would not have a tailored or engineered solution and would rely on manufacturer's technical specifications in this way.

[458] I am not persuaded that the lack of detail as to the locations where fire-rated coatings are to be applied and matters such as thickness are apposite in a situation where two options are recorded for protection. It stands to reason that it was for the building's designers to subsequently determine which elements would be the subject of coatings and which by the box-in method.

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[178] It was not argued by the plaintiffs that a specification offering up two alternatives was fundamentally inadequate.

[459] Mr Olsson conceded that it would be "possible" for the steel structure to achieve a 30/-/- rating (and thus be compliant). If the steelwork had been enclosed in accordance with the GIB manual then the 30 minute FRR would have been achieved. I agree that a suitably competent contractor could fairly have been expected to have incorporated details contained in the GIB manual in the construction of the firewall system. The complaint as to the sufficiency of detail therefore loses potency as a stand-alone criticism. I consider the more material aspect is that the lack of detail in the consenting process meant a heightened burden on the Council at the CCC stage to ensure that fire protection was consistent with the consented documents and particularly the consent conditions.[179]

[460] I therefore conclude that the plaintiffs have not established that the Council was negligent in the issue of the consent.

[461] The plaintiffs do not criticise the Council in the processing of consent in respect of penetrations save in respect of the fire doors. This is no doubt because the Holmes fire report in its various iterations specifically dealt with penetrations. The relevant provision reads:

> All penetrations, including ventilation ducts, through fire rated partitions are required to be sealed with approved fire resistant materials to AS1530 part 4 and are to achieve a FRR of no less than that of the element that is penetrated. This includes electrical sockets and switches in cavity walls.

[462] AS 1530 part 4 sets out the method for testing fire-rated products. Products must be installed in accordance with the tested system in order to achieve their tested FRR. The architectural specification dated August 2004 cites the "Penetrations in GIB Fire Rated Systems" manual. The manual states:

> Penetrations in fire rated construction can allow spread of fire from one firecell to another if they are not correctly fire rated. Poorly installed penetrations can compromise the fire resistance rating and in turn could compromise the health and life safety of building occupants.

[463] It also notes that where a difference exists between the FRR of the penetration, seal or closure, and the FRR of the GIB fire rated system, the lower FRR governs. The

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[179] Mr Glasgow acknowledged on cross-examination that the less detail required at the design stage, the greater care required during or at the end of the project.

manual provides prescriptive guidance on products or systems suitable for installation into GIB fire rated systems.

[464] In relation to the fire doors, Messrs Jordan and Moodie's evidence was that the Council should have requested technical information from the supplier of the fire doors before issuing consent. As I apprehend it, the point was that the Council would then confirm that the proposed fire door set was a tested system. However, the Holmes fire reports specified the rating of stair doors, apartment entry doors and lift doors and expressly required installation in accordance with AS/NZS 1905:1:1997 (Components for the Protection of Openings in Fire-resistant Walls).[180] The same standard was also specified.

[465] AS/NZS 1905:1:1997 is precise in relation to installation. It specifies clearances for fire resistant door sets between the leaf and the top of any floor covering of no more than 10 millimetres unless greater clearance dimensions have been demonstrated on a tested specimen. The Best Door specifications or technical data record the same floor clearance of 0 to 10 millimetres.[181]

[466] The consenting officer at the Council, Ted Jones, gave evidence that it is not uncommon for the supplier of a product in a large construction job to be unknown at the point of consent. Bearing in mind the prescriptive details in the New Zealand standard, I accept that there were reasonable grounds to issue the consent. Further, the clearance dimension in the standard is the same as the clearance dimension in the manufacturer's technical information so there is no causal potency even if the consent should not have been issued without more technical detail.

[467] I note too that Mr Flay for the Council pointed out in relation to the consent, a fire door is tagged by the door manufacturer to say it meets the rating and once installed, is re-tagged. His evidence was that nothing more than the standard reference to the actual specifications and the fire rating of the door that is required to meet the fire report needs to be before Council at the consent stage.

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180 *Components for the Protection of Openings in Fire-resistant Walls* (AS/NZS 1905:1:1997).
181 Best Door was the door manufacturer.

[468] I accept this evidence. No breach of duty on the part of the Council at the consent stage is established.

Was the Council negligent at the inspection/CCC stage?

Claimed defect 1 — fire protection of steel beams

[469] As discussed, the slim information in the architectural drawings and specification impacted the level of care a prudent Council ought to take at the CCC stage.[182] A number of consent conditions are relevant including the requirement of a PS4 from the fire engineer.[183]

[470] Given the specialist nature of fire protection, reasonable grounds could realistically or practically only be achieved by third-party validation. There was no evidence given that the Council had appropriately qualified personnel in-house or access to such personnel to conduct some of those inspections.[184] A council inspector could not have himself or herself assessed any cementitious coating. This is where a consent condition requiring verification is most apposite.[185] On the evidence before the Court, there was no adequate verification by way of a producer statement or otherwise.

[471] The NZFS memorandum dated 5 December 2005 was a red flag in that it highlighted the lack of fire-rated construction details in the consent documents.[186] One of its recommendations was that the Council ensure that the consent included fire rated construction details showing how the assembly was to achieve the FRRs in the fire report. This underscored the criticality of a robust inspection/verification process before issue of a CCC. The Council's pre-CCC findings recorded:

> Undertaking that issues raised by the NZFS Design Review Unit Building Memorandum dated 5-Dec-05 are to be addressed in future consents.

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182 *Body Corporate v North Shore City Council*, HC Auckland CIV-2005-404-005561, 25 July 2008 [*Byron Avenue*] at [97]; and *Body Corporate 160361 v BC 2004 Ltd* and *BC 2009 Ltd* [2015] NZHC 1803 [*Fleet Street*] at [168].

183 Condition 8 in Consent 305; Condition 20 of Consent 303; Condition 11 in Consent 302; Condition 8 of Consent 305; and Condition 12 of Consent 306.

184 The only suggestion was from Dr Abu's curriculum vitae.

185 Condition 12, Consent 302.

186 This memorandum was issued under s 47 of the 2004 Act with respect to Consents 306 and 307 and contained advice in relation to the Holmes Fire Report version D and various Clark Brown plans.

[472] There was nothing in Multiplex's various communications to the Council produced to the Court which addressed this and the Council experts' deflection of that memorandum is no answer.

[473] There was no PS4 provided by a fire engineer as required by the consent conditions. There was no certification of any intumescent or sprayed fire-rated applications (because none was used) but the absence of these ought to have put the Council on notice that the alternative — the boxed in method — needed to be inspected or verified. Without information pertaining to the form of consented protection, there was an information gap which could and should have alerted the Council to an issue. The Council expert, Mr Flay, accepted that an inspector should have seen that the steel beams were not enclosed by GIB.

[474] The Council suggests that the Holmes certification letter dated 29 August 2006 provided sufficient reasonable grounds on which to issue the CCC. There are two problems with this. First, there was no direct evidence that the Council did in fact rely on it, although I infer that the Council obtained it. The CCC for Consent 303 specifically refers to the provision of producer statements and their subject matter as providing reasonable grounds for the Council's belief that the building work complies. There is no explicit reference to the Holmes certification letter. Neither is it referenced in any other CCC.

[475] Secondly, I agree that the one-page Holmes letter falls well short of an adequate producer statement. It was certainly not in accordance with the Council's producer statement guidelines. The equivocal language stands out. It reads:

> We have visited the building on multiple occasions to view the construction works.
>
> Our observations were limited to the passive fire protection and egress features as detailed in the fire report. Construction monitoring for the fire protection systems in this building were not covered in detail, as they have been specified and designed by others.
>
> Based on our site observations and the documentation we have received, we believe that the completed works at the [Gore Street] building generally appear to comply with the requirements of the fire safety report.

[476] It was not addressed to the Council and contained no acknowledgement of likely reliance by a Council. It does not reference the consent or the Building Code. Mr Feeney explained the purpose of this letter was only to indicate that the fire safety systems would perform collectively as intended by the fire safety design and as fire engineers do not produce construction documents, it is not possible to certify compliance with the fire design in an absolute sense. That may be so. But even this explanation further exposes a gap in the compliance system.

[477] Mr Feeney produced a letter in similar terms in relation to another apartment building around the same time frame. I take little from this. The language was not on all fours. The context in which it was written or the terms of the engagement of Holmes on that project were not in evidence. More materially, merely because that may have been a common approach at that time does not inform the question of whether the Council had reasonable grounds to issue a CCC on the basis of such a letter.

[478] I therefore conclude that the Holmes letter could not have provided reasonable grounds to be satisfied as to compliance even without observed anomalies or deficiencies, but particularly so when there were observable issues of non-compliance with the consented documents.

[479] Given the critical importance of fire safety in a building of the size and scale of Gore Street, I consider a prudent council should not have issued the CCC. Instead, it ought to have made further enquiries, carried out inspections itself through an independent fire engineer or insisted on a more comprehensive and informative producer statement complete with a peer review.

[480] In summation, in relation to claimed defect 1, I find that the Council breached its duty of care when it issued CCCs covering the fire safety aspects of Gore Street.

Claimed defect 2 — heads of fire separation walls

[481] It is not strictly necessary to determine the Council's responsibility for the physical state of affair in view of my findings above but I do so in case I am wrong on whether there is an actionable defect.

[482] The Council argues that a Council inspector would not have been looking for matters such as a deflection head and fixings and instead would have relied on the fire engineer construction monitoring to pick up those types of details. Further, even if identified, then the appropriate remedial action would have been to require Multiplex to consult with the fire engineer about whether the required FRR was compromised. It relies on the evidence of Mr Gerlich who said that if Winstone Wallboard (the manufacturer of GIB products) had been contacted (and it frequently is contacted for such matters) Mr Gerlich would have advised that the FRRs were not compromised by the departures from the details in the GIB manuals. Faced with that advice from Mr Gerlich as expert in relation to GIB detailing, the Council submits it would have been reasonable for the Council to rely on that advice at face value.

[483] These contentions are advanced on the basis that the Court does not need to accept the correctness of Mr Gerlich's advice. The point is that the Council would have been entitled to rely on it.

[484] This may be so in isolation. But collectively, I consider it is a different story. I accept that a prudent Council at a pre-line or subsequent inspection would have inspected the firewalls and that it would have been obvious that the construction, both inside and outside the Core, did not comply with the details in the GIB manuals and therefore the consented documents. The evidence is that Council inspectors at that time were very aware of the GIB documentation given its wide use. Mr Flay for the Council also agreed that Council inspectors would know that fire separations needed to be constructed in accordance with the GIB systems to achieve the nominated FRRs. I further accept that the Council had sufficient opportunity to inspect the construction at the pre-line inspection at least and that the lack of expansion gap or non-compliant expansion gap (with more than a minor deviation) would have been or ought to have been seen by an inspector along with the non-compliant use of steel screw fixings contrary to the GIB manuals.

[485] Once any of the anomalies were picked up, a prudent Council would have been alerted to the potential for further non-compliant construction and would have been expected to increase its vigilance, check further aspects of construction and take any and all steps to identify the full extent of the defective work. In short, once the screw

fixing issue was identified (as it ought to have been in my view) it would be even more likely that the absence of expansion head would be picked up and the likelihood of the lack of boxing-in of the critical steel beams. The Council would then be particularly vigilant at the CCC stage to ensure appropriate producer statements were available, along with the requisite peer reviews. In other words, there ought to have been sufficient concerns to warrant a more exacting and careful assessment before the issue of a CCC. A statement from Mr Gerlich, notwithstanding his undoubted expertise, would not in all the circumstances have been sufficient to fulfil the statutory requirement of reasonable grounds.

[486] In sum, I consider the Council was negligent at the inspection/CCC stage and breached its duty of case when it issued the CCC. Those breaches were a material cause of the state of affairs captured by claimed defect 2 insofar as the lack of conformance with the building consent.

Claimed defect 3 – inadequate steel framed connections within Core

[487] I deal briefly with this aspect for the same reasons expressed above.

[488] Messrs Jordan and Moodie's evidence was that while the Council would not have arranged specific inspections to review the welds in the light of an expected PS4 from a structural engineer, prudent inspectors would have identified any obvious structural issues during the course of their inspections. The suggestion was that Council inspectors would have *incidentally* observed the welding issues while using the staircases.

[489] The plaintiffs put store on evidence by Mr Flay during cross-examination that he saw two or three welds that might have given him concerns — a missing weld and another weld on a small cleat. But the exercise of putting photographs of these welds to Mr Flay in the witness box had no real world equivalence. No one has suggested that a Council inspector had or should have relevant expertise to assess adequacy of welding. This issue was not one that Maynard Marks picked up during its two year investigation of defects in the building. It was only picked up by Dr Hyland who has particular expertise in welding. Even then he engaged the services of a specialist welding firm.

[490] That the Council was not expected to arrange a specific inspection of the welding connections is not surprising in the light of the expectation that a registered engineer was to observe the structural elements of the building and provide a PS4. Prior to the issue of a CCC, the Council received a PS3 from the steel fabricator, Dean Steel, and a PS4 from the structural engineer, Buller George. I accept the Council's argument that, in the absence of any requirement to inspect the welds itself, the PS3 and PS4 were sufficient. I reject the incidental observation argument as unrealistic. Though Council officers may have used the stairwells at certain times during other inspections, unless there was a focussed inspection of welds, it has not been established to my satisfaction that the weld issues would have been necessarily observable.

[491] In summary, I do not accept that the Council was negligent for not picking up defective welds.

Claimed defect 7 — inspection and issue of CCC

[492] The plaintiffs say that the Council failed to identify the defective fire stopping during pre-line and fire-rated lining inspections when they should have observed such defects and required remediation. They further say the Council did not have sufficient grounds at the code compliance stage to issue a CCC and the documents they did rely on were patently insufficient.

[493] In relation to the fire doors, the plaintiffs say at inspection the Council failed to identify the non-compliant gaps and missed architraves to the communications and electrical cupboards. Without verification of the adequacy of this work, the Council was negligent in the issue of a CCC.

[494] The plaintiffs' expert, Mr Jordan, says that a prudent Council inspector would have referred to the GIB manual and determined whether the fire stopping complied with its requirements. It should have undertaken a range of sample inspections on each level and given the widespread nature of the fire stopping defects, the Council should have identified at least instances of the defects described by Messrs Olsson and Green. The defects could have been observed both at pre-line inspections and at the fire-rated lining inspection.

[495] Mr Jordan further said once examples of poor standard fire stopping were observed, the Council ought to have undertaken more inspections to identify the full extent of the defective work and require rectification. Mr Moodie generally agreed stating that on the basis of the evidence of Mr Green and the fire engineer, he would have expected an inspector to have identified issues during inspection.

[496] This proposition depends on two things. First, inspection at the relevant stage of construction, neither too early when other services have yet to penetrate the fire wall, nor too late at which point access might be difficult. Secondly, equivalence between the focused investigation by experts in support of litigation and an inspection by a Council employee prior to granting a CCC.

[497] As discussed, the analysis by Mr Green and the produced spreadsheet itemising each deficient fire stopping was the product of a comprehensive analysis over a relatively extended period. That highly specialised consultants who spend weeks or months poring over the construction found the high number of penetration issues does not mean that inspections were negligent in 2005/2006. Or, to put it another way, what passive fire experts pick up does not set the standard for council inspectors. I also accept that the range of stopping solutions and the rigour associated with correct installation today does not reflect what was known 16 years ago.

[498] The Council's expert, Mr Flay, gave evidence that councils would ordinarily inspect the penetrations at the fire-rated lining inspections. He accepts that some of the original penetrations may have been observable at the time of Council inspections. He accepts too that the penetrations in the services cupboards should have been identified at final inspection. He says that provided the alleged defect was extensive and existed at the time of the original construction, they could have been identified.

[499] There is nothing in the point as to whether the observed defects were in existence from the time of the original construction. Mr Olsson carefully considered the possibility of post-construction work. He examined Body Corporate material to see what further work was done, interrogated the second plaintiffs on whether they were aware of, for example, cabling work during their ownership of a unit and concluded that less than five per cent of the penetrations in the whole building had

been created or re-fire stopped since the original construction. He acknowledged that there was some post-construction fire stopping in limited places between 2014 and 2016. In 2014, Chorus installed UFB through communication risers and the server room and there was installation of CAT5 data cables. Cognisant of the point that the relevant time is the time of construction, he identified any new fire stopping work in the schedule of observations.

[500] It is apparent that the Council inspected penetrations during the course of its inspection regime at Gore Street. There were 219 inspections under Consent 303, and two under Consent 305 according to the inspection checklists produced to the Court. The fire-related inspection notes totalled around 68 as far as I can tell. Notably, the inspection checklists for pre-line plumbing on occasion showed a "tick box" section for fire protection of pipework. One such checklist dated 28 November 2005 marked "fail" for fire protection of pipework.

[501] In my assessment, a prudent council inspector would have identified some defects particularly the complete absence of fire stopping (which accounts for about 3 percent of the recorded deficiencies). There was no qualitative analysis by the plaintiffs' witnesses as to which of the fire stopping inadequacies were or ought to have been obvious. Again, the exercise of putting photographs of defective fire stopping to the Council's expert witnesses is not a real-life exercise. It does not replicate what an inspector would have seen *in situ* at the time. However, I agree that once an inspector observed an absence of fire stopping then the Council ought to have been on a train of enquiry that something was amiss with this work. It ought to have alerted Council to a high degree of care needed to ensure that the consent conditions were met, including provision of installer certification and a robust PS4 from the fire engineer. Yet there was none.

[502] This is despite the requirement of the architectural specification at section 5113G, cl 1.3, the various iterations of the Holmes Fire Safety Design Reports and Condition 9 of Consent 305. The Holmes Fire Safety Design Reports were particularly explicit in stating:

> All penetrations, including ventilation ducts, through fire rated partitions are required to be sealed with approved fire resistant materials to AS1530 part 4

> and are to achieve a FRR of no less than that of the element that is penetrated. This includes electrical sockets and switches in cavity walls.

[503] The few contractor PS3s that did exist were clearly not comprehensive. For example, Firepel Kidd recorded that it undertook some fire stopping work in a limited number of discrete locations. Five producer statements by Chenery referred only to plumbing works "as per contract drawings and specifications provided for the contract". It is unclear on their face precisely what that relates to.

[504] In short, although the Holmes Fire Report required producer statements from the installers of fire stopping (and this was a condition of consent) the Council did not have these. It must have been known that penetrations had to achieve the FRR of the fire separation as reflected in Condition 9 of Consent 305. I accept that it was also well known that poorly installed penetrations could compromise a building's fire protection. I accept the plaintiffs' submission that Council should have been concerned at the absence of a proper and robust PS4 from the fire engineer.

[505] In the absence of those producer statements a council could only be satisfied of compliance on reasonable grounds from its own inspection regime. (The inspection process is a means of gathering information to determine whether to certify compliance with the Building Code rather than an end in itself.[187])

[506] I therefore find the Council failed to exercise reasonable skill and care in its inspection regime. I accept that the inspection was not sufficiently thorough. In those circumstances, action should have been taken to address the absence of verification. It was not.

Gaps below the doors

[507] The plaintiffs acknowledge that the small number of apartment doors with excess gaps would not necessarily be identified by the Council. I agree. However, Mr Flay for the Council accepted the Council should have identified the gaps under both the service cupboards and the stairwell doors. These were clearly non-compliant. When the plaintiffs' counsel put to him that observation of this issue should have

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187 *Body Corporate 188529 v North Shore City Council* [2008] 3 NZLR 479 at [256].

alerted the Council to undertake further inspections to identify the full extent of non-compliance and require remediation, Mr Flay said:

> A. Well, if you went over to the apartments on any floor, you probably would've seen reasonable compliance and thought it was only the stairwell. The stairwell has a different finish on it to the actual apartments, there is [an] aluminium bar that goes through the apartments and the stairwell is bare concrete on one side and carpet on the other, for example in the same – I don't think the carpet extends into the service cupboards either from memory. So you've got a different surface, they probably think, "Oh, this looks alright over here, just these ones." So no, I don't think they would've done a full survey based on the finding, service cupboards and stairwell issues.

[508] The Council experts placed emphasis on the door tagging system. This system is set out in AS/NZ 1905:1:1997 (Components for the Protection of Openings in Fire-resistant Walls). Section 6 is headed "Marking and other documentation". It sets out a process for completing installation of doorsets. Essentially, the doorset manufacturer affixes a tag to each doorset leaf only and the manufacturer supplies an installer's declaration. When installation is complete, the installer completes the declaration and forwards it to the manufacturer only if satisfied that the requirements in the clause have been met. One of those requirements is that the door, frame and hardware have been installed in accordance with the specified instructions of the doorset manufacturer. Once in receipt of that declaration, the manufacturer supplies a tag for the frame which is then affixed by the installer. The tag includes information such as the fire resistance rating of the doorset in minutes or the smoke control requirement, or both.

[509] Faced with installed door tags, the Council argues that it is entitled to rely on these as part of the issue of a CCC. I accept that this is one metric which the Council would be entitled to take into consideration at the CCC stage. But, it is effectively only a form of self-certification, much like a PS3. As the purpose of regulatory oversight is to ensure the integrity of the self-certification approach, existence of the door tags cannot absolve the Council of its duty to inspect. I find that the discrepancies in the height between the bottom of the door and surface of the floor in the stairwells and communication cupboards were observable and ought to have been picked up by the Council before issue of the CCC. I am not persuaded the Council breached its inspection duty in relation to the apartment fire doors when it issued the CCC.

Claim against Holmes — claimed defects 1 and 2

[510] It is apparent that while the initial Holmes fire design deviated only slightly from C/AS1 by a reduction in the FRRs for the primary elements, by March 2005 Holmes was proposing a new solution which largely dispensed with any requirement for passive fire protection to the steelwork. One of the reasons was to reduce construction costs.[188] Materially, that design assumed or relied on the construction of the steelwork including the end connections being as designed. It also intended that the wall linings would extend around the beams up to the concrete floor to maintain the fire separation wall, but with no specific protection applied to the beams.

[511] No PS2 was discovered in relation to the March 2005 redesign although Mr Feeney suggested that it had been peer reviewed by Dr Charles Clifton.[189] The absence of contemporaneous supporting documentation (instructions, report or formal PS2) leads me to reject that proposition.

[512] It is curious that versions C to E of the Holmes Fire Reports were unaltered despite the developments in design.

[513] The plaintiffs are critical of Holmes for failing to undertake a proper structural fire analysis when coming up with this revised approach, including consideration of the deflection of the steel beams, damage to fire separation walls below and potential destabilisation of building elements supported by the beams. Mr Feeney's response was that it was not common for structural engineers to carry out analysis of the deformation of the steel structure. This may well be the usual practice but as I understand it, the usual expectation with C/AS1 would have been to have protection of the steelwork (just as the Clark Brown plans envisaged).

[514] It becomes unnecessary to decide whether the fire designs and specifications after 10 March 2005 were the result of a negligent failure to exercise skill and care. I

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188 In answer to the question put to him that the purpose of the redesign was to reduce construction costs in the same way as proposed in a published paper Mr Feeney wrote in 1998, he said "broadly speaking" and then referred to other hypothetical reasons such as changes to construction programme.

189 This was based on an invoice for $450. Asked whether that level of fee was commensurate with a peer review, Mr Feeney suggested that it was not a complex review but a straightforward design process that Dr Clifton was familiar with.

say that because I am satisfied on the expert evidence and by reference to the contemporaneous documents that Holmes failed to exercise skill and care in *inspecting* the building work and failing to resolve issues which it did observe. It did not adequately follow up non-compliant work nor take steps to ensure the full extent of the defective work was identified.

[515] By early 2006 Holmes had identified that the installation of the plasterboard was not in accordance with its specification. It is apparent from the file note of a discussion between Mr Feeney and a colleague that Mr Feeney had concerns about the possibility of the elongation of the beam leading to the beams bowing down and deflecting.

[516] At that point, Mr Feeney undertook FaST modelling. The plaintiffs' experts are critical of the adequacy of that modelling. Dr Hyland and Mr Olsson variously opined that this modelling:

(a) did not analyse the effects of the deflection of the steelwork on other building elements;

(b) did not prepare time temperature and deflection calculations for all relevant beams;

(c) assumed unrealistic fire resistance from the non-fire-rated plasterboard ceilings;

(d) nominated fuel loads well below those applying at the time;

(e) did not prepare a remedial design to protect the steel members and accommodate downward deflections; and

(f) assumed that the ceiling plasterboard would fail at 600 degrees celsius when more recent material stated that 120 degrees celsius should be used as the upper surface temperature for the collapse of GIB plasterboard.

[517] I agree that the FaST modelling undertaken in March 2006 lacked the rigour that one would expect faced with a construction which did not comply with the design specifications and which had dispensed with fire protection to steel members. That is not the same thing however as concluding that, had the appropriate rigour been employed, the results would have matched Dr Hyland's modelling. On that aspect, I am not to reach any view for the reasons set out in this judgment.

[518] Holmes inspected the fire stopping and picked up defects during its various inspections between June 2005 and May 2006. There is no indication of rectification or rechecking. When Holmes issued its 'certification' it effectively confirmed the passive fire elements. It did not have comprehensive producer statements from the installers. In view of the deficiencies which it had picked up, it would be expected that Holmes would be on notice of the need for vigilance yet on issue of its certification there were widespread and systemic defaults.

[519] It follows that in its inspections, and in providing certification in the manner it did, I find that Holmes breached its duty of care. I further accept that, as it was undertaking construction monitoring, and as fire stopping was expressly noted in the Holmes Fire Reports, Holmes ought to have inspected the fire stopping rather than relying on producer statements from Chenery and Firepel Kidd which were clearly not comprehensive.

Holmes' affirmative defences

[520] Holmes has the onus and burden of proof in relation to affirmative defences. As it did not actively defend the claims, I find that the pleaded defence under s 4 of the Limitation Act 1950 not proved. Nonetheless, I observe that it was not until a Cove Kinloch report dated October 2012 that the issue of defective penetrations though walls and floors was evident despite earlier records in which Babbage asked Multiplex to investigate pipe penetrations through slabs to satisfy Babbage that there were fire collars where necessary. That request was made in November and December 2009 and noted that Multiplex (by then named Brookfield Multiplex Construction (NZ) Limited) was to rectify the matter.

[521] There is sufficient evidence that the plaintiffs' cause of action against Holmes only accrued in October 2012 for limitation purposes. As the claim against Holmes was filed in March 2014, it was within the six-year limitation period.

[522] Holmes also pleaded a longstop limitation defence in relation to claimed defects 1 and 2. It pleaded that the date on which it went "off-duty" or "off-task" in respect of all its work at Gore Street, including all its work in relation to defects 1 and 2, was 29 August 2006 at the latest. This was more than 10 years before the plaintiffs first pleaded that Holmes caused or failed to prevent claimed defects 1 and 2.

[523] I deal with the long-stop defence in Part VI of this judgment.

Conclusion as to liability of Holmes

[524] Subject to the long-stop limitation defence in respect of claimed defects 1 and 2 (in respect of which Holmes may benefit from the submissions by the Council), I find for the plaintiffs against Holmes in respect of claimed defect 1 to the extent that the lack of fire protection to beams B4 and B5 breach the Building Code and defect 7.

[525] I dismiss the claim against Holmes in respect of claimed defect 2 on the basis that the plaintiffs have not established that those claimed defects breach the Building Code.

Claim against Chenery — claimed defect 7

[526] Chenery was engaged by Multiplex in respect of plumbing work. It issued a producer statement to Multiplex. Olsson Fire identified 67 fire stopping defects relating to combustible pipes and 60 relating to non-combustible pipes for which Chenery was responsible. The fire stopping in relation to those was not in accordance with the manufacturer's requirements.

[527] The claim against Chenery stands or falls on the findings in respect of whether the penetrations have been shown to be actionable defects. I find the claim against Chenery is established only in respect of the firestopping which it installed. I will hear submissions as to whether this is limited to the 127 defects referred to above.

Claim against Clark Brown – claimed defects 1, 2, 3 and 7

[528] The developer of Gore Street engaged Clark Brown to undertake contract administration and observation among other things. Based on documents discovered during the litigation, Clark Brown issued design meeting reports in the period 15 May 2003 to 14 April 2005, attended design meetings and undertook inspections between 27 September 2005 and 16 August 2006. It issued a number of documents titled "Architectural Consultants Sign Off". It also issued documents titled "Certificate of 'handover' of apartments to the developer" and "handover certificates".

[529] The plaintiffs called expert evidence from Geoffrey Bayley. Mr Bayley is a registered quantity surveyor, a qualified architectural draftsman and principal of a specialist construction disputes consultancy practice. He has worked continuously in the construction field since 1976. His most recent work is as an expert, arbitrator and adjudicator. Mr Bayley was engaged by the Body Corporate to give evidence on the performance of Clark Brown. His evidence was that Clark Brown fell below the standard of a prudent architect because its design documents did not provide specific design detail to ensure that all structural steel had adequate fire protection.

[530] Mr Bayley considers that the lack of specific detail in the consented documents meant there was an even greater onus on Clark Brown to observe the construction of the structural steel to ensure it was protected from fire to achieve compliance with the Building Code. His evidence was that a prudent architect would have identified that the steel was coated only with a primer, would know that a fire-rated board or paint of spray would be required to provide adequate protection and would have taken steps to bring these defects to the attention of the head contractor, structural engineer and fire engineer.

[531] While I accept Mr Bayley is well qualified and his opinion accords with common sense, there is no attempt by plaintiffs' counsel to recontextualise it in the light of the revised or amended fire design by Holmes which did not require passive fire protection to the steel members.

[532] Clark Brown did not participate at trial but had affirmatively pleaded a contractual limitation in its services agreement with First City Trust which was

novated to Multiplex. The liability was limited to $5 million.[190] The plaintiffs did not argue that a limitation in respect of building work is not valid nor enforceable as between contracting parties to the extent that breach entails a code compliance failure. Rather, it submitted that such a clause was irrelevant in a tortious claim by a third party who is not privy to the contractual arrangements. The Court did not have the benefit of full argument. The point was merely touched on by the plaintiffs in closing.

[533] I am satisfied that the limitation of contractual liability is not relevant because the contractual burdens entered into by Multiplex do not bind third parties in these circumstances. The plaintiffs were not only not parties to those contracts but there is no reason for them to be aware of such limitations.[191] Although I was not referred to any authority directly on point, I find support in the Court of Appeal's decision in *Bowen v Paramount Builders Ltd*.[192] Richmond P said:

> It is clear that a builder or architect cannot defend a claim in negligence made against him by a third person by saying that he was working under a contact for the owner of the land. He cannot say that the only duty which he owed was his contractual duty to the owner. Likewise, he cannot say that the nature of his contractual duties to the owner sets a limit to the duty of care which he owes to third parties.

[534] The issues in respect of Clark Brown are whether it provided sufficient information in the designs to demonstrate compliance with the Holme Fire Reports and should it have identified non-compliant steelwork, fire separations and welds in the course of its observations.

[535] As Clark Brown is in liquidation, the claims against it proceeded by way of formal proof. The claims were not pressed by the plaintiffs for various reasons.[193] I am not satisfied that Clark Brown has any liability in respect of design. Even if there was inadequate detail in the design documents, there is no causal potency given that construction ultimately did not follow the design drawings and given the Holmes

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190 The plaintiffs' reply denied the affirmative defence.

191 The circumstances are very different from *Rolls-Royce New Zealand Ltd v Carter Holt Harvey* [2005] 1 NZLR 324 (CA) where the issue was a chain of contracts in which the plaintiff knew that the last subcontract contained a limitation of liability.

192 *Bowen v Paramount Builders Ltd* [1977] 1 NZLR 394 (CA) at 407, per Richmond P.

193 The plaintiffs also claimed against Clark Brown's indemnifiers under an insurance policy pursuant to the Law Reform Act 1936. That claim was settled pre-trial and discontinued against the 13th defendant.

revised approach. As for the negligent observation claims for all claimed fire defects, I consider that observation was squarely within the domain of Holmes and the structural engineers. There was no evidence about the interrelationship between Clark Brown's observation role and that of Holmes as specialist fire engineer. In the circumstances I do not find the claims against Clark Brown proved.

[536] Consequently, I dismiss the claims against Clark Brown in respect of claimed defects 1, 2, 3 and 7.

Summary of conclusions in relation to claimed fire defects and the Council's liability

[537] The contractor Multiplex deviated from the consented designs and plans in the construction of Gore Street but is no longer around to face the consequences. The plaintiffs are left having to seek recovery from other parties left standing.

[538] In a context where it is obvious that passive fire protection at Gore Street is important, and subject to the affirmative defences pleaded, I find the Council did not exercise appropriate care to ensure compliance with the consent and/or Building Code before issuing the CCCs. Subject to determination of limitation defences, the plaintiffs have succeeded in establishing breaches of the Building Code for which the Council is liable in respect of:

(a) Defect 1**:** the unprotected steel elements beams B4 and B5.

(b) Defect 7**:** defective fire stopping of penetrations and defective doors gaps in the stairwells and communication cupboards.

[539] The plaintiffs have not succeeded in establishing that claimed defects 2 and 3 are actionable defects although the construction does not conform with the consented designs. This is because the plaintiffs have not shown on the evidence that the non-conforming construction breaches any provisions of the Building Code.

[540] Accordingly, I dismiss the claim against the Council in respect of claimed defect 2 and claimed defect 3.

PART III – EARTHQUAKE DEFECTS

Context

[541] In an earthquake, ground motion causes a building to sway, twist and experience vertical motion. The form of the building dictates the nature of this movement. New Zealand standards have adopted what is called "limit state design" and require that buildings are designed for "ultimate" and "serviceability" limit state conditions. Simplified, I understand this to mean that a building should be designed with a reliable means of accommodating seismic loads and movement in a manner such that only acceptable damage to property occurs in a 'serviceability limit state' ("SLS") and there is no more than a low probability of collapse in an 'ultimate limit state' ("ULS").

[542] An SLS is reached when the building becomes unfit for its intended use through deformation, vibratory response, degradation or other physical aspect.[194] It is expressed to be a one in 25 year event. A ULS is a condition reached when the building ruptures, becomes unstable or loses equilibrium.[195] In this state, there should be no loss of life but some property damage is acceptable.

[543] The relevant standards applicable at the time of the design and construction of Gore Street were NZS 4203:1992 (Loadings Standard),[196] NZS 3101:Part 1:1995 (Concrete Structures Standard)[197] and NZS 3404:1997 (Steel Structures Standard),[198] all of which follow the limit state design approach.

[544] The plaintiffs' expert, Dr Hyland, explained that in order to cater for the ULS, the lateral bracing elements such as Core walls, shear walls and frames, either need to be ductile to allow for the expected movement or contain sufficient strength to limit the amount of movement. In order to cater for the SLS, the structural elements need

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194 *Code of practice for general structural design and design loadings for buildings (Known as the Loadings Standard)* (Standards New Zealand, NZS 4203:1992) at 13.

195 At 13.

196 *Code of practice for general structural design and design loadings for buildings (Known as the Loadings Standard* (Standards New Zealand, NZS 4203:1992) *Loadings Standard*.

197 *Concrete Structures Standard* (Standards New Zealand, NZS 3101:Part 1:1995).

198 *Steel Structures Standard* (Standards New Zealand, NZS 3404:Part 1:1997)

to be sufficiently stiff that deformation of building elements is limited and consequential damage is avoided.

Pleaded defects

[545] Three pleaded defects fall under the heading of earthquake or seismic defects:

(a) **defect 4** — scissor staircases do not have sufficient allowance for movement or ductile performance and scissor staircases/fire separation walls do not have sufficient isolation;

(b) **defect 5** — inadequate clearance between solid balustrades and adjacent columns;

(c) **defect 6** — junctions of post-tensioned floors to building perimeter beams and wall structure are defective in that the bars to tie the perimeter wall frames to the post-tensioned floor slab and tendon ducts have not been grouted in place.

[546] Claimed defect 3 relating to the adequacy of steel framed connections within the core also falls within this classification but I have found against the plaintiffs regarding this defect in the earlier fire section.

[547] These claimed defects engage cls B1, B2, C2, C3 and E2 of the Building Code and in particular cls B1.2, B1.3.1, B1.3.2, B2.3.1 which I reproduce for convenience:

> **FUNCTIONAL REQUIREMENT**
>
> **B1.2** Buildings, building elements and sitework shall withstand the combination of loads that they are likely to experience during construction or alteration and throughout their lives.
>
> **PERFORMANCE**
>
> **B1.3.1** Buildings, building elements and sitework shall have a low probability of rupturing, becoming unstable, losing equilibrium, or collapsing during construction or alteration and throughout their lives.

B1.3.2 Buildings, building elements and sitework shall have a low probability of causing loss of amenity through undue deformation, vibratory response, degradation, or other physical characteristics throughout their lives, or during construction or alteration when the building is in use.

…

PERFORMANCE

B2.3.1 Building elements must, with only normal maintenance, continue to satisfy the performance requirements of this code for the lesser of the specified intended life of the building, if stated, or:

(a) The life of the building, being not less than 50 years, if:

(i) Those building elements (including floors, walls, and fixings) provide structural stability to the building, or

(ii) Those building elements are difficult to access or replace, or

(iii) Failure of those building elements to comply with the building code would go undetected during both normal use and maintenance of the building.

(b) 15 years if:

(i) Those building elements (including the building envelope, exposed plumbing in the subfloor space, and in-built chimneys and flues) are moderately difficult to access or replace, or

(ii) Failure of those building elements to comply with the building code would go undetected during normal use of the building, but would be easily detected during normal maintenance.

(c) 5 years if:

(i) The building elements (including services, linings, renewable protective coatings, and fixtures) are easy to access and replace, and

(ii) Failure of those building elements to comply with the building code would be easily detected during normal use of the building.

What is the problem?

[548] At a high-level, the plaintiffs contend that as a result of the claimed defects there is non-compliance with the provisions of the Building Code in that:

(a) The staircases, post-tensioned floors and balconies are not able to withstand the combination of loads they are likely to experience.

(b) There is more than a low probability of building elements within the staircases (including fire separation walls), post-tensioned floors and balconies suffering failure and loss of amenity under ULS and/or SLS loadings.

(c) The structural failures and rupture of the fire separation walls in the staircase will mean there is no adequate means of escape or access for rescuers in a serious fire following an earthquake.

(d) The building will not comply with cls B1, C2 and/or C3 for the life of the building, being not less than 50 years.

Who is said to be responsible?

[549] The plaintiffs sue the Council in respect of each claimed earthquake defect. They say that at the consent stage, the Council should have sought verification that all the structural designs, including the staircase drawings were peer-reviewed and approved by a suitably qualified independent engineer. They say there was no such verification for the staircase designs so the consent should not have been issued.

[550] They say that at the inspection stage the Council ought to have identified that the gaps between the solid balustrades and columns were not consistent with the consented designs and should not have issued the CCCs.

[551] In relation to the bar sleeves and tendon ducts, the plaintiffs criticise the Council for failing to make it a condition of consent that construction monitoring be carried out to the CM4 level. Related to this, they say Council did not have reasonable grounds to be satisfied that the work complied with the Building Code because the PS4 from the engineer was only to the CM3 level.

[552] The plaintiffs sue Clark Brown in respect of claimed defect 5 alleging that Clark Brown should have identified that the balustrade to column gaps did not comply with its own drawings. I put this claim to one side and deal with it under claimed defect 8 as I apprehend that the Clark Brown plans/specifications required a 20

millimetre gap for waterproofing membrane purposes. Thus, Clark Brown's involvement and/or responsibility is more relevant to claimed defect 8.

The respective cases in a nutshell

Scissor stairs

[553] The plaintiffs rely on Dr Hyland's assessment of the capacity of the reinforced concrete elements, steel beams, posts, and their connections to withstand the demands under the ULS earthquake loads set out in NZS 4203:1992 (Loadings Standard). He concluded that indicated demands will exceed capacity at various identified locations and that in a ULS earthquake, there is more than a low probability of various failures in the staircases and cleats and rupture of the fire separation wall.

[554] The Council's position is that the plaintiffs have not established that the staircases were not Code compliant at the time of construction. It says that the plaintiffs' staircase analysis is flawed because it is based on an assumed inter-storey drift in an earthquake of 11.3 millimetres when it is only a small fraction of that when correctly calculated. It points to an analysis carried out during the trial by the plaintiffs' own witness, Ashley Smith, which it maintains is conclusive in this respect.

[555] There are other related contentions including whether even if Dr Hyland's predicted 11.3 millimetres deflection is correct, the staircases nonetheless have sufficient ductility to meet the Building Code requirements and whether the fire separation wall between the stairs is required to remain intact in a ULS earthquake event. Finally, whether receipt of a PS2 from Holmes Consulting in support of Consent 302 absolves the Council.

Clearances between solid balustrades and adjacent columns

[556] Pleaded defect 5 relates to the clearance between solid balustrades and adjacent columns on solid concrete balconies on the eastern and western elevations of Gore Street. The solid concrete balustrades terminate just short of columns which extend to the full height of the building. These columns provide vertical support to all of the floors and contribute to the lateral bracing of the building to resist wind and earthquake loads.

[557] The plaintiffs' expert, Dr Hyland, says it is important that there are sufficient gaps between the solid balustrades and the columns so that, when under earthquake loads, the balustrades do not collide with the columns and cause damage and/or structural failures. Detail 7 of the Clark Brown plans/specifications required a 20 millimetre gap between the balustrades and columns. The Buller George structural drawing required a 15 millimetre gap between the balustrades and columns. I apprehend that the reason for the difference is that the architectural plans are focused on sufficiency of gap to enable the balcony waterproofing membrane to extend into the gap whereas the structural requirements are to accommodate the loads on the balustrades in earthquake events.

[558] It is common ground that there are gaps which are less than either 20 millimetres and/or 15 millimetres — the number and extent are contested — however the Council disputes that these constitute a "defect".

[559] The plaintiffs say a Council inspector should have identified that the gaps were less than specified and having failed to do so, the Council did not have reasonable grounds to be satisfied that the construction complied with the building consent or Building Code.

[560] The Council contends it is not reasonable to expect a Council officer to have inspected the clearances against either the structural or architectural drawings; there is no evidence to support the view that a Council inspector would or should have appreciated any structural significance to the gap; rather his or her focus would have been on safety aspects such as minimum height and maximum gap requirements rather than the minimum gaps. The Council challenges Dr Hyland's analysis and evidence. It identifies problems both with its presentation and fundamental assumptions.

[561] Finally, the Council argues it had reasonable grounds to issue the CCC on the basis it anticipated and obtained a PS4 from the structural engineer. This line of argument brings the character and effect of producer statements into sharp focus.

[562] This claimed defect overlaps with claimed defect 8.[199] For the reasons explained in the external waterproofing section of this judgment, I have found that the failure to provide the 20 millimetre gap for weathertightness was a breach of the consent, had consequences in that it prevented effective waterproofing of the gap and that a prudent Council inspector would have picked this up. Practically speaking, arguments about inadequate clearances for earthquake protection are moot because the gaps required for structural purposes are a subset only of the gaps that do not comply with the building consent and the Building Code for waterproofing purposes.

[563] Nevertheless, in case I am wrong on the waterproofing issues, I go on to briefly discuss the structural adequacy issue.

Inadequate or defective grouting of bar sleeves and tendon ducts

[564] The plaintiffs' contentions against the Council are inter-related: first, they say that the Council breached its duty of care at the consent stage by failing to make it a condition of consent that construction monitoring be carried out to a higher CM4 level; secondly, they say that the Council failed to recognise at the inspection/CCC stage that the level of construction monitoring had been inadequate.

[565] The Council's response is that the required level of construction monitoring is a judgement of the engineer to the construction contract and not the Council's responsibility; monitoring at the CM3 level was appropriate in relation to the building generally, and the post-tensioned floors in particular, and monitoring at a CM4 level would not have made any difference to the level of inspections in view of the actual monitoring undertaken.

Other defences

[566] The Council also pleads the 10 year longstop limitation defence under s 393(1) of the 2004 Act in respect of claimed defects 4 and 6 along with other affirmative defences.

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199 Refer Part IV.

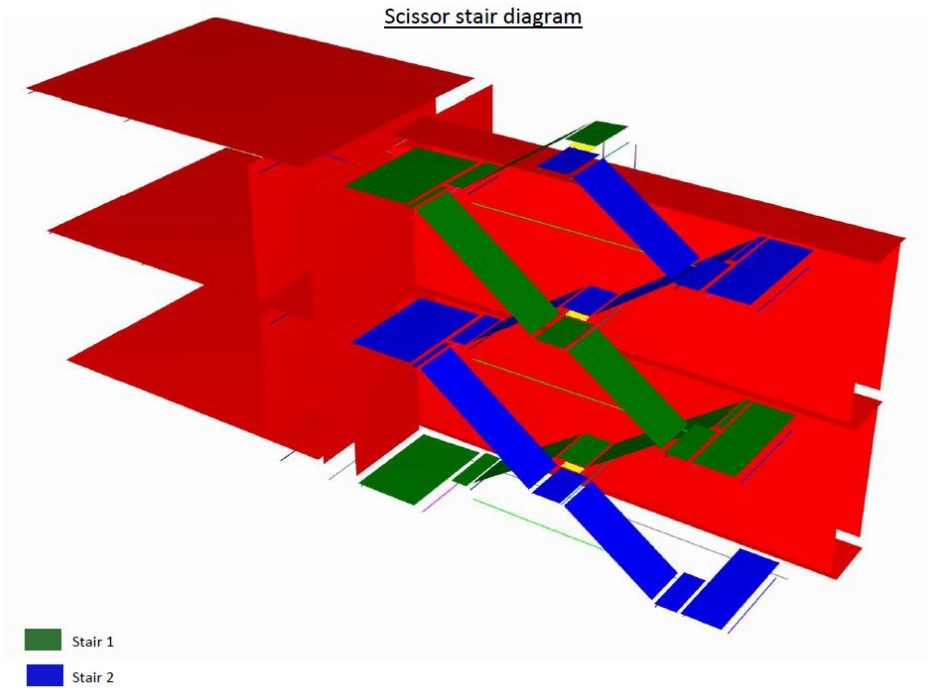
What is the state of affairs?

Scissor stairs

[567] Dr Hyland describes the physical state of affairs in relation to the scissor staircases in these terms:

> There is a single stairwell in the core of the building with a pair of scissor-style staircases. The two staircases criss-cross their way up the building, intersecting and connecting only at the mid-height landings where they are separated by a fire separation wall.

[568] The diagram below depicts the scissor stairs:



[569] I understand that it was common practice at the time of the design of Gore Street to separate scissor-style staircases from each other and from the dividing fire separation wall between them with an ability for the staircase to slide at the foot of each staircase. In this way:

(a) in the event a fire develops or spreads into one staircase, the other staircase is unaffected and can provide a means of escape from the building and access for firefighters.

(b) in the event of an earthquake the staircases are able to accommodate independent movement and do not transfer loads to the other staircase or the landings in a way which may lead to damage to or rupture of the other staircases, fire separation walls or landings or their supports.

[570] It is not disputed that the construction of the staircases at Gore Street largely follows the Buller George drawings. The stairs are cast monolithically with the upper, mid-height and lower landing staircases having no allowance for movement. There is also no separation between the mid-height landings. The fire separation walls and the staircases are connected at the mid-height landings.

Clearances between solid balustrades and adjacent columns

[571] Although the Council accepted that there were many instances of non-compliance with the building consent details, this concession did not take the matter very far. There were many evidential difficulties with the plaintiffs' case in respect of this claimed defect.

[572] Maynard Marks measured 97 per cent of the balustrade gaps in the building. The plaintiffs submitted that an inspector on average would see a clearly non-compliant gap on every two balconies. Maynard Marks confirmed that the gaps specified by the architect and engineer were not achieved. According to their survey, 84 per cent were less than the 20 millimetres required for weathertightness and 57 per cent were less than the 15 millimetres required for structural purposes. Twenty-four per cent were less than 10 millimetres. This last figure assumed importance because Dr Hyland did not suggest that only compliance with the building consent would comply with the Building Code. Rather, in his written brief, Dr Hyland opined that the minimum gap necessary was 7 to 8 millimetres.

[573] Clinton Smith's analysis on behalf of the Council showed that Maynard Marks had marked as "fail" gaps which met Dr Hyland's minimum necessary for structural code compliance instead of only gaps below the minimum requirements. That was not an auspicious start for the plaintiffs' case in relation to this defect.

[574] Next, the Council took issue with the scarcity of explanation in Dr Hyland's evidence, the core of which was:

> I developed a detailed 3-dimensional model of the building using the Prokon software and allowed for material and concrete properties as recommended by the concrete standard. I modelled the effective section properties of the balustrades using the recommendations in the [same concrete standard] and undertook a moment curvature analysis to confirm the cracked properties of the beams. I then applied earthquake loadings through the model in accordance with the requirements of the loadings standard NZS 4203…

[575] That produced a beam/column balustrade gap analysis results table. Dr Hyland made a series of assertions or predictions of what would happen in a ULS earthquake. But when Dr Hyland actually gave his evidence-in-chief, he moved away from the values in the table. He revisited the minimum gap requirements. He revised a minimum required gap of 8 millimetres for levels 3 to 27 and 7 millimetres for levels 28 to 38 to 9 millimetres and 8 millimetres respectively.[200] He stated that these new figures came about as a result of later analysis during the remedial design. The expert caucusing took place after the remedial analysis but, notably, Dr Hyland did not refer to these fundamental changes in his evidence at the expert conference either.

[576] The change was not carried through to the evidence from Maynard Marks. Nor were the revised figures even carried through to the remainder of Dr Hyland's own evidence.[201]

[577] I agree with the Council's submission that, on this issue, Dr Hyland did not adequately explain how he arrived at the values in his initial results table or why they were altered after the remedial analysis. Nor did he adequately explain the mechanism by which the anticipated movement in an earthquake would lead to contact with the column.

[578] Leaving aside those evidential difficulties, the crux of the difference between the Council expert, Dr Jacobs, and Dr Hyland related to whether the balustrade was a rigid beam between columns or would act by bending independently of the beam

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[200] In delivering his evidence-in-chief, he added that these minimum requirements increased – "[f]or Grid B and (sic) 10 millimetres for levels 3 to 27 and 8 millimetres for levels 28-38 on Grid F".

[201] Cross-examination of Dr Jacobs was based on the original figures of 7 and 8 millimetres only although the cross-examination of Mr Clinton Smith was based on the altered minimums.

because it was so lightly reinforced. Dr Hyland considered that there is a significant connection such that the balustrade and beam is a composite member. In cross-examination, he said that he has "*assumed* the connecting dowel bars act as a shear connection which just transfer the loads in between the two elements".[202]

[579] Dr Jacobs on the other hand explained how the balustrades are constructed and connected with the beam. He also described how he believed these elements will behave in an earthquake and was able to pinpoint the values which Dr Hyland inputted into his Prokon software which he (Dr Jacobs) considered were wrong.

[580] Dr Jacobs' conclusion was that impact damage would not be widespread because the balustrade will not be rigidly connected to that spandrel beam. It will also probably have a slip layer so if it does impact it will impact with a very reduced load.

Inadequate or defective grouting of bar sleeves and tendon ducts

[581] There are post-tensioned floors extending to the north and south of the central Core. This means that concrete that forms the post-tensioned floors is stressed into a compressive state so it is able to support its own weight and the loads imposed by the building without loss of structural capacity. High-strength steel tendons are laid within ducts in a grid-like pattern across these floors with steel reinforcing bars within sleeves inserted into the perimeter concrete beams and walls. After concrete is poured to create the slab, the tendons are stressed and grout is pumped into the ducts and perimeter bar sleeves to create a bond with the concrete. An Australian firm, VSL, was engaged by Multiplex to construct the post-tensioned slab.

[582] In the colour enhanced photograph below, the tendon ducts are shown in blue and the bar sleeves in orange.

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202 Emphasis added.

[583] Dr Hyland explained that the bond created enables the slab and the supporting beams and walls to act together as a monolithic system.

[584] The plaintiffs' experts took concrete core samples. They say the sampling showed that 63 per cent of the surveyed bar sleeves were not adequately grouted. No grout was detected in the bar sleeves on level 22. Twenty per cent of the tendon ducts surveyed were not adequately grouted.

[585] The Council accepts that there are instances of missing or inadequate grouting within the bar sleeves and tendon ducts but submits the evidence does not establish inadequate grouting of bar sleeves on a systemic basis. It accepts that missing grouting to the bar sleeves constitutes a defect but there is a live issue about the extent of inadequacy required before constituting an actionable defect. It does however accept that if significant numbers of bar sleeves were not adequately grouted there would be no code compliance. Its experts point out that the design requirements are overly conservative with significant redundancy. Therefore the number of grouted bars actually required to meet the structural imperatives is always less than that designed for.

[586] The Council rejects the assertion that no or inadequate grouting to the tendon ducts is a defect because there is no structural consequence. It maintains that there is no requirement in the Building Code or any standard to grout tendon ducts though they are typically grouted for corrosion protection. There are only six floors where duct heads are beneath corner balconies and therefore more susceptible to moisture ingress. But, Dr Jacobs says that there is more than sufficient concrete cover to meet the 2006 Concrete Structures Standard and protect the duct head from any moisture or air that may penetrate the balcony membrane.[203] Similarly, if the focus is fire protection, there is more than adequate concrete cover to the bottom of the tendon ducts to meet the NZS 3101 (Concrete Structures Standard) and a 30-minute FRR for stability.[204]

Are the claimed defects actionable defects?

Scissor stairs

[587] Dr Hyland expressed the opinion that the drawings prepared by the architect and engineer needed to show how isolation of the staircases and fire separation walls was to be achieved. Further, how movement or ductile performance of the staircases particularly at the junctions with the landings was to be accommodated.

[588] The most apt definition of ductility in this context is the definition found in NZS 3101 (Concrete Structures Standard) at cl 2.1 which reads:

> The ability of a structure to sustain its load carrying capacity and dissipate energy when it is subjected to cyclic inelastic displacements during an earthquake.

[589] Buller George prepared drawings for the staircases and steelwork at the floor level supporting the staircases.[205] They show 'Stairform' half-flights cast monolithically into the upper, mid and lower landings, and reinforcing steel lapped from the upper, lower and mid-height landings into the half-flight to provide a connection.[206] The mid-height landings are shown as supported by two steel beams.

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[203] *Concrete Structures Standard* (Standards New Zealand, NZS 3101.1:2006) at Table 3.6. This standard is the 2006 version of the Concrete Structures Standard.

[204] *Concrete Structures Standard* (Standards New Zealand) at Table 6.2.

[205] Principally drawings S350 revision 2 (Consent 305); S381 Revision 2 (Consent 305); and S384 Revision 5 (Consent 305).

[206] "Stairform" is a proprietary steel formwork product imported from Australia.

The stairs are designed to encapsulate concrete poured onsite to form the shape of the stairs. The half-flights are brought onto site and connected to the steel trays of the upper, mid and lower landings.

[590] This method of connecting two half-flights stands in contrast to the single full-flight method. Dr Hyland explained:

> A common method of constructing scissor-style staircases in a high rise building in New Zealand since the 1970s has been to make pre-cast reinforced concrete staircases, including the upper and lower flights and the mid-height landings as one unit, with no additional support required at the mid-height level. This single unit is then placed in position on site. The opposing staircase is placed next to it, with no structural connection between the two. The reinforcing steel at the top of the upper flight is typically lapped into the upper landing, before the concrete is poured into the upper landing. The foot of the lower flight is seated either onto the previously cast lower landing or onto a ledge supported by the landing in such a way as to allow horizontal movement of the stair flight relative to the landing.
>
> The Buller George design, using a system of half flights connected to landings onsite, did not come with the same inherent separations and allowance for movement as the common pre-cast method. The designer needed to formulate a method of achieving similar seismic and fire performance so as to comply with the building code. As a minimum the staircases in the half flight system needed a means of accommodating movement or performing in a ductile manner and the fire separation walls needed to be isolated from the staircases.

[591] Dr Hyland went on to explain that the accommodation for movement or ductile performance would typically be found in the structural drawings while the isolation of the fire separation walls would typically be in the architectural drawings. In this case, he maintains that the Buller George drawings did not provide for either movement or ductile performance of the staircases. His expert evidence is that a prudent engineer at the time would not have produced the Buller George design for the staircases and a prudent engineer reviewer would not have approved the design.

[592] Dr Hyland's conclusion as to inadequate ductility derives from his Prokon analysis of how the stairs will perform under the ULS earthquake loads prescribed in NZS 4203:1992 (Loadings Standard). This was done in two stages. The first stage was to calculate the maximum horizontal displacement of the stairs on one floor relative to the floor below. He determined this to be 11.3 millimetres at level 36.[207]

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[207] During delivery of his evidence-in-chief, Dr Hyland revised this to 13.9 millimetres following further 'discovery' during the remedial design process. For reasons which will emerge this

The second stage was to apply that maximum horizontal movement to a three-storey model of the building to determine the effect that the movement would have on the stairs.

[593] Dr Hyland's analyses indicated demand would exceed capacity at various locations in the staircases. He concluded that the construction is in breach of Clause B1 of the Building Code because there is more than a low probability in an ULS and/or SLS loading of:

(a) rupture of the throat between the mid-height stair landings of the two sets which would also likely rupture the fire separation wall;

(b) rupture of the cleats supporting the steel beams at the concrete wall at the lower, mid-height and upper landings;

(c) failure and buckling of the posts supporting the mid-height landing; and

(d) rupture of the junction of the upper flights with the mid-height landings potentially pushing supporting beams B15 and B16 apart, leading to instability of the mid-height landing supports.

[594] He further concluded there would be breaches of cls C2 and C3 (in that the staircases are escape routes which would not be resistant to the spread of fire after an earthquake), and cl B2 of the Building Code (in that the staircases are not constructed to comply with cl B1 and C2/C3 for the 50-year durability period).

[595] The plaintiffs also led evidence from a structural engineer, Ashley Smith. He has worked in the civil engineering field since 1981. He carries out engineering peer reviews of structural designs undertaken by other engineers including consideration of the effects of seismic movement and fire on building structures and the design features necessary to enable buildings to withstand these effects.

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difference is immaterial for present purposes although Dr Hyland indicated on cross-examination that since the "number" has gone up the findings for an interstorey displacement of 11.3 millimetres are on the optimistic side.

[596] Mr Ashley Smith confirmed Dr Hyland's view that the Buller George structural designs for the staircases do not allow for seismic movement or provide ductility and are not isolated from the fire separation walls at mid-landing level. He agreed that a prudent structural engineer undertaking a review would recognise those deficiencies and not issue a PS2. He confirmed Dr Hyland's methodology as well as his conclusions without providing reasons. In my view, his evidence was presented more as an industry peer-review than evidence framed to meet the requirements of the evidence rules.

[597] The Council's response is three-fold. First, it challenges the reliability of Dr Hyland's analysis through the evidence of its structural engineering expert, Dr Jacobs. Dr Jacobs has over 41 years' experience in the design of structures in Auckland including well-known high rises in the central business district. He gave evidence at the request of the Royal Commission of Inquiry into the Canterbury Earthquakes in respect of the collapse of the CTV building. Dr Jacobs was an impressive expert witness who delivered his evidence in a measured and objective fashion.

[598] Dr Jacobs gave evidence that it would have been usual for an allowance for movement to be designed and constructed. But, he considered Dr Hyland failed to appreciate the significance of the connection of the stairs to a stiff shear wall in his analysis and so had not properly calculated the displacement of the stairs during an earthquake. In short, he considered that Dr Hyland's assumption of an 11.3 millimetre horizontal movement an unreasonable assumption which did not realistically reflect the anticipated behaviour of the stairs.

[599] Dr Jacobs did not carry out his own analysis but relied on an instinctual analysis derived from his long experience.[208] The Council puts much store on Dr Jacobs significant experience but also draw support from a paper written in connection with the seismic retrofit of buildings in New Zealand after the Christchurch

[208] He referred in particular to experience of three buildings badly affected by the Christchurch earthquakes in which concrete stairs inside concrete shear walls with no allowance for movement were not damaged.

earthquakes.[209] The authors of that paper considered the issue of inadequate allowance for inter-storey seismic drift noting that:[210]

> Large inter-storey drifts are typically an issue for stairs in buildings with seismic resisting frames. The stairs in shear walled buildings are typically supported by the walls. The relative inter-storey displacements are therefore low as the majority of the inter-storey drift arises from wall rotation which does not affect the stair.
>
> The stairs that cannot accommodate the inter-storey drifts typically have no or inadequate seismic movement joints between levels, are relatively stiff and are not adequately detailed to accommodate large displacement induced forces and/or the formation of plastic hinges.

[600] Dr Jacobs considers that the point made in the paper aptly describes the situation at Gore Street in that the stairs are attached to and reside within a stiff large shear wall. This will limit the deflection that the stairs are subject to as they will move with the wall as it rotates. In other words, the whole staircase will rotate in unison with the shear wall to which it is fixed without any significant movement of the stair elements relative to one another. This can be contrasted with a flexible framed building having no stiff shear wall which has large inter-storey movements in an earthquake.

[601] The article and Dr Jacobs' views were put to Dr Hyland in the following exchange with Mr Price:

> Q. Have you read the paper?
>
> A. I don't recall I've read the full paper.
>
> Q. The authors state in there in relation to a shear walled building supported by shear walls stairs in a shear walled building supported by shear walls state large inter-storey drifts are typically an issue to stairs in buildings with seismic resisting frames, the stairs in shear walled buildings are typically supported by the walls. The relative inter-storey displacements are therefore low as a majority of the inter-storey drift arises from wall rotation which does not affect the stair, you see those words don't you?
>
> A. Yes.

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209 GR Houston, AS Beer and others *A seismic engineer's note book* (Paper presented to the 2014 NZSEE Conference, 2014).

210 At 3.

Q. And you understand what they are referring to when they talk about majority of the inter-storey drift arising from wall rotation which does not affect the stair?

A. Yes.

Q. And they're referring to the shear wall rotating, aren't they?

A. Yes they are, yes.

Q. So that the movement that you get is a not a shortening of your points 1 to 6 here but rather a rotation, would that be correct?

A. No, no, what, what they're just saying here they're just giving you some generic sort of advice that where you've got stairs adjacent to shear walls are you know the, the displacements could be less because of the displacement of the shear wall but the shear wall displacements have been directly modelled here, I've already modelled those so what we're getting is what the shear walls, how the shear walls are displacing so…

Q. But we have to take your word for that, don't we, Dr Hyland?

A. Well, yes, but your experts could've checked that as well. And we've had – I've had a peer review of those displacements as well by Ashley Smith so I'm comfortable we've got the right magnitudes there.

[602] When Dr Hyland was asked whether he reassessed his position in any way once reading Dr Jacobs' explanation of the difference between a flexible framed building and one with a stiff shear wall, Dr Hyland stated:

> No. But the reason is because in this case, the thing which is making this stair particularly awkward is the fact that on one side, the stairs are supported near the mid-span of beam B4 so you've got a soft support and a rigid support so that's causing this detrimental twisting effect to the stairs, which is not normal.

[603] Dr Jacobs' evidence with his response to Dr Hyland's assumption was first served in January 2020. Since that time, Dr Hyland revised his brief and served a consolidated brief. He did not include any response to Dr Jacobs' point nor attempt to demonstrate why the matters raised by Dr Jacobs would not apply to Gore Street. This leaves the Court in difficulty. The plaintiffs submit that in undertaking his analysis, Dr Hyland took account of the as-built features of the staircase structure and shear walls. I am not satisfied that this is correct. In his brief, he states that he took into account the as-built features of the staircase structure including the listed structures. The listed structures make no mention of the shear wall. The plaintiffs also referred

in closing to a passage in cross-examination. I do not find that reference addresses the point.

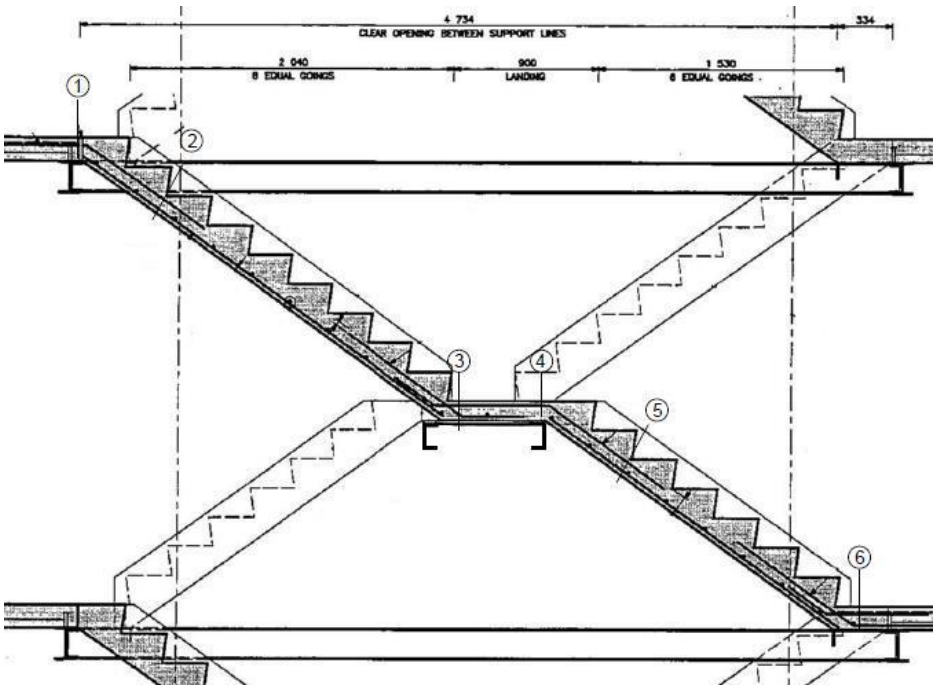
[604] The second prong of the challenge to Dr Hyland's evidence is Dr Jacobs' analysis of Ashley Smith's independent ETABS modelling. The Council argues that this shows the flaw in Dr Hyland's analysis beyond any doubt.

[605] During the expert caucusing approximately a month before trial, Ashley Smith disclosed that his firm had carried out an independent analysis of Gore Street to verify the inter-storey displacements calculated by Dr Hyland using current loadings standards. This was said to be part of a peer review of the remedial works design.[211]

[606] I pause to note that the late emergence of this analysis, and so close to trial, is justifiably criticised by the Council. It significantly reduced the utility of the resulting joint expert statement Ironically, it is only the fact of the complexity and length of the trial which meant that the Council experts had nearly three months to review Ashley Smith's analysis.

[607] Ashley Smith was asked during cross-examination to use his independent model to calculate the shortening between a point at the top of a flight of stairs and a point at the bottom. (Points 1 and 6, as illustrated below.) This followed Dr Hyland's confirmation that his assumed displacement of 11.3 millimetres in a ULS earthquake occurred between these points and was a "shortening" of those points.

[211] The ETABS model was then discovered at the request of the Council's solicitors.



[608] The request made of Ashley Smith was prescriptive. It was, so far as material:

> What is the total displacement of the stairs predicted by his ETABS analysis disclosed to the Council on 21 April 2022, during an ULS earthquake, excluding the shear wall rotation, scaled by the ductility factor, between points 1 and 6 on the diagram above (which are believed to be joints 42 and 20)?

[609] Ashley Smith's initial response was that the answer was 13 millimetres. I granted leave for Dr Jacobs to provide a supplementary brief of evidence in response to this modelling.[212] He opined that Ashley Smith had calculated the horizontal displacement of points 1 and 6 relative to the same points on the floor below but not the actual displacement *between* points 1 and 6. It is the displacement between those points which Dr Hyland said represents a "shortening". Dr Jacobs carried out the same exercise using the same model inputs. He calculated the shortening between points 1 and 6 as 0.03125 millimetres.

[610] On review, Ashley Smith responsibly acknowledged that he had omitted to take into account the vertical displacements of points 1 and 6 between level 35 and the

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212 I also granted leave for the Council to recall Mr Smith for further cross-examination. Ultimately, they did not recall him for this purpose. The plaintiffs then signalled they wished to recall Mr Smith. Ultimately, the plaintiffs did not apply to do so either. The plaintiffs therefore stand or fall on whether the Court accepts that Dr Hyland has adequately explained his reasons for not accepting the rotation theory in this specific situation and that explanation has not been effectively countered.

foundation level which leads to the shear wall rotation. This was intended to be excluded from the exercise. He therefore revised his view but only insofar as the exercise he was requested to carry out is concerned. He confirmed that in a ULS earthquake the analysis indicates that the distance between point 1 at level 36 and point 6 at level 35 shortens by 0.03 millimetres. This acknowledgement was admitted into evidence by consent.

[611] At first blush, this appears to undermine Dr Hyland's analysis yet the plaintiffs did not seek to recall Dr Hyland. After careful reflection, I prefer the plaintiffs' position that this evidence merely confirms the point that *if* all the elements of the staircase remained static relative to one another in a severe earthquake, there would be no significant contraction of the stairs and no "concertina" effect. Mr Ashley Smith's revised answer was based on an assumption reflecting the shear wall rotation theory posited by Dr Jacobs, as requested by the Council. This is beside the point. The crux is whether the elements of the staircase *would* remain static relative to one another. On that issue, the Court is faced with a conflict between Dr Hyland's intensive analysis of the configuration and the firm view of Dr Jacobs. The latter is unsupported on the current evidence by any detailed analysis or calculations but supported by structural engineering principle and intuitive analysis derived by experience.[213] This is no criticism of Dr Jacobs. As discussed, the issue had evolved during trial. He said that he could have done research on the various high-rise buildings he had designed to analyse the configuration of any scissor stairs used had the issue arisen earlier.

[612] I also do not accept that Ashley Smith implicitly accepted that his verification of Dr Hyland's work is wrong because of his revision of this modelling.

[613] In conclusion on this issue, I accept, albeit by a relatively fine margin, that on the evidence presented to the Court, Dr Jacobs' theory does not do enough to undermine Dr Hyland's investigations.

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[213] Dr Jacobs went so far as to say that he was prepared to give an assurance to the owners of units that these stairs will be completely safe in an ULS earthquake based on Mr Smith's analysis. That assurance again is limited in that the analysis excluded any shear wall rotation.

[614] The third (fall-back) response by the Council is that even if Dr Hyland's assumed displacement is correct, the stairs have four flex points, each of which would only have to accept a quarter of the rotation under the inter-storey drift predicted by Dr Hyland (and not accepted by Dr Jacobs) to accommodate the predicted inter-storey drift. Challenged on this point, Dr Jacobs' view was that once one puts reinforcing through a concrete slab, it has a degree of ductility and can flex backwards and forwards without failing. He further explained that the fact there is typically one layer of reinforcement through each joint provides the necessary ductility. This view exposed yet another fundamental difference of opinion between Dr Jacobs and Dr Hyland.

[615] Dr Jacobs properly acknowledged that his critique was not based on his own modelling but on his experience. He also acknowledged how difficult is to model the behaviour of the Gore Street stairs in a serious earthquake.

[616] Faced with a contest between intuitive assessment and intensive forensic analysis of the actual layout of the reinforcing steel, I conclude that the plaintiffs have shown on the balance of probabilities that the Gore Street engineer's failure to incorporate the more usual allowance for movement in the staircases means that it cannot reasonably be concluded that the requirements of the Building Code were satisfied in the design. Claimed defect 4 is an actionable defect in this respect.

Integrity of the fire separation wall between the stairs

[617] There was also a contest between the experts about whether the Building Code required the dividing wall between the two staircases at the mid-height landing to survive a ULS earthquake. This informs the question of compliance with the C clauses of the Building Code which relate to fire safety.

[618] Mr Glasgow, the Council's fire engineering expert, stated that there is no requirement under NZS 1170.5:2004 (Structural designs actions – Part 5: Earthquake actions)[214] and therefore the Building Code, for fire separations around stairs to

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[214] *Structural designs actions – Part 5: Earthquake actions* (Standards New Zealand, NZS 1170.5:2004).

maintain their integrity and fire resistance rating in a ULS event. He maintained that these can be damaged in a ULS event but will still be compliant provided they do not collapse into and block the escape route.

[619] Mr Glasgow referred to section 8 of NZS 1170.5:2004 (Structural design action – Part 5: Earthquake actions) which sets out requirements for what parts and components of buildings are required to be designed for earthquake actions. Table 8.1 classifies "category P.4" parts are building parts and components required to continue functioning for evacuation or human life support after an earthquake. Mr Glasgow also referred to more recent 2016 commentary for this standard.[215] The commentary specifically states that items categorised as P.4 are not expected to include all items that are required for the safe egress in the event of fire because fire is not expected to follow so soon after earthquake shaking that it needs to be a consideration in the immediate evacuation from the building.

[620] Mr Glasgow's views were supported by a second expert called by the Council, Dr Fleischmann. He is a professor at the University of Canterbury responsible for the fire engineering laboratory and the overall research program at the University. He has worked in the fire engineering field since 1987. He confirmed that "we don't design for fires after earthquakes".

[621] Mr Olsson gave evidence that it is very common after an earthquake for fires to start and spread quickly so it is important that the integrity of the fire separation walls is maintained.

[622] While the construction of Gore Street predates the commentary relied on by Mr Glasgow, there is nothing to suggest that the commentary represented a change in position. On this issue, a range of views could well be acceptable from an engineering perspective but I agree that for the purposes of assessing code compliance, the New Zealand Standard answers the question. It is explicitly addressed in the commentary. It can reliably be inferred that those industry experts responsible for the Standard have taken into account that New Zealand is in a seismic region (although

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[215] *Structural design actions Part 5 – Earthquake actions – New Zealand Commentary* (Standards New Zealand Paerewa Aotearoa, NZS 1170.5 Supp 1:2004, September 2016).

Auckland may be far less susceptible than other cities) and the possibility of fire following earthquake is a threat. I also prefer Mr Glasgow's interpretation of the reference to partitions to primary egress routes as being a reference to partitions generally, not necessarily fire separation walls. The objective is that the design is to prevent partitions falling into and blocking a primary egress route rather than to act as fire separations. This is evident, in my view, from the acceptance in the Standard that fire is not expected to follow so soon after earthquake shaking that it should be designed for.

[623] In sum, although the plaintiffs have established that claimed defect 4 is an actionable defect, they have not established breach of any of the C clauses. Thus, it is to be analysed as a structural rather than fire defect.

Clearances between solid balustrades and adjacent columns

[624] The analyses of both Dr Hyland and Dr Jacobs were replete with assumptions. The plaintiffs have the burden of proof. I have concluded that the plaintiffs have not made out their case as to non-compliance with the Building Code on claimed defect 5.[216] Consequently, it is unnecessary to turn to the question of whether the Council had reasonable grounds to issue the CCC in circumstances where it obtained a PS4 from the reviewing structural engineer.

Inadequate or defective grouting of bar sleeves and tendon ducts

[625] The following issues arise:

(a) Does Dr Hyland's statistical analysis establish to the required standard that there are widespread deficiencies in the grouting of the bar sleeves within Gore Street?

(b) Have the plaintiffs established that any floor has inadequate connection strength to be code compliant?

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[216] Lack of compliance with the consented details does not of itself mean there is no code compliance.

(c) Is there reasonable assurance that the bar sleeves within Gore Street have been constructed in a manner complying with the Building Code?

(d) What constitutes inadequate grouting of the tendon ducts and what is the consequence from either a fire or corrosion protection perspective?

[626] The plaintiffs' experts took concrete core samples which they say identified:

(a) 63 per cent of the surveyed bar sleeves were not adequately grouted. This includes no grout at all in the level 22 bar sleeves.

(b) 20 per cent of the tendon ducts surveyed were not adequately grouted.

[627] Dr Hyland concluded from his structural analysis that under ULS earthquake loadings the post-tensioned floors do not have sufficient connection with the Core and surrounding framework to reliably maintain the stability of the structure. In addition, the lack of grouting to the bar sleeves will contribute to water entering ungrouted bar sleeves and corrosion.

[628] At the expert conference, the parties' respective experts agreed that lack of grouting or inadequate grouting of the bar sleeves would be a "defect" subject to its extent. (I apprehend that the proviso goes to both the number of bar sleeves that are inadequately grouted and the extent of "under grouting" in each instance). There is no dispute that there is some defective grouting but a dispute over whether the plaintiffs' experts had established that there is a systemic problem.

[629] It is not difficult to accept that grouting is a critical part of a post-tensioned slab. More difficult questions arise as to whether there is reliable evidence to show that the bar sleeves in their present state are not capable of performing their designed function. Or, to put it another way, the extent to which the as constructed bar sleeves reasonably contribute to their designed function so that there is no more than a low probability of rupture in a ULS earthquake.

[630] The first issue is the challenge to the plaintiffs' experts' investigation method and the statistical analysis on which they rely.

The investigative method — bar sleeves

[631] The drawings for Gore Street specify 190 bar sleeves and 36 tendon ducts on each level of the building across the north and south post-tensioned floors. The investigation of the perimeter bar sleeves at the junction of the slab and edge beams was principally aimed at checking the effect of water leaking from the corner balconies. The investigations in June and September 2018 involved core sampling of 89 bar sleeve cores across locations on 14 floors after scanning to identify locations. Of those, 45 were completely ungrouted, 11 were less than half-filled with grout and 33 had a void of less than 5 millimetres deep. Dr Hyland concluded that 56 of the 89 bar sleeves (37 per cent) were inadequately grouted. More concerning was that on level 22 there was no grout in any of the bar sleeves investigated and on level 19 only 28 per cent of the sleeves had any grout.

[632] Dr Hyland then calculated loading demands on the junctions of the floor slabs to the walls and columns to calculate how many bar sleeves were required to maintain the stability of the structure on those demands at various floors.[217] He explained:

> As we do not have any proof testing of the bar sleeve system used and have not inspected the grout in every bar sleeve it is difficult to predict exactly how the building may react in an earthquake as a result of this insufficient connection, but in my view there are risks as follows:
>
> (a) The post-tensioned floors may detach and slump or collapse in a downward manner.
>
> (b) There may be overloading on portions of the concrete beams and columns on the eastern and western elevations, which may lead to damage and distress to the columns/beams and compromise their ability to support the building.
>
> (c) Instability may develop in the concrete columns where they are not adequately tied into the floor slab as a result of the lack of grouting, so the columns could buckle outwards over a number of floors reducing their ability to support the building and further increasing the potential for slabs to detach from the frame.

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[217] Dr Hyland refers to two documents: the Building Diaphragm Analysis and Remedial Works Building Consent Calculations dated 11 March 2020. Collectively, these documents comprise over 2000 pages of calculations, reports, drawings and tables. They neatly illustrate the difficult task in front of the Court. The Remedial Works Building Consent Calculation document is 1918 pages long.

[633] Dr Hyland also opined that the lack of grouting to the bar sleeves will be allowing more movement at the beam to column junction and therefore contributing to the widening of the cracking on the balcony slab to column junctions. In turn, water which enters this cracking on the corner balconies may enter into the ungrouted bar sleeves and cause corrosion.

[634] To determine the likely frequency of the inadequate grouting to the bar sleeves (and to the tendon ducts), Dr Hyland resorted to an ISO probability method. As he explained it in a footnote to his evidence, by this method he:

(a) took the total population or lot size — being the total number of bar sleeves in the building, 6,270;

(b) determined the acceptable maximum number of non-conforming items, which he considered was five per cent for this type of construction;[218]

(c) applied the equation in the ISO method to determine the conforming sample size required to verify compliance with this maximum; and

(d) calculated there would need to be 89 samples, all with adequate grouting in order to conclude that less than five percent was non-conforming in the building as a whole. Even one instance of inadequate grouting in the sample of 89 bar sleeve core samples would be outside the five per cent limit.

[635] He concluded that as 56 of the 89 bar sleeve core samples had inadequate grouting, "there was an excessively high incidence of defects for the sample size and indicated the defect was systemic and widespread".

[636] Dr Hyland referenced a handwritten calculation in his brief of evidence in which he recorded:

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[218] The choice of five per cent was not adequately explained. Dr Hyland's diaphragm analysis appears to indicate that a smaller fraction of the reinforcing bars included in the design are required.

> The conclusion is that there is a high level of confidence that the defect rate/floor & over the building is equal or greater than 63% for the perimeter bar sleeve grouting.
>
> …
>
> It is likely that non-conformance overall will approach between 50 and 63%. Similar to that of the perimeter bar sleeves.

[637] The plaintiffs submitted that the methodology was sound and the sampling sufficiently random. They also say that it would be unreasonable to expect a higher degree of sampling given the significant work, disruption and cost involved. I agree that these considerations inform the evidential expectations to a degree but they cannot derogate from the burden of proof in an unprincipled way.

[638] The Council called evidence from Professor Christopher Triggs, an expert in statistics. He said that he found Dr Hyland's handwritten notes difficult to understand, both due to lack of legibility and his unconventional approach. He was firmly of the view however that Dr Hyland had misapplied the ISO Standard and misinterpreted the results.

[639] That Dr Hyland and Professor Triggs did not engage during expert conferral is profoundly disappointing. As it transpired, Dr Hyland objected to the relevance of Professor Trigg's expertise on the basis that he had no construction experience.[219] The plaintiffs persisted in their submission that Professor Triggs' review has no direct relevance to incidences of failure in construction work because he has no stated experience in statistical analysis involving construction. I reject the notion that his evidence critiquing Dr Hyland's statistical analysis was not relevant. Clearly Professor Trigg was not able to, nor did he purport to, say what an acceptable level of failure would be. He was however well qualified to challenge the use of the ISO statistical method and in my view kept well within his domain expertise.

[640] I accept the evidence of Professor Triggs. It was not impeached in anyway during cross-examination. On the contrary, he was a persuasive expert witness able to well explain his view with reasons. In particular, I accept:

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[219] In cross-examination Dr Hyland confirmed he considered statistical maths to work differently for construction purposes — a surprising proposition which was not adequately rationalised.

(a) The core samples were not drawn at random as required so no formal statistical inferences can reliably be drawn beyond the specifically observed samples. Rather, they were selected from the most available location on each bar sleeve range.

(b) Different types of non-conformity were conflated which carries the risk of providing inaccurate results and data interpretation.

(c) The proportions of ungrouted bar sleeves on levels 19, 22 are unlikely to be the same as the other floors based on the data available.

(d) It is wrong to interpret the results of the Standards' application as indicating the likely level of non-conformance with the lot. Rather it is used to assess the sample size required to achieve the desired level of confidence that the lot has less than a certain level of non-conformities.

(e) Dr Hyland's analysis confuses the difference between being unable to be 99 per cent confident that a lot's defect rate is below a pre-specified level and it being more likely than not the defect rate is above a particular level.

[641] In sum, I reject the statistical analysis put forward by Dr Hyland.

[642] The high level of redundancy designed into the system of bar sleeves was explained by Dr Jacobs. Referring to Dr Hyland's table headed "RSA Diaphragm Hinges Forces Grid 4", he explained:

> The column…outlines, as far as I can see, the number of bar sleeves (noted as DH16/m) required. This is expressed as the number per meter length of wall between the various grids on line 4. The required number of bars for the wall length noted in the table were always less than the 30 or more provided in the design. In most cases, the number of bar sleeves in the slab are a large percentage greater than required from the table.
>
> For example, on Level 9, Dr Hyland's table appears to show that 5 bars are required along grid 4 and there are about 30 plus on this floor according to the design. On Level 9, three random tests were carried out by the plaintiffs' experts to check the bar sleeve grouting – two were greater than 5 mm void depth and one was equal or less than 10 mm void depth. One floor above, on Level 10, 14 bars are required due to the analysis and also 30 plus are provided

> in the design. No testing has been done on this floor. On Level 12, 15 bar sleeves were required on grid 4 according to Dr Hyland's analysis and about 30 were designed. The tests on Level 12 in two positions found no bar sleeves were un-grouted.
>
> Level 9 may be a more extreme example of the results but it illustrates a number of things. The analysis is only an approximation to the real situation of the behaviour of the slab. The large variation in the number of bars required by the analysis between floors does not make any sense. Except for Level 16 the results should all be quite regular. These results between Levels 3 to 16 are not. They seesaw.

[643] Dr Jacobs went on to conclude that Dr Hyland had not investigated a sufficient number of bars to establish that there is a problem with the grouting that will affect the behaviour of the diaphragm in a ULS earthquake. Rather, Dr Hyland's analysis shows that in nearly all cases there are many more bar sleeves than necessary to connect the diaphragm floor to the shear walls, particularly in the upper levels above level 24.[220]

[644] Materially, Dr Jacobs also said:

> …I agree that the results found on Level 22 are a cause for concern. Level 19 also shows low results.

[645] And:

> I consider Levels 22 and 19 should be the subject of further investigation. I would:
>
> (a) establish how much grout cover is required to develop full strength of the bar;
>
> (b) establish how many of the 190 plus bars need to be grouted to ensure there is sufficient force connecting the slab to the walls; and
>
> (c) continue to investigate the bar sleeves to establish whether there is sufficient number of grouted sleeves.

[646] I find Dr Jacobs' evidence to be compelling on this issue. Even acknowledging the difficulty of investigation, along with a risk that investigation might exacerbate any existing deficiency, and applying a more flexible lens, I am not persuaded that any

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[220] Earthquake loadings reduce higher up the building so the number of bar sleeves required is much less.

structural compromise has been shown on the evidence before the Court other than on levels 19 and 22.

Tendon Ducts

[647] The tendon ducts follow a parabolic profile between high and low points as depicted in this diagram:

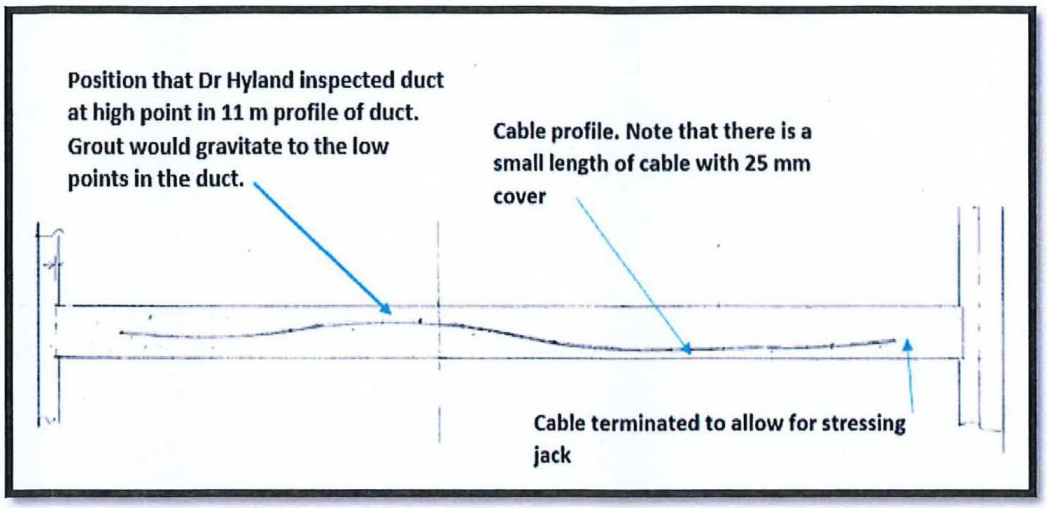

Figure 10: diagram showing typical tendon profile through the concrete slab

[648] The plaintiffs spent relatively little time on this issue in closing submissions. They concede that the "issue" is not as severe as the bar sleeves. This is perhaps not surprising given that their own investigations indicate that 80 per cent of the ducts surveyed were adequately grouted.[221] I further apprehend that the remedial fix proposed does not include regrouting but mitigating the issue on a practical basis by adding fire protection to the underside of the slab. In principle though, the lack of grouting in the tendon ducts is of no moment if the plaintiffs have not established that grouting of all (or any) of the tendon ducts is required to achieve compliance. Whether code compliance (or consent compliance) requires grouting of tendon ducts is therefore a live issue. The plaintiffs submit that a failure rate of 20 per cent is unacceptable and suggest that the tendon ducts should all have been full of grout. In my assessment, there is no cogent explanation in the evidence supporting this submission.

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[221] Of the 15 tendon ducts cored, one was completely ungrouted and two were less than half filled.

[649] Both the Buller George and the VSL structural drawings are silent on the grouting of the ducts. Dr Hyland gave evidence that grouting would be expected with the use of multi-strand ducts. The Council did not challenge the proposition that it may be common practice to grout ducts but resisted the proposition that there is any requirement.

[650] Dr Hyland's evidence was that inadequate grouting in the ducts *may* result in possible corrosion to the tendons should water enter through membrane failure and cracking of the concrete.[222] It could also contribute to failures in the event of earthquake and may lead to localised slab failure during a fire due to greater susceptibility of the tendons to heating and loss of strength.

[651] The Council's expert fire engineer, Mr Glasgow, considers that the required concrete cover to the tendon ducts is 10 millimetres to maintain a 30-minute FRR rather than the 45 millimetres of concrete cover maintained by Dr Hyland. Mr Glasgow bases this on the guidance found in NZS 3101:Part 1:1995 (Concrete Structures Standard).

[652] Dr Jacobs' evidence is that, at minimum, the cover to the tendon ducts is in fact likely to be 25 millimetres where the ducts are closest to the slab soffit. In the majority of the slab the cover to the tendon ducts is much higher. He also considers that the plaintiffs' experts are wrong about inadequate grouting at the lower spans because the samples were extracted at the high point in the duct profile (the upper level of the ducts as they pass adjacent to the internal columns) while grout would gravitate to the low point in the duct.[223]

[653] The plaintiffs did not challenge Dr Jacobs' evidence that the only area of susceptibility to moisture ingress relates to the diagonally shaped corner balconies on levels 24, 26, 28, 30, 32 and 34. There is a stressing head in the concrete slab under these balconies. Dr Jacobs maintains that the concrete cover to the stressing head at

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222 This evidence suggests that it only becomes an issue through the failure of another building element.

223 There is no criticism of this. Rather it was inferred that this was the easiest point of access.

these positions is over 44 millimetres and the duct has cover of over 60 millimetres. This exceeds what is specified in the Concrete Structures Standard.[224]

[654] In relation to the fire protection aspects of the concrete cover, I can put it no better than the Council's closing submissions and accordingly adopt them:

> In relation to fire protection, the fire design for the building assumed that concrete cover would provide inherent fire resistance. For the reasons that Dr Jacobs explains, most of the tendons have much more than the 45 mm concrete cover that Dr Hyland considers is required (typically they have between 50 mm and 100mm). Further, almost certainly the ducts are fully grouted at the low point of the span where they are closest to the slab soffit. However, even assuming there is no grout in these locations, there is a minimum of 25mm concrete cover from the soffit to the bottom of the duct which is more than adequate for the 30-minute FRR for stability specified in the consented design (if a conservative assumption is made that the slab is simply-supported, 25 mm of cover achieves an FRR of 60 minutes). If grout is assumed the FRR would be 90 minutes at the lowest point in the slab (and as high as 120). Dr Hyland's 45 mm provides an FRR of 240 minutes.

[655] Relevantly, Dr Hyland did not refer to the Concrete Structures Standard in his brief on this issue. When put to him on cross-examination he theorised that the FRR table in the Concrete Structures Standard assumes that tendon ducts are grouted (encapsulated in concrete) and that it is just "normal industry knowledge" that the fire tests behind these tables are carried out with grouted tendon ducts. There was no support in the document for that theory and it was not put to any of the Council's experts so I put it to one side.[225] He further said that the FRR table in the Standard:

> …part of a design standard that is giving you guidance as to what are appropriate thicknesses and covers that would…in an isolated situation would give you maximum capacity performance, but it's just one part of the design situation that a structural engineer is faced with.

[656] Standing back and viewing the evidence as a whole, I find that Dr Hyland's approach to the issue of the tendon ducts was driven by a cautious design imperative as part of his remedial work on Gore Street. As he himself said, "You cannot excuse yourself professionally by saying it is not covered by the standard therefore I have not

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[224] *Concrete Structures Standard* (Standards New Zealand, NZS 3101.1:2006) at Table 3.6 sets out the minimum required cover for a specified life of 50 years. For concrete strength of 30MPa, only 35 millimetres is required.

[225] Yet *Concrete Structures Standard* (Standards New Zealand, NZS 3101.1:2006) includes a definition for "unbonded tendons" which tells against Dr Hyland's interpretation Dr Hyland stated on cross-examination that the issue at Gore Street is not covered by the standard because the table is for a design purpose and assumes normally conforming construction not present at Gore Street.

done it, that would not be defensible professionally." This is not necessarily the same as an assessment of code compliance required to establish that there is an actionable defect.

[657] In conclusion I find that the plaintiffs have not proved that claimed defect 6 in relation to the tendon ducts is an actionable defect.

How did the relevant state of affairs come about and is the Council responsible?

Scissor stairs

[658] The alleged basis for Council liability in relation to the staircases is the consent process. The Council argues that it reasonably understood that the design for the stairs had been peer-reviewed at the point it issued Consent 302 and therefore was not negligent. I reframe the question as whether the Council breached its duty of care by failing to ensure that the stair design had been peer-reviewed.

[659] As with most of the statutory processes in the design and construction of Gore Street, the structural design consenting process was far from straight-forward and the course it took is not well documented. The experts had to retrospectively piece it together. Multiplex's absence from this litigation exacerbated the difficulty. Therefore, it is no easy task to identify precisely what was consented and when. I draw the following description from the plaintiffs' closing submissions and the evidence of Trevor Jones, identifying known and material areas of disagreement.

Consent 301 (piling and foundation)

[660] On 3 May 2004, Multiplex wrote to the Council attaching a building consent application and structural plans for piling, foundation, structure and underslab services.

[661] On 28 May 2004, Multiplex wrote to the Council attaching:

(a) a Buller George PS1 dated 28 May 2004 (with register of drawings attached); and

(b) a PS2 issued by Bruce Black of Holmes Consulting dated 27 May 2004 (attaching the register of drawings which had been peer reviewed).

[662] The scope of the consent application was reduced to cover just the site piling and foundations. This consent was issued on 6 July 2004.

Consent 302 (structural)

[663] On 5 July 2004, Multiplex submitted two sets of architectural/structural plans. Trevor Jones gave evidence that Multiplex resubmitted the Buller George PS1 dated 28 May 2004 and the Bruce Black PS2 dated 27 May 2004. Mr Flay for the Council did not agree with this view but it is not material for present purposes. The plans were endorsed (and signed by Mr Black) with the following statement:

> Structural aspects of this project have been reviewed to ensure conformance to the relevant New Zealand Standards and the New Zealand Building Code: 1992 Section B1/VM1, to the scope as limited by our producer statement – design review.

[664] Mr Black's PS2 has similar wording. It states:

> As an independent designer I have taken all reasonable steps necessary to verify design assumptions. I am satisfied on reasonable grounds that in relation to the building work specified above the provisions of the Building Code would be met if the work were properly completed in accordance with the drawings, specifications and other documents according to which the building is proposed to be constructed and which have been submitted with the application. I understand that if this Producer Statement is accepted, it will be relied on by Auckland City Council for the purposes of establishing compliance with the Building Code.

[665] The 27 May 2004 PS2 records that it is issued in relation to "Pilings Foundations and Structure". It states that it is for specific drawings in a register, but no register has been discovered. The PS2 also specifically notes various exclusions from the scope of the peer review such as handrail design and design review of proprietary products which are covered by their own producer statement.[226]

[666] Consent 302 was issued on 11 October 2004.

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[226] It was not argued that the stairs were proprietary products covered by their own producer statement.

Consent 303 (architectural and building services)

[667] On 5 August 2004, Multiplex applied for consent. Multiplex and the Council had earlier entered into correspondence on the matter. Multiplex submitted updated plans including architectural, hydraulic services, electric services, and fire protection plans. Consent 303 was issued on 15 March 2005.

Consent 304 (post-tensioned floor)

[668] Multiplex submitted an application for consent, together with:

(a) one set of plans comprising VSL post-tensioned floor plans (VSL plans) and Buller George plans for the canopy roof and gymnasium;

(b) a Buller George PS1 dated 30 November 2004. This covered the VSL plans;

(c) a PS2 issued by Bruce Black dated 23 November 2004 (with the description miscellaneous structure including canopy and gymnasium). It included a drawing register; and

(d) a second PS2 issued by Bruce Black also dated 23 November 2004 covering the post-tensioned floor design.

[669] Consent 304 was issued on 24 December 2004.

Consent 305

[670] On 7 June 2005, Multiplex wrote to the Council apparently intending to amend Consents 302 and 303. The Multiplex letter attached:

(a) a drawing register recording amendments to Consent 302;

(b) a drawing register recording amendments to Consent 303;

(c) 146 pages of architectural drawings; and

(d) 139 pages of structural drawings.

[671] The drawing register for amendments to Consent 302 included the key structural staircase design drawings that the plaintiffs allege are defective. They have creation dates as far back as August 2004. The register records a comment next to their entry: "New drawing since BC issued." The staircase plans themselves are stamped with the Consent 305 number and another stamp denotes it was processed by the Council on 18 November 2005. Materially, there is no Bruce Black endorsement on these plans. The register indicates that when these documents were submitted ostensibly for amendment to the structural Consent 302, there were new drawings relating to the stairs, albeit potentially drawings which were created much earlier. Mr Flay, the Council's expert on regulatory processes, resisted this conclusion however. He said that this was the first time that Multiplex had put to Council the structural designs for the staircase but they had been checked over by the engineers earlier. I do not find this opinion persuasive. It is not consistent with the natural and ordinary reading of the June letter. There is no explicit record of peer review of the staircase plans.

[672] There was the following exchange between Mr Lewis and Mr Flay:

> Q. [Council's] failed to ensure that the structural plans that were submitted were peer reviewed, is that right?
>
> A. Well that – they got the building peer reviewed. These particular plans don't appear to have been endorsed by Mr Black but I can't comment on whether he did or did not review them.
>
> Q. Well there's no grounds for the council to believe that these plans have been reviewed by Mr Black is there?
>
> A. Well based on – there's no stamp on the plans only, you could say that yes.

[673] Nonetheless, Mr Flay's view was that the Council had reasonable grounds to consider the stairs had been peer reviewed because:

> …they had producer statements that clearly state that the building had been fully peer reviewed because it was not in the exclusions, the stairs that you are talking about here.

[674] And later in the same line of questioning Mr Flay said:

> The design would've required a peer review and I'm saying you're saying because a plan came in, that council should send it off. But I see no evidence that Mr Black didn't look at the design for the stairs.

[675] On 27 July 2005, Multiplex wrote to the Council attaching a Buller George PS1 dated 20 June 2005 pertaining to the structural drawings sent to the Council on 7 June 2005. This is a flag to the Council to expect a related PS2.

[676] No related PS2 from Bruce Black (or any other reviewer) was discovered in the litigation. The Council does not suggest that one was issued.

[677] The Council issued Consent 305 on 24 November 2005.

Consent 306

[678] On 14 October 2005, Multiplex wrote to the Council applying to amend Consents 302 and 303 for the addition of two floors and the reconfiguration of the roof plant room. The letter states that Multiplex understands the amendment will be known as Consent 305. The letter attached:

(a) twenty pages of structural plans;

(b) a Buller George PS1 dated 14 October 2005 with drawing register; and

(c) a PS2 issued by Bruce Black dated 7 November 2005 with drawing register.

[679] The stamps on the plans record they were allocated to Consent 306 rather than Consent 305 as Multiplex anticipated.

Consent 307

[680] On 28 October 2005, Multiplex wrote to the Council applying to amend Consents 302 and 303 for the addition of the wintergarden structure to the level 2 apartment courtyards. The letter attached architectural and structural plans. A PS2 dated 23 January 2006 issued by Mr Black was discovered by the Council. It included a drawing register covering the two structural plans for the wintergardens. Again,

although the Multiplex letter anticipated these amendments would be processed under Consent 305, the plans record they were allocated to Consent 307.

Discussion

[681] The Council processing officer, Ted Jones, gave evidence that he was satisfied with the peer review as it clearly showed what was excluded and it was reasonable for the Council to accept the peer review. As he put it, "it's not my role to check the checker". That must be right in so far as it goes but the real question must be whether it misses the essential point.

[682] Materially, the structural design submitted in relation to Consents 301, 302, 304, 306 and 307 were all covered by PS2s issued by Mr Black. The plans were endorsed with a stamp and signature by Mr Black to confirm his review and approval. Yet the structural designs submitted on 7 June 2005, sent under cover of a letter self-styled as an application to amend Consents 302 and 303, had no such endorsement by Mr Black. There was also no PS2 issued. This was contrary to the Auckland City Council guidelines for producer statements. It was also anomalous.

[683] Ted Jones' evidence was that those drawings were only provided as "as built" drawings rather than in fact to substantively amend the consented design and were not "consented" under Consent 305. In short, he maintained the Council was not authorising Multiplex to build something new or different from that already consented.

[684] Should the 7 June 2005 letter have put a prudent Council on notice of changes to drawings? This question requires scrutiny of the letter from Multiplex to the Council, the terms of Consent 305 and the evidence of Ted Jones and the respective experts on regulatory processes.

[685] The letter refers in the subject line to Consents numbered 302 and 303. The second subject line refers to "Application for Amendment to Building Consent".[227] The first paragraph refers to the attachments to the letter as "information pertaining to our application for amendment …". The listed attachments are the "Drawing register

[227] This is singular rather than plural but does not identify which, if any, consent is to be amended but nothing turns on this.

containing the drawings affected and their latest revision numbers" and two "A3 copies of the drawings contained in the drawing register". The drawing registers were discovered: one for structural plans relating to Consent 302 and one for architectural plans relating to Consent 303.[228]) It goes on to say as relevant:

> This amendment is required to update the Council with the "For Construction" drawings that have now been issued by our Consultants.
>
> In the majority of cases the drawings have not changed since being approved by Council as part of the original building consent application.
>
> As our Consultants issue their drawings as "For Construction" the revisions change from a letter to a number. In the majority of cases the drawing revision has changed from a letter to a number "1" indicating it is the first construction issue.
>
> In some cases the revision numbers of the drawings are larger than "1". In these cases minor amendments have been made since the original construction issue. The majority of these changes are due to subtle dimensional changes encountered on site that have been revised on the current drawings.
>
> Please note that we are in the process of obtaining a Producer Statement (PS1) Design from Buller George Engineers for the new structural drawings issued.

[686] The meaning and import of this letter was debated at trial. The Council argues that the reference to a PS1 for the new structural drawings issued was a reference to a later amendment to add an additional two floors and change in roof structure.[229] That amendment was eventually dealt with under a new Consent 306 for which a PS1 was provided. No one from Multiplex or Buller George was called to give evidence and I am not persuaded that this submission is evidentially supported. On its face, the Multiplex letter relates only to the drawings attached to that letter, suggested that a PS1 had been sought and ought to have put the Council on notice that further inquiry was necessary. Moreover, I find that Buller George's PS1 dated 20 June 2005 expressly pertained to the structural drawings sent to the Council on 7 June 2005.

[687] Ted Jones' evidence was that the "for construction" documents provided by Multiplex were:

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[228] It appears they were 'discovered' separately as they are not attached to the core bundle document produced to the Court.

[229] Multiplex wrote to the Council on 14 October 2005 and provided a PS1 for these changes which amended Consents 302 and 303.

> …accepted and put on the Council's file, but my understanding was that they were simply an updated set of detailed drawings that were in effect an "as built" set of drawings as the work had already been undertaken by that stage. This is the point made in Condition 12 of Consent 305. Consent 305 was therefore issued for the architectural amendments only and noted that the structural drawings were simply being accepted as "as built" documents.

[688] His evidence was that it was not apparent from the letter that there were changes to the design and that he treated the "for construction" drawings as "as built" drawings which did not need a review. That perspective is difficult to reconcile with the wording of the letter which refers to the "majority" of the design changes being subtle and the fact that Buller George was being asked to (and did) prepare a PS1 in respect of new structural drawings.

[689] Consent 305 describes the works as being "Amendment – update of architectural drawings". Condition 12 states:

> The amended engineering drawings have been accepted as as-built documents. The applicant is responsible for arranging the observation by a CPEng registered engineer as required by previous building consents. Producer statements "Construction" and "Construction Review" are to cover these amendments.

[690] The plans were stamped by the Council on 18 November 2005 with the Consent number 305 and consent granted on 24 November 2005. The Council's position is that the "consent" aspect was limited to the architectural amendments and not the amended engineering drawings.

[691] While I accept that the Council could not reasonably have been expected to carry out a comparative audit between these drawings and the previously consented drawings. Indeed the consenting officer would not have been qualified to assess the extent and nature of any structural changes. I consider the regulatory process failed at this point. The Council did not exercise sufficient care in the face of the gap in the peer review process and there was no reasonable basis for concluding the designs of the stairs had been peer-reviewed at an earlier time. My reasons are:

(a) In a building of this size and complexity a prudent Council would have expected a peer review of the structural design by a qualified structural

engineer and indeed, all indicia point to this being the position at Gore Street.

(b) There is no record of any peer review of the designs submitted on 7 June 2005 including the structural staircase design. (Nor do I apprehend that the Council argue that there was in fact such a peer review).[230]

(c) The staircases are a specific engineering design in terms of Part 4, Clause 1 of the Auckland City Council Guidelines for Producer Statements.[231]

(d) Without a peer review of all structural designs the Council could not reasonably be satisfied of compliance with the Building Code.

(e) The plain meaning of the June 2005 letter combined with the absence of endorsement on the plans from Mr Black was sufficient to signal that further inquiry was warranted, particularly when the indication was that Buller George was in the process of issuing a PS1 for the revisions. A PS1 without a corresponding PS2 in the particular circumstances and in light of the Auckland City Council guidelines for producer statements is an obvious anomaly.

(f) Edward (Ted) Jones also said in cross-examination that, based on a conversation with Geoff Wicks of Multiplex, it was his understanding there were no significant changes in the drawings sent under cover of the letter of 7 June 2005. I do not accept this evidence is reliable given the passage of time, the fact it was not included in his evidence in chief and the lack of a contemporaneous file notation of such an important communication. In any event, it would not be reasonable for a consenting officer to rely on an oral statement of this nature even if it was made.

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230 The Council's closing submissions state only that the Council says it reasonably understood the design for the stairs to have been peer-reviewed at the point it issued Consent 302.

231 The guidelines were referenced in Consent 302, Condition 19.

(g) The fact that earlier PS2s did not expressly exclude the stairs does not provide an answer to the indication that structural revisions sufficient to require a PS1 from Buller George were included in the plans submitted in July 2005.

(h) Earlier PS2s referring to plans said to include stairs were only architectural drawings without endorsement by Mr Black and not stair designs.

(i) The Council ought to have been on inquiry, bearing in mind the requirements of s 45(5) of the 2004 Act which stipulated that amendments to building consents were to be made as if an application for building consents.[232]

(j) The Council consenting officer ought also to have been cognisant that he was not himself qualified to assess the extent and nature of the structural changes and should have been careful to ensure the designs had been peer-reviewed.

[692] I further accept that the better interpretation of the drawing register is that there were new drawings relating to the Core stairs. This was accepted to a limited extent by the consenting officer and by the Council expert, Mr Flay.

[693] In those circumstances, the Council should not have issued Consent 305 but it did so on 24 November 2005, having earlier stamped the structural designs submitted with the letter on 7 June 2005 with Consent number 305.

[694] I find therefore that the Council breached its duty of care at the consent stage.

[695] The plaintiffs have made out their claims in respect of defect 4 subject to the Council's affirmative limitation defence.

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[232] Building Act 2004, s 45(5) which came into effect on 31 March 2005.

Balustrade to column gaps

[696] I have found that the plaintiffs have not made out their case in respect of claimed defect 5. It is therefore not strictly necessary to examine the Council's role in inspection and in issue of the CCC. I record only that the Council's position is that the plaintiffs have also failed to establish that a council officer would have both checked the gap against the structural drawings, identified non-compliance and appreciated that gaps were smaller than that specified by the engineer (in respect of defect 5) and smaller than that specified by the architect (in respect of claimed defect 8) had compliance consequences.

[697] Whilst not making any final determination, I am provisionally persuaded that the Council's process did not meet the standard required or expected at the inspection and CCC stages. I briefly set out my reasons.

[698] Unlike most structural issues, the gap was mostly readily observable. It was also a relatively straightforward issue to check against the plans and in my view ought to have been checked, even if primarily for waterproofing reasons. That does not require the council inspector to understand there was also a structural engineering rationale behind the gaps. Mr Moodie, as the plaintiffs' expert on Council matters, gave evidence that a council inspector would know there needs to be a gap for inter-floor drift, but no more than that, and would follow the consented details. Mr Flay disagreed with this proposition. I agree with the plaintiffs that Council inspectors ought to have identified the discrepancy between the consented details and the physical state of affairs, made further inquiry and, if necessary, taken steps to ensure either the non-compliance with the consented drawings was rectified or at least follow up with the builder or the engineer.

[699] The Council also argues that the issue of a PS4 from Buller George absolves it of any obligation to inspect the balcony clearances. I do not accept that overly broad statement. The weight to be attached to a producer statement requires judgment and is context dependent.[233] Structural issues can be quintessentially matters for PS4s

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[233] *Body Corporate 326421 v Auckland Council* [2015] NZHC 862 [*Nautilus*] at [115].

because they require expertise beyond that reasonably held by the Council. As observed by Lang J in *Cancian v Tauranga City Council:*[234]

> They have particular value in relation to building works such as foundations, masonry and structural aspects within buildings. These can be very technical parts of a construction project and many building consent authorities do not have the resourcing or in-house capability to inspect these aspects of the building.

[700] My preliminary view is that the plaintiffs' argument that the Council is capable of checking the balustrade clearances is meritorious. A physical inspection by a council officer is likely to be the most effective way of identifying observable deficiencies. The existence of a PS4 in these circumstances would not provide a whole answer for the Council had claimed defect 5 been established against it.

Grouting of bar sleeves and tendon ducts

[701] I have found that claimed defect 6 is proved but in a limited way. That is, in respect of levels 19 and 22 only. I go on to discuss the Council's role in relation to that limited finding.

[702] Councils would not normally have the required expertise to undertake inspections of the grouting of tendon ducts and bar sleeves. It would be expected that a producer statement in the form of a PS4 from a supervising engineer would be provided to enable the Council to fulfil its role at the CCC stage.

[703] It is self-evident that not all PS4s are equal. I also accept that there is a correlation between the extent of monitoring of a construction project and the weight to be given to a particular producer statement from the construction monitor.

[704] In the late 1990s, the Association of Consulting Engineers of New Zealand (ACENZ) developed a *Guideline for Briefing and Engagement for Consulting Engineering Services*.[235] The scope of the guideline is far wider than construction monitoring. The foreword to the guideline states that it was published to assist

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234 *Cancian v Tauranga City Council* [2022] NZHC 556 at [58].

235 *Guideline on the Briefing & Engagement for Consulting Engineering Services* (The Association of Consulting Engineers NZ, January 2004). There is an earlier draft dated September 2003

commercial clients in considering the principal issues involved in briefing, selecting and engaging consulting engineers.[236] Appendix 3 of the guideline states under the subheading "Construction monitoring" that:[237]

> A high level of quality monitoring may be particularly important in reducing the risk of latent defects which may become apparent only at a later stage of the project…
>
> …
>
> Any statement or certification given the [engineer] in respect of the quality of the completed works will be reliable only to the extent of the [engineer's] engagement for monitoring of construction.

[705] Among other things, the Guideline identifies criteria for determining the appropriate level of construction monitoring, and then what that entails. An extract of the Guidelines is captured below:

CM3	Review, to an extent agreed with the client, *random samples* of important work procedures, for compliance with the requirements of the plans and specifications and review *important* completed work prior to enclosure or on completion as appropriate. Be available to provide the constructor with technical interpretation of the plans and specifications.	This level of service is appropriate for medium sized projects of a routine nature being undertaken by an experienced constructor when a normal risk of non compliance is acceptable.
CM4	Review, at a frequency agreed with the client, *regular samples* of work procedures, materials of construction and components for compliance with the requirements of the plans and specifications and review the *majority* of completed work prior to the enclosure or on completion as appropriate.	This level of services is appropriate for projects where a lower than normal risk of non compliance is required.
CM5	Maintain personnel on site to *constantly* review work procedures, materials of construction and components for compliance with the requirements of the plans and specifications and review completed work prior to enclosure or on completion as appropriate.	This level of service is appropriate for: • major projects • projects where the consequences of failure are critical • projects involving innovative or complex construction procedures. The level of service provides the client with the greatest assurance that the completed work complies with the requirements of the plans and specifications.

236 At 3.
237 At 33.

[706] The pertinent levels for present purposes are CM3 and CM4. The difference between those observation levels are set out in their descriptions.[238]

[707] Observation at the CM3 level is described in the ACENZ table as a level of service "appropriate for medium sized projects of a routine nature being undertaken by an experienced contractor when a normal risk of non-compliance is acceptable". The commentary to CM4 refers to a level of services "appropriate for projects where a lower than normal risk of noncompliance is required".

[708] Observation at a higher construction monitoring level entails a significant difference in both the frequency of visits and intensity of scrutiny with greater *opportunity* to pick up deficient work practices. The plaintiffs submit that it is the intensity of monitoring which is the crucial distinction. However, whether and to what extent observation at a CM4 level would *in fact* pick up particular issues is a more nuanced assessment which depends on the particular case.

[709] On 1 June 2004, Ted Jones — the Council consenting officer — requested a Quality Assurance Plan from Multiplex. The plan was to "include ensuring that (sic) the appropriate level of site supervision and independent inspections." It was also to provide a schedule of inspections that the clerk of works, architect, engineer, project managers, manufacturer's agents or other independent persons will be making throughout the project. It is clear therefore that Ted Jones turned his mind to the question of adequacy of monitoring.

[710] In response, Multiplex recorded that its agreements with consultants specified the required construction monitoring and certification. In the case of the structural engineer, this was CM3 monitoring to IPENZ/ACENZ model conditions. It did not provide any rationale or justification for the proposed levels of observation. There is no evidence that this was discussed with the Council.

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238 At 39.

[711] The Council inserted Condition 7 of Consent 304 (post-tensioned floor slabs). This required that a registered engineer is to observe the construction to at least ACENZ CM3 and the engineer is to provide a PS4 before the issue of the CCC. The plaintiffs argue that the construction monitoring should have been required at the CM4 level and the Council's failure to insert that condition breached its obligation to exercise reasonable care and skill.

[712] This contention turns on three sub-issues:

(a) Council's role in and responsibility for the level of monitoring;

(b) whether CM3 was sufficient; and

(c) whether the difference between CM3 and CM4 compliance monitoring was material in respect of the bar sleeve and tendon issues.

Does the Council have responsibility to determine the level of monitoring?

[713] The plaintiffs say that the Council needed to have a clear understanding of the proposed level of inspection to be undertaken by the engineer so that it could determine whether there were reasonable grounds for it to be satisfied the work would comply with the Building Code. They argue that the Council should have recognised that CM4 or greater level of monitoring was required for Gore Street.

[714] Three factors support the plaintiffs' view of this matter. First, the Council clearly has an interest in the proposed level of inspection so should consider it as part of its determination of whether there are reasonable grounds to issue a CCC. Second, I expect that a Council would be in a position to form a view on some but not all of the criteria under the ACENZ guidelines. Third, there is tension between the commercial interests of the developer in keeping costs down, the risk assessment of the supervising engineer who is putting his or her name to the producer statement knowing the Council will rely on it, and the interests of the Council as regulator. I note too that Ashley Smith for the plaintiffs said on cross-examination that it was the

role of the engineer to agree the level of service "with the client *and with the Council".*[239]

[715] Ultimately however, I prefer Mr Flay and Dr Jacobs' evidence that it is not up to the Council to set the minimum monitoring requirements but rather up to the engineer to carry out his or her own assessment of the risk involved.[240] Dr Jacobs' evidence was that, based on his experience of consents, the level of monitoring is normally agreed between the observing engineer and the client based on the engineer's assessment of what is required given it is the engineer who ultimately must issue a producer statement. I consider that this evidence accords with common sense and reflects the boundaries of Council's expertise and resourcing capability.[241]

[716] These views are consistent with the "Guidance on use of Producer Statements" that is attached to a blank generic producer statement which states:

> **Consulting services during construction phase**
>
> There are several levels of service which a design professional may provide during the construction phase of a project. The territorial authority is *encouraged* to require that the service to be provided by the design professional is appropriate for the project concerned.
>
> (Emphasis added)

[717] I consider this is precisely what Ted Jones did in his correspondence. In short, I disagree with the plaintiffs' contention that the Council's insertion of a minimum of CM3 observation rather than CM4 as Condition 7 to Consent 304 was a negligent breach of its duty at the consent stage.

Was construction monitoring at the CM3 level inadequate for the Gore Street project?

[718] There are divergent views between the plaintiffs' experts and the Council's experts on whether CM3 was inadequate. I observe that the criteria in the ACENZ

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239 Emphasis added.

240 Mr Flay who has carried out the role of consenting officer in these circumstances, does not personally recall "ever dictating a higher level of construction monitoring than that provided for in a quality assurance plan provided by an applicant for consent."

241 Dr Jacobs was not cross-examined on his evidence that the level of monitoring is normally agreed between the engineer and client.

guidelines involve a degree of subjectivity which will be influenced by the supervising engineer's own experience.

[719] Ashley Smith gave evidence that he would not regard the Gore Street construction as "medium" sized or "routine" but rather a large project given it is 40 levels. He considered that the post-tensioned floor arrangement was not common in New Zealand at the time and the method of connecting the post-tensioned floors to the perimeter frame and the Core, with grouted bar sleeves was an unusual feature. He considered the appropriate level of construction monitoring was CM4 or above. Given that Gore Street was, at its time, the largest residential building in New Zealand, this view is, at least superficially, attractive.

[720] Mr Bayley also gave evidence for the plaintiffs. He has been involved with many multi-storey projects. He primarily gave evidence in relation to the performance of the architects of Gore Street. However, he also briefly discussed the question of the appropriate level of construction monitoring required based on the ACENZ construction monitoring guidelines. He stated that in his experience a medium-sized project for which CM3 was appropriate applied to buildings up to approximately six storeys and that daily monitoring of the Gore Street construction would have been consistent with his experience of working full-time on a 30-storey high-rise building in Central Auckland where the architect, structural engineer and services engineer provided daily construction monitoring.[242] I have already found that the relevant assessment is one for the supervising engineer designated to provide the PS4. I therefore find Mr Bayley's evidence on this issue to be of limited assistance as he is not an engineer.

[721] The expert contest is primarily then between Dr Jacobs and Ashley Smith.[243] As discussed, on first impression it seemed surprising that a 400-unit apartment building of 40 storeys with around 1000 sleeping potential occupants would have been regarded as a medium sized project. However, that is the conclusion I have come to on the evidence for the reasons below.

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[242] He gave no further detail of the nature of that construction.

[243] Messrs Jordan and Moodie also briefly discussed the adequacy of construction monitoring. Aside from the observation that the height and scale of Gore Street militated against CM3 observation, I apprehend their views were informed by the structural engineers.

[722] Dr Jacobs suggested that the guidelines are a relatively simplistic tool. He was adamant that observation at the CM3 level was appropriate. His view was that the size of Gore Street was misleading because it had a relatively small floor area and in the context of multi-storey inner-city buildings, it was not a large project. In cross-examination, he in particular compared it to similar buildings in Auckland that were not as tall but as large or larger such as Quay West and the Vero Centre on Shortland Street. He noted that larger central city buildings such as the Vero Centre, the ASB tower in Albert Street and the HSBC Tower on Quay Street (previously known as the PwC Tower) did not have daily site visits by an engineer but rather weekly visits supplemented by more frequent site visits before a significant concrete pour or similar.[244] Dr Jacobs also said that the repetitive nature of the work required in reinforcing each floor was a factor in the assessment. Dr Jacobs went so far as to say that he had not encountered a building in Central Auckland where an engineer was observing the site on a daily basis throughout the construction period.

[723] He also considered that grouting of bar sleeves and tendon ducts was relatively straightforward task by specialist contractors.[245] I considered whether Dr Jacobs' own depth of expertise may have coloured the lens through which he made his assessment.

[724] In the end, two factors tell against the plaintiffs' view that CM3 monitoring was insufficient. First, they have the onus. Secondly, it emerged on cross-examination that Ashley Smith was one of Dr Jacobs' senior engineering staff involved with construction monitoring of the Vero Centre and HSBC Tower. Mr Price took Mr Ashley Smith through the ACENZ guidelines. He asked him to apply the values from Table 2 in Appendix One for the HSBC Tower. Mr Smith arrived at CM4. He was taken through the same exercise for the Vero Centre and reached the same result. Yet Mr Ashley Smith was the author of the construction monitoring letter to the Council for the HSBC Tower in which he confirmed that monitoring took place approximately twice per week on average throughout the construction — consistent with monitoring at a CM3 level. He also agreed that the level of monitoring for the Vero Centre would have been similar. This shows that the plaintiffs' exercise used to

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244 Daily site visits are characteristic of CM4 level observation.

245 Dr Jacobs referred to specialist contractors while another expert witness, Elton Sturmfels (himself a specialist in the field) considered that filling grout into bar sleeves and tendon ducts can be undertaken by a general builder.

determine the monitoring levels and the intuitive sense of a non-expert does not align with the actual monitoring levels that has been applied by engineers in practice.

[725] In supplementary evidence, Dr Jacobs explained that the HSBC Tower was one of the most challenging design buildings with foundations near the water that started below sea level, with a complex non-rectangular shape in which it was quite difficult to work out the forces in the frame and a complex roof with a spire in the back. He explained that the Vero Centre had very unusual foundations, an "incredibly complicated" podium, precast concrete prestressed floors that sit on edges and the large "halo" structure on the rooftop that "is like an aeroplane trying to take off".

[726] Finally, Dr Jacobs said that the post-tensioning aspect is not a new engineering phenomenon but has been around for a long while. He disavows the view that this made Gore Street a very difficult building.

[727] The comparative evidence provided by Dr Jacobs is in the end the most telling. In sum, I find that the plaintiffs have not established that the CM3 level of monitoring was not adequate.

Would observation at CM4 level have made any difference?

[728] I accept that a CM4 level of observation may have theoretically provided a better opportunity for the engineer to identify issues with grouting in the bar sleeves and tendon ducts. But mere *opportunity* is not enough to show the materiality of the level of observation.

[729] The Council called evidence from Elton Sturmfels. Mr Sturmfels is a specialist in the construction sector with over 25 years' experience. He is a director of a construction services firm specialising in concrete repairs, epoxy and urethane injection, waterproofing composite strengthening services, and cementitious and epoxy grouting. He principally commented on the process of grouting sleeves that tie perimeter wall frames to post-tensioned floor slabs and ducts housing post-tensioned cables. While he did not comment on the appropriate construction monitoring level for grouting, he gave evidence that an engineer would not observe the grouting of bar sleeves or tendon ducts in his experience and would not have identified any lack of

grouting (if any) even at a CM4 level of construction monitoring. In his view, once a bar sleeve or tendon duct is grouted, without destructive testing, there is no way of assessing whether the bar sleeve or tendon duct has been adequately grouted. Thus unless the work is observed when the grouting takes place, its adequacy is not reviewed by a site engineer in his or her task of construction monitoring.

[730] Mr Sturmfels' evidence stands in contrast with that given by Mr Ashley Smith. Mr Ashley Smith suggested that an observing engineer undertaking daily observations would carry out a review of the grouting procedure for both bar sleeves and tendon ducts and would regularly observe the process. If they identified any bar sleeves or ducts not properly grouted they would then more rigorously monitor and take steps to have the problem rectified. Under cross-examination, Dr Hyland also anecdotally referred to some experience as a consulting engineer undertaking monitoring of grouting of post-tension ducts on bridge construction as a junior engineer.

[731] Ashley Smith's evidence in this regard was at a high level of abstraction compared to that of Mr Sturmfel. He gave evidence of involvement in only one observation of grouting on a building like Gore Street in the mid-to-late 1990s. He explained that was his first post-tensioning project in which he took a keen interest. He did not suggest that it was formally part of construction monitoring or typical. He did not suggest any involvement in any other grouting aspect of a large construction project since that time. Nor did he explain in any detail how the observing engineer would or could identify problems other than by watching the process.[246]

[732] On the evidence, I am not persuaded that more frequent and intense monitoring would have identified problems with the grouting. I accept the Council's submission that whether it had recorded a CM3 or CM4 level as a consent condition would have made no difference to the position in actuality.

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[246] Mr Ashley Smith raised the possibility of measuring the quantity of grout to be inserted and calculating the adequacy of that but conceded it was not a common method in 2004.

What was the actual level of monitoring in any event?

[733] The Council says that the contemporaneous documents show that the supervising engineer in fact checked more than simply random samples of work procedures and exceeded the CM3 requirement in any event. It is not necessary to make a finding on this point but in my assessment, there was no cogent challenge to the extent of actual review of this work which is a more critical aspect than the mere frequency of site visits in isolation.[247]

Should the Council have issued the CCC when the Buller George PS4 was only to CM3 level?

[734] The Council argues it was entitled to rely on the PS3 from a representative of VSL and the PS4 from Multiplex's structural engineer, Stuart George. The plaintiffs' riposte is that the author of the PS3 was not independent so has limited weight and the PS4 was based on only a CM3 level of construction monitoring when it should have been based on a CM4 level.

[735] The answer to this question stands or falls on the earlier sub-issues. In particular, as I have found for the Council in relation to the question of whether the monitoring should have been at level CM3 or CM4, the compliance at the CCC stage falls away.

[736] It is also material that although the task of grouting could have been undertaken by untrained builders, in this case it was not. The fact that a specialist firm was involved is another factor the Council would have been entitled to take into account.

[737] I find that the Council was not negligent in issuing a CCC on the basis of the VSL PS3 and Buller George PS4.

Summary of conclusions on claimed seismic defects 4, 5 and 6 subject to affirmative defences

[738] To recap, I have found:

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[247] Dr Jacobs opined that the level of monitoring by Buller George was "very thorough and responsible".

(a) As to claimed defect 4, the Gore Street engineer's failure to incorporate the more usual allowance for movement in the staircases means that it cannot reasonably be concluded that the requirements of the Building Code were satisfied in the design.

(b) The plaintiffs have made out their case in respect of defect 4 in relation to the stairs subject to the Council's affirmative defences.

(c) The plaintiffs have not established that claimed defect 5 is an actionable defect.

(d) The plaintiffs have not established that claimed defect 6 is an actionable "defect" except in respect of the absence of grouting of bar sleeves on levels 19 and 22.

(e) However, the Council was not negligent in the issue of consent or CCC in respect of claimed defect 6.

[739] I dismiss the plaintiffs' case as to the claimed defects 5 and 6. I find for the plaintiffs in respect of claimed defect 4 subject to other defences.

PART IV - EXTERNAL MOISTURE DEFECTS

[740] The balconies, level 1 podium and level 3 canopy roof are constructed with waterproofing membranes that are intended to prevent moisture entry and direct water away from the building. Four claimed defects fall under the umbrella of external moisture issues:

(a) **Defect 8** – Inadequate balcony waterproofing.

(b) **Defect 9** - Column to beam junctions on the exterior allow excessive movement and have no weathertight seal.

(c) **Defect 10** – Inadequate application of membranes on level 1 podium.

(d) **Defect 11** – Defective membrane on the level 3 canopy roof.

[741] The external moisture defects engage cls B1, B2 and E2 of the Building Code with the primary focus on E2 (external moisture).

[742] The objective of the external moisture clauses is expressed in cl E2.1 as being to safeguard people from illness or injury which could result from external moisture entering the building. The functional requirement in cl E2.2 states that buildings shall be constructed to provide adequate resistance to penetration by, and the accumulation of, moisture from the outside.

[743] The key performance clause is:

> E2.3.2 Roofs and exterior walls shall prevent the penetration of water that could cause undue dampness, or damage to building elements. (Emphasis added)

[744] Materially, actual damage is not required to establish breach of the Building Code. The reference to "could" in cl E2.3.2 clearly connotes anticipatory damage during the life of the building. The question of whether cl E2.3.2 covers balconies was discussed by Andrew J in *Bianco Apartments.*[248] I agree with his view that in certain constructions balconies perform a roof and exterior wall function.[249] This is the case here with incorporation of the beams of balconies into the exterior structure and/or balconies forming roofs over habitable spaces in some types of balcony. I accept that these joints have a weathertightness function as part of the external envelope of Gore Street.

Defects 8 and 9 — What is the problem?

[745] Claimed defects 8 and 9 intersect so it is convenient to discuss them together.

[746] Almost all the apartment units at Gore Street have a balcony. There are four balcony types:[250]

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248 *Body Corporate 406198 v Argon Construction Limited* [2023] NZHC 3034 [*Bianco Apartments*].
249 At [83].
250 This typology largely follows the table produced by Jacob Woolgar for the Council, with some modifications.

(a) narrow/primary balconies;

(b) corner balconies;

(c) level 1 and 2 terrace decks; and

(d) level 38 penthouse balcony.

[747] These are not homogenous but have certain common features which explains why not all sub-defects relate to all balconies.

[748] The primary waterproofing mechanism on all balcony decks is the Mapei Mapelastic system. Mapelastic is a polymer modified cementitious membrane, and one of the group of membrane types known as a liquid applied membrane (LAM). LAMs are applied on site in liquid form which converts to a solid form after application. The system was created and supplied by Mapei and installed by a licensed applicator, Norager.

[749] Mr Devlin is a polymer and cement chemist with over 40 years' experience and expertise in polymer composition and behaviour, polymer processes and technology, and applications. He gave evidence for the Council about Mapei products including Mapelastic, Mapeband and Mapetex. He described Mapei as a global leader in construction chemicals and described Mapelastic as a well-known product which has been on the market for decades. Unsurprisingly, he said that proper performance requires correct application.

[750] While the Clark Brown design stipulated the use of Mapeband on the beam to post-tensioned floor slabs on the corner balconies, it was not actually used in the construction. Instead, all of the balconies were constructed with Mapetex, a layer of loose fibre matting, underneath the membrane.

[751] There is evidence of moisture ingress into apartments on some but not all balcony types. Where balcony membranes have failed and caused undue dampness and/or damage to building elements there will be a breach of cl E2 of the Building

Code. It is common ground that in the event of a cl E2 failure, cl B2 will have been breached.

[752] Although the pleading does not particularise the manner of alleged inadequacy, the trial issues in respect of claimed defect 8 boiled down to whether the following sub-defects were causative of Building Code breaches, in combination or in isolation:[251]

(a) Unsuitability of Mapei Mapelastic on buildings over 3 storeys.[252]

(b) Departures from the consented plans subdivided into the following categories:

(i) *Bare concrete departures* — missing membrane in gap between column and balustrade; on chamfered edges, in scupper outlets and missing upstands at scupper outlets.[253]

(ii) *Unconsented substitution* — use of Mapetex matting and missing Mapeband on the construction joints.[254]

(c) Installation issues — mixing and curing inadequacies along with inconsistent thickness of membrane.[255]

[753] The plaintiffs do not directly allege that the installation and substitution issues occurred because of the Council's negligence. However for reasons to which I return later, these still have a part to play in the case against the Council at the CCC stage.

[754] Claimed defect 9 is pleaded as "column to beam junctions on exterior allow excessive movement and have no weathertight seal". This requires explanation. The corner balconies and narrow balconies have joints between the beams and columns.

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251 The finer particularisation was adopted at the expert conference.
252 This is relevant to all balconies save the level 1 and 2 terrace decks.
253 The various bare concrete deficiencies are found on some types of balconies only.
254 The use of Mapetex is universal save that there is no evidence of its use on the level 1 and 2 decks due to lack of investigation.
255 This is universal across all balconies.

The original consented design for these joints was as a horizontal joint such that the construction joints did not occur at the beam to column faces. A design change occurred (whether by amendment or not is disputed) and the joint became a vertical control joint against the vertical faces of the columns. A Reidbar connector was used to connect the reinforcing steel from the beams into the columns on the east and west faces of Gore Street.

[755] The plaintiffs' expert, Dr Hyland, attributes excess movement and cracking at the beam to column joints to these design changes. The criticism is that the changes should have but did not incorporate any design for weatherproofing nor sealing of the expected cracks.

[756] Dr Hyland's thesis is that when concrete cures and shrinks, the stresses will spread more evenly over the length of the beam with a horizontal joint design than a vertical joint design. This would result in smaller cracks spread over the length of the beam. He considered the original design to be a standard construction method with less risk of installation error. With the vertical joint design, concrete poured into the beam will instead attempt to shrink away from the interface with the vertical wall surface as it cures over time, concentrating cracks at the vertical control joint. The risk of cracking is said to increase if Reidbar couplers are not tightened correctly to avoid movement at the junction. Dr Hyland is critical that the design change did not include measures to limit the risk of significant cracking at this joint or waterproofing.

[757] It is not altogether clear on the plaintiffs' case whether claimed defect 9 is one of the causes of moisture ingress on the balconies, an independent cause of moisture ingress, or an aggravating factor.

[758] The plaintiffs seek remediation of all balconies. The projected repair cost is in excess of $51 million. There is no significant disagreement about the physical state of affairs or about the form of remediation proposed to address the balcony issues. The contest is over whether the physical issues identified are actionable defects, which balconies (if any) require remediation, causation, who is liable, and the estimated costs of repair.

Who is said to be responsible?

[759] The defect 8 claims are made against the Council, Clark Brown and Mapei. Mapei supplied the Mapei Mapelastic membrane for the balconies.[256] The plaintiffs allege that Mapei breached its duty of care by:

(a) Providing a "performance warranty" indicating that Mapelastic was suitable for Gore Street without any third-party testing or appraisal to verify that it was fit for purpose on the tower balconies.

(b) Adopting an inadequate quality and assurance system, including check sheets that were incomplete and did not address important matters relating to the waterproofing.

(c) Failing to identify the numerous defects in the membrane installation.

(d) Advising Multiplex that the installation of the balcony membranes met Mapei requirements, notwithstanding the defective installation.

[760] The claim against Clark Brown relates to Clark Brown's specification of the Mapei Mapelastic and allegedly negligent identification of balcony membrane defects.

[761] A claim against Norager, the applicator of the membrane system, was stayed following its liquidation.

[762] The claim against the Council is directed at all three regulatory touchpoints — consent, inspection and CCC. The plaintiffs argue that the Council:

(a) should not have consented the use of Mapei Mapelastic without independent verification that the system would comply with the Building Code including clauses B2 and E2;

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256 Mapei also supplied products for the main terrace on the level 1 podium and the bathrooms, and observed or reviewed the installation of the membranes.

(b) ought to have inspected the membrane installation but failed to do so. Had inspections been undertaken, the missing membrane (i.e. bare concrete) issues should have been identified; and

(c) could not have reasonably formed a view about compliance with the building consent details or the Building Code without a Producer Statement from an independent expert given the deficiencies in its own processes.

[763] The Council is the only defendant sued in respect of claimed defect 9. The criticism of the Council is limited to the building consent stage. The issues can be distilled to two: whether the Council breached its duty of care by failing to obtain a peer review from a structural engineer for the design change; secondly, whether the lack of review caused or contributed to any lack of provision for weatherproofing or sealing of the vulnerable joints and consequently moisture ingress.

Respective cases in a nutshell

[764] The plaintiffs draw on the leaky building crisis which emerged in the early 2000s. They say that the Council's performance in relation to waterproofing must be viewed against that backdrop, particularly the widely known Hunn report published in 2002 and the resulting Weathertight Homes Resolution Services Act 2002.[257] They say that cumulatively, these all led to heightened awareness of weathertightness issues and the need for greater vigilance in the regulatory space.

[765] I accept the general proposition that there was heightened awareness of failures with waterproofing membranes. That there was greater awareness is generally supported by in-house practice notes issued by Auckland City Council (the Council's predecessor) around this time.[258] But, it is also relevant to the overall picture that Gore Street is differently constructed with concrete rather than timber substrate.

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[257] *Report of the Overview Group on the Weathertightness of Buildings to the Building Industry Authority* (31 August 2002) [Hunn report]. The focus of the Hunn report was the impact of moisture ingress on timber substrates.

[258] Auckland City Practice Note 17 "*Building Consent Detailing Weathertightness".* This practice note was directed at cladding systems rather than waterproofing membranes but remains instructive.

[766] The Council admits there are breaches of the Building Code in relation to the corner balconies and level 1 and 2 decks but says there is no evidence of moisture ingress on the 492 narrow balconies. It submits that the plaintiffs have not established that bare concrete issues are defects causative of any breach of the Code (though there are departures from the consented plans), and that balcony membranes that have failed but not caused undue dampness and/or damage are still Code compliant.

[767] It says there was no reason to seek a written appraisal before consenting the use of the Mapei product and notes that a BRANZ appraisal was in fact issued shortly after Consent 303 was issued. It argued that membrane inspections only confirm whether it has or has not been installed and not the quality of installation. It denies that the 'defects' would have been observable or were matters which a council officer would have checked on a balcony with a concrete substrate.

[768] At the CCC stage, the Council says there were no red flags because it had a producer statement from Norager and a product performance warranty from Mapei.

[769] As to claimed defect 9, the Council does not accept that the change in construction joint caused cracking. Rather, it says that the vertical cracks to the face of the beam/column junctions are an ordinary incident of concrete construction and merely a maintenance issue. As cl B2.3.1 states that building elements must, with "only normal maintenance", satisfy the performance requirements of the Code there is no breach.

[770] The Council further says that the design change was not something that the Council should or could have picked up. It was not a "consented" design change in the sense that Multiplex was seeking any substantive amendment to the existing consent. In other words in issuing Consent 305 the Council was not in fact authorising the build of something new or different so there was no need for a PS2. For reasons previously discussed, I found the Council's evidence and argument on this unconvincing.

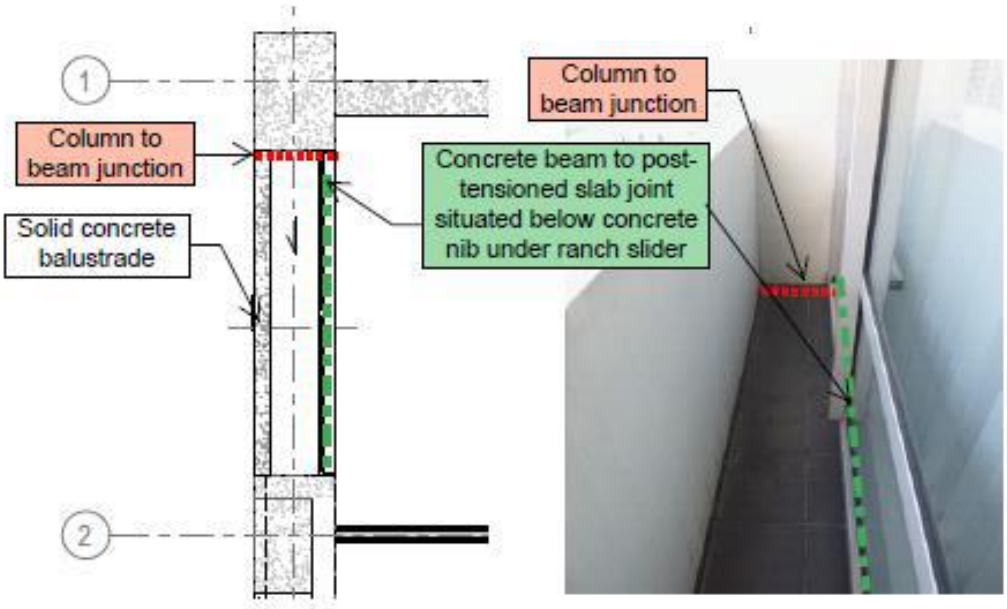
[771] The Council also affirmatively pleads a 10 year longstop limitation defence under s 393(1) of the 2004 Act along with other affirmative defences.

What is the state of affairs?

Narrow balconies

[772] Narrow balconies are the most common type of balcony. There are 492 narrow balconies. They are on levels 3 to 37 on the east elevation and levels 2 to 37 on the west elevation. These are formed over the structural beams which frame the building, and which are reinforced with steel, and/or over cantilevered slabs. These balconies sit over non-interior spaces.

[773] There are two sub-types of narrow balcony — those with solid concrete balustrades and those with metal balustrades.[259] There are 271 narrow balconies with metal balustrades and 221 narrow balconies with solid concrete balustrades. This following diagram depicts the general structure of a narrow balcony with concrete balustrade:



[774] Not all of the narrow balconies have both junctions featured in the photograph.[260] There are 290 narrow balconies with column to beam junctions or joints (shown as the red dotted line). There are 142 narrow balconies which are not over beam to column junctions but have the post tension beam joints below concrete

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259 The level 38 penthouse has glass railing.

260 The parties and their respective experts used different categorisation and nomenclature for the different types of balconies and their relevant construction joints. This caused difficulty.

nibs under the ranch slider joinery. There are 60 narrow balconies over cantilevered slabs.

[775] The narrow balconies with concrete balustrades have two material features which are not found on the narrow balconies with metal balustrades. These are gaps between the balustrade and concrete columns and a scupper mid-way along the concrete balustrade.[261]

Corner balconies

[776] There are 28 corner balconies. They are at the corner apartments (units B, C, G and H) on even-numbered levels between 24 to 36. These triangular-shaped decks are formed over an extension of the main floor structure and act as a roof to the apartment underneath.

[777] The photograph below illustrates a typical corner balcony and the construction joints or junctions. All the coloured areas are part of the balcony. Two relevant features of this balcony type are the beam to post-tensioned floor junction (shown by the pink dotted line) and a beam to column joint (hidden in the photograph; it is where the base of the white column meets the pink section). The cantilevered slab to column joint is at the base of the arrow where the green section meets the column.

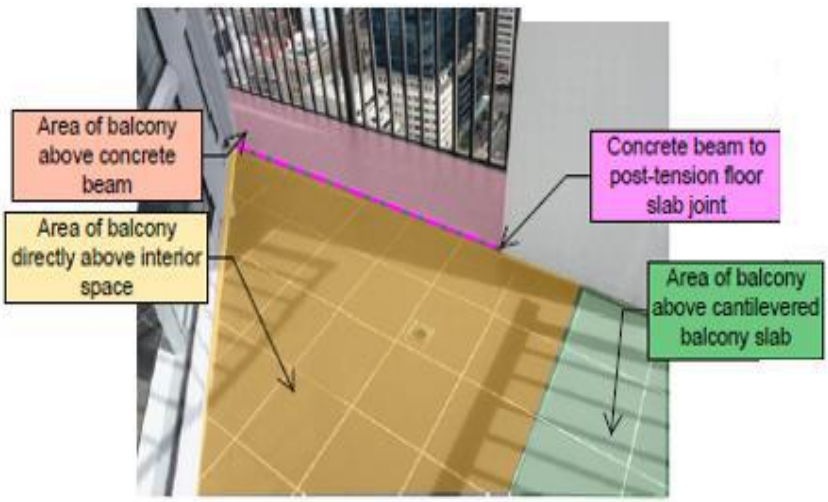

Fig.2 - Photograph of Typical Corner Balcony

[261] Neither is observable in the above photograph.

Level 1 and 2 terrace decks

[778] There are four decks on level 1. Three are on the eastern elevation and are connected to the podium. The fourth is on the northwest corner. They sit over the carparks. They do not have the balustrades which exist on the narrow and corner balconies.

[779] On level 2, the eight decks are formed over the level 1 apartments. Most are covered in part by a membrane roof and do not have the balustrades. This area is commonly known as "the Winter Gardens". There was a different design for the waterproofing of the level two decks. The Clark Brown plan shows upstand details for the membrane and specifies the use of a "selected double layer torch on membrane" without specifying the manufacturer. The as-built construction is the Mapei Mapelastic.

[780] The level 1 and 2 terrace decks all extend beyond the tower's footprint. They also have a different substrate. Materially, they do not share many of the same characteristics of the other decks.

Level 38 deck

[781] The level 38 deck is unique. It wraps around the penthouse on three elevations of the building and is formed over apartments and adjoining decks. Glass sheets between steel posts fixed to the top of a concrete upstand or nib at the outer perimeter act as balustrades. Again, this deck shares very few common characteristics to the others.

[782] The different combination of features of each type of balcony means that it is necessary to address the balcony types separately. The Council produced a useful "quick look" table of each of the relevant features which is reproduced as Schedule I.

[783] The overarching question is whether there is a systemic failure of the waterproofing on the decks, and what has caused it.

What do the experts agree?

[784] The experts agree that:

(a) The installation of the balcony waterproofing system did not comply with the consented plans or specifications in that:

(i) the membranes typically terminate on the horizontal surface and are not carried over the balcony edge on the corner balconies and narrow balconies with solid and metal balustrades;

(ii) there is missing membrane between the solid balustrades and columns and the membranes do not fully extend through the scupper outlets on the solid balustrade decks;[262]

(iii) the level 1 and 2 balconies were specified to be torch-on membrane but LAM was instead installed;

(iv) no Mapeband was used over the construction joints such as the beam to post-tensioned floor slab joints.[263]

(b) The balcony waterproofing system on the balconies did not comply with the manufacturer's requirements (and therefore the consented designs which specified the product) in that:

(i) they were not laid to a consistent thickness of two to four millimetres as required on any of the balconies and the mixing and curing was incorrect (the membrane was consistently laid to under two millimetres thickness);

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262 The Council expert, Clinton Smith, agreed that the membrane termination of the edge is not as the consented design on around 50 per cent of the balconies over beams and all of the balconies on cantilevered slabs.

263 Mapeband is a "tape" which acts as a bond breaker to ensure there is a wide debonded area above a crack or joint.

(ii) there is a loose fibre matting underneath the membrane, which was not part of the Mapelastic system in the Mapei technical material on all the balconies save the level 1 and 2 decks;[264]

(iii) on the corner balconies there is no Mapeband at the construction joints (beam to column joints, beam to post-tensioned floor slab joints, cantilevered floor slab joints).[265]

(iv) on the balconies over non interior spaces there is no Mapeband covering the beam to column joints or the upstands including concrete nibs below the joinery.

[785] The Council experts further agreed at the expert conference that there is evidence of moisture ingress below corner balconies and some evidence of moisture ingress below the level 38 balcony. They generally accept there is evidence of moisture under the membrane on the primary/narrow and cantilevered balconies but say that there is no water penetration into the apartments below from either of those types of balcony and no breach of the Building Code.

[786] The Council experts further agree there is damage due to moisture on the corner balconies and therefore a Building Code breach but say the only actionable defects are the installation or workmanship issues — being the most potent and likely cause of the ingress issues — for which it is not liable. The contest in respect of the primary/narrow balconies is over whether any identified defect is actionable at all even before issues of causation arise.

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[264] The Council experts believed the addition of Mapetex matting was recommended during construction by Mapei. It is not known whether there is loose fibre matting under the membrane on the level 1 and 2 terrace decks because no destructive testing was undertaken on those decks. Given the different substrate, it is not safe to infer that the construction was the same as the other decks.

[265] Mapelastic technical data warns to take special care when operating around expansion joints and joints between horizontal and vertical surfaces where either Mapeband, rubber-backed synthetic fibre tape or Mapeband PVC, vinyl chloride heat-welded resin tape, must be used.

Beam to column construction joints – claimed defect 9

[787] The beam to column construction joints are on all corner balconies and on 290 narrow balconies. Running along the interior of the beam is a 'cage' of reinforcing steel. There are Reid bar coupler locking nuts at the joint within the beam. The couplers are fixed to the wall of the column and bars threaded into the coupler and tightened with the locking nuts.

[788] Surveys by Avalon Industrial Services Ltd ("Avalon") in 2017 showed that there is cracking at these construction joints on the vertical face. There are also examples of cracks at the beam to column joint in the gap between the balustrade and column.

[789] A small number of cracks detected in 2017 were larger than 0.3 millimetres.[266] The plaintiffs' experts, Dr Jonathan Smith and Dr Hyland gave evidence that there is a risk that various factors collectively lead to widening and lengthening of the smaller cracks. There is general acceptance that cracks of 0.3 millimetres or greater can accelerate corrosion of the reinforcing steel within the concrete.

[790] Dr Hyland observed inadequately tightened Reid bar couplers used to connect the beams to the columns. In all eight balcony beams investigated, he found plastic debonder tape wrapped around the Reid bar couplers. He opined that the contractors had made an attempt to focus cracking into the vertical construction joint to act as a crack control joint, inducing cracking in a controlled manner but without a sealing system.

Are claimed defects 8 and 9 actionable defects and if so, in respect of which balconies?

[791] This turns on the following for each type of balcony in respect of claimed defect 8:

(a) Which of the identified issues (in isolation or in combination) cause moisture ingress (and what type)?

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[266] This evidence was not updated for trial.

(b) Is there a resulting breach of the Building Code?

(c) Is any Building Code breach causative of damage or loss?

[792] For claimed defect 9 it turns on whether the evidence shows that the change in the construction joint is the cause of cracking which may permit moisture ingress which could cause undue dampness or damage.

Preliminary matters — durability provisions of the Building Code

[793] This issue appeared to fall away during trial when the plaintiffs' primary expert, Trevor Jones, stated in cross-examination that the membrane was not required to have a 50 year durability. In doing so, he walked back from his evidence in chief.[267] However, Mr Lewis resurrected the issue in closing submissions.

[794] Clause B2.3.1 deals with the durability requirements of the Building Code. It relevantly states:

> Building elements must, with only normal maintenance, continue to satisfy the performance requirements of this code for the lesser of the specified intended life of the building, if stated, or:
>
> (a) The life of the building, being not less than 50 years, if:
>
> (i) Those building elements (including floors, walls, and fixings) provide structural stability to the building, or
>
> (ii) Those building elements are difficult to access or replace, or
>
> (iii) Failure of those building elements to comply with the building code would go undetected during both normal use and maintenance of the building.
>
> (b) 15 years if:
>
> (i) Those building elements (including the building envelope, exposed plumbing in the subfloor space, and in-built chimneys and flues) are moderately difficult to access or replace, or

[267] Mr Jones' evidence-in-chief was that the membranes needed to achieve durability for 50 years because they were "difficult to access" on a 40 storey building.

(ii) Failure of those building elements to comply with the building code would go undetected during normal use of the building, but would be easily detected during normal maintenance.

[795] Mr Lewis submitted that the balcony waterproofing was necessary to protect the structural stability of joints and structural elements below the balconies; a 40-storey building requires special consideration and the warranty periods for membrane systems cannot drive the cl B2 durability requirement. His fall-back position was that all experts agreed that there is non-compliance with the Code requirements within the 15 year period in respect of at least the corner balconies in any event.[268]

[796] The resort to structural stability attempts to engage cl B2.3.1(a)(i). But there was no cogent evidence that the membranes "provide" structural stability within the intended meaning of this clause. Just because inadequate waterproofing may be deleterious to structural stability should water get into the structure does not mean that waterproofing "provides" structural stability. Membranes do not have a structural purpose but a protective purpose. Clause B2.3.1(a)(i) is not applicable.

[797] The membrane system for Gore Street was not an Acceptable Solution but the Acceptable Solution is informative and relied on by the parties as a guide to industry approaches to durability. Paragraph 1.2.1 of cl B2/AS1 sets out a conceptual basis for evaluating the durability requirements of building materials. It reads (as relevant):

1.2 Assessing required durability

1.2.1 Evaluation of building elements shall be based on the following concepts:

a) **Difficult to access or replace** – applies to building elements where access or replacement involves significant removal or alteration of other building elements. Examples are works involving the removal of masonry or concrete construction, or structural elements or repair of buried tanking membranes. A 50 year durability is required.

b) **Moderately difficult to access or replace** – applies to building elements where access or replacement involves the removal or alteration of other building elements. Examples are the replacement of services reticulation in wall cavities and skillion roofs, or of plant and hot water cylinders built into roof spaces without adequately sized access openings. A 15 year durability is required.

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[268] The impact, if any, on remediation should the Court find the durability period was only 15 years was not developed in argument.

[798] The plaintiffs did not argue that replacement of membranes involves *significant* removal or alteration of other building elements. Rather that the replacement of the membrane cannot be undertaken solely from the balconies themselves in a safe manner because it is necessary to remove the balustrades and access the outer perimeter edge to remove tiles, adhesive and membrane. While Trevor Jones said that the ranch slider joinery would also have to be removed in the remediation process, he did not say that this was a significant undertaking. Neither was it argued that failure of the membranes to comply with the Building Code would go undetected during both normal use and maintenance of the building.

[799] Difficult access due to factors extrinsic to the building elements, such as the height of the building, is not the type of consideration envisaged in the Acceptable Solution guidelines. Practical difficulties such as need to construct a working platform, traffic control and occupancy are likewise extrinsic considerations. They are also variable over time. It is the nature of the building element itself, along with its relationship to other building elements, which determines ease of access or replacement in this particular context. I conclude that replacement of the membranes falls within the moderately difficult to access or replace category in the Acceptable Solution guidelines and therefore cl B2.3.1(b)(i) with a 15-year durability period. This does not mean that it would necessarily be expected that the membranes require replacement at the end of the 15-year period.

[800] Trevor Jones' concession in cross-examination supports this conclusion as does the fact that the Maynard Marks' remedial solution for the balconies proposes a Sika product which is assessed as meeting a 15-year durability requirement under the Code.[269]

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[269] Mr Jones noted that the Sika product is not intended to be tiled so there is no question of having to remove tiles to replace the waterproofing in future but did not argue that tile removal increases the level of difficulty of access to the extent anticipated by cl B2.3.1(a)(ii). I note para 1.3.1 of Acceptable Solution B2/AS1 which refers to Table 1 comprising durability requirements of a list of nominated building elements. The durability requirement for "surface mounted" acoustic elements is deemed to be 15 years. None of the experts referred to this.

Corner balconies and evidence of damage

[801] The Maynard Marks investigations found clear evidence of water entry in apartments below corner balconies. It found water and salt staining to the beams in the ceiling voids, water damage and mould to plasterboard wall linings and skirting boards, corrosion to the steel studs behind the wall and ceilings, and mould and decay to carpets and gripper rods in various of these apartments. This clearly constitutes actual damage under the Building Code.

[802] Tellingly, the Council expert Clinton Smith acknowledged that any investigation would not find all leaks and it would only be a matter of time before any corner balconies not already leaking would leak. He also acknowledged that if defects are found on a significant number of balconies — say 70 per cent — it would be usual building surveyor practice to repair all. That is a pragmatic and responsible concession.

[803] The Council's experts agree that the waterproofing on the corner balconies does not meet cls E2.3.2 and B2.3.1(b) of the Building Code but do not agree that the plaintiffs' experts have identified the cause or causes. Rather they have merely identified likely or possible sources of ingress.[270] The Council argues that the most likely fault is inadequate membrane thickness and inadequate curing for which the Council is not, and cannot be, held responsible.[271] Notably these installation issues occur across all types of balconies.

[804] I am satisfied that the waterproofing on the corner balconies is a systemic issue requiring remediation. A plaintiff does not have to wait for physical damage to occur before it is regarded as having suffered loss or harm but in this instance, damage has been shown.[272] Nor does a plaintiff have to establish the existence of leaks on every balcony leading to visibly manifested damage within every apartment.

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270 Mr Clinton Smith properly acknowledged that it can be difficult to definitively identify the source of moisture ingress.

271 The Council does not dispute that the membrane does not meet the minimum thickness requirement.

272 *Body Corporate 207624 v North Shore City Council* [2012] NZSC 83, [2013] 2 NZLR 297 [*Spencer on Byron*] at [45].

[805] The next question is whether any of the claimed sub-defects (individually or collectively) have been shown to be a material cause of this moisture ingress and damage.

What role does Mapetex have?

[806] The use of the acoustic layer of Mapetex was not part of the consented documents. The joint expert statement records that the experts agree that the use of Mapetex does not itself cause moisture ingress. I accept that evidence. However, I consider that it plays an important role for three reasons.[273] First, it means that the membrane itself adheres directly to the concrete only at its outer edge for around 20 millimetres and thereafter to the Mapetex rather than to the substrate. This changes the degree of bonding of the membrane to the substrate. Secondly, if water does get through or bypass the membrane, the Mapetex is able to transport the moisture across its mat fibres.[274] Thirdly, the transport mechanism (whether by wicking or not) means that identifying a precise physical correlation between the access point for the moisture and entry point into the apartments is even more difficult.

[807] Observed instances of membrane degradation and dampness under the membranes (which I readily accept exists) is a product of multiple factors including lack of thickness. It is not difficult to appreciate that the membrane's performance decreases if it does not meet the minimum thickness requirement. It will be less able to accommodate the movement of underlying building elements therefore have less durability, and less resistance to water penetration. However, while a material contributor to the inadequacy of the waterproofing on the corner balconies (and elsewhere), I am not satisfied that it is the sole or even primary cause.

[808] There was some dispute about the need to weatherproof concrete balconies at all. What is not really disputed is that concrete junctions or joints require weatherproofing. I further consider that the importance of preventing moisture from

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273 The construction required an acoustic separation layer to be installed on the balconies to comply with cl G6 of the Building Code. Mapetex is an acoustic solution.

274 Both the plaintiffs and the Councils' other experts referred to this as a "wicking" process. Mr Devlin resisted this characterisation but accepted that the mat fibre increased the prospect of moisture being transported across the deck if there was a membrane failure.

entering behind and under the Mapelastic system is important. This concept explains the importance of terminations.

[809] In revised and consolidated briefs served after the Council expert briefs, the plaintiffs' experts identified three likely water paths on the corner balconies. First, cracks in the membrane which correspond with beam to post-tensioned floor slab joints. These cracks are said to result from inadequate membrane thickness and lack of Mapeband.[275]

[810] Secondly, water entering directly under the membrane at the chamfered edge as a result of the membrane terminating on the horizontal surface and not extending over the edge of the balcony. Once water is under the membrane, it wicks across the Mapetex to beam to post-tensioned floor joints (either directly or via the beam to column joints).

[811] Thirdly, cracks in the concrete at the beam to column junctions enabling entry into the structure.[276]

Cracks in membrane

[812] Mr Devlin acknowledged in his brief of evidence that a potential way in which water might bypass a membrane is where there are cracks in the concrete structure that start beyond the membrane and extend under the membrane.

[813] By 2015 not all apartments below the corner balconies had experienced water ingress. There is no tidy correlation between identified moisture ingress and cracked membrane at the beam to post-tensioned floor slab joint even on the plaintiffs' own

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[275] Mr Keesing suggests that even with Mapeband protection, the extent of movement in this building means that Mapeband is unlikely to have effectively bridged the expected stress cracks. He referred to the 2019 BRANZ appraisal for Mapelastic covering buildings of more than 3 storeys which states "Movement and control joints in the substrate must be carried through the membrane and tile finish. The design and construction of the substrate and movement and control joints is specific to each building, and is therefore the responsibility of the building designer and building contractor and is outside the scope of this Appraisal".

[276] There is a relationship with defect 6 which relates to grouting to the bar sleeves. The plaintiffs hypothesise that the lack of grouting allows more movement at the beam to column junction contributing to the cracking of the cantilevered balcony slab to column junctions.

case. If lack of Mapeband was the primary cause, it might be expected that cracks would be seen in the membrane where the Mapeband was missing.[277]

[814] The plaintiffs' evidence is that cracking of the membrane over beam to post-tensioned floor joints is evident on four of the 13 units investigated (24B, 26C, 34C and 34G).[278] Their experts produced photographs with summary captions of the sites at which the tiles were removed. The photographs did not greatly assist. To an inexpert eye, the membrane, adhesive and concrete after removal were indistinguishable. But this was because of the difficulties of investigating brittle and thin material. The act of lifting the tile itself potentially destroyed the underlying membrane. More relevantly, Mr Woolgar, the Council's expert, was unable to agree that any of the produced photographs showed visible cracking of the membrane save one photograph of the unit 26C balcony.

[815] I accept Mr Woolgar's evidence that the photographs of units 34C and 24B do not show cracks in the membrane but only in the concrete. The photograph relating to 34G shows a crack in the Mapetex layer only. That leaves only one series of photographs relating to unit 26C which clearly evidence cracks in the membrane itself.

[816] Thus, this suite of photographs alone is not a reliable basis to consider it more likely than not that cracking of the membrane at joints on the corner balconies is a systemic issue, or that the cracking is because of the absence of Mapeband and substituted Mapetex. However, the Court has the contemporary physical observations of Messrs Keesing, Jones, Richard Angell and Jonathan Smith recorded in summary form in the captions. Mr Lewis submitted that this first-hand evidence is cogent.

[817] Jonathan Smith attended the inspection on many of the balconies including 24B (but not units 34C and 34G) with Mr Keesing. He confirmed that he observed that, in one of the units, the cracks in the concrete substrate at the beam to post-tensioned floor slab junctions were carried through to the membrane.

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277 Mr Jones accepted this proposition in cross-examination.

278 Only three were specifically referred to in their evidence-in-chief. The fourth was referred to by Mr Woolgar in his evidence-in-chief. Mr Keesing observed cracks in the concrete substrate at the beam to post-tensioned floor slab junction on 10 units but observed the cracks continuing through the membrane only on 3 units — 24B, 34C and 34G.

[818] This highlights a fundamental difficulty when the counterparty's experts do not have the opportunity to observe testing which, because of its invasive or destructive nature, is not replicable (at least in the same location). These difficulties are even more acute when there is an element of subjective assessment. Ideally, experts should have an opportunity to observe the testing. A plaintiff is 'on risk' of evidential difficulties if they do not or cannot later repeat the process in the presence of the defendants' experts.[279]

[819] That difficulty is illustrated in the following exchange between Trevor Jones and Ms Meechan in respect of a photograph which Mr Jones said showed a crack in the membrane corresponding to a crack in the concrete substrate:

> Q. … you've described this as a crack in the membrane.
>
> A. Yes, which it was in the membrane but it as you take the membrane out that gets destroyed but the Mapetex is split at that point, too.
>
> Q. Why didn't you take a photo of the cracked membrane before you took it off?
>
> A. Because it was destroyed at the same time. Probably was on the back of the tile, I can't remember from memory.
>
> Q. So this doesn't show a crack in the membrane because the membrane's gone. At best, it shows a crack in the concrete and you say some split in the Mapetex?
>
> A. That's correct.
>
> Q. So Mr Woolgar's observation in the last sentence of his paragraph 7.19(a) is correct? That photograph of 24(b) does show a crack in the concrete slab, not the membrane?
>
> A. So it shows a crack in the concrete slab and a split through the Mapetex.
>
> Q. But not a crack in the membrane?
>
> A. Doesn't show the membrane there. That was observed during the investigation.

[820] I accept the plaintiffs' expert evidence that the pattern of water staining indicates that the primary source of water into apartments below corner balconies is

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[279] See *Metlifecare Retirement Villages Ltd v James Hardie New Zealand Ltd* [2022] NZHC 511 at [137]. I note that Lang J issued a minute dated 16 October 2020 directing that the plaintiffs should invite the defendants' representative to be present when carrying out destructive testing on site.

via the beam to post-tensioned floor slab joint and that this is likely to progressively increase as time goes on.[280] Weighing the views of the respective experts, and mindful of the evidential problems discussed above, I accept that cracking at this junction and lack of Mapeband is one of the material contributors to water ingress. I am not persuaded that the Mapetex is as effective as Mapeband to 'protect' the membrane over cracks, particularly if the membrane has inadequate thickness. I find it is an actionable defect but make the point that it is not the sole or even the primary cause. Even Trevor Jones said on cross-examination that the cracking of the membrane was not necessarily the systemic issue given the various issues with the membrane.

The chamfered edge

[821] The plaintiffs shifted position on this issue during trial.[281] In the first cut of their evidence, their stated hypothesis was that the lack of membrane on the chamfered edge created an opening between the tiling and concrete substrate where wind driven rain may enter. This theory was put to bed by Mr Devlin who explained that Mapelastic will tear itself apart before debonding or separating from the concrete to create an entry point for moisture as it has higher adhesion to concrete than cohesion. I accept this evidence and reject any theory that relies on the membrane debonding from the concrete substrate.

[822] In cross-examination, Trevor Jones postulated two new theories. First, he suggested that concrete is porous so that moisture is absorbed and bypasses the edge of the membrane. He had not articulated this previously, including at the expert conferral.

[823] This nascent "concrete is porous" theory is an oversimplification. There was no explanation of the inter-relationship between porosity and permeability. It was outside Trevor Jones' domain expertise. The theory was rejected by Mr Devlin (who

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280 It must be borne in mind that the investigation took place in 2015, some seven years before trial.

281 There was more than one shift in position over the course of the proceedings. Trevor Jones' original brief of evidence was dated 30 November 2018. In his updated brief, Mr Jones suggested that 2019/2020 investigations indicated the most likely cause of moisture is the absence of membrane between the solid balustrade and columns. He did not go into any more detail about the investigations. Nor did he give reasons.

does have the requisite expertise) and did not feature in closing submissions. For the avoidance of doubt, I reject the theory.

[824] The second theory was that moisture enters via cracks where the chamfered edge meets the vertical face allowing moisture up through the membrane from the underside where the Mapetex layer sits to be transported by the fibre matting.

[825] There was never any design intent to protect the face of the beam. It follows that membrane on the chamfered edge would never have provided protection against moisture ingress through cracks on the vertical face of the beam. The chamfered edge does however appear more vulnerable to water than the face of the beam, even absent wind-driven rain.

[826] The Council criticised the lack of testing by the plaintiffs' experts to establish whether moisture can or has bypassed the membrane through this pathway. It argued that the destructive testing was too localised at construction joints with no destructive testing adjacent to the scuppers or immediately inside the chamfered edge which would have more reliably tested the accuracy of this theory. The plaintiffs submit that the photographs taken during investigations show numerous instances of cracks passing through the chamfered edges of the corner balconies.

[827] It emerged that Maynard Marks had attempted dye testing but aborted it when the testers could not maintain a seal for a sufficient period. This unsuccessful testing came to light only on cross-examination for reasons not satisfactorily explained. Clinton Smith for the Council was permitted to give supplementary evidence in response about the relative ease of dye testing in situ. He conceded that testing may not conclusively prove the actual mechanism but provides information you can analyse in light of other information. Although it would have been beneficial for the plaintiffs to have completed the dye testing, I do not consider it determinative that they attempted but did not succeed at dye testing. However, I do not accept that the evidence shows that moisture is bypassing the membrane via cracks on the chamfered edge.

[828] The Council's criticisms about lack of probative evidence as to the precise mechanism of water ingress on the corner balconies were forceful but ultimately impose too exacting an evidential standard. The law of negligence recognises the possibility of multiple causes of harm, including by different actors and that sometimes identification of a single operative cause is impossible.[282] The balcony waterproofing is a case in point.

[829] I accept the plaintiffs' expert evidence on the major issues (save as noted) and have therefore concluded that there are multiple interrelated material causes or operative causes of moisture ingress on the corner balconies. Those factors are:

(a) lack of Mapeband on the beam to column junctions;

(b) poor installation (thickness of the membrane);

(c) cracks at the beam to post-tensioned floor slab joints which, with the lack of Mapeband, led to vulnerability, if not ineffectiveness at those locations.

[830] I reject as unproven the thesis that the lack of membrane on the chamfered edge was a source of moisture ingress.

Narrow balconies

[831] There are the same installation and workmanship deficiencies that arise with the other balconies. However, there is no cogent evidence of moisture accessing the apartments served by any of the 492 narrow balconies. Mr Woolgar for the Council attributes that to the existence of a concrete nib and water bar.[283]

[832] With no evidence of moisture in the apartments, the plaintiffs' case turns on showing moisture access into the concrete substrate where it accelerates corrosion to the steel reinforcing in the beams and/or that there is a reasonable risk of moisture

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282 *Ministry of Education v H Construction North Island Ltd* [2018] NZHC 871 at [62].

283 Trevor Jones referred to this nib in his first brief of evidence but removed it in subsequent briefs without explanation.

ingress in the future.[284] They contend that the most likely cause of moisture is the missing membrane between solid balustrades and the columns. But they also point to other possible causes of water accessing the concrete substrate:

(a) *For balconies with metal balustrades:* Entry at the balcony edge where the membrane does not carry over the edge.

(b) *For balconies with concrete balustrade:* Entry via the scuppers where membrane does not extend to the edge of the scuppers.

(c) *For both:* Cracks in the membrane due to membrane weakness arising from its inconsistent thickness and movement of joints below.

[833] As discussed in relation to corner balconies, once moisture gets under the membrane it is transported across the substrate by the Mapetex layer . The plaintiffs say this risks moisture ingress to apartments in future.[285] In my assessment, the risk is overstated. The investigations were carried out about 12 years after construction. The membrane durability requirement is 15 years, as I have found. It can be expected that a reasonable risk would have manifested by now. There is no such evidence. The plaintiffs' experts have not provided an adequate basis to reach a conclusion that there is a real risk of significant water penetration into the apartments from these balconies.

[834] The plaintiffs' experts undertook destructive investigations on 19 narrow balconies and visual inspections on a large number of other balconies. Trevor Jones' evidence was that in a number of instances the membrane had degraded and there was dampness under the membrane. Messrs Keesing, Jones and Dr Jonathan Smith recorded some degradation of matting when tiles were uplifted and dampness of the concrete substrate underneath the tiles. Mr Devlin accepted that some of the photographs illustrated dampness and staining to the Mapetex layer which confirmed that water had bypassed the membrane somehow. (The plaintiffs did not seek to argue that damage to the Mapetex layer itself amounted to damage to a building element.)

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[284] They also suggest there is a risk of eventual ingress into apartments although the mechanism or pathway is not clearly stated.

[285] Mr Devlin disagrees with the "wicking" description and says that the loose fibre matting does not actively conduct water but nonetheless accepts that it allows water transfer.

[835] There is photographic evidence of systemic cracking at the chamfered edge at the beam to column joints on both types of narrow balcony. I have rejected the proposition that the cracking on the chamfered edge where there are no joints is a source of moisture. However, there is also cracking on the vertical face and on the horizontal surface in the gap between the column and concrete balustrade at this junction. I accept the plaintiffs' experts' evidence that the absence of membrane in this gap (where there is a crack) is a most likely source of moisture ingress on these balconies but also that any moisture which does access via this mechanism can be transported across to other junctions or joints. Mr Devlin agreed that this would be a mechanism if the crack extended under the membrane from the edge and "might make a small difference to the amount of water penetrating through the crack" if the cracks propagate down the face of the slabs, not across the top.

[836] The primary evidence relied on by the plaintiffs was visible staining, spalling and efflorescence which they maintained coincided with beam to column cracking of the substrate. It is not clear to me that efflorescence constitutes damage although that must be a matter of degree.

[837] With the assistance of Avalon, core samples were removed from the underside of the beam to column junctions above eight apartments.[286] Drs Hyland and Jonathan Smith observed moisture and light rusting on the Reid bar couplers and heavy corrosion on some of the stirrups next to the couplers. Photographs produced by Jonathan Smith show staining or spalling to the underside of beams and signs of corrosion. The various photos were put to the Council's expert witness, Clinton Smith. He had not investigated the joints nor undertaken any invasive testing himself.

[838] Drillings were also taken from the face of the building at or adjacent to beam to column junctions on 25 balconies where there was cracking to assess the composition and check the presence of chloride. The results indicated that chloride from the outside marine environment had penetrated between 10 millimetres and 30 millimetres into the cracks. Chloride in concrete reduces its alkalinity.

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[286] The coring process was not explained in detail in evidence-in-chief however in cross-examination Dr Jonathan Smith expressed confidence that the process did not use water as a cooling mechanism.

Jonathan Smith's evidence was that if alkalinity in concrete is reduced, the protective layer of concrete on the reinforcing steel is destroyed so that when exposed to moisture, corrosion of the reinforcing steel will initiate, eventually leading to wedges of concrete dislodging from the building (spalling). No evidence of significant spalling was presented to the Court but Jonathan Smith maintained it is likely to occur well within the minimum 50 year life of the building.

[839] He also opined that thermal and wind-induced movement will lead to widening and lengthening of minor cracks allowing water to penetrate further to the inside of the building. He said:

> There is evidence of moisture having penetrated through more than half of the width of the beam in places, based on calcium deposits on the soffits which extend over half of the width of the beam . This was after a period of some 12 years after construction. I would expect the water penetration to continue at a similar rate, in which case water is likely to penetrate the entire width of the beam and into the apartments well within the 38 year balance of the minimum 50 year life of the building.

[840] I accept the plaintiffs' expert evidence that moisture ingress on the narrow balconies is established with resulting and prospective damage to the steel reinforcing in beams but only on the 290 balconies over beam to column joints. Although not all the joints showed signs of cracking or spalling, there is sufficient to show this is a systemic issue. I am not satisfied that the evidence shows moisture ingress or any significant risk of it on the remaining 142 balconies.

Level 1 and 2 terrace decks

[841] These decks are either on the eastern elevation facing the podium or the western elevation.[287] These decks are formed differently to the corner and narrow balconies. They are not located within the building tower and have different exposure stresses. They do not have an exposed edge; they have balustrades of solid concrete or masonry with no gaps along their length. The balustrades do not have scupper outlets; instead, there are drainage outlets in the floor.

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[287] The level 1 balconies were consented under Consents 303 and 305. The level 2 balconies were consented under Consents 303 and 305 but then updated under Consent 307.

[842] The consented plans called for a torch on membrane. The Council did not identify the change from the consented torch on membrane to the Mapei Mapelastic system upon its installation. There is evidence of moisture ingress below these decks into interior spaces. [288] The plaintiffs' experts did not investigate the membrane on these decks so whether Mapetex is present is not known. It was however discovered that the membrane was not dressed into the outlets on the decks contrary to accepted practice.[289] This allows water to enter under the membrane at those points rather than drain into the outlets.

[843] There is some evidence of moisture ingress although the Council's experts say this is isolated. The plaintiffs argue that that there is enough to conclude that the Council's failure to inspect or obtain verification as to the waterproofing is, at the very least, a contributing cause of the failure of that waterproofing.

[844] I accept that these balcony membranes are failing to perform as intended leading to non-compliance with cls E2.3.2 and B2.3.1(b) of the Building Code. The claimed defects constitute actionable defects. They are however sufficiently different in construction, form and location that factors other than those in play on other balconies are likely to apply. This issue attracted little attention in the plaintiffs' evidence and closing submissions. The issue of the outlets was not expressly identified by the plaintiffs as a "listed" defect in evidence-in-chief.

Level 38 deck

[845] The level 38 deck does not share characteristics of the other decks over interior spaces except the workmanship issues. There is no post-tensioned floor slab joint on this balcony but there are other joints. There is no chamfered edge such as found on the corner balconies as the balcony is constructed with a raised nib on the outside perimeter edge on which the balustrade sits. There is a glass balustrade in metal frames and no scuppers, only floor outlets.[290]

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288 The level 2 balconies are over the interior parts of the level 1. The level 1 balconies are over the carpark which the experts treated as an interior space.

289 BRANZ *Membrane Roofing Good Practice Guide* (October 2003), s 2.7.2 and Figure 6. A balcony constructed over a habitable space functions as both a balcony and a roof.

290 There has been no suggestion that the outlets are not dressed properly as with the level 1 and 2 terrace decks.

[846] There is evidence of moisture damage to the apartment below the penthouse balcony. The Council argues that the cause is inadequate membrane thickness only. The plaintiffs accept that membrane thickness is a factor but contend that Mapelastic was never an appropriate choice for a building of this height given the additional stresses involved over joints.

[847] The plaintiffs say that the beam to column joint on this deck is a defect falling within claimed defect 9 and causes moisture entry.

[848] I am satisfied there are actionable defects on the level 38 deck but accept the Council's experts' evidence that the cause is inadequate membrane thickness.

Beam to column junction — claimed defect 9

[849] I am satisfied that there is evidence of water entry through the cracks at this construction joint and corrosion and spalling as a consequence which is more than *de minimis*. Some undue dampness is also established. While the extent of damage in 2017 may not have been significant, I accept the evidence of Jonathan Smith from Optimech that the corrosion rates increase due to the presence of chloride from the outside marine environment which is able to penetrate due to the cracks; and that the cracks will only widen unless addressed. There is a reasonable prospect that water will penetrate further into the concrete beam. I am not satisfied that there is a significant risk that it may ultimately reach into apartments on the current evidence.

[850] The balconies and beam to column joints which are part of the balconies are also part of the Gore Street exterior structure in that the beam supporting the balcony is incorporated into the column. Clause E2.3.2 is not only directed towards actual damage but also potential damage. I find that there is a breach of cl E2.3.2. I am also satisfied that cl B1.3.1 is breached in that there is more than a low probability of the concrete surrounding the cracks spalling, rupturing, becoming unstable and losing equilibrium as a result of the moisture ingress.

[851] In my assessment, the work that the plaintiffs say is required to address the cracking at this joint goes beyond normal maintenance. Mr Klosser for the plaintiffs describes this as:

> We will be making a 10mm by 10mm cut in the cracks in the cantilevered slabs and beam to column junctions (both horizontal and vertical faces) and then applying the Sikaflex 400 flexible sealant in order to provide a weathertight seal. The Sikafloor 400N membrane will then be applied on the balconies as discussed above.

[852] I accept that this proposed repair does not fall within the description of "lawful repair and maintenance" in the 2004 Act . It required a building consent. This tells against the proposition that it falls within normal maintenance.

[853] The more difficult question is one of factual and legal causation. I have accepted that the cracking at the beam to column junction is a source of moisture ingress but have the plaintiffs shown that the cracking is caused by a design change to the beam to column joints which creates that pathway for moisture ingress? As the plaintiffs' evidence unfolded it became increasingly unclear whether Dr Hyland's criticism was fundamentally a design or workmanship issue. At times, his evidence was difficult to reconcile. This is important because, if a workmanship issue, the Council is not responsible for defect 9 on the pleaded case.

[854] The plaintiffs' thesis, as I understand it, is four-fold: the absence of membrane in the column to beam gap where the crack manifests is the mechanism of entry but the existence of the crack is a result of the design change and workmanship issues; the design change should have incorporated sealing of expected cracks or other weatherproofing; and poor workmanship is at least indirectly related to the inadequacy of the detail in the design change. That is, the contractor's poor attempt to address the vulnerable joint in the course of construction was the product of the lack of direction in the design.

[855] I found the evidence unsatisfactory in relation to these issues. Dr Hyland was not able to tell the Court whether in the normal course structural designers would include a tightening specification for Reid bars or whether such specification could reasonably have been expected. It seems, with respect, far-fetched that this would need to be conveyed at all let alone to an experienced contractor. He was not aware of any projects involving Reid bars where a specification was issued to the contractor

with a tightening specification. No supporting technical or industry literature was produced to the Court.[291]

[856] I discern that the plaintiffs' focus in closing was on the design change from horizontal to vertical rather than the absence of a sealing system or the existence of the control joint created by contractors on site. This makes sense as if the contractors did try to construct a control joint when none was included in the design, it is squarely a construction issue.

[857] As with all structural engineering issues in this case, there is a conflict of views between Dr Hyland and Ashley Smith on the one hand and the Council experts on the other hand. In this instance, the Council's primary expert was Dr Jacobs. He considered that the design change does not allow excessive movement. He goes further and says there is no connection between the design and the cracking to the beam to column joints. He also disagreed that the use of de-bond plastic tape was a function of the contractor or engineer's attempt to plan a controlled crack although he had no alternative explanation. He said that had he been asked in 2005 to peer review the revision, he would have no concerns about the absence of means of limiting or accommodating cracking.

[858] I am persuaded that the premise that a change from a horizontal to a vertical construction joint from level 5 upward is the cause of excessive cracking is inconsistent with the observation of similar vertical cracking at the beam to column junction on levels 2, 3 and 4 if there were no Reid bar couplers below level 5. Even this was contested. There had been no physical investigation. The relevant drawing consented under Consent 305 showed no couplers below level 5. Dr Hyland disputed this. He pointed to the revised plan S176 and suggested that another interpretation of the plan was that the Reid bar couplers were allowed for outside of the columns itself and the Reid bars actually constructed were outside the column.

[859] At its highest, Dr Hyland's explanation is that it would not be safe to assume that the revised construction joint only exists on level 5 and above. I agree that the

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[291] Workmanship that was shown to be a departure from Reid bar technical literature would constitute a defect but not one which can be sheeted home to the Council.

evidence was not conclusive, but am satisfied that it is more likely than not that this is so in part because it was only suggested for the first time in cross examination and based on a strained interpretation of a note on the drawing titled "Level 2 (& Above) Coupler Zone". The interpretation was unsupported assertion. There had been no physical investigations carried out to determine whether levels 4 and below were built otherwise in accordance with the original design with the horizontal construction joint.

[860] I consider that all this points away from Dr Hyland's conclusions. Relatedly, I accept Dr Jacobs' evidence that there is nothing to link the Reid bar couplers or the change in design with the cracking which has occurred.[292]

[861] In conclusion I find that the plaintiffs have not discharged their onus of establishing that the design change is causative of the cracking at the column to beam junction and/or is a defect.

[862] I conclude that claimed defect 9 is not an actionable defect.

How did the state of affairs come about*?*

The relevant consents and consented designs

[863] The relevant consent for the balcony waterproofing design is Consent 303 except for the level 2 terraced balconies which were consented under Consent 307. Consent 303 was processed under s 34 of the 1991 Act.[293] Consent 307 was processed under the 2004 Act.

[864] The plaintiffs do not rely on any specific consent conditions relating to the waterproofing of balconies. Condition 30 of Consent 303 imposed inspection conditions for "wet areas". While the precise scope of what constitutes a "wet area"

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[292] Over the life of a concrete building minor spalling and cracking will occur and require maintenance. This is well supported by the New Zealand Concrete Structures Standard which states that "occurrence of cracks in reinforced concrete is inevitable because of the low tensile strength of concrete. *Concrete Structures Standard* (Standards New Zealand, NZS 3101:Part 2:1995) at cl C3.3.2.5.

[293] The effect of the Building Act 2004, s 433 is that a building consent granted under s 34 of the 1991 Act must, as from 31 March 2005, be treated as if it were a building consent granted under s 49 of the 2004 Act.

was the subject of disagreement, it was common ground that a wet area is an internal part of a building such as a bathroom and does not include balconies.[294]

[865] The architect specified waterproofing systems for the balconies. The Clark Brown architectural drawings anticipated tiles laid over Mapei tile adhesive and Mapei Mapelastic membrane for all balconies except the level 1 and 2 terrace decks. The design for the level 1 and 2 terrace decks specified the use of a "selected double layer torch on membrane". This did not eventuate. Instead, the Mapei Mapelastic system was also used on the level 1 and 2 terrace decks. When and why this change was made is not explained.

[866] The use of Mapelastic for waterproofing balconies was an alternative solution because the Acceptable Solution E2/AS1 did not provide for the use of LAMs on roofs or balconies. There was no independent verification when the consent was issued that the Mapei Mapelastic system complied with the Building Code.

[867] The then-current Mapei technical literature described Mapelastic as a "two-component, flexible cementitious mortar for the protection and waterproofing of concrete surfaces, balconies, terraces, bathroom and swimming pools".

[868] One of the cited application examples was the protection of render or concrete with cracks caused by shrinkage. Materially, it also refers to the need for special care when operating around expansion joints and joints between horizontal and vertical surfaces, where Mapeband, rubber-backed synthetic fibre tape, or Mapeband PVC must be used. The purpose of the Mapeband is to act as a "bond-breaker" isolating the membrane from the effects of movement of the underlying junction by widening the area over which the membrane will elongate if a crack under the membrane widens, making it less likely to fail.[295]

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294 The BRANZ Tiling Good Practice Guide (March 2004) defines "wet area" at para 6.1.1 as "any area subject to regular splashing, constant wetting or where water will be present". Section 4.4 in *Australian/New Zealand Standard Wet Area Membranes* (AS/NZS 4858:2004, 15 April 2004) defines "wet areas" as "an area, within a building, supplied with water from a water supply system". Mr Moodie for the plaintiffs accepted that a deck would not be considered a "wet area" and that an experienced building control officer would know that.

295 There are alternative bond-breaking approaches including the use of an anti-fracture layer.

[869] The unconsented layer of Mapetex was installed between the membrane and concrete substrate starting at least 20 millimetres from the balcony edges and across the balconies including over the critical beam to post-tensioned floor slab. Mr Devlin, described Mapetex as an acoustic/crack isolation/anti-fracture fabric — a type of fabric layer commonly used to prevent crack propagation and provide sound reduction. There is contemporaneous documentation which suggests that the primary function of Mapetex at Gore Street was acoustic protection.

The changed design to the beam to column joint

[870] The circumstances of Council's involvement in this design change is key to the plaintiffs' contentions. While the Clark Brown design stipulated the use of Mapeband on the beam to post-tensioned floor slabs on the corner balconies, it was not actually used in the construction. Instead, all of the balconies were constructed with Mapetex underneath the membrane. As discussed above in relation to claimed defect 4, Ted Jones' evidence was that the relevant drawings were only provided as "as-built" drawings rather than in relation to any application to substantively amend the consented design. He said they were not "consented" under Consent 305. In short, that the Council was not authorising Multiplex to build something new or different from that already consented. This also requires examination of the terms of the 7 June 2005 letter from Multiplex to the Council, the terms of Consent 305 and the evidence of Mr Ted Jones.

[871] Among other things, that letter also attached a drawing register. It recorded that two of the three drawings effecting changes to the beam to column joint had a comment next to them "New drawing since BC issued". The corresponding plans showed 'clouded details' which a form of signals a change in the design for the beam to column junction from level 3 or level 5 upwards.

[872] As discussed earlier, I did not find Ted Jones' explanation to be plausible. I do not find any support in the contemporaneous material.[296] This argument highlighted the problem throughout this case when, despite tens of thousands of pages of evidence, evidence from persons actually involved in the design and construction was thin. No

[296] Refer Part III.

one from Multiplex was called to give evidence. I am not satisfied that what evidence there is supports the Council's interpretation and the fallibility of memory of events which took place so long ago is a live issue.

Is the Council responsible for the relevant state of affairs?

[873] The plaintiffs' case is that the Council's negligent failings are causative of:

(a) lack of durability over joints leading to cracking;

(b) the missing membrane issues;

(c) non-compliance with the Mapei Mapelastic specification in terms of thickness (contributing to cracking and degradation);

(d) unconsented use of Mapetex;

(e) lack of Mapeband to bridge construction joints which contributed to cracks; and

(f) beam to column joints which were prone to cracking and had no watertight seal.

[874] There are two alleged failings by the Council at the consent stage. The first is the use of Mapei Mapelastic without verification that it complied with the Building Code. The second relates to claimed defect 9 — the lack of a PS2 for a design change at the beam to column joints.

[875] It is not strictly necessary to review the Council's involvement in the design change in the light of my finding that no actionable defect is established. I go on to do so in case my conclusion is found to be in error.

[876] By way of preliminary observation, departure from the consented plans does not necessarily establish a breach of the Building Code but is relevant to the question

of whether the Council acted in accordance with the standards of a reasonable Council.[297]

Should the Council have consented the use of Mapei Mapelastic membrane?

[877] This issue relates to all decks save the level 1 and 2 terraces.

[878] It is incontrovertible that a prudent council would have considered at the consent stage whether the proposed LAM would comply with the Building Code. But the plaintiffs go further. They argue that a prudent council would ordinarily seek verification that the proposed membrane, being an alternative solution, had been reviewed by an independent testing agency and shown to comply. The consenting officer, Ted Jones, did not accept this. His evidence was that the Council had sufficient information on file in the form of the technical data in the Council library. He also referred in his evidence to the post-consent BRANZ appraisal and emphasised that the membrane was being applied to a concrete structure rather than the significantly different timber-framed structures with monolithic cladding. It is the latter which haunted the construction industry during the leaky building crisis.

[879] None of those points address the key issue at the consent stage. On 25 July 2005, BRANZ appraised Mapei Mapelastic for use for buildings up to three storeys in height. This was after issue of the Consent 303. If anything, that should have alerted the Council to the potential for limitations arising from additional stresses from the height of a building. The technical data did not address use on a high rise building. And Ted Jones acknowledged in cross-examination that the Mapei product is for waterproofing concrete amongst other things. This acknowledgement is consistent with cl 2.14, s 6221 of the Clark Brown architectural specification which provides for a "WATERPROOF MEMBRANE" and indicates that the system includes Mapeband mesh for stress cracks. This is clearly a reference to cracks in the concrete substrate and indicates that the system was intended to waterproof over stress cracks.

[880] The Council did not accept that it was well known amongst building surveyors that LAMs were high risk with a history of failure in service. Ms Meechan was critical

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297 *Palmer v Hewitt Building Limited* [2021] NZHC 1460 at [75].

of the generality of the proposition advanced by the plaintiffs which she submitted was not supported by any examples or literature. She also pointed to Mr Flays' evidence that building control officers did not have the specialist knowledge of building surveyors anyway.

[881] Although I find that the statement about what was considered "well known" is admissible from Messrs Jordan and Moodie because it comprises "in field" knowledge, it does not have much heft in isolation. Mr Flay, the Council's expert, acknowledged in his brief that there were "issues with the design and workmanship of membranes in general" and that "building inspectors knew that poor design and installation of any membrane could lead to weathertightness issues". He did not engage on the question of the information provided about the system with the building consent save to say that councils were approving membranes as alternative solutions and had policies and procedures in place at the time. He said that he was not in a position to comment on the Council's policies at the time of issue of these consents.

[882] There was no independent verification of the suitability of Mapei Mapelastic at the relevant time. But independent verification is not an absolute requirement of consent under the Building Code. Whether there were reasonable grounds to issue the consent is a fact sensitive inquiry in the particular circumstances. In this instance, I am satisfied that the Council did not have reasonable grounds to issue the consent for use of Mapei Mapelastic. My reasons are these.

[883] First, there was general industry awareness of issues around design and workmanship of membranes as the Council expert, Mr Flay, acknowledged. This does not mean that it was necessarily well known that LAMs in particular were high risk. I note the April 2002 BRANZ Bulletin titled "Finding Leaks" referred to problems which had arisen with membranes and the potential sites of leaks.[298]

[884] Second, the absence of "red flags" (as Ted Jones put it) is not the same as the existence of objectively "reasonable grounds". Reliance on previously consented use in other buildings is not relevant unless they are reliable comparators.[299] There is no

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[298] "Finding Leaks" (BRANZ Bulletin 425, April 2002).

[299] No evidence was led about the nature of the prior consents involving Mapei Mapelastic.

evidence that the Mapei system had been consented and used without issues on a building comparable to Gore Street. This is not surprising given that Gore Street was the largest apartment complex in New Zealand at the time of construction. Merely because the system may not have been novel and had been in use overseas may be relevant but is not of itself a sufficient ground.

[885] Third, Ted Jones's evidence that he had no issue about the membrane "sucking off" under wind stress because of its bonding properties had an air of post-hoc rationalisation about it. There were no contemporaneous documents referred to the Court that recorded this view at the time of the issue of consent (or indeed any record of reasons).

[886] Fourth, the Mapei performance warranty addressed to residents of Gore Street is not relevant to the consent assessment as it is dated after the issue of Consent 303. In any event it does not verify the product complied with the Building Code. It merely stated that "when installed" to its specification the product meets the standards in AS/NZS 4858:2004 (Wet Area Membranes).[300] According to the plaintiffs' expert, Mr Keesing, the standard does not test the long term durability of a waterproofing membrane in an exterior environment and does not equate to compliance with either cl B2 or E2 of the Building Code.

[887] Fifth, the 2005 BRANZ appraisal was also published after the issue of Consent 303 but in any event would not have provided confidence that the membrane would cope with movement joints or wind effects on a 40-storey building, as the Council's expert, Clinton Smith, acknowledged.

[888] These factors collectively, and in this context, lead me to conclude that the Council should have required some independent form of verification before issuing the consent, were negligent in omitting to do so and ought not have consented the use of Mapei Mapelastic at that time.

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300 *Wet Area Membranes* (Standards Australia and Standards New Zealand, AS/NZS 4858:2000).

Did the Council's omission at the consent stage have causal potency?

[889] The plaintiffs have the burden of proving on the balance of probabilities that Council's negligence at the consent stage was the cause of (in the but for sense) or substantially or materially contributed to damage or loss.[301] They argue that the membrane has not proved durable, meaning it has permitted moisture ingress causing undue dampness and/or damage.

[890] There was no cogent evidence of any inherent inadequacy in the Mapei Mapelastic system or lack of fitness for purpose above three storeys produced to the Court.[302] That is, there was no evidence that even if the system had been installed in accordance with the consented plans and without any installation deficiencies, it would still have not proved durable.

[891] It is not tenable to say that causation is established by showing that, but for the consent, the installers would not have had the opportunity to install inadequately. Nor do I understand the plaintiffs to advance that argument.

[892] There is no evidence that higher wind loads on this building made the use of this membrane inherently unsuitable. The 2019 BRANZ appraisal for Mapei Mapelastic required a specific weathertightness design over junctions.[303] It confirms that there are no performance issues with Mapei Mapelastic on buildings exposed to winds of up to 6 kPa.[304] I observe that this appraisal is for Mapelastic embedded with Mapeband or "reinforcement fabric" such as Mapetex. I accept that the Mapetex was not embedded between layers of the Mapelastic membrane but installed below the membrane so that the membrane adhered only at the edges rather than to the concrete substrate.[305]

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301 *Easton Agriculture Ltd v Manawatu-Wanganui Regional Council* [2013] NZCA 79 at [121].

302 The higher stresses found in a building of this height are nonetheless relevant.

303 This aspect fell outside the scope of the appraisal.

304 This 6 kPa limit is higher than the wind loads calculated by the plaintiffs' expert Richard Fairhead for Gore Street.

305 Mr Devlin appeared to be saying that the Mapetex was embedded but he did not physically inspect the balconies. On this point, I prefer the evidence of Mr Keesing who had the opportunity of actually observing the layers on destructive testing. If Mapetex is embedded in the membrane rather than serving as an isolation layer it does not have the same ability to transport moisture across the substrate.

[893] However, even the plaintiffs' experts acknowledge that there is no sign of lifting of the membrane at the 20 millimetre edge before the Mapetex begins.

[894] Besides wind load, there is also increased demand at construction joints on a 40-storey building. Mr Keesing expressed doubts that even Mapeband on the joints to bridge the inevitable cracks would have been enough to prevent all cracking given the extent of movement. The 2019 BRANZ appraisal is again informative. Clause 2.2 limits the scope of the appraisal to, among other things, buildings with specifically designed weathertightness design of all junctions. Clause 2.4 reads:

> Movement and control joints in the substrate must be carried through the membrane and tile finish. The design and construction of the substrate and movement and control joints is specific to each building, and is therefore the responsibility of the building designer and building contractor and is outside the scope of this Appraisal.

[895] This appraisal reflects concerns about weathertightness on junctions on a sizeable building (over three storeys). I infer from that appraisal that Mapei Mapelastic is suitable for high rise buildings provided that there is specific design for movement and control joints and that these are carried through the membrane.

[896] I conclude that there is no evidence to show that Mapei Mapelastic was inherently unsuitable at Gore Street if installed correctly and in accordance with the consented design. The lack of independent appraisal in 2005 when this particular consent was granted does not of itself establish that it was inherently unsuitable. There is therefore no established causal potency. The negligent issue of the consent therefore had no actionable consequence.

[897] For the same or similar reasons, the claim against Clark Brown in respect of the specification of Mapei Mapelastic fails.[306]

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[306] Mr Bayley, the expert architectural draftsperson called by the plaintiffs opined that Clark Brown should have specified a two layer torch-on membrane as opposed to a LAM because it is a more robust product and less prone to installer error. The plaintiffs did not argue this at closing but limited the design allegation to lack of verification as to suitability.

Inspection and code compliance stages

[898] At the CCC stage, the Council had a PS3 from the approved applicator and a product performance warranty from Mapei. The Mapei product performance warranty records that Mapei warrants the product when installed to the Mapei specification.

[899] The question is whether what was provided at the CCC was enough for the Council, exercising reasonable care, to form reasonable grounds to believe the building would comply with the Building Code. The Council submits that it is highly likely it would have been aware of Mapei's quality assurance role but there is no evidence to say that the various communications between Mapei and Multiplex were copied to the Council. To infer on the basis of what is before the Court would be to draw a long bow. The product performance warranty stands or falls on its own terms objectively construed.

[900] There were no conditions recording that an independent reviewer was to inspect the balcony waterproofing. On the contrary, the "Auckland City Notifiable Inspections" standard checklist provided for membrane inspection to "decks/showers/walls". That suggested it was therefore anticipated. No completed inspection checklists for the balconies were discovered by the Council. I infer that the Council did not in fact undertake any membrane inspection.

[901] The Council's position in closing was that it can be inferred that it made the conscious decision not to carry out any membrane inspections of the decks. It says that only Mr Flay gave evidence of what a membrane inspection would entail if it had been carried out. Mr Flay said a membrane inspection formed part of the pre-line inspection and it would only confirm whether or not there is a membrane, and whether overflows, outlets and a step down to deck level are present. In his evidence-in-chief, Mr Flay did not consider that a council officer would inspect whether the membrane terminates over the chamfered edges and in the scupper given the substrate was concrete. Further, that it would be too difficult for an inspector to see whether there was membrane in the gap between the balustrade and the column as the gap is so small. But in cross-examination, he accepted that the council inspector will check "detailing that's on the plans" during a membrane inspection.

[902] I consider that identifying non-compliance with the consented plans and documents is fundamentally part of the Council's role.

[903] Whether the decision not to carry out membrane inspections was conscious or not, the lack of inspections is inconsistent with the Council's then internal guideline documents, including practice notes relating to alternative solutions.[307] It is also inconsistent with the indication of assumption of responsibility in the pre-inspection check-list.

[904] The plaintiffs accept that there were aspects of the membrane waterproofing that would be difficult for the Council to check. Mr Jordan's evidence was that a prudent council would not have identified the lack of thickness to the membranes, the layer of matting or absence of Mapeband had it inspected. This is surprising when Mapeband is an integral part of achieving watertightness according to the technical literature. However, if the Council could not inspect such matters, it at least informs the nature of the duty at the final inspection and CCC stage. It does not relieve the Council of its duties. The existence of objectively reasonable grounds to be satisfied of compliance remains fundamental.[308]

[905] Mr Hutt who gave expert evidence for the Council acknowledged that the Auckland City Producer Statement guidelines "on their face" required a producer statement by an independent reviewer for the installation of balcony membranes but said that he had never in his experience heard of an independent review for balcony membranes. Mr Hutt is a very experienced expert witness whose expertise was garnered by lengthy employment by Christchurch City Council. At the time of giving expert evidence he was still employed by Christchurch City Council which meant that while he was independent of the parties in this litigation, he had a particular perspective. His evidence has to be filtered through that lens.

[906] Mr Flay, another expert for the Council, described the limitations of a "membrane inspection" in the period 2004 to 2006. He had 'coalface' experience of inspections for various councils between 1996 and 2005, although he did not detail the

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307 Auckland City Environments Practice Note 16, dated 9 September 2003.
308 *Weaver v HML Nominees Limited* [2015] NZHC 2080 at [93]–[95].

extent to which that included membrane inspection. He said generally, "it was standard practice for a council to require a producer statement from the membrane installer for the completed installation of the membrane as it was considered to be a specialist area of expertise".

[907] Bearing in mind the importance of waterproofing and that this was an alternative solution, I am satisfied that the following departures from the consented plans should have been identified by any council officer who inspected:

(a) Termination of the membrane at the balcony edge rather than extending over the chamfered edge on the corner and narrow balconies. This would have been observable at both membrane and final inspections by use of a mirror. (Although I do not find it to be causative of moisture ingress).

(b) Missing membrane in the gaps between columns and solid balustrades on the narrow balconies. While the very narrow gaps between the balustrading columns in some instances would make observation difficult, the mere fact that the gap was so narrow should have alerted a prudent council officer to the impossibility of effective installation of membrane or at least to query whether membrane had been installed in those gaps.

(c) That the membrane terminated near the entrance to the scupper without passing through the scupper on the narrow balconies with concrete balustrades. (Although I do not find that has been shown to be causative of moisture ingress).

[908] These departures were observable and systemic. It is pedantic for the Council to argue that the means of inspection (by kneeling or use of a mirror) was not set out in the plaintiffs' evidence. The description of the more limited common practice carried out by inspection officers at the relevant time is not an answer to the question of what it was reasonable to do in carrying out the statutory functions. Inspection did not require physical risk. I accept that a mirror on a stick or similar would have

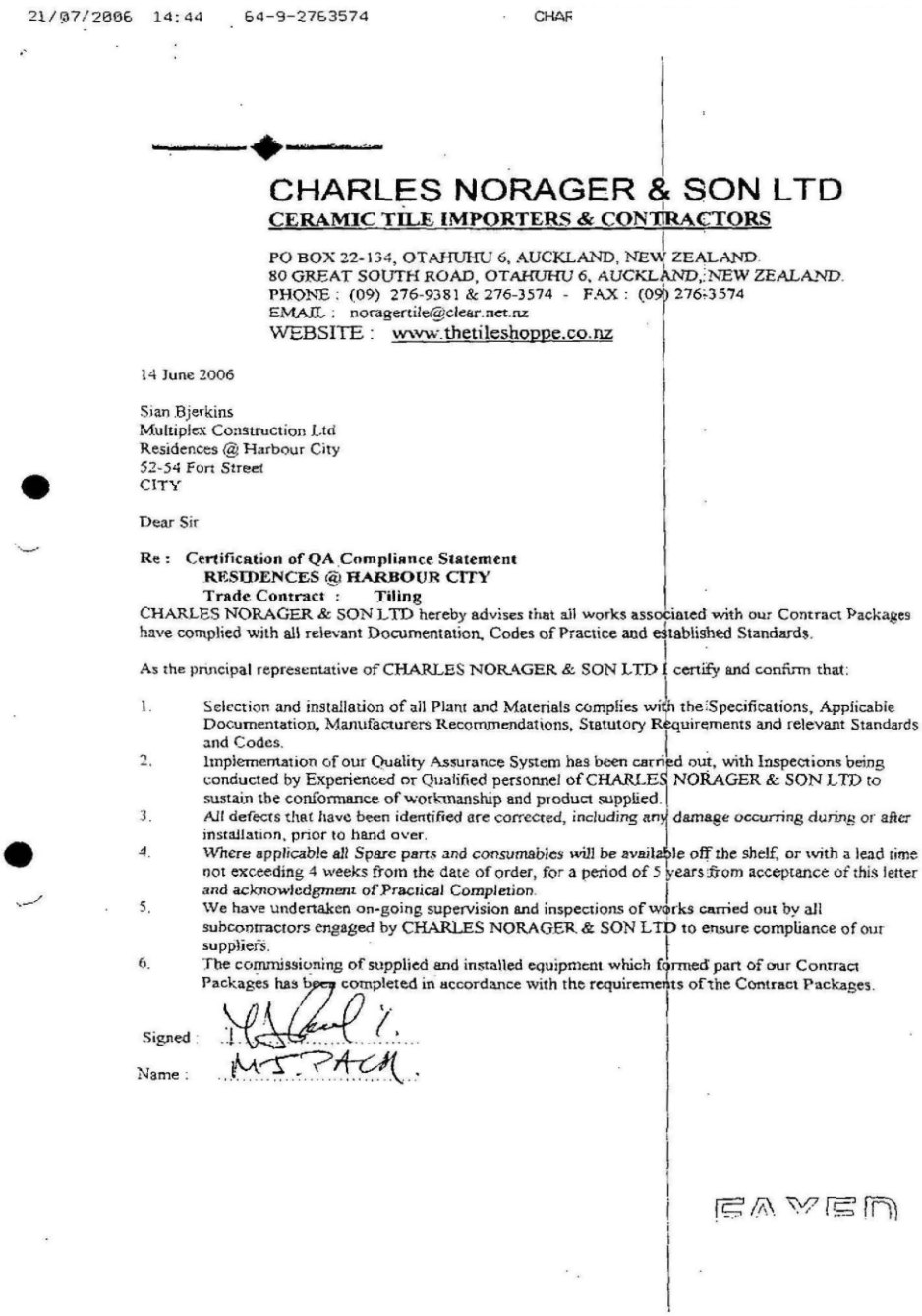
enabled adequate inspection of the edge. Even running a hand over the edge through the scupper would have indicated bare concrete. On cross-examination, Mr Flay agreed that at a membrane inspection what a council looks for is driven by the consented design. Identifying these issues would or should have put the Council on enquiry of the workmanship issues with the balcony and led to greater scrutiny of all aspects of the balcony construction.

[909] Whether the Council ought to have required a producer statement from a construction reviewer, as opposed to the installer, is a more difficult question that needs to take into account the practicalities.

[910] There was a letter dated 14 June 2006 from the applicator, Norager. Mr Hutt for the Council accepted this is the equivalent of self-certification via a PS3.

[911] There are a number of issues with this letter which was produced to the Court as an enclosure or attachment to a document from Multiplex. That document has a footer identifier: "CCC Application for BLD20040670308" and a heading "5. Membranes in Wet Areas".[309] It refers to an "attached certificate from Norager" dated 14 June 2006 which is reproduced below:

[309] Mr Hutt for the Council says that a "wet area" is generally something such as a bathroom inside the building.



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WEBSITE : www.thetileshoppe.co.nz

14 June 2006

Sian Bjerkins
Multiplex Construction Ltd
Residences @ Harbour City
52-54 Fort Street
CITY

Dear Sir

Re : Certification of QA Compliance Statement
RESIDENCES @ HARBOUR CITY
Trade Contract : Tiling

CHARLES NORAGER & SON LTD hereby advises that all works associated with our Contract Packages have complied with all relevant Documentation, Codes of Practice and established Standards.

As the principal representative of CHARLES NORAGER & SON LTD I certify and confirm that:

1. Selection and installation of all Plant and Materials complies with the Specifications, Applicable Documentation, Manufacturers Recommendations, Statutory Requirements and relevant Standards and Codes.
2. Implementation of our Quality Assurance System has been carried out, with Inspections being conducted by Experienced or Qualified personnel of CHARLES NORAGER & SON LTD to sustain the conformance of workmanship and product supplied.
3. All defects that have been identified are corrected, including any damage occurring during or after installation, prior to hand over.
4. Where applicable all Spare parts and consumables will be available off the shelf, or with a lead time not exceeding 4 weeks from the date of order, for a period of 5 years from acceptance of this letter and acknowledgment of Practical Completion.
5. We have undertaken on-going supervision and inspections of works carried out by all subcontractors engaged by CHARLES NORAGER & SON LTD to ensure compliance of our suppliers.
6. The commissioning of supplied and installed equipment which formed part of our Contract Packages has been completed in accordance with the requirements of the Contract Packages.

Signed :
Name : M.S. PACK.

FAXED

[912] The generic statement in the letter from Norager was a completely inadequate basis to issue the CCC. It fell well short of the requirements of the Council's own guidelines on the acceptance of producer statements to establish compliance with the Building Code.[310] Those guidelines provided that:

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310 *Information on the use of Producer Statements* (Auckland City Council, 1 July 1994). Condition 19 of Consent 302 stipulated that producer statements are to be in accordance with the Auckland City Guidelines for the Acceptance of Producer Statements which forms part of the Information on the use of Producer Statements.

> 3. The Council will generally accept Producer Statements to establish compliance with the Building Code subject to the conditions and acceptance criteria set out in these guidelines and that they relate to buildings or elements of building work contained in Part 4.
>
> …
>
> 3(f). The Producer Statement is in an identical form to that prepared by the Council. Samples are included in Part 7. No amendment or endorsement is permitted.

[913] Other conditions set out in the guidelines are that:

> The precise extent of the work subject to Producer Statement/s is clearly stated by the applicant;
>
> …
>
> All producer statements other than for materials or proprietary products, are to be in the form prepared by the Council and no amendments or qualifications are permitted.

[914] The Norager letter did not mention waterproofing of the balconies. The letter was not addressed to the Council and there was no acknowledgement by Norager that it might be relied on by the Council. Mr Hutt describes this omission as "relatively irrelevant" but did not adequately address the inconsistency with the producer statement Guidelines. It did not have the format nor content of a guideline compliant PS3. It refers only to "all works associated with our Contract Packages". Its terms are general and have no link with or connection to any identified technical specification or with the consent. The trade contract refers to "Tiling". It is not obvious that tiling incorporates waterproofing of the substrate despite Mr Hutt's explanation that waterproofing and tiling are associated because "a tiler would typically … need to ensure the substrate is appropriate for what they're tiling over". There is no reference to the qualifications or role of the signatory.

[915] There are many factors to take into account in assessing the weight to be attached to a producer statement or equivalent "certification". There was, or ought to have been, some awareness about the effect of moisture ingress in cracks in concrete causing corrosion to steel reinforcing and an appreciation that membranes provided protection based on the Mapei Mapelastic specification and the Clark Brown specification. This information was also generally available in BRANZ Bulletin 464

dated July 2005 (after the issue of consent) titled "Preventing Corrosion of Reinforcing Steel in Concrete".[311] This was not of the same level of concern or to the same degree as weathertightness issues around timber or wooden substrates but is part of the assessment matrix at the inspection and CCC stage.

[916] I pause to note that neither of the plaintiffs' experts on council matters referred to this particular bulletin in their evidence in chief. It was put to Mr Flay in cross-examination for the first time. Ms Meechan was rightly critical. She counselled caution in respect of an expert's "on the fly" response to a document introduced on cross-examination.

[917] I agree that the manner in which this bulletin came to light was less than ideal. Not only would I have been assisted by hearing from Mr Moodie in relation to this material, but that would also have provided an opportunity for counsel to cross-examine Mr Moodie. In any event, Mr Flay's response on cross-examination was fittingly conditional and did not take the matter very far:

> Q. So Council officers reading information like this would be familiar with the fact that water can enter cracks in concrete and cause corrosion wouldn't they?
>
> A. Yeah, in certain circumstances, yes.

[918] Ted Jones accepted, and I would expect, that Council processing officers had access to BRANZ Bulletins. Whether or not the appropriate people at the Council were familiar with this particular Bulletin is not material given its availability. This Bulletin was at least part of the bank of knowledge available at the relevant time. I put it no higher than that.

[919] The brief of evidence of the council officer at Auckland City Council (as it was then) who was responsible for processing the issued CCC was taken as read at trial. Now retired, he had considerable experience in the construction section including 9 years as a building officer at Auckland Council. His evidence was that he cannot recall

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[311] The cover image on this Bulletin appears to be of a beam under a balcony showing spalled concrete. This version of the Bulletin is stamped "Rodney District Council – Building Control – Technical Library". I note that the Bulletin is marked as a replacement and update of Bulletin 351 of the same name.

the details about his assessment of the pre-CCC findings or the issue of the CCC so it would be speculative to try to reconstruct what was done at the time. (There was a surprising lack of Council documentation surrounding these processes).

[920] I conclude that the Council did not have sufficient grounds to issue the CCC. Although the Auckland City Producer Statement guidelines arguably required a producer statement from a construction reviewer for the installation of balcony membranes, there are obvious impracticalities about the degree of supervision which would be required.[312] I consider the more relevant deficiency in the Council's process was the inadequacies in the content and form of the Norager letter.

[921] The Mapei warranty said nothing about the installation adequacy. It was a future-directed communication and no more than a product performance warranty. There is no evidence that Council was aware that Mapei had any presence onsite and any role in the supervision of the installation. The basic and inadequate check sheets or Q&A documents produced by Mapei and Norager were not in Council's files and would not in any event been a reliable basis for sign off. Any suggestion that the Council would have been aware of Mapei's involvement is mere supposition.

[922] In the circumstances of this case, the Council's failure to undertake any membrane inspections of the balconies was a breach of its duty of care. It had a responsibility to inspect given that there were no conditions recording that an independent reviewer was to inspect the balcony waterproofing. The Mapei Mapelastic waterproofing system was an alternative solution and Practice Note 16 relating to 'Alternative Solutions' pointed out that "particular care should be taken to ensure the work to be inspected is as per the approved Alternative Solution plans and documentation". The significance of waterproofing of over 400 balconies on a building of this size could not reasonably have been overlooked.

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312 On my reading of the guidelines, it is not clear whether a balcony membrane would fall within the term "Specialist Coating System", a "Proprietary Product" or within the general category of "Commercial, Industrial and other Building Work/Buildings not identified above". The Guidelines says that a specialist coating system requires a producer statement by the applicator. while "the acceptance of Producer Statements for materials and proprietary products will be considered individually and the intended use should be discussed at an early stage with Council officers.

[923] I accept too that the obligation was to inspect both at a membrane and final inspection. The earlier inspection would have been the best opportunity to inspect installation before the membrane was covered by tiles but many of the deviations from the consented drawings and plans would still have been observed at the final stages. The Council did not provide any explanation why it did not inspect.

[924] What matters is whether relevant matters were observable to the naked eye on physical inspection. I accept that they were. While they may have taken some additional effort, for example physically lowering to the ground to view through the scupper and the balustrade to column gap, it was not particularly difficult. The missing membrane issues were three standout details which I consider that a prudent inspector would have looked for.[313]

[925] When asked what a council officer would do on noticing details not constructed correctly, Mr Flay agreed that it may lead the officer to make an enquiry, acknowledging that it may be an indicator of wider problem. He went on to say, in relation to the tight gaps between columns and balustrades, that the officer would not himself recognise this as non-compliant with the Building Code but would ask the contractor and inquire about a producer statement from the engineer responsible for the construction review. He added that a council would not be concerned as to how the gap would be waterproofed in those circumstances. Mr Hutt says that a council officer would not be concerned at the absence of membrane on the chamfers because of the concrete construction. That may be so, however I consider that all these deviations from the consented documents ought to have put the Council on alert.

[926] The plaintiffs also argue that the installation/workmanship and substitution issues, while not observable on Council inspection, would have been picked up if the Council had required an independent review of the installation of the membrane. That is:

(a) inconsistent thickness of the membrane;

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313 Nonetheless, Mr Flay acknowledged in respect of some photographs that a council inspector could have identified the membrane did not carry over onto the chamfered edge, but not others.

(b) use of Mapetex underneath the membrane;

(c) incorrect mixing/curing of the membrane; and

(d) absence of Mapeband at joints.

[927] The Council in its closing apprehended that these issues fell outside the scope of claims levelled against it because the plaintiffs accepted the difficulty of detection. I do not accept this is the case. The evidence from Messrs Jordan and Moodie for the plaintiffs squarely put this in issue:

> At the CCC stage a prudent Council would have recognised that it had not undertaken any membrane inspections, and that it did not have any verification from an independent expert to verify the Mapelastic was installed in accordance with the consented documents, Mapei specification and the building code, contrary to the Auckland City Council guidelines for Producer Statements.
>
> In these circumstances the Council did not have reasonable grounds to be satisfied the balcony waterproofing complied with clauses B2 and E2 of the building code and it should not have issued the CCCs.

[928] For the sake of completeness, I record that my conclusion that there were no reasonable grounds for issue of a CCC does not rely on reaching a view that an independent verification of installation was required. It is therefore unnecessary to reach a final determination on this issue.

[929] I am satisfied that the Council's breach of duty at the inspection and CCC stages has materially contributed to the waterproofing defects on the balconies.

[930] I find the Council liable for defect 8 to the extent and limited to the following categories of balcony:

(a) corner balconies;

(b) narrow balconies with beam to column joints where there is no waterproofing membrane in the beam to column gaps.

Claimed defect 9 – Council responsibility

[931] It is not strictly necessary to discuss this in light of my finding that it is not an actionable defect but I do so briefly.

[932] A comparison of drawings of the beam to column joint from Consent 302 and Consent 305 illustrates that the change in detail is far from obvious and certainly not able to be seen by an inexpert eye. This is hardly surprising since Dr Hyland himself says that the change would be inferred by an engineer "because there's only one way you can build it with that reinforcing arrangement shown". Nonetheless, there is the indication by clouding the Consent 305 detail that *something* has changed and in matters of structure understandably beyond the capability of consenting officers, it should have been clarified. As discussed, I read the letter of June 2005 as indicating that Buller George is preparing a new PS1 in for those new structural drawings annexed to the letter. I accept the plaintiffs' submission that if the changes were significant enough for Buller George to be preparing a new PS1, then a review by Mr Black or another structural engineer should have been anticipated also.

[933] I accept that a council could not reasonably be expected to itself carry out a comparative audit between these drawings and the consented drawings but it could, and in my view should, have made inquiry and clarified the extent and nature of the changes. I agree that the failure to ensure there was a PS2 or make that further inquiry means that it did not have reasonable grounds to be satisfied that the design change would comply with the Building Code. The inconsistency with the Council's own Producer Statement guidelines lends support to my conclusion. It follows that it should not have issued Consent 305 in relation to the change in the construction joint.

[934] For completeness, I do not accept the Council's argument that insertion of Condition 12 on Consent 305 ameliorated the position. Condition 12 reads:

> The amended engineering drawings have been accepted as as-built documents. The applicant is responsible for arranging the observation by a CPEng registered engineer as required by previous building consents. Producer statements 'Construction' and 'Construction Review' are to cover these amendments.

[935] That really had the effect of 'doubling down' on what the plaintiffs complain was a defective design. As the plaintiffs submitted, there was no utility in requesting a PS4 from the observing engineers in respect of their unreviewed designs.

[936] The next question is whether there were any material consequences to this breach of duty. I am not satisfied that the plaintiffs have discharged their burden to show on the balance of probabilities that a prudent engineer reviewing the revised drawings would have considered that there were shortcomings in the design. I accept Dr Jacob's explanation as to the reasons why he would have no concerns about the design change.

[937] I conclude that although the Council did not exercise reasonable care at the consent stage of the process, that omission had no actionable consequences. The plaintiffs' claim in respect of defect 9 against the Council also fails at this hurdle.

Claim against Mapei

[938] Neither Mapei nor the liquidators appeared at trial.

[939] In its last amended statement of defence on 31 January 2019, Mapei admitted that it supplied products used in the construction of elements of Gore Street and carried out limited inspections of installation of its products. It also admits it provided conditional performance warranties. It does not admit it owed a duty of care in undertaking its role or that it breached any duty. It pleaded contributory negligence and failure to mitigate. As affirmative defences, Mapei had the onus of establishing such but may in a more general sense benefit from affirmative defences which any other defendant may succeed in.

[940] I accept that Mapei owed a duty of care at least in respect of supervising the installation of its supplied product.[314] Mapei can be expected to know that those using

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[314] The plaintiffs cite *Bowen v Paramount Builders (Hamilton) Limited* [1977] 1 NZLR 394 (CA) at 406 where the Court said "[q]uite clearly English law has now developed to the point where contractors, architects and engineers are all subject to a duty to use reasonable care to prevent damage to persons whom they should reasonably expect to be affected by their work". See too *Carter Holt Harvey Ltd v Minister of Education* [2016] NZSC 95, [2017] 1 NZLR 78 in which the issue was whether Carter Holt Harvey as manufacturer of cladding systems owed a duty of

their products will be relying on the products' proper installation to meet the requirement of the Building Code.

[941] The plaintiffs allege that Mapei breached its duty of care in relation to the balconies when it provided a "performance warranty" without any third party testing or appraisal to verify it was fit for purpose". As I have concluded that the evidence does not establish that the Mapei system was inherently defective, this claim fails.

[942] The plaintiffs also criticise Mapei for adopting an inadequate quality and assurance system, including check sheets that were incomplete and did not address important matters relating to the waterproofing of the balconies.

[943] Various diary notes dated between 11 June 2005 and 20 March 2006 record the dates of inspections by Mapei. They suggest there were inspections completed to nearly all levels between level 1 and level 37. Various "Q&A" sheets for apartments between levels 2 and 14 were produced. These sheets list various application stages to be inspected and signed off. Not all items have been recorded as checked and it appears that there are not Q&A sheets for every apartment.

[944] A summary of inspections completed by Mapei is recorded in "Quality Assurance Sign Off Sheets" for each level from level 2 to 37. There is a separate sheet described as an "Alternative Sign Off Sheet" which provides that a Norager representative is to sign off when the Mapei representative is not available. As far as I can tell, this was used twice: once for the bathrooms on level 11 and once for the decks on level 21.

[945] In addition there is correspondence from Mapei to Multiplex between 15 August 2005 and 7 August 2006 which refers to numerous site visits. The tenor of all this correspondence is that Mapei was satisfied that the quality of installation meets the requirements for Mapei to warrant the installation. A few examples suffice:

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care to the owner of the property. The Supreme Court allowed the various claims to proceed to trial.

(a) An email dated 21 October 2005 from Mapei to Multiplex advised that "[a]s of the 20th of October 2005, Mapei acoustic and waterproofing systems have been installed as per Mapei specification to the following areas: External Balconies – Level 2 to Level 23…".

(b) A facsimile from Mapei to Multiplex dated 16 December 2005 states, among other things "Mapei NZ Ltd representative … has inspected and signed off acoustic and waterproofing installations" to the balconies from level 2 to 32.

(c) A letter from Mapei dated 7 August 2006 states, among other things, "[a]ll apartments and balconies from level 2 through to level 38 have been visually inspected and signed off by either the writer or … of Charles Norager and Sons Ltd".

[946] Trevor Jones summarises the installation and workmanship issues that ought to have been detected by Mapei had they carried out inspections to the standard indicated in the correspondence referred to. I accept that Mapei should have detected that the following matters did not conform with the consented documents:

(a) the membrane was not laid to a thickness of 2 to 4 millimetres in thickness;

(b) the absence of Mapeband at joints; and

(c) the use of Mapetex underneath the membrane.

(d) absence of membrane at the beam to column gaps.

[947] I am satisfied that it has been shown that these deficiencies in the installation materially contributed to failures in the membrane.

[948] I find that Mapei's breach of duty of care has contributed in more than a minor way to claimed defect 8 and therefore Mapei is jointly and severally liable with the Council for the actionable defects on the balconies. That is, on the corner balconies

and the narrow balconies over beam to column junctions. Mapei is also liable in respect of the level 38 deck.

Claim against Clark Brown

[949] I have already determined that Clark Brown's contractual limitation in its services agreement with First City Trust, novated to Multiplex, is not relevant.[315]

[950] The claim against Clark Brown was presented at closing in very summary and conclusory terms. The expert witness called by the plaintiffs, Mr Bayley, gave evidence that a prudent architect would be aware that any departure from the consented documents would likely lead to water ingress. Therefore he or she would take steps to ensure that it observed the installation of the waterproofing membrane on a reasonable sample of decks on all levels. In his view, the prudent architect would have identified the missing membrane issues and then taken steps to bring these defects to the attention of the head contractor; ensure rectification was undertaken and followed up.

[951] There is no evidence that Clark Brown did any of these things.

[952] I accept Mr Bayley's unchallenged evidence to this effect. I therefore find Clark Brown jointly and severally liable to the same extent as the Council. That is, with respect to the corner balconies and narrow balconies over beam to column joints.

Claimed defects 10 and 11

[953] In this section I deal with the claimed defects 10 and 11 separately due to their geographical separation. This should not be read as suggesting that a holistic approach to the scope of duty owed by the relevant parties is not desirable. There are inevitably overlapping issues because each relates to the same subject matter — membranes.

[954] Defect 10 relates to waterproofing membrane on the podium. The podium is on level 1 of Gore Street. It extends out from the Sailor's Lounge to the northern perimeter of the building and borders the gymnasium and the balcony decks of three

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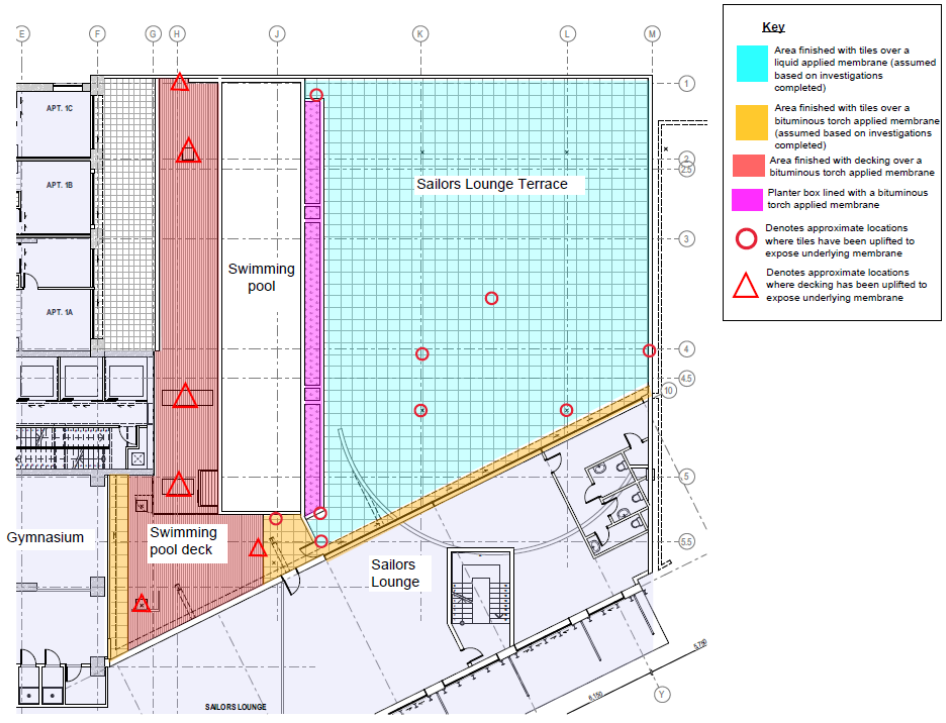
315 Refer Part II.

level 1 units on the western side. It comprises two areas: a main open terrace covered in tiles and a timber-decked pool area. These are separated by a reinforced concrete block planter box running along the length of the pool. At the door threshold of the gymnasium, and at the southern end of the swimming pool adjacent to the pool gate, there are tiles directly fixed over the surface rather than the timber deck. The podium sits over the concrete substrate below which is the roof of the upper ground level carpark and a rubbish room. It therefore functions as both a terrace and a roof.

[955] The consented design drawings for the podium called for a double layer torch-on membrane to the entire podium. In fact, investigations of the building as-built show the different areas of the podium have differing membrane types and finishes. No variation to the design was consented. This deviation from the plans and specifications is an alleged source of some of the problems which have arisen.

[956] The podium areas are shown below:



[957] There is a double layer torch-on membrane (Tremco Tremproof 3000) installed below timber decking in the swimming pool deck area, in a narrow strip on the south side of the terrace outside the Sailor's Lounge entry and adjacent to the pool gate and in front of the gymnasium. This is shown in red and yellow on the diagram. The

Tremco Tremproof system was supplied by Equus and installed by Aquastop, a licensed applicator. The narrow strip of the south side of the terrace did not feature at trial.

[958] Mapei Mapelastic, supplied by Mapei and installed by Norager, sits under the tiles on the lounge terrace shown in blue. The dividing planter is lined with a double layer torch-on membrane (De Boer Duo system) also supplied by Equus.

[959] There are drainage outlets on the terrace and within the pool deck area. There are also two swimming pool skimmer boxes or filters sitting on the timber decks buttressed against the pool. These are not identified on the diagram. One occupies a corner of the deck at the north side of the pool and one at the southern end of the pool.

What is the problem?

[960] Moisture has penetrated the concrete below and adjacent to the podium. There is corrosion and deterioration to metal service pipes and fire components to the underside of the podium slab, and widespread efflorescence. The Council's experts accept that there is undue dampness and consequently a breach of cls B2 and E2 of the Building Code in respect of the membranes. They disagree that there is damage or likelihood of damage to the building. They contend that the affected building elements have either reached or will very shortly reach their required durability under cl B2 of the Building Code.

[961] The plaintiffs' baldly pleaded description of defect 10 is "inadequate application of membranes on level 1 podium". This engages cls B2 and E2 of the Building Code.

[962] The plaintiffs' case at trial asserted the following inadequacies of the LAM on the main terrace, the cumulative effect of which causes moisture ingress:

(a) The LAM is not dressed into the drainage outlets but rather stops at the edges of the outlets, contrary to good trade practice.

(b) The LAM is not installed with a minimum 2 millimetre thickness contrary to Mapei's technical literature.

(c) The LAM was installed without fibreglass mesh reinforcement to the horizontal floor surface as required by the BRANZ appraisal and technical literature.

[963] In respect of the Equus-supplied torch-on membrane in the pool area, the plaintiffs say:

(a) Membrane upstands to the walls terminate without any suitable weatherproof protection to the top edge.

(b) The top layer of the membrane is not dressed into rainwater outlets but terminates at the outer edge.

(c) The manner in which the LAM and torch-on membrane is joined is problematic and inconsistent with the consented plans which did not provide for two different membranes.

(d) The planter membrane upstands terminate without suitable weatherproof protection to the top edge allowing moisture to enter behind the membrane and detachment of the membrane from the wall face.

What is the state of affairs?

[964] A key feature of the "as-built" state of affairs is that the two different types of membrane overlap at certain junctions. The LAM sits on top of the torch-on membrane at those locations suggesting that the torch-on membrane was installed first and the LAM subsequently. These junctions are at the southern end of the swimming pool area adjacent to the pool gate, run along the terrace in front of the Sailor's Lounge and also in front of the gymnasium. (The precise location of the junction in front of the Sailor's Lounge is not clear on the evidence.) Only the junction

adjacent to the pool gate features in the plaintiffs' case. There is no explanation as to why these junctions might behave differently.

[965] There is some measure of agreement between the experts for the Council (Messrs Woolgar and Clinton Smith) and the plaintiffs (Messrs Jones and Keesing) as to the state of affairs. Equus' expert, Grant Hunt, was an outlier. Relevantly, the Council's experts and the plaintiffs' experts agree:

(a) The LAM was not within the consented design, did not contain mesh reinforcing and was not laid to adequate thickness contrary to manufacturer's specifications and good trade practice.

(b) The LAM is not dressed into the outlets as no membrane is visible below the clamping ring.

(c) The installation of LAM on the main terrace, with the exception of the inadequate detailing at the outlets, resulted in moisture ingress into the substrate and/or the building.

(d) Moisture ingress has occurred through the terrace membrane and into the substrate or structure as a result of a combination of inadequate thickness and the absence of reinforcing within the membrane.316

(e) Moisture was found underneath the membrane and moisture egress observed on the underside of the podium. There is not necessarily correlation between the moisture seen on the underside of the podium and membrane failure directly above that location.

(f) The LAM on the terrace deck has not adhered to the torch-on membrane which allows moisture ingress at the junction between the two membranes.

316 Mr Hunt noted that the destructive testing by default destroys the LAM so that he was not able to say if the lack of fibreglass mesh is a contributing factor to moisture ingress.

(g) In the pool area, the upstand top edge of the membrane is not protected with a mechanism such as a cover flashing nor with an alternative detail such as a sealed pressure strip to ensure weathertightness.

(h) The installation of the membrane in the pool area resulted in moisture ingress into the substrate and/or the building.

(i) The termination of membrane upstands on all perimeter upstands in the pool area without suitable weatherproof protection at the top edge is a design and construction issue in that the consented drawings failed to provide weatherproof design for the top of the upstand, contrary to good practice.

(j) In the pool area, the top layer of the torch-on membrane was not dressed into the drainage outlets but stopped around the outside edge of the circular outlet. The method of installation of membrane into the rainwater outlets in the pool deck area is not identified on the consented plans nor detailed in the specification. (Whether the detail ought to have been contained in the consented plans is disputed).

(k) The lack of any weatherproofing to the top edge of the membrane allows moisture to bypass behind or under the membrane system then ingress through the slab at joints, cracks and penetrations.

(l) Moisture ingress has occurred behind and through the membranes and into the substrate and structure of the building in the pool area from a combination of inadequate termination of the membrane at the rainwater outlets and inadequate waterproofing of the upstands.

(m) The top edge of the membrane within the planter box terminates on the inside face of the planter and is not protected with a mechanism such as a cover flashing nor with an alternative detail such as a sealed pressure strip to ensure weathertightness (unprotected top edge).

(n) Moisture has passed behind the membrane in the planter box as a result of inadequate termination or waterproofing of the top edge of the membrane.

[966] All of the experts agreed that the installation of the waterproofing membrane on the podium did not comply with the consented designs nor cls E2 and B2 of the Building Code.

Who is said to be responsible?

[967] The plaintiffs claim that Mapei, the supplier of the LAM on the terrace breached its duty of care when it undertook a site visit but failed to identify the podium defects, or at least some of them.

[968] They claim that Equus negligently failed to identify the inadequate termination of membrane upstands and that the top layer of the membrane was not dressed into the rainwater outlets on the pool deck.

[969] They claim that the Council breached its duty of care by:

(a) issuing a consent for designs which lacked sufficient detail; and

(b) failing to undertake any membrane inspections which would have identified:

(i) the change from the consented torch-on membrane to a LAM on the main terrace;

(ii) the fact that the LAM stops at the edge of the drainage outlets and the membrane upstands to the walls; and

(iii) planter boxes terminated without suitable weatherproof protection.

[970] They say the Council ought to have recognised that it had not undertaken any inspections and therefore carried out a final inspection at which point it would have recognised that the Equus producer statements were unreliable in view of the observable defects. It follows, they say, that the Council did not have reasonable grounds to be satisfied the podium waterproofing complied with the Building Code and should not have issued a CCC.

[971] Finally, the plaintiffs claim that the architects, Clark Brown, were negligent in failing to include adequate details of the podium waterproofing in the designs and in failing to identify the waterproofing defects in the course of its observations.

[972] The Council filed a cross-claim for contribution against Equus under ss 17(1)(c) and 17(2) of the Law Reform Act 1936. It alleges that Equus breached its duty of care in supplying, inspecting the application of and providing written confirmation to Multiplex regarding the application of the waterproofing membranes. It further alleges Equus engaged in misleading or deceptive conduct by the issue of producer statements on which it relied when issuing the CCC.

[973] In closing submissions, Ms Meechan advised the Court that should liability be established against both the Council and Equus, questions of apportionment as between those parties have been agreed so that the Court need not determine that issue. She did not address the position if I should find the Council liable but not Equus.

[974] Mapei also filed a crossclaim against Equus.

[975] The Council crossclaimed against Mapei but did not press that crossclaim at trial.

Respective cases in a nutshell

[976] The Council accepts the state of affairs exists and, with the exception of the lack of dressed membrane into rainwater outlets (both the LAM and torch-on), accepts that the matters set out above are defects. It however denies that they can be sheeted home to the Council.

[977] It says that sufficient information was set out in the consented specification. The specifications for Consent 303 referred to technical information for a double layer membrane system — Polyflame. That system was BRANZ appraised and included details as to terminations at walls. In short, as far as the Council was concerned, it was consenting a torch-on membrane and not a LAM at the consent stage so no criticism can be levelled at it.

[978] It says the issues on the podium would not have been reasonably observable by a council inspector at either a "membrane" or final inspection. With respect to final inspections, the Council says it could not have identified that a LAM had been installed on the terrace nor how the LAM interfaced with the torch-on membrane once tiles were laid. It says that an inspector would not have removed fixed plates over outlets to check the dressing of membrane into outlets and would not have been able to see the termination of the membrane upstand behind tiles. It says that any alleged defect in respect of the planter box is not identified with any particularity and therefore cannot be addressed. It further says that it was entitled to rely on the Equus producer statements to establish reasonable grounds to issue the CCC.

[979] Equus accepts it had a duty of care in respect of supply of the product, its inspection and producer statements to the extent they were relied on.[317] It had no role in design or preparation of the consented plans. It says that duty extended only to the products which Equus supplied and Aquastop installed and to inspecting the installed membrane presented at the time of inspection. It says it had no duty of care in respect of work carried out after that point. Aquastop did not install flashings, having excluded them from their tender and Equus says Aquastop did not have any responsibility to do so. Equus accepts that it had a duty of care in respect of the drainage outlets but denies that the drainage outlets were defective. They were constructed in accordance with technical literature published around 2008; that is, with the bottom layer dressed into the outlet.

[980] In respect of the membrane junction at the pool gate, it says that it had no duty of care since the LAM was supplied by Mapei and installed after the Equus product

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317 There is no inherent criticism of the Tremco or De Boer products supplied by Equus. The focus is on Equus' inspection of the membrane after installation.

and Equus did not assume responsibility for the actions or inactions of subsequent trades. It disputes that there is any evidence of damage or loss from anything it did or did not do. It observes that the torch-on membrane has a 15 year durability lifespan and contends that the Body Corporate's maintenance failures mean that it is unreasonable to rely on Equus' producer statement which was predicated on proper maintenance.

[981] Both the Council and Equus contend that the podium claims are time barred under s 4 of the Limitation Act 1950. They say that the defect was known or reasonably discoverable no later than 19 November 2007 when the Owners' Committee discussed issues relating to drainage around the pool area and resolved to arrange inspection to investigate the issues. The claim incorporating this defect was not filed until 2014, well outside the six year limitation period.

[982] Other general affirmative defences are also pleaded by the Council and Equus.

Is there an actionable defect or defects?

[983] The plaintiffs' investigations showed moisture entry under the main terrace. They argue this is caused by the three defects of the LAM:

a) Installation deficiency in that the minimum thickness was not achieved.

b) Installation without fibreglass mesh.

c) Failure to dress the LAM into the rainwater outlets rather than stopping at the edges of the outlets.

[984] In the pool and planter box areas, the Council's experts agreed that the membrane upstand installation was contrary to good practice, which resulted in moisture ingress and breaches of cls E2 and B2 of the Building Code.[318]

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[318] Equus' expert, Grant Hunt, did not agreed that the membrane upstand installation was the cause of moisture ingress. Mr Hunt's only conducted a desktop review whilst the other experts visited the site to investigate.

[985] The plaintiffs' experts maintained the way in which the torch-on membrane was installed enabled it to become detached and debond at the outlet perimeter and moisture to enter between the membrane layers. They contended that this could then find its way through the bottom layer and into the substrate.

[986] The experts generally agreed that the LAM has not adhered to the torch-on membrane which, together with the condition of the LAM, has allowed moisture penetration into the substrate.

[987] There is evidence of water tracking through the concrete slab and exiting into the carpark. There is corrosion to ducting, copper pipework and cable brackets. On the underside of the concrete slab there is evidence of corrosion staining and efflorescence from the effects of the salt laden moisture passing through the slab. There is, however, no obvious correlation between the locations on the ceiling of the upper ground level carpark below the podium which evidence moisture ingress and the location of the rainwater outlets.

[988] Actual damage is not required to establish a breach of the Building Code because the language in cl E2.3.2 is anticipatory.[319] A duty of care is recognised in respect of pre-emptive expenditure as well as expenditure necessary to reinstate or repair physical damage which has occurred.[320] Additionally, not every instance of water ingress breaches the Building Code. The Code is concerned with "undue dampness" and potential undue dampness, and provides that roofs and exterior walls must prevent water penetration that could cause such. No expert opined that the moisture accessing the slab was not undue.

[989] Anticipatory damage must take into consideration the expected durability of elements. The membrane products supplied by Equus have a 15-year durability requirement and have now been on Gore Street for over 17 years. Equus contends that the membrane therefore has met the minimum durability standards despite inadequate maintenance.

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319 *Minister of Education v H Construction North Island* [2018] NZHC 871 at [116]–[121].

320 At [117] citing *Body Corporate 07624 v North Shore City Council* [2012] NZSC 83, [2013] 2 NZLR 297 [*Spencer on Byron*] at [45]; and *Carter Holt Harvey Ltd v Minister of Education* [2016] NZSC 95, [2017] 1 NZLR 78 at [66].

[990] Related to this key question of whether there is an actionable defect is the question of causation — which of the existing defects caused moisture ingress when there are many potential causes? The defendants' experts dispute that the claimed sub-defect 10 in the pool area caused loss. Equus argued that there were many issues at play causing moisture ingress on the podium and it was not the "defects" identified by Trevor Jones. Its expert, Mr Hunt, considered there had been a lack of adequate investigation and problems with the skimmer box, cracks in the pool wall, holes in the membrane body, and that the various efforts to remove and rebuild the timber decks all could have caused or contributed to moisture. Even Mr Klosser for the plaintiffs indicated that there were likely to be a number of unidentified sources of water on the podium.

[991] Equus argues that dressing the bottom layer only of a double layer torch-on membrane is good trade practice and was so in 2006. Both Mr Greenall of Equus and its expert, Mr Hunt, contend that a single layer of torch-on membrane into a drain is both watertight and practical. Mr Greenall considered that any delamination between the top and bottom layer which may have been identified is a maintenance issue only.

[992] The plaintiffs relied on the concurrence of the experts at the defect 10 conference. All experts at the conference except Mr Hunt agreed the membrane did not correctly terminate at the rainwater outlets as the top layer was not dressed into the outlet. They referred to the BRANZ *Good Membrane Roofing Practice* Guide and the reference in figure 6 to "dress membrane down into outlets".[321] Mr Hunt's view was that the Go*od Membrane Roofing Practice* Guide was a reference to an alternative single layer membrane and not a double layer torch-on membrane.

[993] Mr Woolgar for the Council agreed in cross-examination that the top layer of the double layer torch-on membrane should have been dressed down into the outlet and that this defect has caused moisture ingress in breach of the Building Code provisions.

[994] However, that acceptance was cast in doubt when Mr Woolgar was cross-examined by Ms Tucker. While Mr Woolgar agreed at the expert conference that the

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321 *Good Membrane Roofing Practice* (BRANZ, November 1999) at s 2.7.2 and figure 6.

drain issue was a defect, it became apparent that this concession was based on a misunderstanding of the plaintiffs' expert evidence. His view was predicated on his understanding that there was no layer dressed in the drain. The cross-examination by Ms Tucker elicited clarification from Mr Woolgar that if one of two layers is dressed into the outlet, that "would typically be sufficient". He was then presented with a 2008 Membrane Code of Practice which depicted a typical drain with only the bottom layer being dressed and accepted that it would not be a defect if the drain was dressed in that manner.[322] He also accepted that because a two-layered system requires that each sheet is fully waterproof in its own right, moisture under the top sheet does not necessarily mean moisture on the substrate.

[995] Counsel for the plaintiffs charged with cross-examining the experts on this aspect, Mr Powell, referred technical literature from other manufacturers to Mr Greenall suggesting that they also showed two layers of a doubled layer system extending into the outlet. Mr Greenall did not accept this, although acknowledged that it was an option. He considered the literature irrelevant as it was a different system. He explained the practicality of laying a double membrane (the "cap sheet" he refers to is the top layer of the membrane):

> One of the problems with two-layer membrane work and particularly with the cap sheet is that the cap sheet has a mineral finish on it. If you put the cap sheet on first and then try and put the clamp ring down, it may sit up proud, so that you end up with the clamp ring actually providing a barrier to water free flowing into the drain rather than it being a flat surface that the water can flow into automatically. You're actually putting a little raise[d] dam in there for a kick-off, so you don't ever fully drain the deck, particularly with a membrane on a mineral finish because the mineral finish is irregular, so the clamp ring can sit like this with the base sheet [being the bottom layer] with a smooth surface. Its much, much easier to get the clamp ring down tight so that you do have a good seal, waterproofing with the base sheet.

[996] In October 2008, the Membrane Group New Zealand Inc published a *Code of Practice for Torch-on Membrane Systems for Roofs and Decks* .[323] The first draft edition of this publication was distributed for selected industry comment in September

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322 *Code of Practice for Torch-on Membrane Systems for Roofs and Decks* (Membrane Group New Zealand Inc, October 2008) at 52.

323 *Code of Practice for Torch-on Membrane Systems for Roofs and Decks*, (Membrane Group New Zealand Inc, October 2008). Equus was at the time (and remains) a member of the Membrane Group NZ Inc, now known as the Waterproof Membrane Association of New Zealand.

2005 according to the recorded document history.[324] The Code of Practice included the following reference diagram.

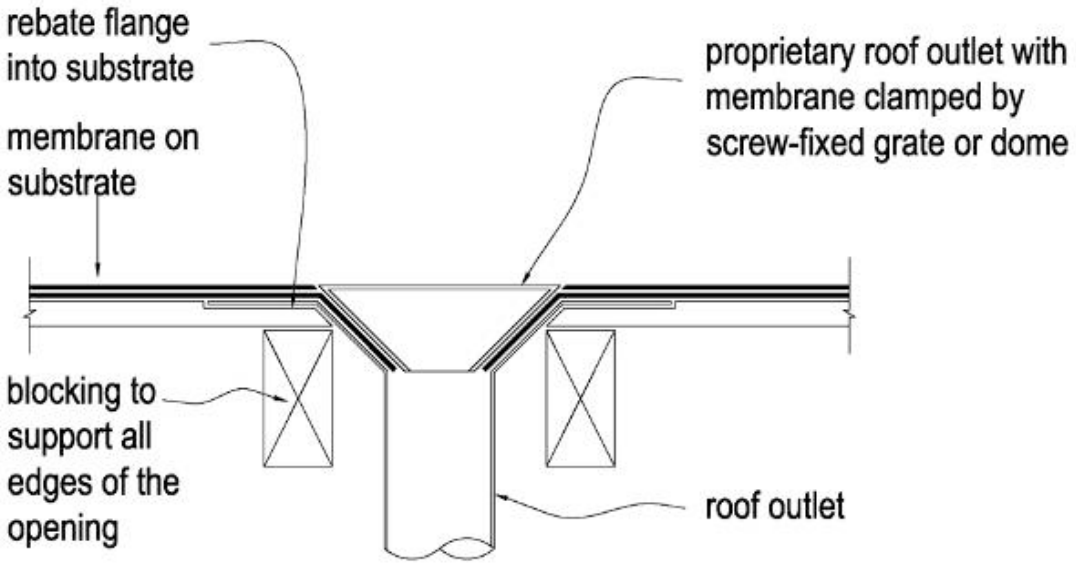

Figure 3 – Typical roof/deck gutter outlet with rebated gutter flange

Note – The figure is not to scale, and "membrane system" may mean a single layer or multiple layer system depending on its application.

[997] Mr Greenall explained:[325]

> On this drawing you can see there is a broad black line which is directly on top of the substrate, goes across the substrate across the flange of the drain and down into the drain entry. Then there is a roof outlet clamped over the top which is drawn quite generically because it might be a grate, it might be a dome, and it consists of a clamp ring with an independent dome or flat plate slot, slotted plate on the top, then the second layer of membrane is shown coming to the edge of that. Now the normal circumstance, and I believe this is what would have happened on the podium, is where that membrane is terminated it's terminated by scribing around where it goes and then it's finished with a little bead of compatible bituminous sealant between the clamp ring and the membrane itself.

[998] The expert evidence leads me to conclude that there were, at the relevant time, alternative acceptable ways of dressing a torch-on membrane system into drains and that dressing one layer down is not a defect.

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[324] That draft was not produced to the Court.

[325] Mr Greenall did not address the issue of the membranes being dressed into drainage outlets in his brief of evidence served in October 2021.

[999] I also accept that moisture under a top layer of a two-layer system does not necessarily mean there is moisture under the bottom layer, or moisture is getting through to the substrate since the bottom layer has to be waterproof in and of itself. The following exchange between Ms Tucker and Mr Woolgar was instructive:

> Q. …your concern with the way the drains were constructed was that there might be water able to get under the top layer and then that could travel through and then get to the substrate that way?
>
> A. Yes, if there's any defects in the bottom layer, yes.
>
> Q. Yes. And so, for that to happen, would you agree then you would need the top layer of the membrane to be lifting at the drain so that the water can get in to begin with?
>
> A. Yes.
>
> Q. And then you would need also a lack of adhesion between the two layers so the water can travel through the membrane?
>
> A. Yes.
>
> Q. And then finally, you would also need the bottom layer to fail as well since the bottom layer –
>
> A. Correct.
>
> Q. So in order for there to be a breach of E2, [as] as result of only one layer in the drain, you would need all of those things to happen first?
>
> A. That's correct.

[1000] It is a more difficult question whether the evidence shows that it is more probable than not that the failure to dress the LAM into drain outlets caused moisture ingress. It is contrary to the technical literature from the BRANZ *Good Membrane Roofing Practice Guide* and Mr Hunt opined that one would typically expect to see LAM painted below the clamping ring.[326] The mechanism of water ingress was explained but there was no evidence of such ingress at those locations. However, Trevor Jones said that water penetrating from the surface will exit through construction joints or penetrations so that moisture observed on the underside of the podium is not necessarily related to membrane failure directly above.

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326 *Good Membrane Roofing Practice Guide* (BRANZ, November 1999).

[1001] On that basis, I find that it is established that the defective workmanship at the drain outlets on the tiled part of the podium where the LAM is installed is causative of the moisture issues.

[1002] While there were many issues with the podium membrane and multiple causes of water ingress, I am satisfied that the following workmanship defects materially contributed to breach of the Building Code through undue dampness:

(a) lack of termination on the membrane upstands in the pool area;

(b) junction vulnerabilities arising from the dual membranes installed;

(c) inadequate thickness of the LAM on the terrace and installation of LAM without fibreglass mesh; and

(d) failure to dress the LAM into the drain outlets.

(e) planter membrane upstands terminating without suitable weatherproof protection to the top edge.

[1003] I am not satisfied that dressing one layer of the torch-on membrane into the drains was a defect or causative of any problem for the reasons set out above.

How did the relevant state of affairs come about and is the Council responsible?

Whether the relevant consented designs were issued under the 1991 Act or 2004 Act

[1004] The relevant consented designs for the podium underwent a number of changes from initial plans consented under Consent 303 through to revised plans under Consent 601. Some of the revisions were relatively significant. They included shifting the position of the pool further north, and adding a pool gate and door.

[1005] Although the as-built state of affairs appears to reflect the drawings stamped under the later Consent 601, the parties disagree about whether the podium plans were approved under Consent 303 or those plans were formally superseded under later

consents.[327] The scope of building work under Consent 601 covered, among other things, the addition of a new floor known as the level 2 commercial space to be used as a residence gym, and changes to the bathrooms on level 1.

[1006] The parties' respective positions were based on retrospective analyses of the drawings and revisions by the Council subject matter experts. While this issue took up some hearing time, I have reached the view that it is unnecessary to resolve the question, even if it were in fact possible to do so. This is because the plaintiffs accepted that the 2004 Act does not materially alter the substance of the Council's duty.[328]

Was there sufficient detail in the plans?

[1007] The plan for the podium indicates that it was to be constructed with a pre-cast concrete slab, which was then screeded, then overlaid with a "selected double torch-on membrane to falls" and finally be given an overlay of timber decking. No other product or installation details were explicitly provided for the podium waterproofing such as termination of the membranes up the walls, outlet details and the falls which the membrane was required to achieve. The architectural specification provided extensive details for sheet tanking and mineral fibre asphalt roofing for other areas of the building but makes no reference to the waterproofing of the podium.

[1008] The plaintiffs' criticism of the Council at the consent stage is two-pronged. They are critical of, first, the lack of product details in the consented documents and, secondly, the lack of installation details including as to how the membranes were to terminate up the walls surrounding the podium, outlet details and what falls the

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327 Mr Flay agrees that the plan in Consent 305 changes the location of the pool but did not accept that the later plan "superseded" the drawings under Consent 303.

328 The relevance is that the operative consent determines whether the 1991 Act or 2004 Act is engaged since Consents 301 to 304 inclusive were issued under the 1991 Act. Subsequent consents were issued under the 2004 Act. In addition, Condition 35 of Consent 601 referred to "Flashings and Membranes" and read "Particular care is to (sic) taken to ensure that all flashings and membranes are installed correctly. Special care should be shown when installing flashings or membranes that the upstands behind cladding materials are adequate. This will assist in ensuring that the building will be weathertight. These area are to be inspected prior to installing any covering materials." Mr Flay's evidence was that this condition would not likely be directed at the podium but rather the level 1 toilets which were within the identified scope of building work. This seems anomalous. It was not explained why the level 1 toilets would present heightened weathertight risks.

membrane was required to achieve. They argue that in the absence of these details, the Council could not be satisfied on reasonable grounds that the podium waterproofing would comply with cls E2 and B2.

[1009] It is incontrovertible that absence of details in consented plans may contribute to defective construction. This is particularly so where a proposed building element is novel or there are multiple layers of sub-contract. I respectfully agree with the observation of Harland J in *Johns v Hamilton City Council:* [329]

> [143] The lack of details in the plans coupled with the various layers of sub-contract involved in this aspect of the build reveal how easily an issue such as this can fall between the cracks. It reinforces why a more specific detail should have been included in the consented plans.

[1010] Practice Note 17 issued by Auckland City requires specific relevant plan detailing and explicitly stated that detailing via the manufacturer's technical literature was not acceptable.[330] But each case must turn on its own facts. The degree of detail required to form reasonable grounds in some instances may be less than others depending on the element at issue.

[1011] Mr Jordan's opinion was that a prudent Council should have required details of the manufacturer and technical literature setting out all of this information otherwise it could not be in a position to know whether the waterproofing would comply with cls B2 and E2 of the Building Code. Mr Moodie concurred. Mr Jordan also said that if the Polyflame specification was intended to apply to the podium outlets he would have expected to see this on the architectural plans and an actual drawing detail for the outlets. Mr Flay did not disagree that no such detail is found on the plans themselves. He maintained that it would be seen by a council officer at the consent stage as sufficient to have typical details that would apply to any area designated in the plans as requiring a "double layer torch-on membrane". He took the plans to read that wherever the architect referred to a double layer torch-on membrane, they were

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329 *Johns v Hamilton City Council* [2022] NZHC 379.

330 Practice Note No.17 "Building Consent Detailing Weathertightness*"* (Auckland City Council, 24 July 2003).

referring to the Polyflame system and that this was sufficient to provide reasonable grounds at the consent stage. He was challenged but held the line.[331]

[1012] Mr Flay's opinion corresponded with evidence from the Council processing officer, Ted Jones, who said:

> Included in section 4421 of the architect's specification, were pages which showed details from technical information provided by the manufacturer of the Polyflame product. Although this section of the specification refers to various roofs and not the podium itself, the same product that was intended to be used on roofs was also to be used on the podium.
>
> Detail 3 of the technical information clearly shows details as to how the Polyflame double layer torch-on would terminate at the wall. There is no detail showing how to dress the membrane down into the outlets, but this is something I would expect any competent membrane applicator to know this needed to be done at the outlets without the architect having to provide a detail.

[1013] Relevantly, the architectural specification dated August 2004 issued under Consent 303 provided details of sheet tanking and mineral fibre asphalt roofing but the listed scopes for such systems made no mention of the podium. Either the level of detailing for these items starkly contrasts the level of detail expected but omitted for the podium waterproofing system or, as the Council argues, these details were intended by the architect to provide instruction for the podium.

[1014] This specification included a section under the heading "Membrane roofing". The podium operated both as a roof and terrace. The specification provided technical information for a double layer, reinforced, bitumen waterproofing membrane. It referred to other technical material including two BRANZ bulletins for flat membrane roofs, design and installation and manufacturer's and supplier's documents (manual and specifications). The scope of work section referred to the level 36 roof, the plant room roof, lift shaft roof, gym roof and box gutters. There is no reference to a podium. No one suggested that the gym roof was early terminology for the podium.

[1015] It referred to the material as "4 mm Polyflame" membrane system from Waterproofing Systems Ltd and included a detailed architectural specification for a

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331 Whether or not the applicator installed the membrane upstand in accordance with the Polyflame technical information does not itself inform the question of adequacy of details.

"Torch-on membrane system: double layer." This did include termination details: at Detail 3 — a "roof/wall chase flashing option"; and at Detail 4 — an alternative "roof/wall flashing option".

[1016] Mr Flay also referred to Detail 4 on drawing 059-621 (revision 04a). This is a specific detail for terrace paving which shows a membrane upstand cut and chased into the concrete with an aluminium angle and skirting tile and then a bead of sealant between the angle and concrete wall. Again, there was no reference to the podium. Instead there was reference to gridlines correlating to Unit 1D's terrace deck and the turret on the corner of the canopy at the corner of Fort and Gore Streets. As I understand Mr Flay's point, while these details were not specifically designated for the podium they could be used for the podium even if not designated with the usual markers of generic or typical details.

[1017] Taking these points and counter points into consideration, I accept the Council's position that there were reasonable grounds to issue the consent. First, Mr Flay's actual experience in the processing of consents meant that his evidence on this issue was persuasive

[1018] Second, there is a specialist skillset for the construction of this aspect of the plans, as is made clear in the Polyflame specification. Membrane waterproofing is not a general contractor's task and the Council was entitled to view the sufficiency of detail through that lens.

[1019] Third, Mr Jordan's criticism about the absence of manufacturer's literature is answered once I have found that the Polyflame material is relevant.

[1020] Fourth, the fact that Mr Ted Jones could not say on cross-examination whether one or both layers of a torch-on membrane needed to be dressed into outlets and that he had not seen any Tremco literature showing how membrane was to terminate overlooks the fact that it was not the Tremco product but the Polyflame specification being assessed at the consent stage. That specification clearly refers to dressing membrane into outlets and fixing the membrane into down pipes and overflow.

[1021] Fifth, Ted Jones' explanation in oral evidence as to why an architect might include a manufacturer's specification (for example the Polyflame) and then a more generic reference on plans to a type of product such as double layer torch-on membrane accords with common sense. He said in cross-examination:

> Q. I suggest to you there's no link between the Polyflame literature in that section of the specification and this torch-on membrane on the podium, is there?
>
> A. The 303 consent included details for that area and had the two-layer torch-on membrane.
>
> Q. Well this refers to the two-layer torch-on membrane, doesn't it?
>
> A. Yes.
>
> Q. But neither refer to the Polyflame, do they?
>
> A. And that is normal so if a product was to change then that would change the specification if, or, sorry – yes, if the, if they changed to a different manufacturer's two-layer torch-on membrane they would change and update their specification but the drawings because they're already specifying a two-layer torch-on membrane wouldn't need to update all the drawings so the issue is if you were to provide a manufacturer's name on the drawing that could occur in, if that – if that, specified in every location there would and then you changed the manufacture you would then have to find that reference through all your documents to be able to update and then you'd have to update all those documents but by specifying the two-layer torch-on on the details in the drawings and then the specification sets out the specific manufacturer that was specified then if the product get changed they change the specification so it's still a two-layer torch-on but if they go to the, instead of using the Polyflame they go to someone else and they update the specification and there's no need to search the entire drawing set to try and find every reference to the Polyflame, if you can understand what I'm trying to say.

[1022] For the sake of completeness, I do not accept that Mr Flay's subjective interpretation of Detail 4 on plan 059-621 rev 04a informs the reasonableness of the issue of consent. He suggested that Detail 4 also applied to the podium given its reference to terraced paving and because it calls up double layer torched-on membrane. However, the locations for Detail 4 are particularly specific and defined by gridline references despite the more general sheet title for the drawing is "Exterior Details level 2 Roof". None of the stated gridlines apply to the podium. The upstand detail which refers to selected double layer torch-on membrane continuous upstand and clamped to wall behind silver anodised "alum" angle is different to the detail in

the Polyflame specification. The level of specificity of the in-situ use tells against an intention that this is a generic or typical detail for use wherever there was double layer torch-on membrane. I observe too that Ted Jones did not refer to this Detail in his evidence.

[1023] To recap, for the reasons stated, I consider there was sufficient detail in the consent documentation by reference to the Polyflame specification to provide reasonable grounds to issue Consent 303. I also accept the Council's argument that there is no sound evidential basis for the proposition that any of the alleged defects in the membrane on the podium results from a lack of information or details.

[1024] It follows that the plaintiffs' claim against the Council at the consenting stage is not established.

Was the Council required to inspect the installation of the membrane?

[1025] Mr Flay agreed that external membrane inspections were a standard part of council inspection regimes. The Council "Notifiable Inspections" for this project included "Membranes, decks/showers/walls". I accept that the podium has the features of a deck. There is no record of the Council undertaking any membrane inspection and no dispute that it did not. Neither does the Council argue that it was unnecessary to carry out inspection. Mr Flay indeed accepted that the Council ought to have inspected the podium. I agree that inspection was a Council responsibility since there was no consent condition specifying that a third party was to inspect and that failure to do so was a breach of its duty of care.[332]

Did the Council's failure to inspect have any actionable consequence?

[1026] This question depends on what a membrane inspection involves and precisely when it takes place. As previously discussed, Mr Jordan did not provide any detail as to what a council membrane inspection should cover. Nor was he specific about at what stage of the process such inspections are to take place. Mr Flay on the other hand said that in 2004-2005 a council officer would typically inspect the substrate of an area

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[332] This is consistent with Consent 601, Condition 35.

to be waterproofed with membrane. They would not inspect or observe the placement of the membrane.

[1027] Common sense suggests that a Council officer would not and could not practically oversee or observe the installation itself. This underscores the role of a producer statement from the specialist installer who is in a position, practically speaking, to certify installation in accordance with the manufacturer's specifications.

[1028] Mr Flay's statement says nothing about inspection *after* the membrane has been installed and before tiles are laid. The Council inspector would have at least seen that two different types of membrane were installed, inconsistent with the consent, and that one type of membrane lapped the other at the junctions. There was evidence that junctions between membranes were known to be high risk. He or she would also have observed that the LAM stops at the edge of the drainage outlets. Mr Moodie's view was that a prudent Council would have failed this detail at such an inspection and sought verification about the compatibility of the two membranes.

[1029] The Council's expert, Mr Flay, gave evidence that a council inspector would not remove the grate to the rainwater outlet to identify how the membrane is dressed into the outlet at final inspection. Mr Moodie said otherwise. Mr Flay did however accept that the interface between the membrane and the drainage outlets are an important aspect to view "if you can". I am not persuaded that removing the grate necessarily involves destructively pulling apart an outlet and do not see why this relatively simple exercise would not be carried out or would even have been necessary when shining a torch into the outlet may have provided an initial view. This too would have confirmed a LAM rather than torch on across the podium area. On the torch-on section, I am not satisfied that observing one rather than two layers dressed into the drain would have been seen as an issue (and I have determined it is not an issue).

[1030] It is obvious that a membrane inspection would have been the best opportunity to inspect the installation since the membrane would later be covered with tiles. A final inspection would not have afforded the same opportunity. Given the criticality of membranes and that waterproofing is a particular aspect with which the Building Code deals, I find that a schedule of inspections for this particular project ought

reasonably to have included inspection after installation and pre-cladding. Therefore, I find that the Council's failure to inspect breached its duty of care and that failure had material consequences in that it would have picked up the dual membranes and membrane upstand issues.

[1031] The inspection and CCC issues are intertwined, both for the reasons set out and because absence of inspection prior to the CCC assessment must inform the approach at the CCC stage, including the degree of scrutiny of producer statements.

[1032] At final inspection, a council inspector would not have been able to see the termination of the membrane upstand behind the tiles and the membrane upstands to the pool areas were predominantly covered by timber decking. Far from exonerating the Council, this underscores the importance of membrane inspection earlier and the need to scrutinise with care all and any producer statements relating to this work.

[1033] Before setting out my conclusions in respect of the role of Council at the CCC stage, I turn to Equus' involvement which is linked to that of the Council.

Is Equus responsible?

[1034] Brian Greenall, co-founder and managing director of Equus was the main Equus witness. Mr Greenall has long experience in building practices, waterproofing and the application of coating systems. He holds a Bachelor of Engineering (Chemical) and is a member of a number of industry bodies including the Waterpoof Membrane Association of New Zealand. Mr Greenall stated in his brief that he had read and agreed to be bound by the Expert Code of Conduct in so far as he expressed any opinion. At the same time he made no claim to independence for obvious reasons. He attempted to restrict his evidence to factual matters but the reality was that he also has relevant expertise. I am assisted by his evidence on some technical matters relating to waterproofing membranes but remain acutely conscious of the lack of independence.

[1035] Mr Greenall did his upmost to answer questions honestly. The weakness was that he at times attempted to fill in gaps in the contemporaneous documentary evidence based on recall. That had obvious limitations given the passage of time. Recall cannot

help but be informed by the litigation process and the evidence of experts. I place greater reliance on what contemporaneous material does exist and inferences available from that material.

[1036] Equus engaged Grant Hunt as its independent expert. Mr Hunt is a registered building surveyor, registered quantity surveyor and qualified builder who has been in the building industry for over 39 years. His expertise is in construction remediation works involving leaky buildings, structural and fire defects, and earthquake-damaged buildings. Mr Hunt did not inspect Gore Street. Rather, he conducted a desktop review of the plaintiffs' expert evidence. That does not mean that his evidence is weak or flawed but there are inevitable limitations to a desktop review.

Claim against Equus

[1037] For ease of reference, I set out again the thrust of the Equus claim. The claim is limited to part only of the podium comprising the strip next to the swimming pool which wraps around to the area at the south end of the pool and a planter box running along the eastern side of the pool. Although there is also an Equus supplied membrane directly in front of the Sailor's Lounge, no claim is made about this membrane.

[1038] The 'live' pleading at trial sought damages against Equus of just over $13 million. During the course of the trial this was substantially revised downwards to $2.5 million or thereabouts. In closing submissions, Mr Illingworth conceded that most categories of consequential economic losses were not properly claimable against Equus. In the end, the quantum claim against Equus in the event of a liability finding and assuming isolated repair works to the pool deck area on the podium (and excluding the terraced area) dropped to just under $2 million. Even that sum remains dependent on the reliability of a remedial cost schedule prepared by Maynard Marks which attracted substantial criticism at trial.

[1039] The initial case against Equus evolved substantially during the course of the proceeding. The plaintiffs' case in closing in relation to defect 10 was that in the course of its inspections of the level 1 podium pool deck and planter box, Equus ought to have identified the pool deck membrane defects; it should not have issued a producer statement for the podium; and it should have defined those parts of the podium to

which the producer statement applied more precisely rather than referring to the podium in general terms without appropriate definition or limitation.

[1040] The defects which the plaintiffs contend Equus ought to have picked up are the lack of weatherproofing protection to the top edge of the membrane at upstands (both in respect of the pool deck terminations and the upstands at the planter box), the termination of the top membrane layer (known as the cap sheet) at the edge of the outlets rather than dressing both layers into the outlets, and the incompatibility between the two types of membrane at the junction adjacent to the pool gate.

[1041] In opening its case Equus admitted it owed a duty of care in respect of its inspection and the statements it made in the producer statements (to the extent they were relied on).[333] It disputed the scope of that duty and denied any breach. But in closing, it cast that submission slightly differently. It argued that Equus' liability "could only be the producer statements which it had issued and not the inspection that it did" because it had no obligation to inspect, contractual or otherwise. I pause to interpolate that in the context of the case against Equus this is a distinction without a difference. Inspection and issue of the producer statements are better understood as interwoven, not separate, obligations. By issuing the producer statements, Equus expressly represented that it had carried out the appropriate inspection or inspections required to proffer the views within those.[334]

[1042] It argued that its duty extended only to the products which it supplied and was only to identify those defects which could reasonably be seen during a visual inspection after installation with no ongoing duty of care. It denied any obligation to supervise installation or destructively test. It further stated that any of its obligations effectively dissolved once the plaintiffs failed to subsequently maintain the membrane. Materially, it says that the metal flashings and weatherproof terminations were not the responsibility of Equus or Aquastop, as Equus' role was limited to Equus supplied materials. Therefore any reliance on the producer statement for that purpose was unreasonable. As discussed, it says the drainage outlets are not a defect but

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333 It was more circumspect as to precisely whom it owed such duty of care.

334 See *Hunt v Optima (Cambridge) Ltd* [1994] EWCA Civ 1073, [2018] 1 WLR 2137. I read this case as supporting the view that it is the statement which founds the liability.

constructed in accordance with technical literature published shortly after construction. It further says that the claimed sub-defect at the pool gate was not its responsibility since the Mapei product was applied after the Equus installation.

[1043] Equus does not accept that the claimed sub-defects have resulted in any damage to the podium although acknowledges that there are issues with water ingress into the upper ground carpark.

[1044] Other defences relied on by Equus include causation, a limitation defence in the same terms as that pleaded by the Council, betterment, contributory negligence, and failure to mitigate. It asserts that the plaintiffs have failed to repair and conduct maintenance even when advised to do so. The claimed remediation costs for this part of the podium were also vigorously contested, even after the significant downward adjustments by Messrs Klosser and Jones at trial.[335]

Issues for determination

[1045] Equus' liability for claimed defect 10 turns on:[336]

(a) Whether the sub-defects pleaded against Equus are actionable defects causing damage to building elements, or undue dampness or both.

(b) What the Equus producer statements covered and the scope of Equus' duty.

(c) Whether Equus breached its duty of care in the issue of the producer statements and whether any reliance on this was reasonable insofar as the claimed defect is concerned.

(d) Whether any lack of maintenance on the part of the plaintiffs may break causation, and amount to failure to mitigate and/or contributory negligence.

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335 The remediation cost issue was challenged by Equus on multiple occasions prior to trial in correspondence and robustly challenged by Mr Hunt, Equus' expert.

336 I frame the issues in a different way to counsel for the fourth defendant.

(e) If it breached any duty of care, was there resulting loss or damage for which Equus is liable.

(f) If Equus has liability, is the claim nonetheless barred by the Limitation Act 1950?

(g) If Equus has liability, is there an element of betterment?

(h) Were the second plaintiffs purchasing after the 2009 AGM contributorily negligent?

What was Equus' involvement?

[1046] Equus was not a party to the contractual relationship between Multiplex and Aquastop. There was also no contractual relationship between Multiplex and Equus. No documents concerning supply or other terms between Aquastop and Equus were produced. This is unsurprising given the effluxion of time between the supply/installation and the service of proceedings some eight years later.

[1047] Equus supplied a Tremco Tremproof 3000 2-Layer Torch-On membrane for the pool deck area (Tremco). Each layer is a three millimetre sand-finished membrane. It also supplied a De Boer Duo Landscape 2-Layer Torch-On Membrane System (De Boer) for the planter box. At the time, neither membrane system had a BRANZ appraisal or certification. Mr Greenall stated in his evidence that standard specifications on Equus letterhead were available to architects at the time. He did not produce these to the Court.[337]

[1048] Equus issued a materials warranty to Aquastop in respect of areas of Gore Street which are not part of the plaintiffs' claim. No such warranty was issued in respect of the pool deck or level three canopy roof. There is no suggestion that the Tremco or De Boer products were faulty.

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337 The specifications were said to be within the class of lost documents due to the passage of time.

Are the sub-defects claimed against Equus actionable defects?

[1049] I have already determined that the lack of termination on the membrane upstands in the pool area is an actionable defect but the complaint as to one layer of membrane only dressed into the drain is not a defect.

What did the Equus Producer Statements cover and what was the scope of Equus' duty?

[1050] Equus did not supervise installation but accepts responsibility for Aquastop's performance (insofar as observable matters are concerned and subject to other limitations).

[1051] I accept that Equus did not have any relevant design role in respect of the podium waterproofing although it appeared to have design capacity within its technical team.[338] Equus would have or ought to have been aware that third parties such as Multiplex and the Council would rely on producer statements. Equus therefore assumed responsibility for the full scope of work encompassed by those statements. The scope of work encompassed in the producer statements is to be objectively construed bearing in mind context and audience. Equus ought to have appreciated that a council relying on a producer statement would not necessarily have independent visibility of that scope of work.

[1052] Equus' duty of care in respect of the producer statements extended to ensure that all membrane waterproofing works captured in the statement were undertaken in accordance with the Building Code. There is no express statement that the "system" has been applied in accordance with "good trade practice" although meeting the requirements of the Building Code must inferentially mean that the installation has adopted good trade practice. I am satisfied that it was reasonable for the Council to rely on the description of scope in the producer statement. Whether it was reasonable

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338 Equus supplied a modified drain detail drawing to Aquastop for outlets on the street canopy roof following architectural revisions to the consented plans. Equus' modification was for one layer to be dressed into the drain with other changes to the location of copper plate and the extension of the plate into the drain. The same detailing of a single layer being dressed into the drain has also been used on the podium drains. The plaintiffs' expert, Mr Jones, said that the detailing of the street canopy roof drainage arrangement was different from the issues in respect of the pool deck areas. It is notable however that no claim is made against Equus in respect of the drain detail on the street canopy roof.

for the plaintiffs to (indirectly) rely on the producer statements depends on whether following its recommendations is a pre-condition.

[1053] Equus prepared three material producer statements:[339]

(a) Producer Statement Tremco Tremproof 3000 2-layer Torch-On Membrane to Concrete Podium Slabs dated 17 August 2006 (Podium Statement);

(b) Producer Statement De Boer Duo Landscape 2 Layer Torch-On Membrane System to Pool Area Planters dated 17 August 2006 (Planter Statement); and

(c) Producer Statement Tremco Tremproof BS3/Tremproof 4000M 2 Layer Torch-On Membrane to Level 3 Roof Area and Street Canopies dated 17 August 2006 (August Level 3 Roof Statement).

[1054] Each has a similar format. Each is signed by Mr Greenall. Each:

(a) Refers to the relevant Equus supplied waterproofing system, the building name, building owner, Multiplex and the building consent.

(b) Refers to the licensed applicator, Aquastop.

(c) Refers to identified specifications and confirms that the product has been applied in accordance with the applicable specification and that the standard of installation is found to be satisfactory.

(d) Confirms that the waterproofing product has been inspected by an approved person at Equus who is neither named nor credentialed.

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339 Equus produced six producer statements overall for Gore Street.

(e) Certifies that when installed in accordance with the specification and Equus recommendations it complies with and meets cls B2, E2 and F2 of the Building Code.

Podium Statement

[1055] Aquastop provided the Equus producer statements to Multiplex under the cover of a facsimile sheet which described the areas as "Street Canopy, Level 3 roof, Podium Area to side of Pool and Planter on one side of Pool.[340] Materially, the description of the area in the facsimile coversheet did not match the Podium Statement. The latter does not delineate the discrete partial area over which the membrane was actually laid.

[1056] Given its central importance, I reproduce the key parts of the Podium Statement in full:

> This statement confirms the following:
>
> **1) Inspection**
> The above completed **Tremco Tremproof 3000 2-Layer Membrane** System has been inspected by an Approved Person employed by Equus Industries Ltd, and the standard of installation has been found to be satisfactory.
>
> **2) Applicable Specification**
> The **Tremco Tremproof 3000 2-Layer Membrane** System has been applied to concrete in accordance with Standard Specification P3304, which was the applicable Specification at the time of installation.
>
> **3) Compliance**
> When the **Tremco Tremproof 3000 2-Layer membrane** System is applied to concrete in accordance with Standard Specification P3304 and the recommendations of Equus Industries Ltd, it complies with and meets the relevant provisions of the following New Zealand Building Code Clauses
> **B2 – Durability**
> **E2 – External Moisture**
> **F2 – Hazardous Building Materials**
>
> **4) Recommended Maintenance**
> It is recommended that the installation be inspected annually, to ensure that all drainage points are clear and working and that no detrimental mechanical damage has been caused to the membrane. Any such damage must be repaired

[340] The cover sheet refers to eight pages. Mr Greenall's evidence was that the producer statements and the quality assurance signoffs for the relevant areas were all faxed by Aquastop.

immediately. This is a requirement in terms of compliance with clause **B2 – Durability** of the New Zealand Building Code. [341]

[1057] The specific elements of the Podium Statement are:

(a) The reference to Consents 303 and 601.

(b) Identification of the applicable specification as "Standard Specification P3304".

(c) The statement that the membrane system meets the relevant provisions of the Building Code when applied to concrete in accordance with the identified specification and the recommendations of Equus.

(d) The recommendation for annual maintenance inspections required in terms of compliance with cl B2.

[1058] The specification reference P3304 relates to membrane in buried or underground situations and is not, on its face, applicable to membrane installed in the pool decking area.[342] It also contains a broadly worded detailing clause. The plaintiffs argue that, by incorporation, Equus was effectively advising that the membrane installations were carried out in accordance with a specification which provided for detailing of the membranes, a point to which I return later. The clause covers:

> "…all outlets…and anything above or below the roof surface…carried out before, during or in some cases after the laying of the membrane depending on the detail type. All detailing should be done in accordance with recommended procedures. Where special detailing accessories and chase sealants are required, confirm with Equus."

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341 There is a similarly worded statement in the producer statement for the pool area planters which reads: "It is recommended that the installation be inspected annually, to ensure that all drainage points are clear and working, that no surface damage has been caused to the membrane, and that all detailing and joints are sound".

342 It was unclear whether the version of the specification produced in Court was current at the material time or had been revised subsequently. Mr Greenall was unable to explain why this specification was used when there was no area at Gore Street meeting that description but speculated that it was an older specification. It was not argued that "buried" connotes "covered" in the sense covered by decking.

[1059] I agree that inspection would fairly be understood as a visual inspection without destructive testing of the "completed" membrane system. I also accept that inspection does not suggest supervision of the actual installation, which would be impractical. The certification is conditional on *application in accordance* with the recommendations of Equus. These appear to be unrelated to the ongoing maintenance recommendations which are expressed as a requirement only in respect of the durability clauses of the Building Code rather than cl E2.

[1060] The Planter Statement includes a note that "protection layers to the installed membrane has been placed by others." This refers to the polystyrene placed as protection inside the planter box. This is reasonably understood as excluding the efficacy of that polystyrene.

[1061] The compliance certification is in respect of the membrane *system.* Equus argues this is only the product it supplied which does not include the missing flashing on the podium around the pool. Reference to a system tends to infer composite elements. Those elements may conceivably be the two layers. But its meaning is less clear than Equus suggests.

[1062] During construction, either Aquastop or Equus took (undated) photographs of the membrane installation. An inspection document dated 15 August 2006 for the "Tremco TP3000 beneath timber decking beside pool" refers to seven inspection steps undertaken by an Equus senior technical consultant ranging from, among other things, checking all concrete surfaces for soundness to ensuring all details are correct at roof edges, column details and gutters ready for torching to checking that "penetrations well sealed, gutters and outlets checked". There is no reference to checking the transition between the double layer torch-on membrane and LAM along the Sailor's Lounge and main podium deck or to checking upstands. It is unclear whether the Equus representative attended on more than one occasion. The steps include inspection before installation of the first layer when the concrete surfaces were checked, inspection after application of the first layer and a final walk over after

application of the cap sheet.[343] There was no explanation of how long the process would take in a relatively small area.

[1063] Equus' counsel and witnesses spent a considerable amount of time attempting to identify the work which Multiplex required Aquastop to carry out by reference to contemporaneous contractual material. That proved problematic. There was no witness from Aquastop or Multiplex. Both Equus witnesses relied on the tender offer from Aquastop to Multiplex dated 26 January 2006 in which Aquastop expressly excluded "metal flashings or other plumbing items" for the work at Gore Street.[344] Mr Hunt opined that the tender offer's exclusion was consistent with industry practice because termination of membranes was the role of subsequent trades such as tilers or plumbers. However, the tender offer was superseded by a contract between Multiplex and Aquastop (Aquastop subcontract) entered into a few weeks later.[345] This document was introduced into the evidence late in the day and had not been part of the plaintiffs' evidence-in-chief. Mr Greenall's evidence was that Equus was not aware of the Aquastop subcontract at the time.

[1064] Mr Hunt was then recalled at the behest of the plaintiffs as a result of counsel's omission to put the Aquastop subcontract to him on cross-examination.[346] He confirmed that he had been aware of the existence of this document before he prepared his brief. Front footing Ms Zellman's inevitable line of cross examination, he sought to explain why he relied on the tender and not the Aquastop subcontract. He suggested that the tender more accurately reflected what had taken place. With respect, it was not a compelling explanation.

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343 The document records that the "section" was finished and inspected on 15 August 2006. Although the form refers to a "start date", this was not filled in by the Equus representative.

344 The tender offer produced to the Court omitted various schedules attached included a schedule 2 which the covering letter described as a scope of works. The tender price also stated "[we] have allowed for the details shown. On the nibs linking to tiled areas, we have allowed to take the membrane up and onto the top of the nib, such that the under tile membrane will overlap the torch-on membrane".

345 Multiplex Subcontract Agreement dated 10 February 2006.

346 Mr Hunt was cross-examined on the tender offer document but not the Aquastop subcontract which was overlooked. Plaintiffs' memorandum seeking leave to recall Mr Hunt dated 31 August 2022 and Ruling dated 1 September 2022. Mr Hunt's evidence on recall was given by remote means.

[1065] Whether or not the tender better reflected what actually took place on site is beside the point. I permitted Mr Hunt to explain his reasoning and view of the Aquastop subcontract, not because his view was admissible evidence, but to allow Mr Hunt the opportunity to explain why he ignored the Aquastop subcontract in his evidence.[347] It was an unfortunate slip by an expert who otherwise provided clear and logical expert evidence. It had the hallmarks of crossing into the territory of advocacy.[348]

[1066] The Aquastop contract defines Aquastop's scope of work. It contained the following relevant clauses:

(a) the preamble records that the Multiplex Standard Conditions of Subcontract will apply except as specifically amended in schedules 1–4;

(b) Schedule 1 lists specific project requirements and records that "Design Services" are not applicable;

(c) Schedule 2 records first that the scope of subcontract works is to "Supply and install Membrane roofing system to the Roof areas, Lift Over run, Wintergarden Roof, Commercial Space roof Level 3 Fort Street and the building canopy on Fort and Gore St". There is no mention of the pool deck or podium.

[1067] It then states (among other things):

(a) flash and seal all penetrations/roof gullies/upstands/etc for other trades;

(b) the Subcontractor is responsible for the waterproofing and sealing of the Works, including all junctions with adjoining work et cetera;

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347 Contract interpretation is a matter for the Court and opinion evidence as to meaning is not permissible save in limited circumstances such as evidence of particular trade usage or technical terms used. *Bathurst Resources Ltd v L&M Coal Holdings Ltd* [2021] NZSC 85, [2021] 1 NZLR 696 at [155]–[157]; *Firm PI 1 Ltd v Zurich Australian Insurance Ltd* (trading as Zurich New Zealand) [2014] NZSC 147, [2015] 1 NZLR 432 at [82]; and *Vector Gas Ltd v Bay of Plenty Energy Ltd* [2010] NZSC 5 at [19].

348 This was not the only expert who crossed this line.

(c) the Subcontractor shall allow for provision of all membrane to up-stands, hobs etc required to provide continuous water barrier throughout all waterproofed areas.

[1068] A sentence beginning "The works are:" is then followed by an apparent cut and paste section from the tender offer with pricing. This paragraph refers to "Deck areas" which does not obviously correlate with the earlier scope description in Schedule 2.

[1069] Schedule IV refers to applicable Clark Brown drawings (although these do not provide any termination details for the waterproofing membranes for the podium and level 3 canopy roof).

[1070] Inconsistencies in the Aquastop subcontract make its interpretation difficult but it is more than arguable that Aquastop was taking on responsibility for waterproofing and sealing including the upstands. Mr Hunt sought to explain this away. He gave evidence that the usual construction sequence on a work site would be to flash and seal existing penetrations and upstands such as door thresholds and nibs for antecedent work or trades rather than returning to the site to flash and seal work for separate trades following membrane application. He regarded it as a "nonsense" to suggest that a membrane applicator would return after the tiler to seal and/or flash tiles when this is the role of the tiler. He suggested that the bespoke and complex design flashings at the upstands needed to be designed. Neither Aquastop nor Equus are designers, and the Clark Brown drawings did not provide details and the subcontract excluded design work.

[1071] The Aquastop subcontract and the detailing references in the specification tend to support the plaintiffs' case about Aquastop's scope of work. However, there was also a producer statement from an entity called Spectrum Aluminium, a design and build manufacturing company in respect of colour steel cappings and flashings. The evidence does not show that Aquastop had any design role.

[1072] Unsurprisingly, Mr Greenall also sought to rely on the tender offer to limit Aquastop's scope of work and in turn Equus' supervisory limits. He says that Equus

would only have seen the tender offer, excluding the annexed documents, at the time of issuing the relevant producer statement.

[1073] The passage of time makes this evidence unreliable. Neither the tender offer nor the Aquastop subcontract was among Equus discovered documents. I do not consider that Mr Greenall could accurately recall what documentation he saw some 16 years earlier although he genuinely believed he did so recall. He would not be in a position to know what documents Equus' senior technical employee who inspected the membrane installation was provided with. Reliance on the tender offer without at least making further inquiry of Aquastop does not accord with commerciality when that document expressly disavowed any contractual obligation arising from the tender submission. Mr Greenall did not refer to the tender offer in his brief of evidence which leads me to believe it did not inform Equus' role as far as he was concerned. If he had relied on the tender offer to define Equus' role, then his evidence that he did not know about junctions appears inconsistent when the tender offer specifically refers to allowing for taking the membrane up and onto the top of nibs linking with tiled areas.[349] Nor does the confidentiality obligation provide an answer. It is unlikely that the Aquastop subcontract would have been withheld from Equus because of confidentiality in circumstances where Equus was supplying the membrane and certifying its installation.

[1074] I find that it was incumbent on Equus to identify the full scope of work which Aquastop undertook before it issued a producer statement and to frame its producer statement accordingly. Mr Greenall's acceptance that it would be important to know what work Equus was signing off before it did so supports my finding.

[1075] The evidence before the Court is incomplete. Although the subcontract expressly requires Aquastop to flash and seal the membrane upstands, absent any consented design for upstand termination details, Aquastop's scope of work could not practicably have encompassed the flashings on the pool podium. In short, that the scope of contracted work is best represented by the plans and drawings listed in

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[349] Mr Greenall made the point in cross-examination that at the stage of installing the Tremco, no one knew what the other membrane was going to be. He said "..our membrane was applied and signed off before we even knew what was going onto there and nobody at any time asked us how did we make this junction. Which I could've answered."

Schedule 4, none of which includes flashings and terminations at the top of the upstands.

[1076] In the end, I find it unnecessary to resolve the interpretation difficulties. The reason is that I reject the plaintiffs' submission that Aquastop's contractual obligations may extend the scope of Equus' duty beyond the work it assumed responsibility for in the producer statements. In my assessment, Equus assumed responsibility only for the work identified in its producer statements, construed objectively and reasonably. This is not determined by the scope of the contractual arrangements between Aquastop and Multiplex in respect of which the Council had no visibility. As to the point that the specification itself referred to detailing, that comprises anything other than a flat lay and is just as likely to refer to trades which came before the installation or readying the product for the following trade.

[1077] Consequently, I am not satisfied that the Podium Statement can fairly be said to describe a scope of work which included flashing detail as opposed to simply the membrane itself.

Is Equus responsible for the junction at the pool gate?

[1078] The answer is no. Mr Hunt agreed that incompatibility between the two membranes allowed localised moisture ingress at the pool gate. I accept that the evidence shows that the Mapei product was installed after the Equus supplied membrane. Responsibility for that junction lay with Mapei and/or others, not Equus. Relatedly, even if Equus was liable for the poolside membrane, it would not follow that it has responsibility for remediation of the LAM. No direct claim was made against it in respect of the strip in front of the Sailor's Lounge.[350] Remediation of that junction has not been shown to be consequential on repair of the torch-on membrane.

[1079] Accordingly, the plaintiffs' claim against Equus in relation to claimed defect 10 has not been made out because the drain is not a defect, Equus had no responsibility

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350 Trevor Jones only identified the interface between the podium terrace and the swimming pool deck area when discussing the interface between the podium terraces.

for the terminations, and the podium statement could not reasonably have been read otherwise.

Whether any lack of maintenance on the part of the plaintiffs may break causation, and amount to failure to mitigate and/or contributory negligence

[1080] Equus argues that reliance is only reasonable if the Body Corporate complied with the maintenance recommendations and the duty of care inures only to the extent that those recommendations were complied with. The conclusion I have reached makes it unnecessary to determine whether any failure to comply with the recommended annual inspections meant that reliance was no longer reasonable. The need to maintain membranes was cited by Babbage Consultants when they undertook investigations of the podium in 2009 and issued a building and investigation report.[351]

[1081] Equus' argument appears to be advanced as a means of confining the scope of the duty of care. It is a beguilingly simple approach. But it conflates the duty of care and concept of reliance. The obligation to maintain or repair in the face of this explicit warning nonetheless is relevant but in terms of causation and mitigation rather than as informing the ambit of the duty of care.

[1082] Having rejected the claim against Equus, I return to the last issue under the heading of the Council's liability.

Was the Council negligent at the CCC stage?

[1083] The Council argues that reliance on the Equus producer statements was reasonable, as they left the Council with no identifiable 'information gap' to prompt a final inspection. I disagree. I make this finding against the backdrop that the installation of flashings was generally known to be carried out by a following trade.

[1084] Had the Council carried out a final inspection itself, it would have been able to see, save where covered by decking and behind tiles, that the top edge of the membrane upstand around the pool was unprotected and the absence of the consented

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[351] Babbage Consultants *Building and Investigation Report* 19 November 2009. The Body Corporate Manual, 1 January 2004, refers to the need to maintain membranes.

aluminium angle. I accept that it would not have identified the installation of a LAM rather than torch-on membrane. Had it carried out any inspections prior to CCC stage (which I say it should have done) the limitations to the scope of the Equus Podium Statement would however have been known. In particular, it would have been on notice that the membrane on the main terrace was a LAM falling outside the scope of the Equus supplied material. In short, that the Council had no verification as to the installation of the main terrace membrane.

[1085] I find therefore that the Council breached its duty of care when it issued a CCC in respect of the podium.

Council's crossclaim against Equus

[1086] I am not satisfied that Equus has any liability to the Council in respect of the issue of the producer statements relating to the podium. It did not breach its duty of care or have any other culpability for the issue of the producer statement. Even if the Podium Statement itself was not clear about the area of the torch-on, this had no causal potency in circumstances where the Council had a duty to inspect at least during construction.

Claim against Mapei

[1087] The plaintiffs' claim against Mapei in relation to claimed defect 10 was only faintly pressed. Trevor Jones refers to a visit Mapei undertook in February 2006 and issue of a Contractor's Advice dated 13 February 2006 sent to Multiplex. That document records that water ingress was occurring. It attributes this to an insufficient layer of Mapegum and a lack of fibreglass mesh reinforcing. However that document refers to water ingress from the level 1 balcony into the apartments below and not the podium. It is not apparent, nor is it explained why Trevor Jones relies on it in relation to the podium itself.

[1088] I find no evidential basis to sheet home liability to Mapei in relation to claimed defect 10.

[1089] Had it been necessary, I would have dismissed the Mapei crossclaim against Equus. Mapei had the onus and burden of proof in respect of this crossclaim and did not appear at trial. It therefore fails.

[1090] The Council originally cross-claimed against Mapei seeking contribution pursuant to s 17(1)(c) and 17(2) of the Law Reform Act 1936. It did not press that crossclaim at trial. I have assumed that the Council forewent that crossclaim for practical reasons. I leave over that question. For the avoidance of doubt, it is not resolved. The Council is to advise the Court of the position.

Claim against Clark Brown

[1091] Clark Brown has no liability for the podium waterproofing design for the same reasons set out in relation to the question of the Council's consenting process.

[1092] The plaintiffs are critical that Clark Brown failed to identify the podium waterproofing defects in the course of its observations. Mr Bayley's expert opinion is that a prudent architect charged with construction observation would have been interested in the junctions with the walls and outlets. That is particularly so given the manner in which design was approached in the consented documents. In his view a prudent architect undertaking observation would have identified the non-conforming use of LAM and ought to have been particularly interested in the drain outlet details and lapping of the two different types of membrane.

[1093] He further says that a prudent architect would have identified that the membrane upstands to the walls of the podium in the pool area terminated without any weatherproof protection.

[1094] There is no evidence that Clark Brown did any of these things.

[1095] I accept Mr Bayley's evidence. I find that Clark Brown was negligent when carrying out its contract observation role.

Is claimed defect 10 time barred?

[1096] This issue is dealt with in Part VI – affirmative defences.

Summary in relation to claimed defect 10

[1097] Subject to the affirmative limitation defence pleaded by the Council, I find that the plaintiffs succeed in their claim against the Council and Clark Brown in respect of defect 10.

[1098] I dismiss the plaintiffs' claim against Equus and Mapei.

[1099] I dismiss Mapei's crossclaim against Equus and the Council's crossclaim against Equus.[352]

[1100] I reserve the issue of whether there is an extant crossclaim by the Council against Mapei.

Claimed defect 11 – Level 3 Canopy Roof

[1101] The final external moisture claimed defect is defect 11. This relates to the Equus supplied membrane on the level 3 canopy roof.

[1102] This claim was mercurial, both in substance and in respect of remedial scope/quantum. During the trial there was a dramatic reduction in the quantum claimed from $9.7 million to $324,000 (excluding GST). It is not difficult to imagine that had this occurred pre-trial, pragmatism may have prevailed and it would not have been necessary for the Court to deal with this claimed defect at all.

[1103] The canopy roof sits above the level 2 balconies (the Wintergardens) on the western side of the building. The roof is punctuated by sky lights. It joins a roof which wraps around the southern end of the building, separated by a low "stepover". This southern roof of the building is not part of the defect 11 claim. A wide gutter runs north to south along the length of the roof which abuts the tower. The canopy roof sits

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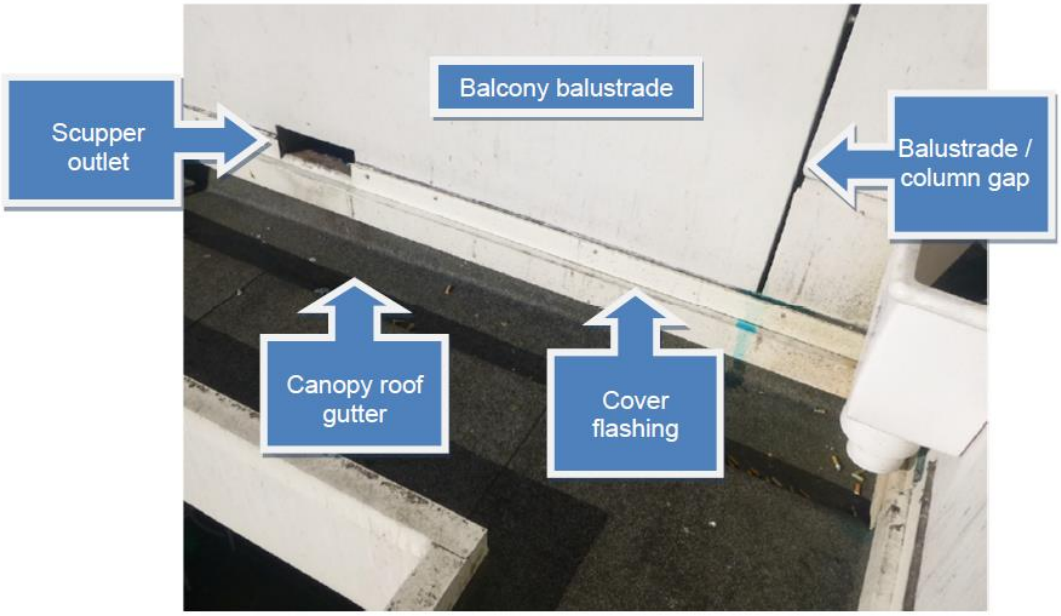
352 Mapei did not attend the trial to press its crossclaim but in any event the plaintiffs have not proved the claim against Mapei.

on a plywood timber substrate fixed to steel joists and timber supporting framework in turn fixed to the concrete structure below.

[1104] Critically, there are junctions between the canopy roof and the balconies at the base of the tower. The membrane is installed with an upstand — turnup onto the vertical face of the balustrade — along this junction. There is a cover flashing on the roof side of the junction extending above the height of the membrane upstand. There are seven scuppers and 14 gaps between the balustrade and columns on the level 3 decks through which water can flow from the decks to the gutter on the membrane roof. An example is illustrated in the photograph below:



What is the problem?

[1105] The plaintiffs say that water from the balconies is able to access the top edge of the membrane upstand at the scupper outlets and the balustrade to column gaps. It then tracks behind the membrane into the structure below resulting in timber decay.

[1106] There is expert evidence of the presence of toxigenic mould on the timber below the membrane upstand. Maynard Marks undertook destructive testing which included removal of the soffit linings below the canopy to examine the timber substrate. The investigators observed water leaking from the vicinity of the membrane upstand junctions with the main tower. Moisture readings taken showed readings

between 20.2 per cent and 95.7 per cent. Timber framing and fibre cement samples were sent to a specialist laboratory which identified decay damage and toxigenic mould.

[1107] Maynard Marks also undertook dye testing of the junction between the membrane upstand and main tower structure in two locations. Trevor Jones gave evidence that the testing showed dyed water entering into the void of the canopy roof below the gaps between the solid balustrades and columns to the level 3 balconies. Maynard Marks concluded that the primary cause of moisture entry and damage in the roof voids below the canopy roof was moisture entering the junction between the membrane upstands and tower.[353]

[1108] The plaintiffs claim that this defect has caused damage to the underlying structure in breach of cls E2.3.2 and B2 of the Building Code.

[1109] It is fair to say that the plaintiffs' case was fluid. The pleaded case is simply that the membrane is defective. There is no further particularisation in the statement of claim. The case proceeded on a different basis. The claim boiled down to two issues at the start of the trial. First, that the top edge of the membrane is unprotected in gaps between the balustrade and columns and scupper outlets. The plaintiffs' experts maintain that these "outlets" channel water behind the membrane via the unprotected top edge. The water is able to then access the roof framing below.

[1110] The second issue was that only a single layer torch-on membrane was installed rather than the consented double layer. This fell away at trial. Trevor Jones gave evidence that a single layer of torch-on membrane was not causative of damage. He maintained the suggestion that there was a single layer in the gutter based on an inability to observe seams on visual inspection. However, there was an alternative explanation for the absence of seams based on how the membrane is laid. One would think that deconstruction of the membrane in the gutter would have been a relatively straightforward exercise. In any event, the plaintiffs pared back their case on claimed

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[353] Mr Jones gave evidence of other poor installation practices such as inadequately bonded membrane laps and a single rather than double layered membrane but Maynard Marks did not find any evidence that these issues were causing significant moisture ingress.

defect 11 to the one specific sub-issue being the unprotected top edge of the membrane upstand at the critical junction with the level 3 balustrades.

Who is said to be responsible?

[1111] The plaintiffs claim against the Council in respect of all three stages of the regulatory process; Equus for failing to pick up the design deficiency and issuing a producer statement; and Clark Brown for both design and observation failings. The design failing is said to be that the design of the canopy roof to tower junction left the top edge of the membrane unprotected at the balcony balustrade drainage points (the scuppers and gaps) and directs water via a third party flashing onto the substrate before it reaches the membrane. The construction generally followed this defective design leading to the moisture ingress.

[1112] The plaintiffs' case against the Council is that the consent should not have been granted in the absence of adequate detailing of this junction when it did not have reasonable grounds to be satisfied these junctions would comply with cls E2 and B2 of the Building Code. It further says that the Council should have noticed the unprotected top edge of the membrane at the drainage gaps during the course of inspection but did not undertake a membrane inspection. Finally, at the CCC stage, the Council should have identified that it did not undertake any membrane inspections. Although it had a producer statement from Equus, the defect was so clearly observable that no reliance ought to have been placed on it.

[1113] Against Equus, the plaintiffs' case is that it too should have picked up the absence of protection originating in the design detail and not issued a producer statement unless and until the vulnerability was rectified.[354]

[1114] Against Clark Brown, the plaintiffs' case is that it provided designs for the level 3 canopy membrane to tower junction which would allow water to track behind the membrane and failed to identify that the membrane to tower junction was defective during the course of its supervision.

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354 The producer statement was not required by the building consent but may have been provided at Multiplex's initiative.

The respective cases in a nutshell

[1115] The Council (and Equus) accepted that there is evidence of water ingress and deterioration of timber framing supporting the gutter and that this breaches cls B2 and E2 of the Building Code. The Council's experts agree that the inadequacy of the cover flashing to the top edge of the membrane has the *potential* to allow moisture ingress but says that the plaintiffs have not established that the claimed defect has caused or materially contributed to any damage. It admits that it ought to have identified that the top edges of the membrane between the concrete balustrade gaps were unprotected. More particularly, it disputes that this has caused or materially contributed to damage to which the plaintiffs' remedial scope is directed and contends that the Council had reasonable grounds to issue the CCC on receipt of the Equus producer statement.

[1116] Equus accepts that it had a duty of care to ensure there was a double layer torch-on membrane on the canopy roof and denies any responsibility for failing to detect the lack of protection at the membrane upstand edge for the same or similar reasons as it denies responsibility for the waterproofing issues on the podium. Equus argues that the design causes a problem which exists before the water gets anywhere near the Equus membrane. It points out that the consented remediation plans for the membrane internal gutter prepared by Maynard Marks include the very same detail alleged to be negligent. Equus is critical of the plaintiffs' approach. It says that Equus is being asked to pay for a design error which has nothing to do with Equus' products and replace what is acknowledged to be a defect with exactly the same defect.[355]

[1117] Equus has also pleaded a limitation defence under s 4 of the 1950 Act, failure to maintain the membrane – both as mitigation and as disqualifying reliance on its Producer Statements, betterment, and contributory negligence.

[1118] Clark Brown filed a statement of defence pleading a contractual limitation of liability in the contract with the Principal and Builder, among other things. I have discussed this contractual limitation in Part III.

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[355] On cross-examination, Mr Klosser acknowledged that there are a few details needing to be added around the scupper outlet and junction between the balustrade and column junction. In short that "it's not currently detailed but it would need to be addressed."

[1119] The issues for determination in relation to the Council are directed more to the consequences of the admitted defect, whether and to what extent the defect has caused damage and what is reasonably required to remedy it. This contest is in essence between the plaintiffs' "robust remedial solution" and the Council's narrower approach which limits remediation to only the specific area where destructive testing took place.

[1120] The core issue for determination in respect of the claim against Equus is whether it caused or materially contributed to the defect in breach of a duty of care. Then, what remedial consequences, if any, flow from any breach.

What is the state of affairs?

[1121] In this instance, expert conferencing did narrow the issues. It also significantly reduced the proposed scope of remediation. The relevant experts agreed that the design was negligent.

[1122] The output from the expert conferral is instructive. In summary, the experts agreed:

(a) this was a design issue not remedied during construction;

(b) the construction was generally as per the consented plans except for the way the metal flashing was cut and folded at the scupper outlets for which there was no consented design;

(c) the inadequate protection of the top edge of the membrane where there are gaps was contrary to acceptable weathertightness design and construction practices;

(d) this has breached clauses E2.3.2 and B2.3.1 of the Building Code;

(e) the consented design does not comply because it does not address the height in relation to the balconies on the floor level above the junction

and there is no detail at the complex junctions through the seismic balustrade gaps and scupper outlets to the balcony floors; and

(f) the result is that water is channelled behind the membrane upstand at those complex junctions.

Is there an actionable defect?

[1123] I am satisfied that the Maynard Marks testing has established that the design issue which was not rectified during construction has caused water ingress with consequent damage to the timber framing and that this is a systemic issue. Further that they have established a breach of cl E2 of the Building Code.

[1124] In making this finding, I do not overlook that Mr Woolgar subsequently removed a section of flashing to the parapet on the west elevation of the canopy roof and found the plywood membrane substrate to be saturated though there are no gaps in the parapet wall. I am not satisfied that this undermines the plaintiffs' case as to the identified cause of damage on the other side. That there may be multiple causes of damage contributing to the problem is not an impediment to the plaintiffs' claim. The Council suggests that this reinforces its position that the sealant failure is the material cause of damage.

[1125] Mr Jones' evidence is that when he inspected in 2015, the sealant was well adhered and yet the damage was evident. Although there are no photographs taken by Maynard Marks of the western side he said in evidence that the condition of the sealant on that side was not in as good a condition as the gutter side where it was in surprisingly good condition. It is apparent therefore that he did view the sealant on both sides.

How did the relevant state of affairs come about and is the Council responsible?

[1126] I would have been inclined to accept that a prudent council should not have approved drawings without requiring waterproofing detailing for the top edge of the membrane at the drainage points but for the fact that the consented remedial plans prepared by the plaintiffs' experts also lack the same detail. I discuss that point below.

[1127] On 28 October 2005, Multiplex applied for a building consent to add wintergardens to the level 2 apartments. This was expressed as an application to amend Consents 301–305. Various plans accompanied the application, one of which is stamped with Consent 307 and included a detail 4 showing a section through the gutter and junction with the level 2 balcony balustrade.[356] There is nothing on this plan to tell the council officer that there is a break in the concrete balustrade. Trevor Jones says this detail should be read in conjunction with the detail on another drawing showing a gap at the balustrade to column gap.

[1128] Trevor Jones and Messrs Jordan and Moodie for the plaintiffs are critical of the omission to show how the top edge of the membrane is to be weatherproofed at the drainage points in the gaps between the concrete balustrades. They maintain that the cover flashing shown on the plan above the upstand will be ineffective.

[1129] On 25 January 2006, the Council issued building Consent 307 with the description "Amendment – winter gardens added to level 2 apartments".

[1130] Mr Flay for the Council did not agree that a council officer should have picked this up because that would require the officer to recall the single detail of the seismic gap at the balustrades from earlier submitted plans. His view was that a Council officer would focus only on changes being made under Consent 307. He also considered that the potential for moisture ingress at these points would not have been apparent to a council officer. Ted Jones, the Council processing officer, confirmed that there was nothing to alert him to a potential problem on the face of drawing 059-625 and had not "carried in [his] head" all of the details from the earlier drawing sets.

[1131] In my assessment, a prudent Council would not approach a staged consent in a complex project in a siloed fashion, as if each consent had no relationship with earlier consents. A more holistic approach is appropriate in the particular circumstances of Gore Street. This requires a view to be taken on how subsequent consents affect

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356 I understand there is a difference in level descriptions. What the plans refer to as "roof level 2 terraces" is referred to by the plaintiffs' experts as the level 3 canopy roof.

specific parts of the original consent, particularly in relation to amendments. This is not a matter of carrying in one's head the earlier detail. I accept that would be a humanly impossible task given the level of complex detail. It would necessitate reviewing earlier details as part of the processing inquiry or requesting confirmation from Multiplex.[357]

[1132] I accept the plaintiffs' argument that in order to determine whether the plans complied with cl E2 of the Building Code it was necessary to consider the design of the junction as a whole. If it had been so considered, the gaps in the balustrade and the potential for water ingress would also have been identified. It is curious however that the Maynard Marks remedial design has the identical detail for the top edge of the membrane and this design has been consented by the Council. Mr Klosser for the plaintiffs explained in evidence that the proposed membrane installer can expect some additional details to ensure that water is not directed from the balconies above in a manner avoiding the membrane. A finding of negligence at the consent stage in those circumstances would be incongruous. I therefore find no negligence at the consent stage notwithstanding the views of the experts as to the design.

[1133] The Council responsibly accepts that the unprotected edge ought to have been picked up at an inspection stage. This is despite the lack of detail in the consented document. I agree. A Council inspector should have required the unprotected edge to be waterproofed.

[1134] At the CCC stage, the Council was in receipt of the Equus producer statement. Had it inspected and therefore observed the lack of detail, it would also have been on notice of its limitations. While the inspection and certification stages are in one sense distinct processes, there are also intimately connected in another sense. In terms of assessing the scope of the duty of care, the failure to inspect flows through to the issue of the CCC. In any event, I do not accept that it would be reasonable for the Council processing officer to read the Equus producer statement as going beyond the application of the membrane given the general view among the experts that flashings

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[357] I note too that a specific condition states that Consent 307 is to be read in conjunction with previous building consents and all conditions from previous consents apply equally. This tends to support the holistic approach.

are usually installed by tilers, builders, roofers or plumbers. The other reasons informing this view are discussed above in relation to claimed defect 10. At the very least, the officer should have been on notice to make further inquiry.

[1135] I conclude that the Council has breached its duty of care in respect of the inspection and CCC stages of the regulatory process. It did not have reasonable grounds to be satisfied that the canopy roofing membrane waterproofing construction complied with cls E2 and B2 of the Building Code.

Claim against Equus

[1136] At the outset of the hearing, the quantum claim against Equus was for $14,678,521 for claimed defects 10 and 11 combined.[358] Midway through the trial the remedial costs claim against Equus was updated, resulting in a total claim of $2,798,144.51 for claimed defects 10 and 11 combined. Further iterations of the quantum claim reduced this sum further if the terraced courtyard remedial work is removed from the claim. In closing, in response to questions from the Court, the plaintiffs conceded that consequential losses could not be Equus' responsibility since the remedial work could be undertaken in isolation without the attendant inconvenience. I refer to this by way of introduction to illustrate the moving feast with which Equus was confronted.

[1137] I have accepted in relation to claimed defect 10 that Equus had no design role in respect of the areas relevant to the claims against it. It is also material that the work at issue was carried out in 2006 and proceedings were not served on Equus until later 2014. Consequently, document retention was patchy.

[1138] The plaintiffs claim that Equus ought to have identified the vulnerable junction between the canopy roof membrane upstand and the tower during the course of its inspection. They say that Equus should not have issued its producer statements in relation to the level 3 roofs. Equus accepts as before that it is responsible for the accuracy of the producer statements (where they are relied on) and contends they were

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[358] This comprises $13,22,578 in respect of claimed defect 10 and $11,178,359 in respect of claimed defect 11.

accurate insofar as the certified scope of work is concerned. As with defect 10, it argues that the matters at the heart of the plaintiffs' claim under this claimed defect are matters arising out of third party work; lack of specific design detailing by the architect and for the flashing installed by a third party which directs water from the balconies above behind the gutter membrane.

[1139] I accept that Equus did not have a general supervisory role. Its inspection role is limited to exercising reasonable care in order to certify the scope of work included within the producer statements it issued. It follows that, unless the producer statement directly or indirectly says otherwise, its obligation extended only to inspecting the completed membrane work (however defined) presented for inspection at the time. It had no ongoing obligation to inspect subsequent work carried out by others after that time.

[1140] The inspection of the level 3 canopy roof was carried out by Karl Wootton. His job description was "Equus Senior technical Consultant". He signed an inspection check sheet noting a start date of May 2006 and final inspection completion on 7 July 2006. He is no longer with Equus and was not called to give evidence.

[1141] There are undated photographs of the areas inspected by Equus. These were discovered by both Equus and Aquastop during the course of the litigation.

[1142] The sheet has seven operative steps with an eighth should there be damage by other trades after the sign off date. The potentially most relevant steps are four and five which read:

> 4. Application of **BS3 basesheet.** Decide on most suitable direction of sheets. Ensure all details are correct at roof edges column details and gutters are ready for torching.
>
> 5. Check – laps 75 mm-80 mm, end laps fully torched and closed, evenly torched, penetrations well sealed, gutters and outlets checked.

[1143] Equus' August Level 3 Roof Statement appears to have superseded an earlier Producer Statement dated 26 July 2006.[359]

[1144] The August Level 3 Roof Statement certifies that the standard of installation of the "Membrane system" has been found to be satisfactory; the product has been applied in accordance with standard specification P3303 (the applicable specification at the time) and when installed in accordance with the specification and the recommendations of Equus, complies with cl B2, E2 and F2 of the Building Code. There is the Equus standard annual "recommended maintenance" provision.

[1145] I accept that objectively read, the compliance certification is limited to the "Membrane System" – in this case the Tremco Tremproof BS3/Tremproof 4000M 2-Layer Membrane System. There is no statement that the "system" has been applied in accordance with the consented plans and specifications. Rather the certification is as to the relevant provisions of the Building Code.

[1146] The standard specification P3303 operative at the relevant date was not produced but a version available as of April 2020 was put to Mr Greenall in cross examination. The plaintiffs rely on cl 3.4 of that specification to inform the scope of Equus' duty of care. They ask the Court to infer that the 2020 document is not materially different from the specification at the relevant date given its similar wording to an Equus specification dated 2005 referred to in the Aquastop tender document. Clause 3.4 relates to detailing. It reads:

> **Detailing**
>
> This shall include all outlets, pipe penetrations, gutter stop ends, parapet upstands, machinery plinths and anything above or below the roof surface. This is carried out before, during or in some cases after laying of the membrane depending on the detail type. All detailing shall be done in accordance with recommended procedures. Where special detailing accessories and chase sealants are required, confirm with Equus.

[1147] Mr Greenall explained in evidence that "a detail" is anything other than a flat lay. According to Equus, the flashing on the level 3 canopy roof is a third-party

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[359] Producer Statement dated 26 July 2006 headed "Tremco Tremproof BS3/Tremproof 4000 2-layer torch-on membrane to level 3 Winter gardens concrete roof area." It refers to Consents 301 to 308 but is otherwise in identical terms.

product not installed by Aquastop. It suggested that it was a product designed and installed by Spectrum Aluminium (Spectrum). It relied on a producer statement issued by Spectrum relating to cappings and flashings which, according to Mr Jones appeared to relate to levels 1–3 or the upper roof. I am unable on the state of the evidence to determine whether it is more likely than not that Spectrum undertook this flashing work and in the end consider it is not dispositive in any event.

[1148] Equus did not have any duty to inspect the work of Aquastop falling outside the scope in its producer statements. But for the issue of a producer statement, it could not have any responsibility for a defective design. Equus would have been well aware of the Council's potential reliance on a producer statement.

[1149] I accept that Equus assumed responsibility for the full scope of work set out in the producer statements and had an obligation to take reasonable skill and care to ensure that all membrane waterproofing works described in them were undertaken in accordance with requirements of the Building Code, not the consented designs. The question is what scope of work is covered? This must be objectively interpreted. What would the reasonable understanding be bearing in mind the purpose and context?

[1150] I have already found that the Aquastop tender did not define Aquastop's scope of work as it was superseded by the contract between Aquastop and Multiplex. The scope of work in the contract included flashing and sealing of all membrane upstands. However, in my assessment, the producer statement is to be read without that special knowledge. At its highest, it is ambiguous whether the work certified include flashing and sealing. The experts agreed that flashings are usually installed by a trade such as a tiler, builder, roofer or plumber. Had the Council inspected (as it should have done) it would have observed the lack of protection of the top edge, and the Producer Statement would have been understood to relate to the membrane itself.

[1151] In light of these factors, I have concluded that the plaintiffs have not shown a breach of duty of care on the part of Equus in respect of claimed defect 11. Its duty was limited to the scope of work it reviewed as set out in the producer statements. In any event, I have found that the Council should have carried out an inspection so anything Equus did or did not do had no causal potency.

[1152] It follows that the claim against Equus for claimed defect 11 fails.

Consequences of Council breach

[1153] I am satisfied that the absence of a protected edge on the membrane upstands has caused water ingress and damage and that the Council's breaches are causative of the actionable defect. The Council is therefore liable for the cost of reasonable repair.

[1154] I find that the Council has not proved by way of mitigation that had the sealant been adequately maintained, the ingress and consequent damage would have been much less than occurred.

Claim against Clark Brown in respect of claimed defect 11

[1155] I accept the evidence of Mr Bayley for the plaintiffs. I find that Clark Brown causally contributed to actionable defect 11 in producing a defective design that permitted, if not channelled, water from the balconies to discharge over the top edge of the membrane and by failing to identify this in the course of its various inspections.

[1156] I have previously found that Clark Brown's contractual limitation of liability in its services agreement with First City which was novated to Multiplex does not answer claims against it.

[1157] As discussed, Clark Brown is liable on the same principles as the Council for the required remedial work, losses on sale and share of fees but neither have liability in respect of this defect for general damages nor consequential losses because the remedial scope is relatively limited and would not necessitate moving out of the apartments.

Other

[1158] I also dismiss the Council's crossclaim against Equus.

PART V — INTERNAL MOISTURE DEFECTS

[1159] Defects 12 and 13 relate to alleged lack of adequate waterproofing to apartment bathrooms. They are pleaded as:

(a) **Defect 12**: Junctions between baths and tiles are not waterproof and glazed shower screens do not contain water; and

(b) **Defect 13**: Inadequate containment of water in the bathrooms.

[1160] Their interrelationship means that it is both appropriate and practicable to deal with them together.

Context and framework

[1161] There are 407 bathrooms in total. Eighty-eight two-bedroom apartments have bathrooms with a shower over the bath. A subset of 15 of those have a second bathroom with a shower. The remaining apartments have bathrooms with an enclosed shower and no bath. Claimed defect 12 concerns the 88 main bathrooms in the two-bedroom apartments only. Claimed defect 13 concerns all bathrooms except the penthouse.

Clause E3 of the Building Code

[1162] The internal moisture clause of the Building Code provides the main framework for these claimed defects.[360] It throws up a host of interpretation issues which separated the parties' respective experts.

[1163] The non-mandatory guidance or compliance document for cl E3 is E3/AS1. It adopts the standard stepped guidance for one method of compliance with the specific internal moisture performance criteria of cl E3. First published in 1992, there were a number of revisions and amendments prior to October 2004.

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[360] The plaintiffs rely on both cls E3 and B2 of the Building Code.

[1164] For convenience I repeat the relevant provisions. Clause E3.1 of the Building Code states two high level objectives:

> (a) safeguard people against illness, injury, or loss of amenity that could result from the accumulation of internal moisture; and
>
> (b) protect household units and other property from damage caused by free water from another household unit in the same building.[361]

[1165] It can readily be seen that the objective of (b) is not protection of the household unit from which the free water comes but prevention of free water from one unit causing damage to another.

[1166] The objectives are to be achieved by construction in a manner that avoids the likelihood of:[362]

> (a) fungal growth or the accumulation of contaminants on linings and other building elements; and
>
> (b) free water overflow penetrating to an adjoining household unit; and
>
> (c) damage to building elements being caused by the presence of moisture.

[1167] The material functional requirements of cl E3.3 for present purposes read:

> **E3.3.2** Freewater [sic] from accidental overflow from *sanitary fixtures* or *sanitary appliances* must be disposed of in a way that avoids loss of *amenity* or damage to *household units* or *other property.*
>
> **E3.3.3** Floor surfaces of any space containing *sanitary fixtures* or *sanitary appliances* must be *impervious* and easily cleaned.
>
> **E3.3.4** Wall surfaces adjacent to *sanitary fixtures* or *sanitary appliances* must be *impervious* and easily cleaned.
>
> **E3.3.5** Surfaces of *building elements* likely to be splashed or become contaminated in the course of the *intended use* of the *building* must be *impervious* and easily cleaned.

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361 Free water is not defined in the Compliance Document.
362 Cl E3.2.

> **E3.3.6** Surfaces of *building elements* likely to be splashed must be constructed in a way that prevents water splash from penetrating behind linings or into *concealed spaces.*

[1168] The overarching difference between the parties' respective experts to the relevance and interpretation of the acceptable solution pathway permeates this case. It is particularly relevant in respect of the claimed internal moisture defects. As discussed in Part I of this judgment, it is not "cherry-picking" to have a combination of acceptable solution elements or details alongside alternative solutions for other elements, or to have alternative solutions based on the Acceptable Solution. Compliance with an acceptable solution in an approved/compliance document requires strict compliance to achieve deemed compliance. But that is not the same thing as complying with the entire Acceptable Solution which may include irrelevant solutions to some elements.

[1169] E3/AS1 illustrates this. It sets out solutions for various situations extending to wall linings, floor linings, bath/wall junctions and enclosed and unenclosed showers. It is possible to have some elements of the overall design, such as the floor waste gully, rely on the deemed-to-comply pathway for the containment functional requirements of the Building Code. Other elements, such as the shower over the bath, may fall outside E3/AS1 or be a variation of the solutions in E3/AS1. (Both would be an alternative solution, the latter based on the Acceptable Solution.) It will be a matter of fact and degree as to how much reliance (if any) can be placed on the compliance document to assess compliance of the variation. The slighter the variation, the more valid the comparison with E3/AS1.

Floor wastes

[1170] Paragraph 2 of E3/AS1 sets out two required measures to deal with overflow — containment and floor wastes. The first, containment, may be achieved by "using impervious continuous and coved floor coverings *or* joints sealed where they meet the wall".[363] At Gore Street, the floor covering is not coved. Both diagrams in the illustrative Figure 1 in this section show a coved transition in both diagrams so are not directly relevant. Both refer to "[f]lat or continuous fall to floor waste". Figure 1(b)

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[363] Compliance document E3/AS1, para 2.1.1 (emphasis added). "Coved" means there is a rounded or moulded junction between a horizontal and vertical surface.

refers to "waterproof membrane if wall lining or floor is water absorbent" and depicts the membrane rising up the wall to 75 millimetres. The Council argues that this reference to waterproof membrane in a specific instance only supports the idea that there is no universal requirement for a waterproof membrane.

[1171] The Council considers that the sealant at the ends of the door thresholds constitute "sealed joints" as intended by paragraph 2.2.1. I disagree. I favour the plaintiffs' argument that the reference to "sealed joints" means, in context, the sealing of vinyl floor sheets with hot welded seams as per figure 1 in paragraph 2.1.1 and is not therefore relevant. The disjunctive "or" points to something other than continuous and coved floor coverings. Clinton Smith for the Council acknowledged on cross-examination that the term "sealed joints" is a reference to the hot welding. That an expert in the field takes it to mean this lends support given the technical underpinning.

[1172] The plaintiffs contend that the floor coverings are not impervious where they meet the walls as the membranes stop short of the architraves and the membrane is not continuous. It follows that containment is not achieved in accordance with E3/AS1.

[1173] The second required measure to deal with overflow is to remove or dispose of free water by means of a floor waste before it can flow to and damage another unit. "Floor waste" is defined in E3/AS1 as "[a]n outlet located at the low point of a graded floor or in a level floor designed to receive accidental or intentional discharges".[364] Materially, the definition does not require a floor waste to be installed in a graded floor.

[1174] Paragraph 2.2.1 requires that a floor waste comply with paragraph 3.4.3(c) of G13/AS1, and goes on to state that "a graded floor is not essential in this situation". The phrasing "in this situation" appears to mean the situation set out in paragraph 3.4.3(c). G13/AS1 is the Acceptable Solution relating to cl G13 of the Building Code. It deals with foul water and has the objective of preventing illness and loss of amenity due to odour and the accumulation of offensive matter resulting from foul water

[364] Compliance document E3/AS1 at 9.

disposal. Paragraph 3.4.3(c) covers the situation where the only purpose of the floor waste is to discharge accidental overflows. In that situation a floor waste shall:

(a) have no water trap;

(b) discharge to the open air within the property boundary;

(c) discharge to a safe location; and

(d) be fitted with a means to prevent the entry of birds and vermin.

[1175] It is apparent that this paragraph is not applicable to Gore Street since (a) and (b) are not relevant. I accept that the floor wastes in this situation not only have the purpose of discharging accidental overflows (the primary purpose) but also to trap foul gas and discharge water from cleaning. Consequently, neither paragraphs 3.4.3(c) of G12/AS1 nor 2.2.1 of E3/AS1 apply to Gore Street. These provisions cannot be relied on as providing a basis for dispensing with the falls in consented specifications if such are provided for.

Requirement for membranes

[1176] Paragraph 3 of E3/AS1 deals with watersplash — the third functional requirement. There are three measures to deal with water splash in E3/AS1.[365] The first deals with lining materials. Paragraph 3.1.1 sets out the types of floor linings and finishes which satisfy the performance for impervious and easily cleaned surfaces in areas exposed to water splash. Included in that list are ceramic or stone tiles meeting certain specifications and cement based solid plaster or concrete with a steel trowel or polished finish. Other floor linings and finishes listed refer to sealing with a waterproof coating but this requirement is absent from ceramic or stone tiles and concrete with the steel trowel or polished finish.

[1177] The second measure dealing with water splash relates to joints between lining sheets, and between linings and sanitary fixtures. Paragraph 3.2.2 provides that,

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[365] There is no definition of "watersplash" in the Acceptable Solution so the common and ordinary meaning applies.

"[w]here baths, basins, tubs or sinks abut impervious linings, the joint between fixture and lining shall be sealed to prevent water penetration to concealed spaces or behind linings." The paragraph refers to Figure 3 which details two types of junctions — junctions of bath and wall; and junctions of tub, sink and basin. All three diagrams of bath and wall junctions have a curved or lipped bath edge. Neither the paragraph nor the Figure refer to membranes at joints.

[1178] The third measure to deal with water splash in paragraph 3.3 focuses on showers (and urinals). There is no discrete section for baths and no section dealing with showers over baths. Shower spaces shall have impervious floor and wall finishes under paragraph 3.3.1. There is an explicit edict that certain materials are not to be used. It also states that ceramic or stone tile finishes shall be laid on a continuous impervious substrate or membrane.[366] There are only two other references to "waterproof membrane". One is in respect of a tiled shower tray if the wall lining or floor is water absorbent.[367] The other is with a ceramic tile covering if the wall lining or floor is water absorbent.

[1179] I therefore accept that, even if applicable, there is no requirement for the whole of the bathroom floor or walls to have a waterproof membrane.

[1180] I accept Mr Lewis' submission that the containment and waterproofing design of the bathrooms was not based on E3/AS1 although I note that consent conditions imposed by the Council at the consenting stage did call up E3/AS1 in relation to containment issues. There was nothing in the designs to indicate that E3/AS1 was being followed and E3/AS1 does not cover showers over baths.

An alternative solution?

[1181] The general consensus among the experts is that the bath edge detail is an alternative solution. I accept and agree with that evidence. The Council consenting officer, Ted Jones, did not accept this characterisation. He described it instead as a "variation" of the Acceptable Solution. Mr Woolgar confirmed in cross-examination

366 Paragraph 3.3.1(b) as shown in Figure 4(c).
367 Figure 4(c) Shower Trays.

that the bathrooms do not strictly comply with E3/AS1 since E3/AS1 only refers to a separate bath and shower. As he said, this design is therefore "an alternate solution using an alternate designed bath to that shown in the Acceptable Solution". He suggested that one way to look at it is that "a shower over a bath is the same as a shower but with a deeper shower tray". This strikes me as an inapt and strained interpretation. I observe that shower solutions in E3/AS1 require the shower trays to have an upstand behind the impervious wall lining to prevent water getting back into the wall framing.[368]

What is the problem?

[1182] The bath edge construction followed the consented design except that in some cases the second line of sealant was missing. Water is entering and tracking down behind the sealant joint. It then enters behind the plasterboard linings and into concealed spaces causing water staining and mould damage to the linings behind the baths and water damage to carpets and carpet grippers in some adjoining bedrooms. Water is also flowing off the edge of the bath at the junction of the glazed screen and wall, beyond the tiled surface of the wall and onto non-impervious painted surfaces resulting in damage to the plasterboard linings.

[1183] The plaintiffs say that the shower screens on baths do not adequately contain water splash within the bathroom and water splashing onto the floor can travel to the door frames and track to adjoining rooms.

[1184] Although not particularised, the plaintiffs contend that there are four sub-defects. First, installation of flat edge baths which rely on sealant at the wall junction. Secondly, the glazed shower screens are an incorrectly positioned single pivoting shower screen on the bath edge contrary to the Clark Brown design which called for one fixed and one pivoting pane. Third, the bathroom floors do not fall towards the waste outlets on the bathroom floors. [369] Fourth, the membrane upstands

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368 Paragraph 3.3.4 and Figures 4 (a) and (b).
369 Fall in this context means graded or sloped.

are not present behind the door frame architraves. The third and fourth sub-defects are said to cause the inadequate containment of water alleged in claimed defect 13.[370]

Who is said to be responsible?

[1185] The plaintiffs allege breaches of cls B2 and E3 of the Building Code. They sue the Council for negligence at the consent and inspection/CCC stages. They also sue the architects Clark Brown in respect of the design of the bath-edge junctions and Mapei in respect of an alleged failure to identify defects when reviewing the bathroom waterproofing.

[1186] The plaintiffs' case is that the bath edge detail was an alternative solution which the Council ought not have consented. They say that the Council failed to undertake a wet area membrane inspection. Such an inspection would not only have picked up the consented design flaw but that the designed secondary line of sealant was missing on a considerable proportion of bath edges and the shower glazed screen deviated from the consented plans.

[1187] The plaintiffs say both those issues arise from negligent construction and ought to have been picked up by the Council on inspection as being contrary to the consented documents and cl E3 of the Building Code. The plaintiffs allege that had a membrane inspection been undertaken in accordance with condition 30 of Consent 303, a prudent council officer would have observed the absence of membrane at the door threshold and the issues with the fall to waste. It follows, they argue, that the Council did not have reasonable grounds to be satisfied that the bathroom construction was code compliant.

Claim against Clark Brown

[1188] The plaintiffs say that Clark Brown breached its duty of care at the design stage because its design detail for the junction of the bath edge and walls did not follow the technical documents referred to in its own specification. Further, that its reliance

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[370] Maynard Marks visually inspected 283 apartments in relation to the containment defect. Approximately 53 per cent had visible signs of moisture ingress adjacent to the bathroom door thresholds. It undertook destructive tests in 38 door threshold locations. All but one had no membrane upstand at the architrave.

entirely on sealant was a flawed approach and did not allow water to drain away from the wall.

[1189] They say that Clark Brown failed to identify the defective bath to wall junctions, the non-compliant glazed screens, the absence of waterproofing behind the architraves to the doors and the lack of falls to wastes when undertaking contract monitoring.

Claim against Mapei

[1190] Mapei's Mapelastic LAM product was used for waterproofing the bathroom and shower floors. There is some evidence that Mapei reviewed the bathroom waterproofing.[371] Against Mapei, the plaintiffs allege breach of a duty of care by failing to identify the lack of membrane upstands to the door framing behind the architraves and the lack of positive fall to floor wastes.

What is the state of affairs?

[1191] The bath edge generally followed the design detail save that in many instances, there was only one line of sealant with the secondary line between the bath and plasterboard missing.

[1192] The bathroom floors as constructed were either flat or fell towards the door threshold. Of 71 bathrooms investigated as part of the containment observations, 34 per cent recorded falls toward the door thresholds ranging from 0.05 degrees to 0.9 degrees. These issues are potentially relevant to all bathrooms although the Council puts the plaintiffs to proof as to the extent of the alleged problem.

[1193] Instead of two panes, a wall mounted, single paned bath pivoting glass shower screen has been installed at the shower end of the baths. As installed, the screen sits above the outer edge of the bath rather than on the inside edge. The pane has a pivoting hinge rather than being fixed to the wall. The rubber seal at the bottom edge of the installed screen has a gap at the junction with the pivoting hinge adjacent to the wall. Trevor Jones' evidence was:

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[371] There are Mapei check sheets and correspondence relating to the bathrooms.

> Had the specified screen at least been installed, incorporating a fixed pane adjacent to the wall, in the as designed inner bath edge position then water flowing off the shower screen would not have [been] able to flow onto the plasterboard wall linings adjacent to the shower end of the baths. This would have been much improved had a bath with a lipped upstand also been part of the consented design, which it was not.

[1194] The membrane upstands do not reach the door threshold though the design intended to make the architraves impervious by using membranes. It is not disputed that moisture ingress has caused the architraves to swell and deform allowing moisture behind and mould growth to the plaster board and corrosion to steel framing. The plaintiffs' experts say that the resulting damage is more extensive than merely where skirtings are swollen.

Respective cases in a nutshell

[1195] The Council does not dispute the existing state of affairs. That is, it accepts the situational facts. It disputes they are defects with the exception of the poor workmanship in the installation of sealant joints (absence of a secondary line of sealant) for which it is not responsible. It maintains that the flat-edged bath detail is a "good detail" and the workmanship issue could not have been picked up on inspection.

[1196] It argues that code compliance does not require a shower screen. Therefore, a council inspector cannot be said to be negligent by not critically assessing the installation of the screen and picking up its hinging and position even though it did not conform with the consented documents.

[1197] As for the floor and membrane/architrave issues, the Council does not dispute that these accurately represent the as built reality but argues that none, individually or collectively, are defects. It says that the Acceptable Solution E3/AS1 does not require membrane upstands to extend 100 millimetres up the base of the wall, does not require membrane upstands inside the door architraves or a positive fall to the floor waste. The Council argues that if a method of construction is not required by E3/AS1 such indicates that the method of construction is not required to achieve code compliance. It further argues that none of these elements would (or should) have been identified at any inspection had it taken place since there were no "defects" to observe.

[1198] It says that there is no prescription for a fall in the Clark Brown drawings nor architectural specifications. Further, that reliance on the Norman Disney and Young hydraulic services specification (NDY Specification) submitted in support of Consent 302 in July 2004 is too long a bow to draw. The Council argues that these factors mean that it must follow the bathrooms are code compliant even without upstands or a fall towards the waste.

[1199] Finally, the issue of a CCC was not only reasonable but an inspector would not have been entitled to fail the bathrooms for lack of a fall to waste or missing membrane in view of the information and documents available to the Council. In particular, the Council points to a producer statement and a 'warranty' from Mapei.

[1200] Faced with clear evidence of degradation and damage to the architraves the Council posits that there has either been excessive or unusual exposure to moisture beyond normal water splash (a usage issue) or the standards established by the Acceptable Solution are not actually sufficient to meet the Building Code. It says that in neither case can the Council be held liable.

[1201] The Council pleads reliance on a six-year limitation defence under s 4 of the Limitation Act 1950. It contends that the matters pleaded as part of defect 12 were reasonably discoverable no later than 19 November 2009 but the claim was not pleaded until 26 March 2014, outside that limitation period.

[1202] As previously recorded, although Clark Brown and Mapei filed defences, they did not take part in the trial. The claims against them proceed by way of formal proof.

How did the state of affairs come about?

[1203] Trevor Jones describes the typical layout in the Clark Brown drawings for the 88 bathrooms with a shower over the bath in the following terms:[372]

> In all instances, one side of the bath faces into the bathroom. The other side and the both ends of the bath finish against tiled walls. The walls above the bath area shown as tiled finishing above the level of the shower head which is over one end of the bath. There is a glazed screen which runs part way along

[372] Clark Brown drawing 059-524 revision 02 (Consent 305). Typically these bathrooms also have a utility area with a washing machine and stacked dryer.

the side of the bath from the end with the shower head. The glazed screen is drawn as having two panes, a fixed pane next to the wall and then a pivoting pane which can rotate in and out.

Bath edge detail

[1204] Detail 3 of Clark Brown drawing 059-532 revision 03 (Consent 305) shows a horizontal (flat) edged bath to the open side of the bath facing into the bathroom with the glazed screen finishing above the inside face of the bath. Detail 5 in the same drawing set shows a bath-to-tiled-wall junction. It shows the bath edge as horizontal (flat) with a first line of sealant between the tile and bath and a second line of sealant between the bath and plasterboard behind the tiles. A liquid applied membrane is to be applied over the plasterboard. The Clark Brown plans 059-524 for the bathroom walls and 059-532 for the bath detail specify GIB Aqualine plasterboard for the wall linings above the bath.[373]

[1205] There is a contest over whether the inner line of sealant is specified to be behind or in front of the membrane in the drawings and "as-built". I return to this point later.

Shower screen on bath

[1206] The Clark Brown drawings show a shower screen with two panes, including a fixed pane adjacent to the wall and a longer pivoting screen.[374] The bottom of the shower screen was designed to finish on the inside edge of the bath.[375] As constructed, the shower screens have one long pivoting pane instead. The pane has a pivoting hinge rather than being fixed to the wall and the pane is above the centre of the bath edge rather than on the inside edge.

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373 The bathroom plans were first consented under Consent 303 but underwent amendment. The bath edge detail and door threshold details are found only in the subsequent plans 059-532 and 059-541 respectively under Consent 305. The Council contends that the plan 059-524 was first consented under Consent 303 so the touchstone on CCC was code compliance rather than the consent and consent conditions. (The August 2004 architectural specification was also approved under Consent 303). They accept that plan 059-532 was consented under Consent 305. The plaintiffs submit that there were changes between the bathroom plans in Consent 303 and same plans under Consent 305 although did not explicitly identify whether the clouded items (signalling a drawing change) and changes to the legend were material. They maintain that the plans under Consent 303 were superseded. In the end, it is not apparent to me that this needs to be resolved for the reasons already discussed.

374 Clark Brown drawing No 059-524, detail 12C and D2 consented under Consent 305.

375 Clark Brown drawing No 059-524, detail 3.

Fall to floor wastes

[1207] The design intent in the consented bathroom plans was for the floors to be constructed on specified waterproof membrane/acoustic underlay on slab.

[1208] The architectural drawings did not themselves show a fall on the bathroom floors. However, note 8 of the "bathroom notes" on the drawings states "drawings to be read in conjunction with the written specifications".[376] It is not disputed that the "specifications" include the Clark Brown specification dated August 2004 which in turn cites the BRANZ *Good Tiling Practice Guide* (BRANZ Guide). The plaintiffs argue that the reference to specifications also includes the NDY Specification which accompanied the documents supporting an earlier consent in July 2004. Clause 7.2.8 of that specification requires floor surfaces (including ensuites) to be graded to wastes.

[1209] Although the Council expert, Mr Flay, agreed in cross-examination that cl 7.2.8 applied to bathroom floors and Mr Woolgar agreed the reference to the written specification included the NDY specification, the Council challenged the proposition that this prevailed over the architectural detail. As Ms Meechan put it, the plaintiffs' experts never explained why a council inspector would have checked the NDY specifications submitted in support of Consent 302, found the reference to the particular clause and then assumed it prevailed over the architectural details.

[1210] There was of course no evidence from Clark Brown or NDY to shed light on these issues.

Membrane upstands

[1211] Detail 1 on drawing 059-532 shows a "door threshold detail" for doors adjacent to carpeted areas. There is a similar detail with the same annotations on a later drawing for doors adjacent to timber floor areas. Trevor Jones explained that these details show the use of an aluminium threshold bar, finishing above the level of the tiled floors. The details state "[l]ap floor membrane up onto vertical face of threshold and 100mm up wall beyond as a continuous upstand". He opined that the combination of

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376 Clark Brown drawing No 059-532, rev 3, note 8 on "bathroom details typical".

membrane upstand, raised threshold bar and floor waste was to contain free water on the floors during both ordinary use and in the event of accidental overflow.

[1212] The plaintiffs' experts refer again to the BRANZ Guide recommendations on wet area tiling and waterproofing interior wet areas as a cited document within the Clark Brown specification dated August 2004 and the Australian Standard referred to within the BRANZ Guide.

Conditions in consent

[1213] I consider that both Consents 303 and 305 are relevant. A consent subject to conditions under ss 34(4) and (5) of the 1991 Act does not become an unconditional consent once the 2004 Act is in force.[377] I accept there is nothing in either the 1991 or 2004 Acts empowering a Council to refuse to issue a CCC simply because a condition is not met. However, that does not mean that consent conditions are redundant or could be ignored by council inspectors at the CCC stage because in the view of the compliance officer they stipulated something in excess of the Building Code. Even if a condition is better understood as a statement of expectation, failure to observe the condition goes to the adequacy of the assessment of code compliance. Failure to confirm that conditions are complied with, or to consider the impact of non-compliance, can and should inform the question of whether the Council has exercised the requisite care.

[1214] Consent 303 included two relevant conditions which were expressly incorporated in the later consent:

> **29. Sanitary Fixture Room Finishes**
>
> Floor finishes in sanitary fixture rooms are to be impervious and easily cleansed (sic).
>
> Areas prone to water splash (walls and floors) are to comply with NZBC – E3/AS clause 3.0.
>
> Gib Aqualine and waterproof membranes are to be installed to the manufacturer's specification details.

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377 The 2004 Act does not contain any general power to impose conditions but authorises consent conditions in certain circumstances.

> Where overflow could damage an adjoining unit, containment and floor waste to be provided to comply with NZBC – E3/AS Clause 2.0.
>
> **30. Membranes in wet areas**
>
> Where membranes are being installed in wet areas, an inspection is required before applying the covering materials, i.e tiles, shower trays. Adequate curing time is to be allowed where these materials are to be covered over, in accordance with the manufacturer's specifications.
>
> Particular care is to (sic) taken to ensure that all membranes are installed correctly with adequate upstands behind linings.

[1215] Consent 305 also included condition 11 in relating to sanitary fixture room finishes in the following terms, as relevant:

> Floor finishes in sanitary fixture rooms are to be impervious and easily cleansed (sic).
>
> Areas prone to water splash (walls and floors) are to comply with NZBC-E3/AS Clause 3.0.
>
> If a sanitary fixture is located where accident overflow could damage an adjoining household unit, containment and a floor waste shall be provided to comply with NZBC – E3/AS Clause 2.0.

[1216] The import of, and reason for, incorporating these references to the Acceptable Solution when there is nothing in the Clark Brown designs calling up E3/AS1 was not explained by Mr Jones in his evidence-in-chief.

[1217] Mr Lewis submitted that the commentary in the BIA Technical Review of the Council Building Control Group dated June 2003 provides an explanation why these consent conditions were incorporated. The review team was tasked with, among other things, investigating whether the processes and procedures employed by Territorial Authorities enable them to satisfy the requirements of the 1991 Act and the Building Code. On the subject of consent conditions, it noted that strong reliance is placed on the use of building consent conditions and that:

> The computerised checklist used at the time of vetting the consent application generates a number of generic consent conditions. Building officers make extensive use of these conditions and will also make endorsements to plans in red pen. This practice serves several functions:
>
> - It highlights issues that require the builder's attention
> - Serves to educate applicants & contractors

- Provides information to compliance monitoring building officers involved with onsite inspections, and

- Expedites consent processing by alleviating the need to suspend an application that may have otherwise been considered lacking detail and requiring additional information.

> Some of the consent applications viewed had 12–15 pages of generic consent conditions and in some cases were more specific than the specification provided. Many of the consent conditions appear to have been applied to cover documentation deficiencies; some were not relevant to the project.
>
> *Comment: It is the review team's opinion that while written consent conditions may serve the functions bulleted above; they should mainly be used to highlight matters of particular importance. Consent conditions should not be used as a substitute for missing design information. If documentation is deficient it should be either rejected or suspended.*

[1218] Which, if any, of the functions of these conditions are relevant is speculative. Nonetheless, the level of specificity of the relevant conditions tells in favour of some function.

The specifications

[1219] The consented Clark Brown specification accompanying the relevant drawings required compliance with the GIB Aqualine Wet Areas Systems Manual (Aqualine Manual).[378] It also cited and expressly recorded the BRANZ Guide as part of the specification.[379] None of the options illustrated in the Aqualine Manual or BRANZ Guide for waterproofing junctions between wall linings and baths include a flat-edged bath. Instead, they show a lipped-bath edge with membrane lapped over the edge or similar. On the face of it, this was inconsistent with the Clark Brown-drawn detail. Similarly, I agree that the Acceptable Solution E3/AS1 does not contemplate a flat-edged bath. But I note that it does not contain any edict about lipped- versus flat-edged baths.

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378 Clark Brown specification dated August 2004 at 5113G, cl 3.9.

379 At cl 1.2, the Clark Brown specification states "Documents listed above and cited in the clauses that follow are part of this specification. However, this specification "takes precedence in the event of it being at variance with the cited document." There is no similar hierarchy expressed when the drawings are at variance with cited documents. The general section provides that the specification is to be read in conjunction with the architectural drawings and finishing schedule. It is arguable that this should be understood as implicitly according the drawings precedence over cited documents but this was not argued by either party. A ripe area for cross-examination was whether the lack of reference to a graded floor in the bathrooms in the Clark Brown specification could be said to be at variance with the BRANZ Guide when there was no mention at all to fall or lack of fall in the specification.

[1220] The BRANZ Guide (but not the Clark Brown specification) references Australian Standard AS 3740 for guidance in relation to internal waterproofing.[380] The import of this reference was the subject of considerable cross-examination of the Council's experts. At the Expert Conference, the Council experts recorded in relation to the glazed screen detail that "the design and construction anticipated the waterproofing of the bath walls and floors adjacent in accordance with AS/NZ 3740 Figure 4.1".[381] This suggested that a shower screen is optional. However, Mr Woolgar appeared to walk back on the import of AS 3740. The core point made by the Council's experts was that the standards set out in AS 3740 went above and beyond E3/AS1, as did the recommendations in the BRANZ Guide. Both Mr Woolgar and Clinton Smith expressed the view that had the architect wanted to include AS 3740 it was necessary to do so in the specification. Mr Woolgar put it succinctly when he said that a graded floor is such a "fundamental construction piece" that it needed to be shown on the architectural details if the designer had intended it.

[1221] It is worth setting out relevant parts of the BRANZ Guide:

> **6.1.4** As a tiled surface is not inherently waterproof, any wet area tiling which has habitable or useable spaces adjacent to below, must be detailed and constructed to prevent moisture getting into the substate and those spaces.
>
> …
>
> Relying on the tiles and grout (without a waterproofing system) to make a floor or wall waterproof is a common cause of problems, as are:
>
> - insufficient fall to provide drainage to horizontal surfaces
> - poor detailing and/or construction of:
>   - Outlets to floors
>   - Junctions between tiling, waterproofing and screens to baths or showers
>
> …
>
> **6.4 Wet Area General Design Criteria**

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380 *Waterproofing of wet areas within residential buildings* (Australian Standard AS 3740: April 2004).

381 Experts' Conference dated 23 March 2020. The recorded statement of Messrs Woolgar and Smith referred to AS/NZS 3740. However this is not a New Zealand Standard, only an Australian Standard. Neither explained the error. On cross-examination, Mr Woolgar said that he was "slightly confused" about the answer recorded.

6.4.1 General design requirements for wet areas are:

- allow for required falls at the design stage and show them on contract documents
- …

[1222] The BRANZ Guide refers to areas where wet area detailing is required as including splashback areas around baths and bathroom floor.

[1223] Section 7 is titled "Waterproofing Interior Wet Areas". This section includes figures 12 and 13. Figure 12 depicts the recommended extent of waterproofing to a bath with shower over and no shower screen. Figure 13 depicts the extent of waterproofing to a bath with shower over and a side screen.

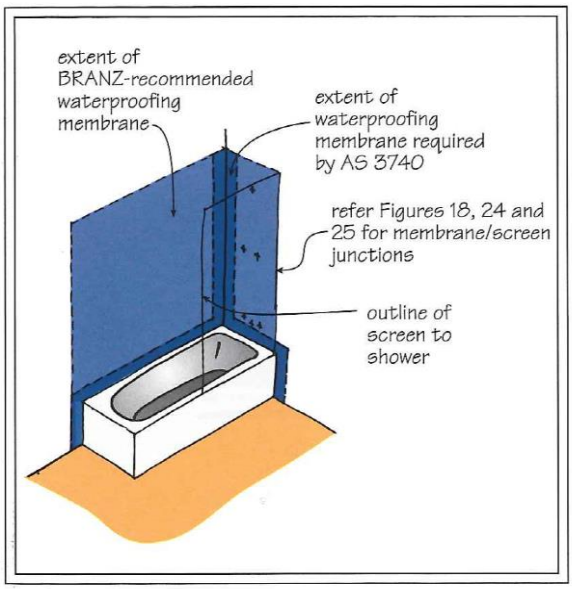

Figure 13. Extent of waterproofing to bath with shower over and a side screen. Ensure wallboard lining around bath fits behind bath flanges. Note – where the bathroom floor is also tiled BRANZ recommends the use a waterproofing membrane over the complete floor area.

[1224] In a section headed "Wet Area Floors", the BRANZ Guide recommends to "fall floors away from entry points to the outlets" and "have waterproofing membrane upstands around the perimeter of the wet area floor".

[1225] The referred-to Australian Standard AS 3740 also includes a recommended typical bath junction showing a lip edge to the bath and water-resistant linings overlapping to provide a waterproof detail.

[1226] The Council experts generally accept that the Clark Brown specification references both the BRANZ Guide and AS 3740 but dispute that it cites them or calls them up in a manner directing the design to those documents. They maintain that the primary specification is the Clark Brown drawings which do not require a fall to a floor waste. Neither does the Acceptable Solution. The BRANZ Guide does, but it reflects good practice only and embodies a higher standard than the Building Code requires.

[1227] An Australian standard referred to in this way, is not elevated to a "cited" standard. I accept that AS 3740 does not shape or dictate the approach to a consent but by informing what comprises good practice, it informs the approach. As Andrew J observed in *Bianco Apartments*, "one of the public policy reasons for the Council providing an appropriate degree of oversight is to promote good trade practices with a view to avoiding breaches of the requirements of the Building Code."[382]

What else do the experts agree on?

[1228] The plaintiffs' and Council's experts agree:[383]

(a) The constructed detail for the bath junction departs from the consented plans or specifications in that the rear or inner line of sealant joint is missing or inadequate in some of the investigated locations.

(b) The consented design was an alternative solution.

(c) The junctions between the baths and tiles are not waterproof and water has penetrated the joints between the bath and wall linings.

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382 *Body Corporate 406198 v Argon Construction Limited* [2023] NZHC 303 [*Bianco Apartments*] at [135].

383 Expert Conference statement Defects 12 & 13 dated 23 March 2020.

(d) Damage is likely to all 88 bathrooms which contain baths.

(e) The construction of the junction does not comply with cls E3.2 and B2.3.1(b) and (c) of the Building Code

(f) The position of the shower screen identified on Clark Brown Drawing 059-532 (Detail 3) is different to the as-built shower screen insofar as it sits on the top middle part of the bath edge detail whereas the consented detail has the screen on top but to the inside edge of the bath.

[1229] As to claimed defect 13 the experts agree:

(a) Moisture ingress has occurred behind the door architraves (the Council's experts say despite compliance with the Acceptable Solution).[384]

(b) Any issues are not design issues but construction issues.

(c) Moisture ingress has caused the architraves to swell and deform allowing moisture behind allowing mould growth to plaster board and corrosion to steel framing immediately behind the architrave position.[385]

(d) The above results in breaches cls E3.3.6 and B2.3.2(c).[386]

(e) If the lack of fall to floor waste is a defect (which the Council's experts dispute) then it affects the floors to all bathrooms.

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384 Messrs Smith and Woolgar for the Council accept there is moisture ingress and said this was despite compliance with E3/AS1.

385 The experts do not agree as to the extent to which damage has occurred. The Council experts noted that during inspection not every architrave had swollen. That would be the first indication of a systemic moisture problem.

386 The plaintiffs' experts consider there are also breaches of cls E3.3.2, E3.3.3, E3.3.4, E3.3.5 of the Building Code.

(f) Where there is a fall to the doorway (as opposed to a level floor) this issue can contribute to moisture ingress associated with the lack of membrane behind the architraves.

(g) Door thresholds and adjacent walls are likely to be splashed in all types of bathrooms in the apartments.

[1230] The consented design intended that the membrane upstands would make the door junction impervious. It is apparent that by stopping short the junctions would not be impervious if watersplash or overflow does flow in the direction of the door junction. I see an interconnectedness with all the bathroom issues in that a floor graded to fall towards the waste minimises the potential for water to reach the door architrave.

Are claimed defects 12 and 13 actionable defects — compliance with the Building Code?

[1231] In light of the expert agreement and the evidence of manifest damage it is clear that there is a breach of the Building Code. The more material question is whether the plaintiffs' experts are right that it is the bath edge design detail which has caused the damage to the wall linings or whether it is poor workmanship which has led to the water ingress around the bath edge.

[1232] In my assessment, the design of the junction was demonstrably inadequate to satisfy cl E3 and is an actionable defect. It was inconsistent with the technical literature and good trade practice. A shower over a bath puts greater pressure on a bath edge than the normal use of a bath and sealant joints are known to be prone to unseen failure. This is particularly relevant where the rear line of sealant cannot be seen at all once covered by tiles and membrane. Maintenance of that sealant is impractical if not impossible. As a matter of common sense, the potential for moisture to get in behind the wall linings is exacerbated by a flat-edge bath detail which does not return water splash to the bath.[387] Both primary and secondary lines of defence are therefore prone to failure and damage has manifested.

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[387] Ms Meechan submitted that it was not part of the plaintiffs' evidence-in-chief that a lipped-edge allows water to drip down more quickly rather than collected on a flat edge. With respect, not only does the plaintiffs' proposition accord with common sense but it is the implicit mechanism set out by Trevor Jones.

[1233] For completeness, I put to one side as lacking in proof the proposition that Clark Brown's detail 5 may have provided for waterproofing membrane ahead of the rear row of sealant. It is not clear on the plan as Mr Flay acknowledged. The plaintiffs' experts who deconstructed the bathrooms did not cover this in evidence-in-chief. Neither was it explored in cross-examination. The only clue in the evidence is the "bathroom leak" diagram prepared by Maynard Marks illustrating the as-built state of affairs. This does appear to show the inner line of sealant behind the membrane.[388] There was no evidence of the probable sequence — whether sealant was installed before or after the application of the membrane or whether it is even possible to install sealant after application of the membrane. With the benefit of hindsight, it is unfortunate that this was not covered more explicitly. The Council consenting officer, Ted Jones, made no mention of this in his evidence and the experts proceeded on the basis that the detail was reliant on sealant. Even if the detail was as speculated, the plaintiffs argue that an inspecting officer ought to have detected the absence of sealant.

[1234] I am not persuaded that the shower glazing issues, although a deviation from the consented design, have been shown to be a material cause of moisture ingress despite the potential relationship with claimed defect 13. The as-built construction may not be as effective at keeping moisture within the bath edge as the designed shower pane which is fixed to the wall but I agree that there are user issues which are causative or significant contributors to any issues. The fact that there is no mandatory requirement for any form of screen in this situation is a telling but not determinative indicator. In sum, the shower pane non-conformity with the building consent is not of itself an actionable defect.

Floor to waste

[1235] There are two elements to this issue; first, falls to the door threshold; and second, floors which, while not graded towards the door threshold are not graded to the waste.

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[388] The Council flagged this diagram as inadmissible as part of an omnibus challenge to exhibits referred to in briefs but without specific grounds. The Council did not explore this diagram with Trevor Jones in cross-examination. In written closing submissions, the Council relied on this diagram.

[1236] It is self-evident that floors which fall towards the door architraves rather than to waste do not avoid loss of amenity or damage to household units or other property as required by cl E3.3.2. A high proportion of the bathroom floors of apartments sampled had falls towards the doors. I accept that falls to the door threshold are actionable defects.

[1237] It is difficult to see how floors could comply with cl E3.3.2 without a fall to waste since water can and will reach the door architraves when there is any overflow. The wording in E3/AS1 creates ambiguity. The answer lies in the need to holistically assess the bathroom design and construction. When there is a shower over a bath, different considerations apply as the overall solution is an alternative solution. There is greater need to accommodate water splash. In those circumstances, the statement in E3/AS1 that a graded floor is not essential is not determinative. It is clear that in the event of conflict the architectural drawings take precedence in the ordinary course however in this case the architectural drawings note that they are to be read in conjunction with the specifications. Although those specifications do not distinguish between types of bathrooms, I find that the lack of graded floor in the 88 bathrooms with a shower over the bath (but not the other bathrooms) is an actionable defect.

[1238] The absence of membrane at the door architraves is clearly causing or contributing to damage at those locations in breach of cls E3.3.6, E3.3.2, E3.3.5 and E3.3.4.[389] Common sense dictates this result. There is the potential for accidental overflow from basis, toilets, baths and washing machines in the bathrooms. It is also a systemic issue. This is not a usage issue and is consistent with my finding above because overflow can occur when occupants are not present. This actionable defect is not limited to the 88 bathrooms that contain showers over baths.

Did the Council breach its duty of care in issuing the building consent?

[1239] I distil the key issues in relation to the bath edge detail as follows:

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[389] As the breaches have existed since the time of construction I am also satisfied that cl B2 is engaged.

(a) Should the council officer have identified at the consent stage that the flat top edge of the bath and the junction with the walls could not be waterproofed in a durable manner using sealant?

(b) Was there any technical information or support to form reasonable grounds for the issue of a consent?

[1240] I find the Council did not exercise a sufficient level of care when it issued the consent for the bath edge detail and did not have reasonable grounds to be satisfied the proposed work would comply with the Building Code. I set out my reasons.

[1241] First, there was no technical or supporting information for what is clearly an alternative solution. There should have some technical justification or support to show how the specific performance requirements would be met. The Auckland City Practice Note 16 stated that applicants putting forward alternative solution designs are to provide "documentation clearly showing how the specific performance requirements are being met".[390]

[1242] Second and relatedly, all of the literature before the Court contemplated a lipped-edge bath. This does not mean that the literature, or indeed E3/AS1, prohibited a flat-edged bath. But the inconsistency between the drawn detail and cited material along with the uniformity of the literature overall underscored the importance of careful scrutiny of and technical support for a novel approach. Not only was none provided with the application for consent, but none has been produced to the Court.[391]

[1243] Third, I do not accept that Ted Jones' post-facto justification reliably represents his thinking at the time of granting the consent.[392] He advanced on cross-examination that a lipped-edge bath was not possible in conjunction with a steel frame (which does not permit notching), thus a double line of sealant was a "belts and braces" approach to overcome this problem. This was late evidence and not included in his brief. It was

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390 Auckland City Practice Note 16 (16 July 2003).

391 The current acceptable solution requires an upstand of 15 millimetres on the rim of a bath where there is a shower over a bath but was only introduced in 5 November 2020.

392 I am conscious of the caution expressed in *Gestmin v Credit Suisse (UK) Limited* [2013] EWHC 3560 (Civ) at [17]–[19] that, among other things "[c]onsiderable interference with memory is also introduced in civil litigation by the procedure of preparing for trial."

also not referred to by any of the experts. These factors undermine its reliability given its critical nature. This purported justification for granting consent was not at the forefront of the Council's closing. Mr Lewis debunked it on cross-examination because the witness agreed that there are other options for use of a lipped-edge bath which do not involve checking the bath into the stud, including use of a bath mould to protect the top of the bath roll or packing the wall above the lip edge.

[1244] In sum, I find that the Council did not have reasonable grounds to be satisfied that the proposed design of the bath edge junction would comply with the Building Code. The Council breached its duty of care and that breach had causal potency. The resulting moisture damage to the linings surrounding the bath and concealed spaces is a material consequence of the flawed design because, although a double line of sealant was intended, that remained a high risk solution of limited duration.

Was the Council negligent at the inspection or CCC stage?

Inspection / CCC stage

[1245] I deal with the inspection and CCC challenges to the bath edge detail in conjunction with the shower screen issues because they are interconnected. I will then turn to the inspection and CCC issues in respect of the floor and missing membrane.

[1246] I proceed on the basis that the Council did not undertake a bathroom or wet area membrane inspection but undertook a final "bathroom waterproofing inspection". This is the only reasonable conclusion in view of the absence of any record of inspection. An inspection at that stage was a material omission since distinct aspects were observable at various times. Many key elements were not detectable at a final inspection. The Council ought to have ensured compliance with the inspection condition because this was the most effective way of checking that the work had been carried out correctly and would perform as expected.[393] Inspection was intended, and required, to produce information relevant to the decision whether or not to issue a CCC.

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[393] Refer to *Southland Indoor Leisure Centre Charitable Trust v Invercargill City Council* [2017] NZSC 190, [2018] 1 NZLR 278, at [75]–[76].

[1247] Moreover, if Mr Flay's description that a typical final bathroom inspection is "an overall general check of the works as they present in their completed state" is correct, it appears to me to be of a more superficial nature. It has to be borne in mind that some problems with wet area installations are covered up in their completed state.

[1248] Failure to carry out a membrane inspection is inconsistent with condition 30 in Consent 303. This condition is explicit. It required an inspection before application of covering materials where membranes are installed in wet areas. Condition 30 further says that "[p]articular care is to (sic) taken to ensure that all membranes are installed correctly with adequate upstands behind linings."

[1249] The condition does not explicitly state that inspection should be carried out by the Council but I accept that this is how it ought to be understood. The condition did not require a PS3 or PS4, therefore there was no other way to ensure the condition had been met. Mr Hutt, a regulatory expert for the Council also accepted that condition 30 was probably intended to be an inspection undertaken by Council. Internal membrane inspections were part of Auckland City's standard inspection regime.

[1250] The more difficult proposition is whether at a membrane inspection the inspector could be expected to identify the missing second line of sealant at the rear of the bath edge junctions (where that was the case). It is conceivable that this depended on whether the second line of sealant was intended to be, and was, installed in front of the membrane or behind the membrane. As discussed above, I have put this possibility to one side given that the Clark Brown drawings are too unclear to discern the design intent. Neither Mr Jordan's brief nor Mr Moodie when he gave evidence explained why they maintained it should have been picked up at a membrane inspection. In those circumstances, I am unable to find that the absence of the second line of sealant would have been more likely than not to be picked up at a membrane inspection. It is possible that it would have been observable at a pre-line inspection but that was not the argument made at trial. What this does show is that it was essential to have a dedicated schedule of inspections during the installation process, especially if the double line of sealant was the factor intended to make this a "good detail".

[1251] In view of my assessment that the design of this bath-wall junction was flawed, there is less need to engage with the issues on inspection and issue of the CCC. The defective design at the consent stage flows through to the inspection and CCC stage. Nevertheless, I briefly discuss the parties' respective contentions.

[1252] The final bathroom inspection took place on 12 April 2006. The final checklist records that the inspection was carried out under Consent 303. It records tick passes for floor wastes and bathroom waterproofing among other things. It records, by a ticked box, that previous inspections passed. This is curious in a context in which there were no previous inspections, at least on the record before the Court. Also curious is that the form is marked "fail". No individual item is recorded as a "fail" but it is possible that this may have been because of the comment "showers to be completed". No witness gave explanations for this and the question was not put to any witness as best as I can tell.[394]

[1253] The Council argued that an inspector would have no concern with the shower screen and would not likely check against the consented plans since a shower screen is not a mandatory element in E3/AS1. This line of argument strikes me as problematic. It suggests a compartmentalised approach to inspection and compliance at odds with the intent and purpose of the compliance regime. Rather than isolating details, the Council's compliance-checking function ought to assess how the composite elements interact since, logically, it is the combination of elements which drive the design solution. It seems to me that installation of one pivoting pane compared to a two-part pane comprising a fixed and pivoting pane is sufficiently different that it at least warranted further inquiry. In short, the shower screen combined with a flat-edged bath ought to have been observed and assessed together against the backdrop of the consented design given the requirements of the 2004 Act.

[1254] The position of the shower screen on the bath edge was not obvious to an inexpert eye. However, Mr Flay for the Council accepted in cross-examination that it

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394 The Council officer (now retired) who was responsible for processing application for the CCC issued in 2006 and relating to various building consents for the construction of Gore Street served a brief in which he stated that he reviewed hundreds of applications for CCCs under the 1991 and 2004 Acts, had limited direct recollection of dealing with Gore Street and that it would "simply be speculative for me to try to reconstruct what was done at the time." His brief was "taken as read" and he was not called to give evidence.

could be seen that the shower screens were not in the position shown on the details of the plan. The exchange with Mr Lewis was as follows:

> Q. So I would just suggest that for a council inspector, the inspector should've identified the non-compliance with the consent because it it's not constructed as per the detail, you could have issues in terms of waterproofing. What do you say to that?
>
> A. You could have issues in terms of splash but you could also have a shower curtain and it would comply with the acceptable solutions. And still have splash.
>
> Q. But in this case, it was important, wasn't it, for the inspector to check that the shower screen and bath edge was in accordance with the consent design because obviously some thought had been put into that design, do you agree with that?
>
> A. No.
>
> Q. Well it's not appropriate for the council inspector to dispense with the consented design, is it?
>
> A. No. He would look at what's constructed and decide whether compliance could be achieved. Might even test it; he can run the shower, turn the shower on. Done that myself, no waters coming out so it seems to be adequate for its purpose.
>
> Q. But in this situation, it wasn't adequate was it, because there was a flat top and there was gap under the hinge, do you agree with that?
>
> A. Mr Jones seems to be saying there was a gap under the hinge, yes. But I don't agree that a flat top was an issue that would stand out to a council officer.
>
> Q. Well, isn't the problem that once you start dispensing with consent requirements that these sort of defects can creep in, can't they?
>
> A. Disagree.
>
> …
>
> Q. But again, you're assuming that it's appropriate for the inspector to dispense with the consented requirement, aren't you?
>
> A. I'm saying he would be looking at the shower and he could adequately assess whether it was appropriate or not without going back to the consent and saying well this is not as per the detail, where you had 200 and 700. It would be a minor variation in my view.
>
> (Emphasis added)

[1255] On this issue, I accept and agree with the explanation from Messrs Jordan and Moodie. An inspector ought to have identified the different construction of the shower

screen (one hinged screen instead of the two-pane screen). Mr Moodie, the Council expert for the plaintiffs, suggested that a standard test an inspector would carry out in an enclosed space with a shower screen would involve squirting water around the screen. He suggested that had this test been carried out, the water would run across the floor. (That is supposition since he did not himself conduct that test at Gore Street.) In the extract cited, Mr Flay also referred to the potential for a "water test" at inspection. The further inquiry warranted by the different installation from the design drawings could have included a water test.

[1256] The more difficult question is what a prudent council officer would do faced with construction (bath-edge details) which complied with the consented plans but which is problematic in terms of code compliance. Ms Meechan was critical of counsel for the plaintiffs for omitting to put to the Council experts what a council inspector would or ought to do at the inspection stage where the as-built conformed with the consented design but the design is non-compliant.

[1257] I am not satisfied that it is correct that an inspecting council officer is required to look behind the consent given the explicit wording of the 2004 Act. But this issue loses potency because I have found that the consented design was non-compliant. Without finally deciding the point it strikes me as antithetical to the purpose of the Building Code and the regulatory function of a council for an inspector to have done nothing at all when faced with the combination of elements at issue in Gore Street. Messrs Jordan and Moodie's view was that the Council inspectors should have recognised the junctions could not be waterproofed in a durable manner using sealant when the top edge of the bath was flat but what then should have transpired is indeterminable on the evidence before the Court. Given however the issues with the absent second line of sealant, I am satisfied that the Council's failure to devise a schedule of inspections enabling checking of sealant was a dereliction of its duty which had causal potency.

[1258] I accept there were opportunities at both a wet area membrane and final inspection to identify that the fall of the floor in some bathrooms was problematic, along with the absence of membrane at the door threshold. A fall towards the door threshold is clearly incompatible with containment. A floor which is not graded

towards a waste is contrary to the consent and, as a matter of common sense, problematic. It is a fair point that some of the falls may not have been noticeable if the door was not hung plumb but use of a spirit level is an obvious and straightforward measure. In a building of 40 storeys with over 400 units, the consequences of uncontained water overflow is evident.

[1259] It follows that I consider that the Council inspection was not carried out with due care in respect of those aspects of construction.

Conclusion in relation to claimed defects 12 and 13 and Council liability

[1260] Subject to the affirmative limitation defence, I conclude that the bath edge detail, absence of membrane at the door thresholds (with lack of waterproofing of the door to wall junctions), lack of fall to the waste in the bathrooms with a shower over the bath and fall towards the door threshold in any bathroom are all actionable defects materially contributing to actual damage or lack of containment in breach of the Building Code.

[1261] I reject the plaintiffs' claim that the shower screens are a defect, despite not conforming with the consented documents.

[1262] I have found that the Council was negligent at the consent stage in relation to the bath edge detail. That negligence infected the regulatory process which followed.

[1263] I find that the Council's failure to carry out a wet area membrane inspection was a negligent breach of duty which had causative potency. It was the best opportunity to pick up the workmanship issues. An inspection was important to form reasonable grounds that the bathrooms met the Building Code requirements. It was also a condition of the consent. Failure to inspect was part of the sequence of omissions by the Council culminating in the issue of a CCC without reasonable grounds.

[1264] As discussed in relation to Part III — External Moisture defects neither the Norager letter nor the Mapei warranty lessened the scope of the Council's duty nor provided reasonable grounds for the issue of a CCC. There was no adequate

verification that the bathroom waterproofing complied with cl E3 of the Building Code.

Affirmative limitation defence

[1265] The Council contends that the plaintiffs' defect 12 claim (bath and shower screen defects) was made more than six years after this defect was known or reasonably discoverable (that date being no later than 19 November 2009). This will be dealt with in Part VI – Affirmative defences.

Claim against Clark Brown

[1266] I find Clark Brown to be jointly and severally liable in respect of the flawed bath edge detail for the same reasons expressed above. On the evidence before the Court, I am unable to reach a conclusion on Clark Brown's duties of contract observation and make no finding.

Claim against Mapei

[1267] I find Mapei jointly and severally responsible with the Council for failure to identify the lack of membrane upstands to the door framing behind the architraves but responsibility is not established against Mapei in respect of a positive fall to door thresholds. The former materially contributed to the damage to door thresholds but has no bearing on the damage to the wall linings caused by the bath defects.

PART VI – AFFIRMATIVE DEFENCES

Is claimed defect 10 time barred under s 4 of the Limitation Act 1950?

[1268] It is common ground between the parties that the Limitation Act 1950 applies as the relevant acts took place before 1 January 2011. Under s 4 of that Act, the Council has a defence to any "action" brought more than six years from a date on which the cause of action accrued. The test for when a cause of action for a latent

defect accrues is that set out in *Hamlin* as affirmed in *Trustees Executors Limited v Murray*.[395]

[1269] The gist of the limitation defence is that when a negligence claim is founded on a latent defect, the cause of action does not accrue until either: the defect is discovered; or could with reasonable diligence have been discovered.

[1270] The Council argues that the podium defects were known or reasonably discoverable no later than 19 November 2007 when the Owners Committee discussed the drainage system for the pool deck and resolved to carry out an inspection. As this defect was first claimed in the statement of claim dated 26 March 2014, the Council (and Equus had liability been established against Equus) says that claimed defect 10 is time barred.

[1271] The plaintiffs counter that the podium waterproofing defects were not reasonably discoverable until the Babbage Report prepared in January 2009. They say that was the first time that any expert identified the waterproofing system itself as a cause of the leaks. Subsequently, Babbage entered into discussions with Multiplex and then engaged Prendos in October 2011 and CoveKinloch in October 2012 to address the podium leak issues.

[1272] They argue that the cause of leaks was not obvious, which distinguishes this case from *Pullar v Secretary of Education*,[396] and *Burns v Argon Construction Ltd*.[397] In *Burns*, owners of a leaky home engaged building experts Prendos in 1997 to investigate leaks and then undertook repairs. However, the true extent of the problems did not become apparent until 2003. Asher J found:

> [73] A substantial number of defects were discovered in early 1997. However, that discovery was made when the nature of the defects and the remedial steps necessary to repair them, were not fully understood. It is arguable that all recommended necessary works to repair the defects were carried out in 1997. From late 2003 further defects have become apparent. The real causes of the problem, not apparent or understood in 1997 were then discovered.

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395 *Trustees Executors Limited v Murray* (2007) 8 NZBLC 101.
396 *Pullar v Secretary of Education* [2007] NZCA 389 at [13].
397 *Burns v Argon Construction Ltd* HC Auckland CIV-2008-404-7316, 18 May 2009.

[1273] Both that decision and the decision in *Body Corporate 169791 v Auckland City Council (Farnham Street)* focused on the time at which there was a real appreciation of the real causes of the problems and the remedial action required.[398] The existence of leaks, even serious leaks, did not of itself mean that the cause of action had accrued.

[1274] I accept that the evidence shows that leaks into the basement from the pool deck area were obvious and known largely from the time Gore Street was completed, and certainly in 2007. The former chairman of the Body Corporate, Mr Hojem, said in evidence that moisture was dripping below the pool deck area and tracking into the basement levels below and by 2008, "the stalactites in some places were, I'm not exaggerating, two centimetres long already".

[1275] But at that time, the focus was not on the waterproofing but the pool drainage. When the Owners Committee discussed the issues on 19 November 2007, they resolved to arrange an inspection of the drainage system for the pool deck. There was no mention of the podium defects which I have ultimately found to be the cause of the leaks. The minutes recorded:

> It was noted that a deck was installed over a pool deck and a drain hole and hence there was no drainage system. Sansom are to quote to provide inspection…

[1276] There was earlier reference in the minutes to following up with Designer Pools Ltd asking that entity to honour their warranty. These matters were all recorded under a heading "Common maintenance matters".

[1277] Thus I find nothing in those minutes to support the Council's position that the cause of action had accrued.

[1278] Just under a year earlier Multiplex had written to Aquastop, Norager and Designer Pools Ltd on the subject of leaks into the carpark from the pool area/podium. It records that Aquastop had carried out extensive water testing and one possible cause appeared to be the box containing the pool filter unit, which was the responsibility of Designer Pools Ltd. It noted the other leak cannot be traced but Multiplex had decided

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398 *Body Corporate 169791 v Auckland City Council* HC Auckland CIV 2004-404-005225, 19 May 2009 [*Farnham Street*].

to commission Chenery. It noted that the possible contractors responsible for work in the area were Aquastop, Designer Pools Ltd and Norager. The reference to Aquastop, inferentially is membrane-related since Aquastop installed the membrane.

[1279] In late April 2008 Sansom Contract Services Ltd was asked to quote to investigate leaks to the carpark below the pool area. It subsequently reported that leaks may be from the pool skimmer enclosure but recommended further investigation. It noted that the leak to the upper ground floor carpark is difficult to trace because of the timber decking built over the courtyard surrounding the swimming pool. It referred to the potential for supports to this decking to aggravate the ponding occurring and provided a quote/estimate to enable a more thorough investigation including the lifting of sections of the timber decking.

[1280] This too suggests that the defects had not been sufficiently identified nor were reasonably identifiable as at April 2008 in view of the number of investigations. There was nothing to suggest that Sansom identified the defects which are the subject of the present claim. It appeared focused on a build-up of debris over the outlet grill which had caused water to pond.

[1281] In January 2009, Babbage investigated leaks. At that point it identified the waterproofing system itself. Babbage suggested upgrading the concrete slab waterproofing system, removing the decking, introducing another slab drain and laying pavers or tiles to fall on pads or stools to an open dish drain. Clearly that did not happen.

[1282] I am not satisfied that knowledge alone of water ingress into the carpark is sufficient for the cause of action to accrue. The cause was not obvious as can be seen from the various exploratory views of experts. It was not until Babbage reported in 2009 that membrane issues were first identified.

[1283] I conclude therefore that the claimed defect 10 is not time barred by s 4 of the Limitation Act 1950.

Is claimed defect 12 time barred under s 4 of the Limitation Act 1950?

[1284] The first pleading of a bathroom defect was on 26 March 2014 at the commencement of these proceedings. Then the allegation was that the bathroom floors did not fall to the waste leading to damage to bathroom doors and adjacent carpet. That became claimed defect 13. Claimed defect 12 as presently worded was first pleaded in the plaintiffs' third amended statement of claim dated 30 November 2018.

[1285] The Council argues that the reports of Babbage Consultants on 5 and 18 August 2009 identified issues with the bath to tile junctions. It says that at that point the defect was known or reasonably discoverable.[399]

[1286] The Babbage reports in August 2009 did deal with bath issues but a fair reading of them suggests that the issues were not then systemic but related to a small number of units. The reports implicitly, if not explicitly, indicated that the issues were also resolved.

[1287] The Babbage report on 19 November 2009 refers to bath issues. A significantly greater number of units is mentioned. The section references "serious water damage" as follows:

> The most prominent defect involves water tightness of the bath overflows. It was initially thought that due to poor installation, the seals that connect the overflows to the baths have become dislodged; creating a gap through which water can flow. On further inspection it was discovered the pipes that carry water from the overflows to the waste were never connected. Therefore when the level of bath water reaches the height of the overflow water would discharge straight into the wall cavity behind the baths and under the kitchen floor. This has caused severe damage to the kitchen floorboards, cupboard panels and kick plates.
>
> Rebates have not been installed between the wall-tiles and the baths. This means the silicone sealant used around the inside edge of the **bath is the only barrier preventing water leakage**. When this silicon seal is penetrated water flows straight into the wall cavity. It has been established that due to incorrect installation, the baths rock when a person stands in it. This movement breaks the silicon seal between the bath and the wall, consequently allowing water to enter the wall cavity.
>
> (*Emphasis added*)

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[399] The Council's pleading refers to a report by Babbage dated 19 November 2009. The Council's closing submissions refer to Babbage reports dated August 2009 and 19 November 2009.

[1288] The report recommends that Multiplex (by then Brookfields Multiplex) should undertake listed actions including, among other things, establishing that the bath/wall seals are sound and resealing the bath to the walls.

[1289] It is correct that there is no mention of a defective design of the bath to wall junction — the defect now claimed. It is also directed at Multiplex as part of an outstanding work identification process which is typical in the period post construction. But the thrust of this report is that the bath edge detail is reliant on sealant. That goes to the heart of the issue. The mechanism is identified as is the need for repair.

[1290] I find that claimed defect 12, as it relates to the bath edge detail, was reasonably discoverable as at 19 November 2009. Time began to run at that date. That means that a claim had to be made on or before 19 November 2015. Only the first statement of claim had been filed by that date. That was filed in March 2014. When claimed defect 12 was expressly pleaded in November 2018, was it a fresh cause of action or in substance a particularisation of the bathroom defects first pleaded in March 2014?

[1291] The first iteration of the claimed bathroom defects in schedule 5 read:

> Tiled floors not installed to fall to floor wastes, contrary to the following sections of the Building Code and technical literature which was in place at the time:
>
> (a) Building Code B2 Durability;
>
> (b) Building Code E3 Internal Moisture;
>
> (c) BRANZ Good Practice Guide – Tiling (2004);
>
> preventing drainage of bathroom moisture and allowing it to pond causing damage to carpet and underlay adjacent to the bathroom doors and decay of timber architraves and jambs.

[1292] This pleading was unchanged in the January 2016 and March 2016 amended statements of claim. There is some connection between an aspect of claimed defect 12 and the overall bathroom containment issues first pleaded although claimed defect 12 is confined to a subset of the bathrooms. The plaintiffs' expert, Trevor Jones, gave evidence that the damage to the bathroom doors was high due to the shower screen/bath perimeters failing to adequately contain water splash within the bath.

There is also an overlap in analysis and scope of repair in that the proposed remediation of defect 12 impacts defect 13 (although not the converse).

[1293] The bath edge junction has some correlation to the bathroom floor and door in the sense they functionally impact one another. However, I accept it involves a different factual inquiry and that an investigation of claimed defect 13 would not have revealed the now claimed defect 12. The resultant damage is separate and distinct.

[1294] I find therefore that claimed defect 12 is statute-barred pursuant to s 4 of the Limitation Act 1950 having been pleaded more than six years after it was reasonably discoverable.

Longstop limitation

Introduction

[1295] Under s 91 of the 1991 Act and s 393 of the 2004 Act those involved in the design, construction, alteration, demolition or removal of any building and those performing functions under the Act have the benefit of a 10 year longstop period for any civil proceeding running from the date of the act or omission on which the proceeding is based.

[1296] I turn to the issue of whether the following claimed defects are barred by the longstop defence. I set those out again for convenience.

(a) defect 1 — load-bearing steel-framed elements do not have adequate fire protection;

(b) defect 2 — heads of the fire separation walls not constructed to maintain the integrity of walls in a fire event;

(c) defect 3 — inadequate steel-framed connections within the Core;

(d) defect 4 — scissor staircases do not have sufficient allowance of movement or ductile performance;

(e) defect 6 — junctions of the post-tensioned floors to building perimeter beams and wall structure defective in that the bars to tie the perimeter wall frames to post-tensioned floor slab and tendon ducts have not been grouted in places;

(f) defect 9 — column to beam junctions on exterior allow excessive movement and have no weathertight seal; and

(g) defect 12 — junctions between bath and tiles not waterproofed and glazed screens do not contain water.

[1297] The Council relevantly pleads:[400]

> [73] To the extent that the alleged defects are based on alleged acts or omissions on the part of the first defendant (which is **denied**) that took place more than 10 years before said alleged defects have been claimed, the claims are time-barred pursuant to s 393 of the Building Act 2004.

[1298] Equus also relevantly pleads in respect of the claims relating to the level 3 canopy roof and pool area/planter box:[401]

> [104] Any acts and/or omissions which the plaintiffs rely on to support their claim against the fourth defendant, which are pleaded in the statement of claim dated 30 November 2018, but not pleaded in the earlier statements of defence, if occurring on or before 30 November 2008, are time barred as provided by s 91 of the Building Act 1991 and/or s 393(2) of the Building Act 2004.

[1299] Holmes also pleads a longstop limitation defence under s 393 of the 2004 Act on the basis that it was not until the pleading dated 30 November 2018 that a claim was made against it based on 'Holmes Fire & Safety Work' contributing to claimed defects 1 and 2.[402] It pleads that the latest involvement of Holmes was 29 August 2006.

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400 First defendant's statement of defence to plaintiffs' amended statement of claim (11 March 2021), dated 21 April 2022.

401 Statement of defence, dated 31 January 2019. I assume that the reference to "earlier statements of defence" should read "earlier statements of claim". Counsel for Equus relied on the Council's closing submissions. Equus did not explicitly identify any relevantly pleaded acts falling outside the 10 year period.

402 Statement of defence by eighth defendant (Holmes Fire and Safety Limited) to plaintiffs' (6th) statement of claim dated 11 March 2021, dated 25 March 2021.

[1300] Only Equus relies on both s 91 of the 1991 Act and s 393 of the 2004 Act. The Council and Holmes pleads s 393 of the 2004 Act only. Section 393(2) of the 2004 Act overrides the Limitation Act 2010, including the limitation rules under the 1950 Act which have been saved.[403] Section 393(1)(b) of the 2004 Act provides that the Limitation Act 2010 applies to civil proceedings arising from the performance of a function under this Act *or a previous enactment* relating to the construction, alteration, demolition or removal of the building.[404] Although the relevantly pleaded actions and omissions may have taken place during a time when limitation rules under the 1950 Act were saved, I consider s 393(1)(b) is operative.[405]

[1301] The critical consents for this proceeding (Consents 302 and following) were issued by the Council between 11 October 2004 and 24 November 2005. Consents 303 and 304 were issued under the 1991 Act when s 393 had commenced but the repeal of the 1991 Act had not yet come into force. Consents 305 and following were issued under the 2004 Act. The Council issued CCCs for all building consents on 5 October 2006. Building work and inspections took place between the issue of the relevant consent and the issue of the CCC.[406]

Summary of the contentions

[1302] The primary contest between the parties is an exercise in statutory interpretation which has been the subject of other decisions in this court but not yet determined by appellate authority.[407]

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403 *Body Corporate 202692 v Auckland Council* [2019] NZHC 1976 at [14], citing *Johnson v Watson* [2003] 1 NZLR 626 (CA).

404 Section 393(1) was amended on 1 January 2011 by s 58 of the Limitation Act 2010.

405 The Supreme Court in *Carter Holt Harvey Limited v Minister of Education* [2016] NZSC 95, [2017] 1 NZLR 78 at [96] said that s 91 of the 1991 Act was the relevant statutory provision for acts or omissions which occurred when the 1991 Act was in force. Although between 30 November 2004 and 31 March 2005, both s 91 of the 1991 Act and s 393 of the 2004 Act were in force, the 1991 Act governed all building work which occurred up to 31 March 2005 by virtue of a saving provision.

406 Design work would have taken place prior to the consents being granted. Relevantly, the Holmes Fire Safety Design report (version B) was dated 31 March 2004, before the 2004 Act commenced. However versions C–D were prepared after the 2004 Act commenced.

407 The Court of Appeal heard an appeal from the decision of Osborne J in *Body Corporate 355492 v Queenstown Lakes District Council* [2022] NZHC 1494. Leave was granted (*Body Corporate 355492 v Queenstown Lakes District Council* [2022] NZHC 1780), but the case settled. Thereafter the Court of Appeal declined to issue its judgment.

[1303] The Council argues that claimed defects added to the plaintiffs' statement of claim after expiry of the 10 years from the issue of a CCC is statute-barred. In short, that s 393 prevents the addition of a cause of action seeking relief more than 10 years after the relevant act or omission. It says that the reference in s 393(2) of the 2004 Act to "proceedings" encapsulates more than a mere filing in the Court represented by the CIV number. It also includes the particular cause of action and relief claimed. It contends that the impugned defect claims represented such fundamental changes to the factual basis for the claims that they amounted to new time barred causes of action.

[1304] Conversely, the plaintiffs contend that the initiation of the "proceeding" in March 2014 by filing and serving the first statement of claim was sufficient to take the longstop out of play. Subsequent amendments adding further defects did not constitute new "proceedings" in this context because the pleaded underlying acts or omissions of the defendants remained the same. The longstop bar does not relate to "cause of action" at all but focuses on the negligent act or omission on which claims are based. And the further defects pleaded after that date are no more than particulars of the *consequences* of the alleged negligent acts or omissions first pleaded in 2014.

[1305] If this argument does not succeed, the plaintiffs fall back on the more orthodox cause of action analysis to argue that the defects "particularised" after the longstop expiry did not comprise new causes of action. Both the primary and alternative arguments are in reality the same argument cloaked differently.

Issue one — what is the meaning of s 393(2)?

[1306] The longstop provision was first introduced in the 1991 Act. Section 393 of the 2004 Act replicates s 91 of the 1991 Act. At the commencement of this proceeding in 2014, s 393 relevantly reads:

> **393 Limitation defences**
>
> (1) The Limitation Act 2010 applies to civil proceedings against any person if those proceedings arise from—
>
> (a) building work associated with the design, construction, alteration, demolition, or removal of any building; or

> (b) the performance of a function under this Act or a previous enactment relating to the construction, alteration, demolition, or removal of the building.
>
> (2) However, no relief may be granted in respect of civil proceedings relating to building work if those proceedings are brought against a person after 10 years or more from the date of the act or omission on which the proceedings are based.
>
> (3) For the purposes of subsection (2), the date of the act or omission is,—
>
> (a) in the case of civil proceedings that are brought against a territorial authority, a building consent authority, a regional authority, or the chief executive in relation to the issue of a building consent or a code compliance certificate under Part 2 or a determination under Part 3, the date of issue of the consent, certificate, or determination, as the case may be; and
>
> …

[1307] The key to construing the meaning of s 393 is to understand the meaning of "proceedings". This is to be ascertained from the text and in the light of its purpose and context.[408] Case law recognises that the term "proceedings" is capable of a variety of meanings.[409] This underscores the importance of purpose and context.

[1308] The plaintiffs say that the initial statement of claim is the "proceeding" for the purposes of s 393 and the focus of the analysis or inquiry. It should therefore be a simple, predictable matter of identifying the date of the CCC, calculating a 10 year period from that date and ascertaining whether the acts or omissions have been pleaded within that period. They say that it is not correct to analyse at a granular level whether there is significant difference between the originally identified defects and amended or further defects added to the proceeding.

[1309] The plaintiffs submit that this approach reflects the legislative intention that the longstop be "cause of action neutral" in contradistinction to the cause of action accrual approach in the Limitation Act 1950 or Limitation Act 2010. This would mean that provided a proceeding is commenced within the longstop period and amendments to the pleading do not change the underlying acts or omissions there is only a single proceeding for the purposes of s 393. In advancing this interpretation, they say:

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408 Legislation Act 2019, s 10.

409 *Body Corporate 355492 v Queenstown Lakes District Council* [2022] NZHC 1494 at [84], citing *Blake v Norris* [1990] 20 NAWLR 300 (NSWCA) at 306.

(a) Section 393 is only concerned with the act or omission of a defendant.

(b) Parliament deliberately chose not to stipulate that the longstop applies to amendments.

(c) It is not necessary to analyse whether the amendments by addition of further alleged defects constitute a fresh cause of action as that is not a relevant consideration under s 393 although is a consideration under the general limitation provisions of the Limitation Act 2010.

(d) To construe s 393 as applying both to the original proceeding and subsequent amendments would be harsh to property owners

(e) On its face s 393 does not require any analysis of the building defects because the only relevant matters are the dates of the issue of building consent and CCC.

[1310] They further say that *Body Corporate 360683 v Auckland Council* (*Orewa Grand*),[410] *Body Corporate 355492 v Queenstown Lakes District Council* (*Oaks Shore Interlocutory Judgment*),[411] and *Body Corporate 355492 v Queenstown Lakes District Council* (*Oaks Shores Substantive Judgment*,[412] were incorrectly decided and inconsistent with the principles set out in earlier authorities.

[1311] The Council relies on *Orewa Grand* and *Oaks Shores*. It says that the reference to "proceeding" in s 393 must mean a proceeding existing at the time that the longstop is said to apply. Adding new defects fundamentally changes the pleaded factual basis and therefore introduces new time barred cause(s) of action.

Survey of existing cases and history of the provision

[1312] The plaintiffs' position requires a survey of the key cases.

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410 *Body Corporate 360683 v Auckland Council* [2017] NZHC 1785.
411 *Body Corporate 355492 v Queenstown Lakes District Council* [2022] NZHC 678.
412 *Body Corporate 355492 v Queenstown Lakes District Council* [2022] NZHC 1492.

[1313] First in time were *Klinac v Lehmann*,[413] and *Gedye v South.*[414] Both dealt with claims under a vendor warranty with limitation defences pleaded in reliance on the 1991 Act. That Act first introduced the longstop in building litigation.[415] In *Klinac*, the vendor of a house warranted that certain building work carried out some years earlier had been completed in compliance with the requirements of the 1991 Act. The purchaser sued for breach of warranty and misrepresentation. The proceeding was issued more than 10 years after the building work had been undertaken. The vendors argued that the longstop limitation provision, then in s 91, barred the claim. Though the "civil proceedings" clearly related to building work, the Court focused on the act or omission of the defendant rather than the broader subject matter. As the claims were based on the warranty breach rather than the faulty building work, the 10 year longstop period started running from the date of the warranty. That was the relevant "act or omission" more closely connected to the cause of action. The faulty building work was not the act on which the proceeding is based but was relevant to establishing the breach of warranty.

[1314] Materially, Glazebrook J stated:[416]

> [35] The operative act in a cause of action in negligence must be the act which causes the breach of duty. Even where the eventual plaintiff is unidentifiable, the duty is still owed and breached at that point. Damage is, however, an essential part of the cause of action in negligence and until the damage has occurred (or it is discoverable), the cause of action is not complete. *Section 91(2) focuses on the act or omission, not completion of the cause.*
>
> [39] …The language of s 91(2) refers to the date of the act or omission and to nothing else. It does not use loose language such as the date upon which the cause of action occurred. It refers solely to the actual date of the act or omission relied upon by a plaintiff[.]

[1315] *Gedye v South* also concerned a contractual warranty that the works on the property complied with the 1991 Act.[417] Regarding the policy reasons for enacting s 91, the Court of Appeal commented that:

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413 *Klinac v Lehmann* (2002) 4 NZ Conv C 193,547 (HC)
414 *Gedye v South* [2010] NZCA 207, [2010] 3 NZLR 271.
415 The longstop provision came about after the Court of Appeal in *Askin v Knox* [1989] 1 NZLR 248 (CA) at 256 suggested that Parliament should seriously consider a longstop provision to provide a balance between the interests of homeowners and those involved with the construction industry.
416 *Klinac v Lehmann,* (2002) 4 New Zealand ConvC 193, 547 (HC) at [39] (emphasis added).
417 *Gedye v South*, [2010] 3 NZLR 271.

> [35] History shows that the impetus for a long-stop provision in New Zealand was the problems engendered by a discoverability approach in the context of negligence claims pertaining to building work and building control. Equally clearly, we think the purpose of s 91(2) was to restrict the litigation of faulty building claims to a maximum ten year period.

[1316] The Court generally affirmed Glazebrook J's analysis in *Klinac*.[418] It said that s 91 did not have a part to play in a contract case where the cause of action is complete upon breach without the need for actual loss or damage. By way of contrast, negligence cases where there is a reasonable discovery approach to damage lead to problems.[419]

[1317] There are two essential elements to a longstop provision: specification of the date of the relevant act (or commencement) and the term.[420] These cases above illustrate the different focus of a longstop provision on acts and omissions (to create a clear commencement date) versus general limitation provisions which tend to focus on the point of accrual of the cause of action.[421]

[1318] As foreshadowed, the plaintiffs' interpretation has been considered in two cases: *Orewa Grand* and *Oaks Shores*.[422]

[1319] In *Orewa Grand*, architects facing claims of negligence in respect of a residential apartment building applied to strike out those parts of an amended claim alleging that they negligently carried out on-site inspections and observations. Woodhouse J distilled the central issues as whether those claims were new causes of action or no more than further particulars and, if the former, whether the amendments were time barred.

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418 See, for example, *Gedye v South* [2010] NZCA 207, [2010] 3 NZLR 271 at [44].

419 At [44].

420 *Beca Carter Hollings & Ferner Ltd v Wellington City Council* [2022] NZCA 624 at [129].

421 See also *Body Corporate 378351 v Auckland Council* [2020] NZHC 1701 at [107] where Associate Judge Smith said "[t]hat in my view is the whole point of introducing any longstop limitation period – the focus goes onto the defendant's acts or omissions, and not on when the plaintiffs' cause of action accrues. In circumstances where damage might not be suffered by the plaintiff for many years, that is necessary to give defendants some certainty over the period they will remain exposed to possible claims."

422 Earlier decisions did not consider this argument as the parties approached the issue simply on a cause of action analysis.

[1320] After setting out the general principles for identifying a fresh cause of action from *Transpower New Zealand Limited v Todd Energy Ltd,* Woodhouse J rejected the plaintiffs' argument that the new paragraphs were merely adding particulars to a prior pleading.[423] The prior pleading claimed that the architects had negligently provided architectural services, the particulars of which were preparation of plans and specifications and acting as developer's agent in respect of consent applications. He said that the substance of the earlier pleading was not that the architects had been negligent in the provision of architectural services although the pleading was expressed in that way. That pleading would have been too abstract. It was insufficient to identify the breach in question. The precise allegation in the prior pleading should be regarded as the allegation that in breach of their duty of care, the architects failed to prepare adequate plans and specifications. The newly introduced pleading in respect of the allegation of negligent observation and inspection introduced fundamentally different areas of enquiry.[424] It was therefore a new cause of action.

[1321] Although the 'proceeding' as whole was filed within 10 years of the observation work being carried out, the negligent observation *claim* was not filed within that period.[425] As here, the owners argued that the reference in s 393(2) to when "proceedings are brought" in s 393(2) is a reference to the "date when a proceeding is commenced initially and not when amendments to the claim may be brought".[426]

[1322] Woodhouse J referred to earlier cases where the relevant enquiry was when the particular claim, or cause of action, is first brought, not when the proceeding was first filed. He noted that in those cases the word "proceedings" had been treated as synonymous with "claim" or "cause of action" although the argument now advanced

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423 *Body Corporate 360683 v Auckland Council* [2017] NZHC 1785 at [9], citing *Transpower New Zealand Ltd v Todd Energy Ltd* [2007] NZCA 302 at [61].
424 At [19]–[20].
425 At [23].
426 At [24].

by the owners had not been raised.[427] He did not accept the owners' argument for the following reasons:[428]

(a) The argument ignores the opening words of s 393(1) that the Limitation Act 2010 applies to civil proceedings defined in s 393(1).

(b) Section 393 must be given effect consistently with the Limitation Act 2010 because that Act governs s 393.

(c) The time limits under the Limitation Act 2010 are expressly directed to the date on which the *claim* is brought, not when the proceeding is first filed in Court.

(d) Construing s 393 consistently with the relevant provisions of the Limitation Act 2010 makes it clear that the word "proceedings" is to be given the same meaning as "claim" in that Act (and the word "action" in the Limitation Act 1950).

(e) It follows that the critical date for the purposes of the longstop is the date on which the particular *claim* is brought rather than when the entire proceeding was first filed.[429]

[1323] The plaintiffs' submit that the statements of principle in *Orewa Grand* are obiter. In my assessment, the impugned "claim" in *Orewa Grand* effectively introduced a cause of action based on a newly pleaded act or omission on the part of the architects — observation and inspection. This added to the originally pleaded preparation of architectural plans. Thus, even on the plaintiffs' argument, s 393(2) would bar that addition. While I accept that this makes it distinguishable, the analysis

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427 At [25], citing *Body Corporate No. 338356 v Endean* [2014] NZHC 2644 at [19]; *Body Corporate 32561 v McDonough* [2015] NZHC 764 at [58]–[59]; *Body Corporate 325261 v Stephen Mitchell Engineers Ltd* [2014] NZHC 76 at [27]; and *Perpetual Trust Ltd v Mainzeal Property and Construction Ltd* [2012] NZHC 3404 at [85]. On my reading of those cases, the point was not argued. Rather, it was common ground between the parties that a cause of action analysis was to be employed. See also *Osborne v Auckland Council* [2014] NZSC 67, [2014] 1 NZLR 766 at [26].

428 At [26]–[30].

429 At [28].

by Woodhouse J still merits considered attention. Even more so given that his analysis was endorsed by an Associate Judge and Judge of this Court in the *Oaks Shores* cases, to which I now turn.

[1324] In the *Oaks Shores* cases, a body corporate and unit owners sued Queenstown Lakes District Council ("QLDC") alleging negligence in the issue of the building consent and CCC. On commencement, the pleading related to external weathertightness and structural issues. Typically, the statement of claim underwent various iterations. In the sixth amended statement of claim, the plaintiffs added to their pleaded list of defects a structural defect identified as "bathroom pods structurally deficient floor slab".[430] This was added more than 10 years after the last relevant involvement of QLDC. The bathroom pod defect claim itself evolved in further iterations of the pleadings. These added bathroom defects such as "shower outlets constructed in a way that allows water to penetrate behind linings and/or into concealed spaces."[431] By the strike-out hearing date, the bathroom pods claim had two limbs — lack of internal watertightness and the structural claim relating to installation of the pods in the rebated floor slabs.

[1325] QLDC asserted this was a new head of claim which was statute-barred by s 393 of the 2004 Act, having been brought more than 10 years after the consent had been issued. As here, the plaintiffs argued that the operation of the s 393 longstop did not require a cause of action analysis and that the filing of the proceeding within 10 years of the negligent *acts* took the longstop out of play. They also argued that a catch-all reference to "structural and/or fire and/or acoustic and/or other defects to be particularised" made it clear that the pleaded defects consequent on the negligent conduct were not a closed category.

[1326] The Associate Judge identified that the issue turned on which of the two approaches advanced by the parties is correct. One approach focused on the express wording of s 393 and the allegedly negligent actions.[432] The other on whether a new cause of action had been added.[433]

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430 *Body Corporate 355492 v Queenstown Lakes District Council* [2022] NZHC 1494 at [16].
431 At [18].
432 At [35].
433 At [49].

[1327] Interpreting s 393, the Associate Judge determined that the relevant "civil proceedings" comprised the statement of claim as it existed at the time the statute-bar was triggered.[434] Each iteration of the statement of claim replaced the previous ones and the earlier statement of claim is treated as if it did not exist for the purposes of the limitation. He rejected the submission that the originally commenced claim with its allegation of breach of duty by QLDC constituted the "proceedings" in respect of which any relief relating to the bathroom pods would be granted. Rather, when s 393 refers to "those proceedings" it is referring to the proceeding in which the challenged relief is sought.[435] Only this avoids the longstop provision being subservient to the reasonable discoverability.[436] He said:

> [56] The commencement of a broadly pleaded statement of claim against a local authority would, on the plaintiffs' case, from that point take the long stop out of play. It cannot have been intended by parliament that the long-stop, being an "overarching limit on liability", could be sidestepped through judicious pleading.

[1328] The Associate Judge concluded that the bathroom pod claim was a fresh cause of action because the essential nature of the factual enquiry required gave rise to a fundamentally different claim. Describing Woodhouse J's decision as the same result by a different path, he rejected the submission that *Orewa Grand* was distinguishable. He relied on Woodhouse J's observation that the *Transpower* test did not mean the highest level of abstraction to the point where the facts relied on by the plaintiff are so abstract that an essential factual element of the cause of action has not been identified. A pleading merely that QLDC was negligent in issuing building consent, undertaking inspections and issuing code compliance fell afoul of that principle as it was so abstract, it failed to identify the impugned activity.[437]

[1329] Consequently, the application was to be decided by whether the essential nature of the factual enquiry introduced by the 2019 amendment gives rise to a fundamentally different claim. The Associate Judge found that it was, and the bathroom pods claim was out of time.

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434 *Body Corporate 355492 v Queenstown Lakes District Council* [2022] NZHC 678 at [50].
435 At [53].
436 At [55].
437 At [69].

[1330] On a review application, Osborne J reached the same conclusion applying the reasoning in *Orewa Grand.*[438] He began his analysis with the question of whether the bathroom pod defects were a fresh cause of action before turning to the meaning of "proceedings" in s 393(2) and said:

> [67] When the relevant question is identified as in *ISP Consulting* (rather than the arguably more restricted wording identified by Mr Raymond in the earlier decision in *Visy Board* — (above at [62])), the question is whether the bathroom pods claim requires investigation of an area of fact of a new and different nature not identified in the earlier pleading?
>
> [68] The answer to that question, as found by the Associate Judge, is plainly "yes". It is of course the case, as emphasised by Mr Raymond, that the plaintiffs have all along asserted the breach of a duty of care by QLDC in relation to code compliance. But the case as formulated up to and including the 5ASOC was a case turning on external weathertightness and some structural defects, unrelated to the bathrooms. All those claimed defects were identified in the pleadings and able to be investigated by the other parties. The issues relating to the bathroom pods were of an essentially different nature. The pods are in a physically different, discrete area of the buildings. The structural elements in relation to the bathroom pods are of a different nature to the other alleged structural defects. The issues relating to internal moisture ingress are of a different nature to the previous (externally sourced) weathertightness issues.

[1331] As to what "proceedings" mean in s 393 of the 2004 Act, Osborne J observed that case law recognises that the term "proceedings" is capable of a variety of meanings.[439] He considered that the context makes the meaning clear. Under s 393(1) the Limitation Act 2010 applies to the "civil proceedings" referred to in s 393(2). He reasoned therefore that s 393 should be construed consistently with the Limitation Act giving a clear meaning of "proceedings". He adopted and applied the reasoning of Woodhouse J in *Orewa Grand* in the following passage:[440]

> [27] Ms Grant's submissions were directed only to the word "proceedings" and the use of that word in the expression "if the proceedings are brought". The argument ignores the opening words of s 393(1) – the Limitation Act 2010 applies to civil proceedings as defined in s 393(1). Section 393 must be given effect consistently with the Limitation Act because that Act governs s 393.
>
> [28] The time limits under the Limitation Act are expressly directed to the date on which the claim is brought, not when the proceeding is first filed in Court. The word "claim" replaced the word "action", and the expression

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438 *Body Corporate 355492 v Queenstown Lakes District Council* [2022] NZHC 1494.

439 At [84], citing *Blake v Norris* [1990] 20 NAWLR 300 (NSWCA) at 306 in which it was held that where there are several causes of action, "a separate cause of action is a proceeding" for the purposes of the power to transfer proceedings.

440 At [87], citing *Body Corporate 360683 v Auckland Council* [2017] NZHC 1785.

> "cause of action" used in the Limitation Act 1950, but that makes no difference.
>
> [29] Under s 11(1) of the Limitation Act 2010, the primary limitation period for the owners' observation claim is six years after the date of the act or omission on which the claim is based. A further provision in s 11 extends the period by three years after the "late knowledge period", and there is a "long stop period" of 15 years after the date of the act or omission on which the claim is based.
>
> [30] Section 393(2) of the Building Act introduced the 10 year long stop period for civil proceedings of the type defined in s 393(1). Construing s 393 consistently with the relevant provisions of the Limitation Act 2010, it is clear in my judgment that the word "proceedings" is to be given the same meaning as "claim" in the Limitation Act 2010, and the word "action" in the Limitation Act 1950.

[1332] Osborne J pointed out that one of the purposes of the 10 year longstop gleaned through the materials leading to its enactment, was to limit indeterminacy.[441] It was a compromise to what otherwise become an indeterminate liability as a consequence of the recognition of a late knowledge period.

Discussion

[1333] The plaintiffs' principal argument is contrary to the weight of this authority. I am not persuaded that they are incorrectly decided. On the contrary, the reasoning employed is persuasive. The policy drivers for the longstop provisions and the legislative history make clear that a longstop is intended to be an ultimate limitation period, not subservient to the primary limitation period nor any extended period through the discoverability test. As the Court of Appeal stated in *Beca Carter v Wellington City Council*:[442]

> A "long-stop" limitation imposes a complete bar on the commencement of legal proceedings. Such a limitation restricts the effect of provisions which allow standard limitation periods to be extended in certain circumstances.

[1334] The longstop defeats the discoverability commencement date which otherwise favours plaintiffs. The start date for the period has nothing to do with the point at which a cause of action accrues — unlike the primary limitation period under the

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441 At [92].

442 *Beca Carter Hollings & Ferner Ltd v Wellington City Council,* [2022] NZCA 624 at [4], fn 1. This decision is under appeal to the Supreme Court, leave granted in *Beca Carter Hollings & Ferner Ltd v Wellington City Council* [2023] NZSC 38.

legislation. It also has nothing to with whether negligence or contract is pleaded. It is in respect of these points that the description "cause of action" neutrality bites.

[1335] Accordingly, in this case, the effect of s 393(2) is to bar relief if "proceedings" are brought later than 5 October 2016 (or earlier in respect of the negligent issue of a consent).

[1336] When are the "civil proceedings" brought? If "civil proceedings" are construed merely as initiation by a statement of claim and notice of proceeding which references the allegedly negligent act at such a high level of abstraction that there is, in truth, no cause of action or relief, then it is correct that the longstop can be taken out of play by judicious pleading.[443] That cannot sensibly have been the intention of the legislature.

[1337] I agree with the view expressed by the Associate Judge in *Oaks Shore Interlocutory Judgment* that the "proceeding" which is material for the analysis is the statement of claim at the time of expiry of 10 years from the issue of consent or CCC (whichever is in issue in the particular analysis). That is, each iteration of the statement of claim replaces the previous iteration which is treated as though it did not exist.

[1338] The question then becomes whether the challenged further defects become in substance a new proceeding in this context, even if no "act or omission" is added? Alternatively, does it merely add detail to a proceeding commenced within the longstop period? In posing the question this way, I consider that a "fresh cause of action" analysis is inevitable.

[1339] I consider that a proceeding which merely pleads that the issue of a CCC was negligent without identification of any consequence is so incomplete that it does not bring the longstop to an end. The level of abstraction is too high. It would undermine the certainty which the legislature desired when enacting a longstop provision.

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443 *Body Corporate 355492 v Queenstown Lakes District Council* [2022] NZHC 678 at [56].

[1340] In summation, I do not accept the plaintiffs' interpretation of the longstop provisions in either s 91 of the 1991 Act or s 393 of the 2004 Act. Rather, I consider that the longstop prevents any new causes of action after 5 October 2016 in respect of the Council and after August 2016 in respect of Equus.[444]

A brief pleading history

[1341] The plaintiffs commenced the proceeding on 26 March 2014, within 10 years of the Council issuing the relevant building consents and well within 10 years of issue of the CCC. Although the original statement of claim has been amended five times, the structure of the pleading has remained largely the same. In each lengthy pleading, there is the same general factual narrative identifying the parties, their involvement in the design and construction of Gore Street, the consenting process and issue of a CCC. The core allegation is that the Council owed the plaintiffs a duty to exercise reasonable skill and care in issuing the building consents, inspecting the building work and issuing the CCC, and breached those duties. The plaintiffs allege that as a result of breaches of duty, Gore Street has the defects and damage (earlier defined) and requires repairs as a result of which the Owners have suffered or will suffer, among other things, consequential damages. The schedules describing the pleaded defects have been revised since 2014, including by the addition and removal of claimed defects.

[1342] Although there are multiple defects in the schedule, there is only one single cause of action in negligence against the Council based on one set of alleged acts or omissions. At that fundamental level then, the core allegation has not changed through the various iterations of the pleadings. There are not separate causes of action relating to each defect.[445]

[1343] The statement of claim at commencement pleaded 39 defects relating to weathertightness, fire, health and safety risk, and structure. The plaintiffs filed amended statements of claim on 22 January 2016 ("SOC2"), 15 March 2016

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444 The Equus producer statements are dated July and August 2006.

445 The plaintiffs point out that just as a building consent or CCC is not divided according to construction items, so the claim against a council pleads a single cause of action based on the negligent issue of the consent or CCC (with the issue of the CCC subsuming negligence in the course of inspections).

("SOC3"), 30 November 2018 ("SOC4"), 29 August 2019 ("SOC5), 11 March 2021 ("SOC6").

[1344] In SOC4, the plaintiffs abandoned their claim against Equus under the Fair Trading Act 1986. The negligence claim pleads the same underlying acts — supply and inspection of the waterproofing membranes.

[1345] The first three statements of claim were all filed within 10 years of the issue of the CCC. The last three statements of claim were not and are identical in terms of defects to each other. Therefore, the two most material iterations relating to inspection and CCC are SOC3 and SOC4.[446] The former pleads:

> **Defects & Repairs**
>
> 48. The Gore Street Apartments was built with defects *including but not limited* to those set out in **Schedule 5** ("**the Defects**").
>
> 49. As a result of the Defects the Gore Street Apartments have suffered moisture ingress and damage ("**the Damage**")

[1346] The reference to "including but not limited to" is intended as a catch-all and notice that potentially more defects will be identified and included as investigations continue.

[1347] SOC4, SOC5 and SOC6 plead:[447]

> **Defects**
>
> The Gore Street Apartments was built with defects including the defects in **Schedule 2** ("**the Defects**").
>
> The Defects resulted in the Gore Street Apartments failing to comply with clauses B1, B2, C2, C3, C4, E2 and E3 of the New Zealand Building Code.

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446 The consent allegations relate to Consent 305 issued on 15 November 2005. The relevant pleading for a fresh cause of action analysis would be after SOC2. I intend to focus on the inspection/CCC issues only, since negligent issue of consent tends to fold into the Council's obligations at the CCC stage.

447 At [56]–[57] of the 2018 statement of claim (SOC4); [56]–[57] of the 2019 statement of claim (SOC5); and [57]–[58] of the 2021 statement of claim (SOC6).

[1348] Schedule 2 lists 13 defects in four broad categories: fire, earthquake, external waterproofing and internal waterproofing. The pleaded defects in SOC6 are identical across SOC4 to SOC6.

What constitutes a fresh cause of action — legal principles

[1349] The principles relevant to determining what constitutes a fresh cause of action were set out in *Ophthalmological Society of New Zealand Inc v Commerce Commission,* and summarised in *Transpower New Zealand Ltd v Todd Energy Ltd* as follows:[448]

> (a) A cause of action is a factual situation the existence of which entitles one person to obtain a legal remedy against another;
>
> (b) Only material facts are taken into account and the selection of those facts "is made at the highest level of abstraction";
>
> (c) The test of whether an amended pleading is 'fresh' is whether it is something 'essentially different'. Whether there is such a change is a question of degree. The change in character could be brought about by alterations in matters of law, or of fact, or both; and
>
> (d) A plaintiff will not be permitted, after the period of limitation has run, to set up a new case "varying so substantially" from the previous pleadings that it would involve investigation of factual or legal matters, or both, "different from what have already been raised and of which no fair warning has been given".

[1350] The Court of Appeal in *Commerce Commission v Visy Board Pty Ltd* confirmed that a new cause of action can arise as a result of an alteration in matters of fact.[449] However, in order for an amendment to amount to a new cause of action there must be a change to the legal basis for the claim. While that could, in theory, occur through the addition of new facts, the facts added must be:[450]

> … so fundamental that they change the essence of the case against the defendant. If the basic legal claims made are the same, and they are simply backed up by the addition or substitution of a new fact, that is unlikely to amount to a new cause of action.

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448 *Ophthalmological Society of New Zealand Inc v Commerce Commission* CA 168/01, 26 September 2001 at [22]–[24], cited in *Transpower New Zealand Ltd v Todd Energy Ltd* [2007] NZCA 302 at [61] (citations omitted).

449 *Commerce Commission v Visy Board Pty Ltd* [2012] NZCA 383 at [142].

450 At [146].

[1351] Whether a pleading was of an essentially different nature was analysed in a strike-out context in *Body Corporate 346799 v KNZ International Co Ltd* (*Victopia*).[451] The earlier pleading in that case referred only to "[c]ladding" and "[b]alcony waterproofing defects".[452] Further defects relating to "fire" were then pleaded. The losses said to be attributable to the claimed fire defects totalled nearly $6 million. Only a small part of that sum had commonality with other defects. Palmer J held that the fire safety defects merely added particulars that did not change the essence of the claim against the defendant council. Rather, all that had changed were the details in respect of which the council had or should have consented, inspected and issued a code compliance certificate. Palmer J relied on the requirement in *Visy* to identify the material facts at the highest level of abstraction.[453]

[1352] A year later, whether a change to the alleged facts meant a fresh cause of action was considered further by the Court of Appeal in *ISP Consulting* v *Body Corporate 89408.*[454] This too was a building defect case. The circumstances were unusual.

[1353] Proceedings relating to the development of apartments were consolidated. Following consolidation, the Owners filed an amended statement of claim. That consolidated statement of claim omitted certain factual allegations that had been pleaded in one of the earlier proceedings. Shortly thereafter, on realisation of their error, the Owners applied to amend the pleading under r 1.9 of the High Court Rules, adding back the omitted structural defects.[455] The defendant raised a limitation objection. The High Court concluded no fresh cause of action arose on the addition of the structural defects because they were only a further particularisation of facts rather than an alteration to the legal basis for the claim. Moreover, the damages claimed remained substantially the same.

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451 *Body Corporate 346799 v KNZ International Co Ltd* [2016] NZHC 1523. This was decided before *ISP Consulting Engineers Ltd v Body Corporate 89408* [2017] NZCA 160, (2017) 24 PRNZ 81.

452 At [23].

453 At [26], citing *Commerce Commission v Visy Board Pty Ltd* [2012] NZCA 383. This approach reaches the same result as treating the "proceeding" in s 393 as the whole proceeding filed

454 *ISP Consulting Engineers Ltd v Body Corporate 89408* [2017] NZCA 160, [2017] 24 PRNZ 81.

455 This application was treated as akin to an application by the defendant to strike out the challenged part of the pleading because if there was no new cause of action, no issue of limitation arose, and the amendment would be allowed.

[1354] On appeal, the Court of Appeal framed the relevant enquiry as whether the pleading added a new cause of action that was time barred, or did no more than particularise the already pleaded and in-time cause of action. Endorsing the principles set out in *Transpower*, the Court said: [456]

> [22] The issue is whether the Owners were setting up a new case, in the sense of making new allegations that would involve the investigation of an area of fact of a new and different nature, or a new and different legal basis for a claim not put forward in the earlier pleading. To put the question more generally, does the Second [consolidated statement of claim] have an essentially different character from the First [consolidated statement of claim]? The assessment is objective and the consideration must be of the substance of what is pleaded, rather than the form.

[1355] And in relation to new facts:[457]

> [25] It is clear that the importance of the pleaded fact to the success of the claim is not the test. The question is whether the proposed amendment will change the essential nature of the claim; is there a new area of factual enquiry? The fact that the underlying facts may be the same or similar does not save a cause of action from being fresh if the plaintiff seeks to derive a materially different legal consequence from the facts.

[1356] The Court emphasised that the issue is one of degree. Merely because the pleadings raise new facts will not be enough to show a fresh cause of action. The pleading must be of an essentially different nature or involve an investigation of an area of fact of a new and different nature.

[1357] In *ISP Consulting,* there was a substantial overlap both in the general duty of care alleged and in the defects. There was no distinction drawn in the duty of care between weathertightness and structural responsibilities.[458] The engineering work carried out by the defendant is the same in both the earlier and later claim. In listing the defects, the introductory words contained the words "including but not limited to".[459]

[1358] The summary of defects in the relevant schedule included reference to defects that were structural in nature resulting in weathertightness defects. Some of the other

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456 *ISP Consulting Engineers Ltd v Body Corporate 89408* [2017] NZCA 160, [2017] 24 PRNZ 81 (footnote omitted).
457 (Footnotes omitted).
458 At [34].
459 At [28].

pleaded defects appeared to have a structural element and the pleaded remedial works included "structural strengthening". The Court considered that the weathertightness and structural defects were causally linked and there was likely to be some overlap in the remedial work required.[460] The second pleading was not therefore essentially different from the first.[461] The same duty of care was relied on, and the new allegations did not require investigation of factual matters of a new and different nature not earlier raised.

[1359] Acknowledging that the new consolidated pleading which included the previously omitted structural defects enlarged the claim, the Court said that it did not do so to such a degree as to create a new cause of action. It concluded that the amended consolidated claim merely provided further particulars in respect of the originally pleaded cause of action in negligence and both the legal basis and essential area of factual enquiry are the same.

[1360] I have also considered other cases. In *Body Corporate 202692 v Auckland Council*, the Associate Judge applied Palmer J's reasoning in *Victopia.*[462] While there was no overlap between the fire safety defects and water penetration defects, the defendant faced the same basis legal claim in negligence for the issue of a CCC. The change is in the details going to the issue of the CCC.

[1361] In *Body Corporate 406198 v Argon Construction Ltd [Bianco Apartments],* the issue was whether amendments to the defects schedule constituted a time barred fresh cause of action.[463] Edwards J referred to the principle that a new cause of action can arise as a result of an alteration in matters of fact, citing both *Visy* and *ISP Consulting.* She agreed that the test in *ISP Consulting* was less restrictive, a conclusion with which I respectfully agree.

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460 At [32].
461 At [34].
462 *Body Corporate 202692 v Auckland Council* [2019] NZHC 1976.
463 The Court of Appeal declined leave to appeal in *Auckland Council v Body Corporate* 406198 [2019] NZCA 635 at [14]. The reasons included unresolved factual issues about the extent to which the structural and fire safety defects are interconnected to the weathertightness issues; an appeal would delay the trial by up to two years and the defendants can pursue the defence at trial in any event.

[1362] She found that the addition of particulars relating to the "failure to install GIB within apartment firewalls in accordance with manufacturer's literature" to "fire stopping defects" did not constitute a claim that is essentially different although the changes expanded and added to the factual particulars. The essence of the claim remains the same. She distinguished *Oaks Shores* and held that *ISP Consulting* was analogous in view of the overlap between fire stopping and fire rating.

[1363] While the scope of the claim would be extended by the proposed amendment to the defect schedule, the judge said:

> [25] Nevertheless, that extended scope must be seen in context. The existing pleading identifies the location of the alleged defects as being "between fire cells in all units and common property" and expressly includes "risers, ceiling spaces between ceiling and slab above". Although the focus in the current pleading is on specific areas, others are not excluded. The effect of the proposed amendment is to add specificity to those areas expressly included between fire cells in all units and common property.

[1364] Although *Victopia*, *Bianco Apartments, Oaks Shores* and *Orewa Grand* ostensibly all apply the *Transpower* principles, *Victopia* and *Bianco Apartments* focused on the essence of the breach and duty in accordance with the *Visy* principles. In allowing extra defects to be pleaded without the new defects counting as a new cause of action, they represent an approach which is more sympathetic to plaintiffs. That properly recognises the difficulties plaintiffs face in this context. Their outcome is more closely aligned to the plaintiffs' position as to the proper application of s 393. In contrast, in both the *Shore Oaks* cases and *Orewa Grand* there was more focus on the core factual propositions brought about by the amendment. Or put another way, whether the additional allegations required investigation of an area of fact of a new and different nature not identified in the earlier pleading.

Analysis of defects

[1365] The essential question is whether the challenged defect claims are new causes of action even though no new legal basis is put forward for the claim. Rather, the legal basis for all the defect claims remains breach of duty of care.

[1366] I deal with each of the claimed defects in respect of which a longstop defence has been pleaded regardless of whether I have found them not to constitute actionable defects.

[1367] The plaintiffs submit that it is impractical to consider each defect on an isolated basis for longstop purposes. They say defects 1, 2 and 7 all related to passive fire protection measures, involve consideration of the Holmes fire reports and the sign off letter of 29 August 2006. Moreover, there are Council inspections which could apply to more than one of those defects and both the consents and the CCCs relate to all of the construction features which are the subject of those defects.

[1368] The plaintiffs point out that they have alleged widespread building defects in each statement of claim including cls B1, B2, E2, E3 and C2 to C4 (structure, weathertightness and fire safety clauses) in every statement of claim. They argue the amendments are not so fundamental as to change the essence of the claim; and the basic legal claims are the same, just backed up by additional facts and in each statement of claim it is alleged there are structural, fire, waterproofing and bathroom defects of one type or another. They advocate a review of the pleaded defects "in the round" since there is a significant overlap in analysis required between defects acknowledged to be inside the 10 year limitation and those outside. They point to the defect apportionment schedule produced in evidence in support and say the repair overlap demonstrates that there is no essential change to the nature of the claim arising from the challenged defects.

Defects 1 and 2

[1369] Both claimed defects 1 and 2 were introduced in SOC4. They both relate to fire safety. For convenience, I repeat them:

(a) defect 1 — load-bearing steel-framed elements do not have adequate fire protection.

(b) defect 2 — heads of the fire separation walls not constructed to maintain the integrity of walls in a fire event.

[1370] In SOC3, three fire defects were repeated from the previous pleading and refined by location details:

> 32. Fire-rated junctions/penetrations within the ceiling/wall spaces at the upper ground car park, the stairwell located at the commercial premises occupied by Lollipops, the ground level and levels B1, 1, 2, 10, 15, 34, 35 are not formed and/or installed correctly in breach of clause C of the NZ Building Code.
>
> 33. Poorly installed and/or missing fire collars at the upper ground car park, the stairwell located at the commercial premises occupied by Lollipops, the ground level and levels B1, 1, 2, 10, 15, 34, 35, in breach of clause C of the NZ Building Code.
>
> 34. The fire rating stoppings (foam, plaster or sealant) to the service penetrations at the upper ground car park, the stairwell located at the commercial premises occupied by Lollipops, the ground level and levels B1, 1, 2, 10, 15, 34, 35, are poorly installed in breach of clause C of the NZ Building Code.

[1371] I do not consider that the specificity as to location is determinative. Defects 33 and 34 related to penetrations and are now pleaded as claimed defect 7. The question is whether defect 32 is sufficiently connected to the claimed defects 1 and 2.

[1372] I am satisfied that claimed defect 2 is broadly pleaded in SOC3. It relates to a junction, is a fire safety issue calling up the same code provisions and has merely been refined in its current iteration. The degree of difference is certainly not great. In substance, I consider it is closer to *Bianco Apartments* than *Oaks Shores.* It therefore does not introduce a fresh cause of action and is not time barred.

[1373] The increased scope and volume of the fire, structural and remedial engineering evidence and fact that the initial investigations of the beams only took place in 2016 tell in favour of the Council's argument that claimed defect 1 is time barred. However, by a slim margin I accept that this claimed defect broadly falls within the ambit of fire-rated junctions in that it is the junctions between the steel beams inside the Core and or concrete slabs outside the Core and the fire separation walls at issue.

Defect 3

[1374] Claimed defect 3 — "inadequate steel framed connections within core" — was also introduced in SOC4. The main allegation is that the welds of the steel beams are inadequate or had imperfections. This has both structural and fire safety implications. The original statement of claim had included in the defect schedule "various structural steel connection defects including missing bolts, particulars to be provided at a later date". This was removed from SOC2 and SOC3 before reintroduction in SOC4. Earlier iterations of a pleading are not relevant since a new pleading must render the pleading it replaces as inoperative.[464]

[1375] I consider this defect amounts to a fresh cause of action. This is neither a junction nor a penetration in the sense pleaded in SOC3 and it bears no relationship to the other claimed defects. Claimed defect 3 is time barred.

Defect 4

[1376] Claimed defect 4 relates to the performance of the staircases in the event of an earthquake. It is pleaded as "scissor staircases do not have sufficient allowance of movement or ductile performance". The plaintiffs submit that there had been various defects pleaded under the heading "Structure" in each statement of claim together with breaches of cl B1. Curiously, the first statement of claim included as defect 38 "Sliding stair joints not installed to floor and mid-floor stair landings … causing cracking of stair landings". This was removed from SOC2 and SOC3 before reinstatement in SOC4. No explanation for removal was provided.

[1377] The essence of this pleaded defect is different. The analysis and remediation involves a very different approach and there is no evident causal connection between this defect and the defects which are not challenged on the basis of limitation. Claimed defect 4 is statute barred by the longstop defence.

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464 *ISP Consulting Engineers Ltd v Body Corporate* 89408 [2017] NZCA 160, [2017] 24 PRNZ 81 at [20].

Defect 6

[1378] Claimed defect 6 is that "junctions of the post-tensioned floors to building perimeter beams and wall structure defective in that the bars to tie the perimeter wall frames to post-tensioned floor slab and tendon ducts have not been grouted in places". This was introduced in SOC4. It is a seismic-related failing and it also has a weathertightness aspect to it. It is physically manifestly different from earlier pleaded defects. While there is some causal link its investigation involves a very different analysis to earlier pleaded defects. Despite the link with claimed defects 5, 8 and 9 in that the lack of grouting to the bar sleeves will be allowing more movement at the beam to column junction and therefore contributing to the widening of the cracking at these junctions, I consider that causal link is not sufficiently strong in substance. I find that claimed defect 6 is time barred.

Defect 9

[1379] Claimed defect 9 is that the column to beam junctions on exterior allow excessive movement and have no weathertight seal. SOC3 refers extensively to external moisture ingress as a consequence of the various matters, including on the balconies. For example:[465]

(a) poorly installed liquid applied membrane installed under balcony tiles creating an open path for moisture ingress;[466]

(b) penthouse balcony balustrade posts top-fixed into tiled nib, exterior joinery installed hard down onto tiled nib, and external edge of nib is unfinished creating a potential path for moisture ingress between tiled membrane and concrete balcony; and

(c) Unit 2K's balcony window to handrail junction poorly sealed creating an open path for moisture ingress.

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465 Defects 20 to 22.

466 This is now included as part of defect 8, inadequate balcony waterproofing.

[1380] It was always apparent from the early pleadings that balcony moisture issues were a focus in the overall claim and the defendants were on notice of external waterproofing issues. It was inevitable that all potential causes of ingress would continue to be investigated. In my assessment, claimed defect 9 falls within the notion of "additional factual detail" of an alleged breach of duty. The identified "damage" is the same so that the complete cause of action is the same. This is more closely aligned with the facts in *Bianco Apartments* than *Oaks Shores.*

[1381] I conclude that claimed defect 9 is not time barred.

Defect 12

[1382] Claimed defect 12 alleges that in the bathrooms, "junctions between baths and tiles not waterproofed & glazed screens do not contain water". Every iteration of the statement of claim has included a bathroom waterproofing defect of some type and an alleged breach of cl E3. SOC3 repeated the bathroom defects earlier pleaded relating to the lack of falls to floor wastes. It was not until the SOC4 that claimed defect 12 in the express terms above was pleaded.

[1383] Claimed defect 12 is a fresh cause of action first pleaded in November for the same reasons set out in relation to the six year limitation period above and therefore barred by the longstop provision.

Equus' reliance on the longstop defence

[1384] Equus did not make submissions on this affirmative defence but essentially relied on the Council's submissions. The plaintiffs did not argue that issue of a producer statement falls outside the definition of "building work" in s 393(1) of the 2004 Act.

[1385] As at March 2016, the pleading against Equus set out Equus' role as manufacturer and supplier of membrane products. These were used at various locations including the level 3 roof, pool area and planter box. SOC3 also referred to Equus' inspection of the installation by Aquastop and issue of "*at least* the following

producer statements".[467] The producer statements expressly listed at that time were limited to the level 3 wintergarden roof; the lift and plant room roofs, level 39 roof; and concrete plant room floors, each dated 26 July 2006. There was no explicit reference to a producer statement in respect of the podium (pool deck and planter).

[1386] SOC4 defined the Equus work as follows:

> 46. During the Construction Period, Equus:
>
> (a) supplied the waterproofing membrane products that were applied to the level 1 podium (pool deck and planter) and the level 3 canopy roof;
>
> (b) inspected the application of the waterproofing membranes to the level 1 podium (pool deck and planter) and the level 3 canopy roof;
>
> (c) issued "producer statements" dated 26 July 2006 and 17 August 2006.

[1387] This included for the first time the two producer statements at issue at the trial, both dated 17 August 2006. However, the podium membrane was specifically listed in schedule 5 of SOC3. In my assessment, the addition of additional producer statements relating to areas already flagged but not expressly pleaded does not amount to a new cause of action. Rather, this falls within the ambit of further particulars or details of an existing cause of action.

[1388] I conclude that the claims against Equus are not time barred under the longstop provisions.

Holmes and the longstop defence

[1389] The plaintiffs argue that the acts or omissions on which proceedings against Holmes are based have remained the same. There has always been pleaded reliance on the fire reports/designs produced by Holmes, its review of the construction work and advice to Multiplex at the end of the project as to compliance.

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467 (Emphasis added).

[1390] The 10 year longstop period for Holmes commenced on or around 29 August 2006, slightly earlier than the issue of the CCCs.[468] This difference is not material for present purposes and the relevant comparison remains that between SOC3 and SOC4. I see no reason why there should be a different outcome to that discussed above in respect of claimed defects 1 and 2 for the same reasons. That is, neither defect is time barred by the longstop defence.

Affirmative defence of contributory negligence/voluntary assumption of risk

[1391] I have determined that, although the Body Corporate is entitled to claim the remediation costs in respect of claimed defects 1 to 12 (where liability is established) the contributory negligence of Owners (if any) remains relevant. The second plaintiffs have standing and are the proper plaintiffs for claimed defect 13.

[1392] Both the Council and Equus plead the affirmative defence of contributory negligence.[469] The Council pleads that in the event the Court finds liability against it then any loss or damage suffered has been caused by, or at least contributed by, the plaintiffs' own conduct.

[1393] This affirmative defence was further particularised at a judicial conference on or about 28 June 2019. Essentially, the Council contends that second plaintiffs who obtained minutes of meetings of the Body Corporate held after 20 June 2009 either voluntarily assumed the risk that Gore Street had defects and required repairs and agreed to buy the unit based on their own judgment of the value of the abatement of the purchase price, or failed to safeguard their own interests. That is, they either voluntary assumed the risk or were contributorily negligent if they did not negotiate an abatement of the purchase price. Those who failed to obtain copies of the minutes at all before acquiring their units were contributorily negligent.[470]

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468 This is as pleaded in the Holmes defence and did not appear to be challenged by the plaintiffs.

469 Statement of defence of first defendant, dated 21 April 2022; and Statement of defence of fourth defendant, dated 31 January 2018.

470 Memorandum of counsel for first defendant, dated 19 June 2019 and annexure A.

[1394] There are 160 unit purchasers in respect of which the Council pleads contributory negligence. These purchasers are categorised depending on the time of purchase on the basis that there are different degrees of causal potency.

[1395] Equus pleads the affirmative defence in different terms. It contends that those plaintiffs who purchased the property without seeking appropriate expert advice in relation to the building's condition caused or contributed to their own loss, as did those who purchased at a time when there was a heightened awareness of defects to buildings.

[1396] This aspect of the pleaded defence can be disposed of briefly given that I have found that the claim against Equus fails. In case I am wrong in that conclusion however, I find that the limits of pre-purchase inspection reports are such that there would have been little point in this case in obtaining an inspection report. The number and extent of investigations in the pool/podium area show that identifying the extent and nature of the problems was complex. It cannot sensibly be suggested that a pre-purchase inspection report would have identified claimed defects relating to the pool and level 3 canopy roof. Or expressed another way, there is no causal potency between the damage/loss and failure to obtain a building report.[471]

[1397] In *Fleet Street* the Court held that it was reasonable for purchasers to rely on the issue of a CCC rather than arrange a building report when the CCC was issued at a time that Councils could be expected to be familiar with leaky building problems.[472] That observation is also apposite in the present circumstances.

Evidence of second plaintiffs

[1398] A selected sub-set of second plaintiffs was cross-examined about their pre-purchase knowledge of defects and related issues. That exercise was carried out

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471 Only one second plaintiff obtained a pre-purchase building report and it did not identify any building defects. It was dated 15 August 2011, was relatively shallow and specifically notes that it was a visual inspection only of building elements which could be seen easily. The report writer expressly stated that therefore we are unable to report that any such part of the structure (not easily seen) is free from defect.

472 *Body Corporate 160361 v BC 2004 Ltd* [2015] NZHC 1803 [*Fleet Street*] at [216].

by a Deputy Registrar of the High Court in parallel with the main proceeding ("Second Plaintiff Evidential Hearing").

[1399] There is evidence from the Second Plaintiff Evidential Hearing that at least one purchaser adjusted the purchase price based on his knowledge of the building defects and the then estimated cost of repairs of around $6.5 million.

[1400] Apart from evidence elicited on cross-examination, the second plaintiffs did not give evidence about the steps they took before purchasing or their knowledge or lack of knowledge at the time of purchase. It must be borne in mind that the onus lies on the party advancing the affirmative defence.

Legal principles relating to contributory negligence

[1401] Section 3(1) of the Contributory Negligence Act 1947 provides:

> **3 Apportionment of liability in case of contributory negligence**
>
> (1) Where any person suffers damage as the result partly of his own fault and partly of the fault of any other person or persons, a claim in respect of that damage shall not be defeated by reason of the fault of the person suffering the damage, but the damages recoverable in respect thereof shall be reduced to such extent as the court thinks just and equitable having regard to the claimant's share in the responsibility for the damage:
>
> provided that—
>
> (a) this subsection shall not operate to defeat any defence arising under a contract:
>
> (b) where any contract or enactment providing for the limitation of liability is applicable to the claim, the amount of damages recoverable by the claimant by virtue of this subsection shall not exceed the maximum limit so applicable.

[1402] "Fault" is defined to mean "negligence… or other act or omission which gives rise to a liability in tort…".[473] The question is whether a plaintiff has acted reasonably in all of the circumstances in safeguarding his or her own interests.[474] Damage that

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473 Contributory Negligence Act 1947, s 2.

474 *Body Corporate 326421 v Auckland Council* [2015] NZHC 862 [*Nautilus*] at [294].

may be apportioned must be the reasonable consequence of a lack of care on the part of the plaintiff and caused by such lack of care.

[1403] The Court of Appeal in *Johnson v Auckland Council* said:[475]

> [87] There is no dispute that in making the apportionment, it is necessary to consider both relative blameworthiness and causative potency. The question of the appropriate apportionment is a question of fact involving matters of impression and not some sort of "mathematical computation"…

[1404] It suffices that the plaintiffs' conduct has contributed to the damage that they suffer rather than necessarily to the event that causes the damage.[476]

[1405] The plaintiffs argue that there is no basis for the Court to uphold the defence of contributory negligence and the appropriate response is to find it unproven. They say that the cross-examination of second plaintiffs revealed nothing of significance in relation to the defence. Gore Street was not the type of construction normally associated with leaky buildings such as those constructed with monolithic cladding and the Council issued a CCC in October 2006, well after the emergence of leaky building problems.

[1406] I accept that it was reasonable for purchasers and their legal advisers to take some comfort from a CCC issued at that time.

[1407] The plaintiffs say that it was only in 2013 that the Body Corporate minutes recorded building wide problems of any real significance. Up to that point, it is reasonably arguable that the only reports were in relation to ongoing issues with the contractor and normal maintenance issues. They accept that the 2013 annual general meeting ("AGM") minutes did provide information of the work and cost to remediate then known building problems. At that stage the Body Corporate was predicting an average cost of about $16,000 per apartment. The plaintiffs accept that a prudent purchaser in receipt of those minutes would negotiate an allowance for this cost in the purchase price but dispute that proceeding with purchase was negligent.

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475 *Johnson v Auckland Council* [2013] NZCA 662 at [87].

476 Stephen Todd "Defences" in Stephen Todd (ed) *Todd on Torts* (Ninth Ed, Thompson Reuters, Wellington, 2023) at [20.2.3].

[1408] It is common ground that Owners who purchased after the filing of the court proceedings in March 2014, purchased with knowledge of building defects at that time. Those purchasers all took an assignment of the vendors' claims.

[1409] The plaintiffs and the Council each called a highly experienced property and conveyancing solicitor to give expert evidence. The credentials of both are unimpeachable. Both gave substantially helpful opinion evidence in a measured and careful fashion. The plaintiffs called Robert Eades. The Council called Peter Nolan. The principal differences between them was first that Mr Nolan disagreed with Mr Eades that a typical purchaser would only associate leaky buildings or other building defects with monolithic clad or timber framed buildings. Mr Nolan pointed to ongoing media articles about the leaky building crisis to show that the crisis was known to encompass buildings other than standalone timber clad homes. Secondly, Mr Eades and Mr Nolan had different views on the import of various AGM minutes. Mr Nolan's view was that these contained 'red flags' for prospective purchasers from as early as 2009. Mr Eades considered it was not until 2013.

[1410] I accept that purchasers were likely to take into account factors such as any other information they had, the general construction of the building and whether the Council had issued CCCs after the emergence of leaky building problems in the building industry in the early 2000's. I accept and agree with Mr Eades' evidence that purchasers and their lawyers were likely after October 2006 to take some comfort from CCCs issued at that time.

[1411] Mr Eades also said that he was not surprised to learn that in the period between 2009 and 2011 only a very small proportion of purchasers obtained Body Corporate minutes when purchasing at Gore Street.[477] Similarly, in his view, the contents of the minutes in that date range would also be unlikely to have caused concern. If I accept his view it would follow that even if it was negligent to omit to request minutes, that omission was not causative of loss.

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[477] The Council considered this evidence was hard to understand in view of the evidence Mr Eades is reported to have given in *Nautilus*. However, Ms Meechan and Mr Price responsibly concede that this point was not put to Mr Eades in cross-examination. I agree that nothing can be made of any apparent inconsistency if one indeed exists. Mr Eades' view was expressed conditionally "in view of the matters" already discussed.

[1412] Mr Nolan on the other hand gave evidence that in the relevant period (circa 2009) it was common practice for solicitors to recommend seeking body corporate minutes extending back some years. He considered that there are 'red flags' in minutes as far back as 25 June 2009.

[1413] It is material that by August 2010 the form of agreement for sale and purchase recommended that purchasers should obtain minutes of past meetings of bodies corporate and inquire whether there are any issues affecting the units and/or common property.[478]

[1414] Against this backdrop, there are four issues:

(a) Whether a failure to obtain legal advice before signing an agreement for sale and purchase amounts to contributory negligence.

(b) Relatedly, whether a failure to obtain body corporate minutes amounts to contributory negligence.

(c) Is any failure to obtain minutes causative of loss and, if so, in what period?

(d) What is the appropriate range of deductions, if any, for the 160 unit owners?

[1415] Context must be important when assessing how the minutes would be construed by prospective purchasers. Gore Street had a different appearance to the type of construction normally associated with leaky buildings. It appeared to be of solid concrete construction with no external cladding or other risky features. The various media reports about leaky building syndrome, including those that referred to high rise buildings and their vulnerability, provided some basis on which to argue a heightened public awareness but is relatively weak. Those reports are not enough to provide the support which the Council seeks from them. While the fact that many

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[478] This recommendation appears adjacent to the purchaser's signature box as the fifth bullet point below a bold heading "Before signing the Agreement".

purchasers were overseas based has limited relevance, it must be relevant to the question of general public knowledge.[479]

Whether a failure to obtain legal advice before signing an agreement for sale and purchase amounts to contributory negligence

[1416] Mr Eades gave evidence that in the period between July 2009 and June 2011 when a new disclosure regime came into effect, it was common for purchasers of apartments to enter into unconditional agreements without getting legal advice. I do not understand Mr Nolan to disagree. Agreements were in standard form commonly used and apartments are often sold by auction. Purchasers were therefore reluctant to incur legal costs in bidding successively for properties when those costs could be wasted. In Mr Eades' experience, purchasers who did not seek legal advice before entering into the sale and purchase agreement were unlikely to request Body Corporate minutes.

[1417] Failing to obtain legal advice before signing an agreement for sale and purchase in relation to Gore Street does not itself amount to contributory negligence. The Council does not expressly argue otherwise.[480] In view of that, I find it was reasonable for purchasers to enter into agreements without sighting the Body Corporate minutes until August 2010.

Whether a failure to obtain Body Corporate minutes amounts to contributory negligence

[1418] Those who did take legal advice were more likely to request minutes. I accept that it became common practice for lawyers to recommend seeking copies of the Body Corporate AGM minutes and in some cases Extraordinary General Meeting ("EGM") minutes. The expectation was that the minutes would reflect any or at least any significant problems with the building.

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479 This makes it distinguishable from the point made by Baragwanath J in *O'Hagan v Body Corporate 189855* [2010] NZCA 65, [2010] 3 NZLR 445 [*Byron Ave*] at [76]–[80].

480 See *Body Corporate 189755 v North Shore City Council* HC Auckland CIV-2005-404-005561, 25 July 2008 [*45 Byron Ave*] at [309].

[1419] After August 2010 when agreements for sale and purchase recommended reviewing Body Corporate minutes, failure to do so is relevant to contributory negligence. If that failure was causative of loss any award should be reduced to reflect this.

[1420] Once the 2010 Act came into force (after June 2011) purchasers of units at Gore Street were routinely provided with the latest available Body Corporate minutes containing up to date information about the condition of the building. Prior to that the legislation required vendors to provide certificates five working days before settlement. The information in those certificates from a body corporate included matters such as the owner's share of any levies owing, whether the Body Corporate had entered into any contracts to undertake work that may be reapportioned to the unit and whether there were any court proceedings outstanding. Standard form agreements required that the vendor provide these five working days before settlement. That was usually well after the agreement was unconditional so it would have been difficult for purchasers to extricate themselves from the agreement for sale and purchase. Mr Eades' view was that the s 36 certificates for Gore Street that he had seen in the period between July 2009 until June 2011 did not identify any adverse information and would not have raised any concern with purchasers.

[1421] Section 146 of the 2010 Act introduced the requirement for the vendor to provide a pre-contract disclosure statement before entry into an agreement for sale and purchase. The information to be included is prescribed.[481] It includes the amount of any outstanding levies, details of maintenance work the Body Corporate proposes to carry out, whether there is any claim under the Weathertight Homes Resolutions Services Act 2006 or other civil proceedings related to water penetration of the buildings. Section 147 introduced a requirement for the vendor to provide a pre-settlement disclosure statement to the purchaser five working days before settlement. This too required information such as whether proceedings are pending against the Body Corporate.

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[481] Unit Titles Regulations 2011.

[1422] The pre-contract statements in the period after June 2011 (up to the issue of proceedings) included the following statement:

> The unit or the common property is not currently and has never been the subject of a claim under the Weathertight Homes Resolution Services Act 2006 or any other civil proceedings relating to water penetration of the buildings in the unit title development.

[1423] After June 2011, recent AGM minutes were attached to the s 146 (pre-contract) statements provided to purchasers save that in mid-2013, the January 2013 minutes were not included.

Is any failure to obtain such minutes causative of loss and, if so, from which point in time?

[1424] Whether a finding of contributory negligence and an associate reduction in damages are appropriate will, of course, depend on the circumstances, particularly what such inquiries would have revealed and what a prudent purchaser would have made of that information.[482]

[1425] Once there was sufficient information in the AGM Minutes for purchasers to become aware of the defects, failure to request them or, proceeding without factoring this into the negotiated price must be a relevant factor to be considered in any damages award comprising remediation cost.

[1426] The caselaw on percentage reduction for contributory negligence is naturally fact specific and therefore provides only limited guidance. There is a relatively large range awarded in previous cases. One of the largest deductions was a 75 per cent deduction to one purchaser's claim in *Nautilus*.[483] That purchaser ignored clear warnings of global defects in a Prendos report. The sale and purchase agreement even contained an acknowledgement that they were aware of ongoing issues with the building.

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482 *O'Hagan v Body Corporate 189855* [2010] NZCA 65, [2010] 3 NZLR 445 [*Byron Avenue*] at [138].

483 *Body Corporate 326421 v Auckland Council* [2015] NZHC 862 [*Nautilus*] at [310].

[1427] Conceptually, the required analysis is more nuanced than simply being on notice of generalised defects. It may even be granular and dependent on the type of defect. The Babbage reports referred to claimed defects 7, 10, 12 and 13. The CoveKinloch report referred to claimed defects 3, 4, 7, 8, 10 and 11. Neither report made any reference to issues captured by claimed defects 1, 2, 5, 6 and 9.

[1428] Understandably, I have not had the benefit of submissions about the impact of finding a defendant liable in respect of some but not all claimed defects on the question of contributory negligence. My provisional view is that the causation requirement cannot be directed at knowledge of defects for which the defendants have not been found liable. Otherwise, defendants benefit from the existence of known defects which have no bearing on their own liability, to a plaintiff's significant disadvantage. I will need to have submissions directed at that issue.

[1429] Nonetheless, there are some factual matters which I can dispose of and which may inform those submissions.

[1430] Mr Eades' view is that up until the January 2013 minutes, most purchasers or their lawyers would not have been concerned about the building matters disclosed because they largely concerned the pursuit of the contractor to attend to what appeared to be maintenance matters. However, the January 2013 AGM minutes were sufficiently specific to put prospective purchasers on notice. At that stage, CoveKinloch provided an estimate of repair costs of $6.5 million. Mr Eades did not regard this as particularly significant in the context of an over 400 unit development because the average cost per unit would have been manageable. I respectfully disagree. This would have caused purchasers to pause. Common sense suggests that the estimated repair cost would not have been seen as sufficiently reliable or certain.

[1431] Mr Nolan does not share Mr Eades' robust view. He considered that there were 'red flags' as early as the June 2009 minutes. I have conducted my own review of the relevant minutes to reach my conclusions. (It is not clear to me when the minutes were necessarily available following the respective meeting.)

AGM minutes dated 25 June 2009

[1432] These referred to a Babbage report on the "health" of the building in terms of structural soundness and guided by a schedule of what various subcontractors to Multiplex had done. It also referred to discussions between Multiplex and Grimshaw & Co, described as specialists in leaky building matters. Mr Nolan accepted that there was nothing in the report indicating *serious* issues. However, his opinion is that the engagement of Grimshaw & Co, well known by then as a specialist leaky home litigation firm, would have alerted purchasers. He expressed the view that, "their engagement would make your blood run cold if you were a purchaser".

[1433] Those minutes do not suggest major problems but do specifically reference issues around the pool area said to be due to a lack of filtration and drainage system The focus was on pursuing Multiplex as contractor.

AGM minutes dated 17 March 2010

[1434] These included the following comment:

> We contracted Babbage Consultants in late 2008 to prepare a report on the "health" of the building in terms of structural soundness and guided by a schedule of what various subcontractors to Multiplex had done and their warranties. Subsequent to that, we have had discussions with Multiplex and Grimshaw & Co, specialists in leaky building matters are in negotiation with Multiplex on our behalf, too. We do not have a leaking building but on occasion, when there is a high, wind-driven rain, moisture is making its way past the glazing on Level 38 and causing flood damage. The fins on the upper levels are also one of the items on the Babbage/Grimshaw/Multiplex agenda, as well as the pool deck and drainage area.

[1435] Mr Eades considers a prospective purchaser would take some comfort from the statement "we do not have a leaking building…". Mr Nolan pointed out that it was only a statement by the chairman as opposed to a consultant expert and that he would have expected purchasers to request a copy of the Babbage report.

[1436] If purchasers did request the Babbage report,[484] they would have seen the internal issues relating to water damage to units from watertightness of bath overflows

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[484] Babbage report dated 19 November 2009 *Review of Responsibilities for Outstanding Work*. There were three Babbage reports dated January 2009, 18 August 2009, and 19 November 2009.

(the most prominent defect) and the absence of rebates installed between the wall tiles and the baths. The report specifically says that due to incorrect installation, the baths rock when a person stands in it; the movement breaks the silicone seal between the bath and wall and allows water to enter the wall cavity. There is also reference to one unit where the bathroom floor tiles slope away from the drain and toward the carpeted living areas.

[1437] The Babbage report required a series of actions by Multiplex.

[1438] Although the issue is more finely balanced, I am satisfied that these minutes ought reasonably to have alerted prospective purchasers to the need to seek out the Babbage report or make further enquiry or even that problems in the bathroom were significant such that abatement of purchase price should be considered.

AGM minutes dated 23 March 2011

[1439] These included reference to a representative from Babbage presenting an enclosed report. That report refers to a number of problems but also completion of some remedial work. There are also four significant warnings. First, the comment by the Babbage representative that the Council should not have issued the CCC. Secondly, the reference to leaking through the pool deck which will ultimately affect the structural steel if not halted before it gets beyond the pool level. Thirdly, the request that the Body Corporate engage an engineer to assess the building's structural integrity given its "checkered financial history through construction process". Fourthly, there is a statement that "because of recent events it would seem prudent to achieve a level of knowledge as to our building's suitability by way of design to be in the event such as earthquake or fire".

[1440] The chairman estimated that the problems identified would cost between $200,000 to $400,000 to repair "which is less than one per cent of the total value for the complex". This seems to be at odds with the comment that the Council should not have issued the CCC and also with the reference to the limitation periods, both of which have a more serious undertone.

[1441] These minutes would have put purchasers on notice that further enquiries should be made of the Body Corporate, any and all Babbage reports obtained and that some abatement in purchase price was justified.

AGM minutes dated 7 December 2011

[1442] These recorded a motion (carried) by the chairman of the Body Corporate that:

> The new committee… be mandated to bring closure to the building defects as identified by Babbage in January 2009 to be progressed by July 2012.

[1443] Viewed in isolation, I doubt that purchasers would be particularly concerned by these minutes. The reference to a three year period in which building defects have been outstanding cuts both ways. On the one hand, it is a sufficient period in which to prepare and file proceedings if the problems were sufficiently serious. On the other, an inability to resolve them over a three year period hints at uncertainty and the potential for ongoing issues. However, there is enough in these minutes to make it imperative to review earlier minutes to trace back the evolution of the current issues.

AGM minutes dated 7 June 2012

[1444] No building defect issues are raised in these minutes. A question remains whether prudent purchasers would have been satisfied to consider those minutes in isolation. I consider it would be imprudent to do so.

AGM minutes dated 31 January 2013

[1445] These refer to specific issues with the deck membrane after rainfall, including leaks from the pool deck area, a leak to the upper ground carpark and rubbish room, steel girders not fixed with stainless steel, minor leak issues on level 38, stairs not complying with the previous code not complying with post-Christchurch earthquake code and could collapse if there was movement and leaks in the lift pit. The installation of a new membrane was estimated to cost around $250,000 to $300,000.

[1446] Those minutes referred to a ballpark figure of $6.5 million from the CoveKinloch report but mention other costs relating to possible stair repairs. There is also a warning that the CoveKinloch report should not be provided to the Council for

any reason as if the Body Corporate decided to go to litigation, the main party to sue would be the Council.

[1447] The summary by the chairman that "this is a rock solid building but there are a couple of defects that need to be dealt with" would not and ought not have given comfort to purchasers. At the very least a purchaser ought to have requested a copy of the confidential CoveKinloch report given that the minutes specifically state that, while confidential, it must be disclosed by a selling owner. The references to potential litigation would clearly be a red flag.

[1448] Mr Eades dismissed many of these matters on the basis of the estimated expenditure being of a level well able to be brought within the negotiations. These minutes elevated what were previously manageable defect issues to a new and much more serious level.

[1449] The CoveKinloch report of some 269 pages comprised a long list of defects. Mr Nolan's view that that would certainly be enough to make prospective purchasers cautious and even to scare them off is persuasive. There is at least some evidence that a number of second plaintiffs were aware of the CoveKinloch report at the time of purchase.

[1450] By way of illustration only, the report referred to the following matters:

(a) The welds in the stairwell were not of a high standard.

(b) The stairs do not allow for movement in the event of an earthquake.

(c) The need for fire collars to penetrations to concrete slab.

(d) Weathertightness issues with level 38 decks.

(e) Repair of the membrane under the timber pool/pool deck to prevent water migrating.

(f) Canopy roof flashing with visible leaks in the tenancies below the level 3 roof in various locations.

[1451] I do not accept that there is a basis on which to say that the chain of causation is broken but I conclude that from 17 March 2010 (or from the date at which the March 2010 minutes were available about which there is no evidence) some deduction may be available in any award of damages in respect of the second plaintiffs who purchased after this date. This is subject to the parties' further submissions in respect of the matters identified in this judgment. An increased deduction may be available and reasonable for those purchasers who purchased after the January 2013 minutes were available. This is because the degree of causal potency is greater for those later purchasers.

What is the appropriate range of deductions for the 160 unit owners for contributory negligence, if any?

[1452] The Council assigned categories to the various second plaintiff owners based on the minutes available when they agreed to purchase the unit. Provisionally until resolution of the issue identified in this judgment, I would be inclined to make the following contribution reductions based on a finding of contributory negligence (adapting the categories relied on by the Council):

Category	**Description**	**Contribution reduction**
A	Second plaintiffs who agreed to purchase their units after the 2013 minutes would have been available	30 per cent
B	Second plaintiffs who agreed to purchase their units after the 2012 and June and December 2011 minutes would have been available	20 per cent

C	Second plaintiffs who agreed to purchase their units after the March 2011 minutes would have been available	10 per cent
D	Second plaintiffs who agreed to purchase their units after the March 2010 minutes would have been available	10 per cent
E	Second plaintiffs who agreed to purchase their units before the March 2010 minutes would have been available	0 per cent

Alleged failure to mitigate

[1453] The Council (and Equus) pleaded that any resulting loss or damage from any breach of duty has been caused or contributed to by the plaintiffs' failure to mitigate their loss and any loss or damage should be reduced to the extent that the plaintiffs were responsible.

[1454] This issue attracted little attention in written or oral closings except from Mr Davies and Ms Tucker for Equus.

[1455] The onus is on a defendant to establish what reasonable steps could and should have been taken by a plaintiff and that those steps were not taken. That includes demonstrating how the steps a defendant says should have been taken would have reduced the damage. This requires consideration of all of the circumstances of the case, should not be assessed applying hindsight and does not impose a high standard of reasonableness on a plaintiff.[485] It is not enough to demonstrate only that it would have cost less in nominal terms to do repairs at an earlier date. It may also be

[485] *White v Rodney District Council* 11 (2009) NZCPR 1 at [26]–[27] citing *Banco de Portugal v Waterlow & Sons Limited* [1932] AC 452 at 506.

reasonable for a plaintiff to postpone repair work because of a refusal of another to accept liability.

[1456] It is apparent to me that most of the claimed defects are of the type which "cannot be maintained away" to pick up on an expression used by Mr Woolgar on cross-examination. Most of the claimed defects arise from the design and construction of Gore Street which requires repair or replacement.

[1457] The exception to that observation is the podium and level 3 canopy roof. I heard evidence from Mr Singh who described the building maintenance regime. Ms Beaton produced the building manager reports and maintenance sheets.

[1458] While the criticism that maintenance was not carried out by a specialist membrane company is fairly made, it does not address any causal connection between that level of maintenance and the water ingress issues in those areas. I accept Trevor Jones' evidence for the plaintiffs that the Body Corporate actively took steps to address the matters raised in the Babbage reports. I am not satisfied that the Council (and Equus had it been necessary to do so) have discharged their onus of establishing disqualifying failure to mitigate on the part of the plaintiffs.

[1459] This affirmative defence fails.

PART VII — REMEDIATION AND QUANTUM

Measure of loss claimed

[1460] The appropriate measure of loss is the reasonable cost of bringing any defective building work up to Building Code compliance. That is, the reasonable cost of carrying out the remedial works reasonably required to be carried out to repair the specific defects for which a party is liable.[486] That approach ensures that the damages reflect the extent of the loss actually and reasonably suffered.[487] That is not synonymous with the least expensive method of remediation. But cost-effectiveness remains relevant and important because reasonableness is assessed by reference to an

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[486] *Body Corporate 406198 v Argon Construction Ltd* [2023] NZHC 3034 [*Bianco Apartments*] at [174]–[177].

[487] *Leisure Investments NZ Ltd Partnership v Grace* [2023] NZCA 89, [2023] 2 NZLR 724 at [177].

amalgam of factors including, but not limited to, the nature and context of the building and defects.

[1461] The plaintiffs claim the cost of remedial work which they intend to carry out and consequential losses. The plaintiffs engaged expert consultants to prepare remedial designs, undertook a procurement and tender process, obtained a contractor's tender, negotiated adjustments to the tender price and estimated further associated costs to reach an "adjusted final tender value". The cost claim underwent further substantial adjustment during trial.

Consequences of a global approach to remedial scope

[1462] The tender and remedial work costs claimed by the plaintiffs are for one global remedial project rather than on a defect-by-defect remediation basis. This assumes the Council is liable for every claimed defect but also recognises overlap between claimed defects and their repair. This was pragmatic. Approaching the exercise as a single managed building contract maximises efficiency, manages costs and disruption and ensures a uniform standard of repair.

[1463] However, the Court's findings on liability have rendered that approach inutile. The remedial costs claimed therefore need to be adjusted to reflect the plaintiffs' partial success and consequent impact on the scope of interrelated repair work for which the defendants (or any of them) have been found liable. I require the parties to address both how this is to be approached and to substantively address quantum, informed by the findings in this judgment. I anticipate further submissions regarding quantum and a hearing, at the very least. Potentially, input will be required from the respective experts although the bounds of that input, if any, will need careful consideration.

What can be addressed in this judgment?

[1464] In this section I discuss various contested inputs into the remediation and quantum exercise and related issues. I make some limited findings related to the scope of repair and costings in relation to claimed defects 10 and 11. I also record some provisional observations which may or may not become final after hearing further

from the parties. In this way, I begin to frame the issues which will need to be resolved with further input from the parties. I anticipate (and indeed expect) that even the provisional views expressed will enable the respective experts to further narrow the extent of disagreement between the parties.

General principles

[1465] The development of a repair scope is inevitably a complex and challenging exercise. The remedial design took place over a five-year process culminating in a court order settling a scheme under s 74 of the Unit Titles Act 2010. It comprised investigation, testing of elements to try to achieve cost savings (such as water testing of joinery to see if it is reusable after removal to effect repairs), trial works to determine the most cost-effective methods of repair and third party testing of methods to reduce costs.

[1466] In any remedial program there is inherent tension between certainty of cost, programming, risk assessment and code compliance. Where the plaintiffs have established breaches of duty, they are entitled to a remedial solution which reasonably avoids rather than heightens compliance risk. As Gilbert J stated in *Nautilus,* plaintiffs should not have to accept makeshift repairs and be left with the risk that this would not be effective or durable.[488] On the few occasions where the Council experts have proposed alternative repair solutions, these have been relatively undeveloped or conceptual. Where the plaintiffs' experts' solutions have met the threshold of reasonableness, I generally prefer their evidence as to the scope of repair.[489] On balance, I am satisfied that the plaintiffs' overall approach was reasonable and appropriate in its reliance on experts. I therefore reject the criticisms of the Council as to the *process* undertaken by the plaintiffs. Those criticisms reflect an impractical and largely unattainable standard. However, that does not mean that the elements of the repair scope are not contestable.

[1467] I reject any suggestion that the Court should adopt a different test or apply different principles in respect of remedial work yet to be undertaken as opposed to

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488 *Body Corporate 326421 v Auckland Council* [2015] NZHC 862 [*Nautilus*] at [39].

489 The Council's experts presented alternative repair 'solutions' for some claimed defects and discrete cost estimates for claimed defects 8, 10, 11, 12 and 13.

repair work actually undertaken. That distinction would be arbitrary and artificial. Owners of defective buildings have no realistic alternative but to rely on the advice of experts and are not often in a position to fund the cost of remedial work without contribution.

Remediation design and tender process

[1468] In light of the above, I provide an overview only of the design and tender process.

[1469] Mr Klosser is a registered architect and Associate Director at Maynard Marks. He outlined the design process. Preparation of designs began in 2018. The designs were completed for building consent purposes in mid-2019. Maynard Marks applied to Auckland Council for a building consent for the proposed remedial works on 11 July 2019.

[1470] Dominic Rose of Maynard Marks was project manager for the remediation works in the early stages. He described the procurement process, likely methodology and programme for the remediation works. Mr Rose explained:

> …we decided to adopt a 2 stage tender process. Stage 1 was the issue of provisional designs by Maynard Marks. This would give the contractors advance notice of the nature of the remediation, which is very complex in relation to access and methodology. Stage 2 was to be the pricing by the contractors. The quantity surveyors, Kwanto Limited, would prepare the pricing schedules for the contractors to complete. The contractors would then submit tenders. The quantity surveyor would prepare a report on the tender submissions and, in consultation with Maynard Marks, recommend a contractor. The body corporate would then select the contractor and we would issue a letter of intent to the successful tenderer, in the knowledge that the final pricing could only be undertaken when the building consent was issued and the designs complete.

[1471] Six contractors were selected to price the provisional designs. Of the six selected, four completed and returned the request for qualification document issued by Maynard Marks. One contractor withdrew. One was deselected. Further enquiry was made of other potential tenderers, both by the Body Corporate and Maynard Marks.

[1472] In late November 2018 three contractors submitted tenders which were then reviewed by Maynard Marks, the quantity surveyors and the Body Corporate committee. The contractors were also interviewed in regard to programme and methodology. A further pricing stage was undertaken because of ongoing design changes.

[1473] The designs at that stage were still provisional. In part, the process timing was informed by the prospect of a looming expedited trial. It was intended that a further pricing stage would take place due to ongoing changes in the design. During this period Maynard Marks was updating the tenderers with further programme requirements such as timing methodologies to limit loss of rental during construction.

[1474] One contractor pulled out. Brosnan Limited ("Brosnan") and SRG submitted tenders on 25 June 2019. The Brosnan tender was the lowest tender by a significant sum.

[1475] In October 2019 the trial date was delayed. The plaintiffs took the opportunity to seek updated tenders. Updated costings were submitted by Brosnan and SRG on 2 December 2019. SRG's costings were in the region of $11 million higher than Brosnan. The plaintiffs' quantity surveyors, Kwanto, issued a tender report and recommended to the body corporate committee to accept Brosnan's tender.

Anticipated work programme

[1476] The Brosnan tender included a programme of work for each stage of the project. Mr Rose reviewed this and concluded that it underestimated the actual timeframe required by about 43 per cent. This assessment was based on a comparison with the SRG tender, experience of delays in other remedial projects arising from on-site conditions and the potential that removal of building elements would uncover discrepancies between the plans and 'as-built' or even more defects. It was also cross-checked against example projects the four contractors provided in their submissions. These issues could give rise to a need to draw up new details and potentially Council approval. I pause to interpolate that the extent to which any defendant is held responsible for such delays is a vexed issue.

[1477] In March 2020, Brosnan provided an updated tender submission which included competitive tender pricing for sub trades. [490] Brosnan was asked to and did also provide a 'disrupted' programme to advise additional costs that would arise in the event further issues or defects were uncovered on-site. After much toing and froing and adjustment to reflect an amended start date, the disrupted programme anticipated 918 working days as a realistic timeframe to undertake the remedial work assuming a start date of 1 April 2022. Needless to say, that has been overtaken by the passage of time.

Costings

[1478] Establishing the scope of remedial works for which the Council (and others) are liable is only the first stage. The next stage is proving the cost of those works on the balance of probabilities.

[1479] Mr White of Kwanto prepared the tender reports reviewing the cost attributes of the tenders from Brosnan and SRG. He also set out the reasons for selecting Brosnan which included the more compressed programme duration correlating to less 'out of pocket' expenses for the Body Corporate.

[1480] As the Brosnan March 2020 tender price was significantly higher than the June 2019 tender price, Mr White and his team undertook a reconciliation process to identify costs increases which were not explicable by scope change. He satisfied himself that a significant portion of the increase could be reconciled against changes in the scope of works. They also analysed the impact on the tender programme which triggered a requirement for additional management resources. This exercise left a delta of around $15 million which was not able to be reconciled.

[1481] Kwanto had prepared its own quantity survey estimate to compare to the Brosnan tender (prepared before the second Brosnan tender) and issued a tender report on 26 March 2020 (Kwanto 2020 estimate). The Kwanto 2020 estimate was used as a control document on which to base discussions with Brosnan and to seek explanations.

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[490] The 60 competitively tendered quotes across subtrades added to the reliability of the Brosnan tender.

The Kwanto estimate was around $18.6 million lower than the Brosnan tender which was at that stage just over $92 million.

[1482] Mr White said at that stage, while it is not uncommon for there to be differences between a contractor's tender and a quantity surveyor's estimate, Brosnan's tender was outside the general range he would expect.

[1483] Mr White then worked with Brosnan to resolve discrepancies and unreconciled sums culminating in an 'adjusted final tender value'. This ultimately brought the Brosnan contract value to just over $83 million exclusive of GST. This 'adjusted final tender' value is the basis for the plaintiffs' quantum claim, although it was revised pre-trial and during the course of the trial.

[1484] The plaintiffs' overall remedial cost claim then factored in metrics such as start date, cost inflation, contingency, forecast professional fees, consent and insurance costs, costs incurred to date and prolongation costs.

[1485] This overview illustrates, albeit at a high level of generality, the lengths to which the plaintiffs' experts went to obtain a 'real-world' remediation cost estimate for the global project.

[1486] As discussed, the plaintiffs approached remediation and therefore quantum on a global basis. They say that costing defects in isolation would have been inconsistent with their theory of the case that the Council's responsibility is for all the claimed defects. However, the plaintiffs' experts attempted a defect apportionment exercise by:

(a) pro-rating time-related costs on a total value apportionment basis;

(b) listing each item of remedial work and allocating that item to the defects that give rise to that work to create the Maynard Marks Defect Apportionment Schedule (MMDAS);

(c) apportioning costs to each of the defects using Mr White's pricing schedule as a control document;

(d) pricing each defect in accordance with the MMDAS; and

(e) apportioning professional fees based on the percentage of a particular defendant's liability of the total claim.

[1487] It became apparent during the trial that it was Maynard Marks which was tasked with allocation of the specific works to claimed defects and that Mr White had a more limited role of calculating the cost of specific works — a mathematical exercise in one respect, but informed by quantity surveying principles in another.

[1488] The Council and Equus vigorously challenged the reliability of the MMDAS notwithstanding the various iterations it went through. I accept the Council's argument that there was little or no reasoning or explanation of assumptions for the allocation. Trevor Jones merely confirmed that the MMDAS accurately records the defects which gave rise to each item of work. Mr Klosser's evidence was similar.

[1489] The Council gave early notice to the plaintiffs that this was a critical failure. It was recorded at a pre-trial conference and in the judgment of the Associate Judge in a pre-trial application.[491]

[1490] The Council's quantity surveying expert, Paul Ranum, did carry out a cost estimate analysis for a limited number of defects relying on the scope set out in Mr Klosser's evidence, including items where it was not necessarily apparent to him that they are part of the scope.

[1491] Mr Ranum has broadly the same expertise as Mr White. Both have considerable experience costing leaky building remedial works. Mr Ranum's evidence-in-chief "decoded" additional information from the native excel format of the schedule produced by Mr White to provide some insight into the calculation of remedial repair costs. Mr Ranum explained that he:

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[491] Minute of Lang J dated 11 October 2019. *Body Corporate 366567 v Auckland Council* [2021] NZHC 491 at [63]–[64]. Minute of Walker J dated 11 February 2022 in which I recorded that while the plaintiffs are entitled to have their expert singularly focused on a particular quantum methodology, that is their tactical risk to take.

(a) took the items listed in Mr White's schedule as apportioned to defects 8 and 10-13 excluding any items which clearly appear to fall outside what Mr Klosser's remedial evidence says is required for those defects;

(b) erred on the side of caution and included items even if it was not necessarily apparent that they were within the scope of the remedial evidence;

(c) adopted Mr White's estimate for that item and then prepared different permutations of estimates to take into account different propositions;

(d) took a different approach in relation to estimating preliminary and general allowances for each defect, adopting an estimated 15 per cent allowance;

(e) assumed the same contractor's margin as Mr White of 7.5 per cent, inflation adjustment to April 2022 (3 per cent) and contingency of 10 per cent;

(f) adopted a 15 per cent allowance for professional, consent and insurance fees (being a commonly accepted percentage for estimating works in the nature of those proposed for claimed defects 8 and 10-13);

(g) prepared estimates on the basis that they are remedied in isolation although in reality there could be some overlap between claimed defects 12 and 13;

(h) for claimed defect 10 considered only the proposed "apportioned" scope rather than Mr Klosser's remedial evidence scope; and

(i) reached estimates as at April 2021 excluding GST, escalation and asserted "prolongation".

Is the Brosnan tender admissible for the purpose relied on by the plaintiffs?

[1492] The Brosnan tender is the foundational document for the remedial costs claim. It serves three purposes. The first is as evidence of quantification of the cost of the remediation. The second is as a basis for further costs of remediation. The third is as evidence of the consequences of remediation including when the building is to be vacant and when work will be undertaken on each floor.

[1493] The plaintiffs did not call any witness from Brosnan to adduce the Brosnan tender. A preliminary question is whether it provides a legitimate evidential basis for the remedial costs claim. The Council contests its admissibility. It argues that it is hearsay and unreliable and the assumptions within it cannot be tested. The plaintiffs accepted in oral closing submissions that the Brosnan tender is hearsay but rely on s 18 of the Evidence Act 2006.

[1494] I agree that the Brosnan tender is hearsay but I reject the Council's challenge to its admissibility. The Council's challenge that the tender is not reliable because the process is not robust and Brosnan is underqualified conflates the question of reliability and that of reasonableness. I have no doubt that the Brosnan tender submission is reliable as to the price for which Brosnan is prepared to carry out the works. It is a different matter whether that tendered price comprises a reasonable cost for the purposes of assessing damages. As Mr Ranum acknowledged in cross-examination, a competitive tender process will result in a more reliable picture of remedial costs than an estimate by a quantity surveyor. That concession is appropriate. It accords with common sense. The tender price is a real world quantification reflecting supply and demand exigencies, such as the willingness of contractors to take on this kind of work.

[1495] The qualifier is that it must be a *competitive* tender process. The Council criticises use of the March 2020 tender material, prepared after the plaintiffs selected Brosnan, and say it lacked competitiveness. That material was relied on to calculate additional costs such as contingency, anticipated fees, building consent fees, insurance and prolongation (or disrupted programme timing). It was used as a rough apportionment of the cost of remediation of each defect. It was also the basis for

assessing the consequences of the remediation works such as noise effects and disruption.

[1496] I am satisfied by the evidence of Mr Rose, Mr White and Mr Williams that the tender process was as competitive as was feasible in the circumstances and reject the views of the Council experts that the tender was neither competitive nor realistic.[492]

[1497] In sum, the tender process was sufficiently robust. The plaintiffs are entitled to rely on the Brosnan documentation. The Council's experts' views as to Brosnan's capabilities in the marketplace does not militate against my finding. The protracted contract process and uncertainties around timing, design and scope necessarily informed which contractors were willing to take on the project. That is not a factor which ought to prejudice the plaintiffs who were forced by circumstance to engage in an immensely difficult exercise.

Contingency

[1498] It is generally accepted that a construction project should include a contingency sum in the assessment of overall cost. The experts were in general agreement both as to the recognition of a contingency sum and that a 10 per cent contingency is appropriate for the Gore Street remediation. I accept this is appropriate and that anything less would not fairly recognise the risk of a potential cost blow out.

Prolongation

[1499] I accept that prolongation is a separate consideration to contingency although care must be taken to ensure there is no 'double-dipping'. Prolongation arises when problems are found during construction with consequent delays to the programme for which the contractor claims compensation. I accept as a general proposition that prolongation claims are realistic and likely on a large scale project such as that at issue at Gore Street.

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492 I put to one side hearsay evidence for the Council on cross-examination about discussions with alternative contractors.

[1500] Any prolongation impact to be sheeted home to the defendants depends however on the defects and scope of work for which they are found liable. Issues that might arise during the project but which are not related to defects for which a defendant is liable cannot found compensable loss. I anticipate that the nature of those proved defects and relative remedial complexity will inform this issue. In short, the plaintiffs' evidence as to prolongation must now be seen in the light of the findings in this judgment.

[1501] Consequently, I will need to hear from the parties on this issue. At this stage, I accept only that a prolongation allowance is not captured in a contingency allowance of 10 per cent. I note also that the plaintiffs do not seek a prolongation allowance in respect of the remediation of claimed defects 10 and 11. I agree with that. If prolongation is to be allocated, care needs to be taken that the calculation is on the appropriate base figure excluding elements in respect of which prolongation has no bearing.

Impact of construction programme and cost escalation

[1502] Brosnan's tender was prepared on the assumption that the remedial work would commence in April 2021. That was adjusted to reflect commencement on April 2022, site possession in June 2022 and an overall duration of 918 working days undertaken in two stages. Further adjustment is now required to correspond to the actual construction start date, a reduced scope of work for which the defendants are liable and consequent impact on the programme. The parties will need to address how any reduced remedial scope and programme will impact adjustment. Provisionally I see no reason why the evidence of Mr Kiernan and Mr White on costs escalation and the approach therein should not form the basis of adjustment. However, I make no final determination without further hearing from the parties.

Section 112 of the 2004 Act — is the principle of "as near as reasonably practicable or ANARP" an appropriate approach?

[1503] The plaintiffs' apportionment of remedial costs to claimed defect 7 is significant — circa $51 million.[493] They approached remediation of claimed defect 7 on the basis that all defective fire stopping be remediated as soon as possible. Their experts provided remedial details for each type of penetration to Maynard Marks which incorporated them into the remedial plans. Needless to say, remediation involves consequential access works.

[1504] The Council argues that repairing the fire stopping defects should be determined on an "as near as reasonably practicable" ("ANARP") basis pursuant to s 112 of the 2004 Act.[494] It says that the plaintiffs are not legally obliged to bring fire penetrations up to full and current code compliance. Instead, many of the defective service penetrations at Gore Street can be left as is. Therefore the plaintiffs' repair scope is not reasonably required but represents the most extensive possible repair approach despite safety not being compromised.

[1505] In support, the Council relies on a BRANZ study report[495] and a risk analysis tool created by Maynard Marks.[496] Mr Glasgow for the Council concluded, relying on the Maynard Marks tool, that most of the passive fire defects are not reasonable nor practicable to repair and that where repair is required, only partial repair should be undertaken. He based this conclusion on the risk to life safety against the backdrop of the many layers of fire safety features and systems at Gore Street.

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493 This sum is inextricably linked to other remedial work and a large proportion of it relates to accessing the penetrations.

494 The Council criticised the plaintiffs' approach as misapprehending the burden of proof. This is a red herring. The plaintiffs put forward their experts' views on what is reasonably required . That did not involve an ANARP approach or ANARP principles. The Council contended it informed the reasonableness of the remedial scope. The plaintiffs rebutted their approach. This is orthodox. It does not involve a reversal of the burden which lies with the plaintiff.

495 K Frank, G Baker and J MacIntyre, *Assessing the risk of non-compliant firestopping and smokestopping in New Zealand residential buildings undergoing alterations* (BRANZ study report, SR410, 2018). Among those providing input into this project were Ron Green, an expert fire consultant who gave evidence for the plaintiffs and Hans Gerlich, one of the Council's experts. The stated purpose of this report and project was to develop a process to provide consistency in the application of s 112 of the 2004 Act when passive fire protection defects are found during building alteration work.

496 Maynard Marks *Passive Fire-Risk/Cost Analysis: Process*, dated 27 June 2017.

[1506] If adopted, I glean from Mr Glasgow and Deborah Scott's evidence that this would mean exposing and rectifying penetrations in the communication risers, hydraulic risers, corridors and the lobby to stair walls.[497] However, on present evidence, it is difficult to identify the extent of the difference if ANARP principles are or are not employed, since much depends on the extent of remedial work relating to other claimed defects.

[1507] Section 112 of the 2004 Act is a provision setting out the requirements for granting consent for existing buildings undergoing alterations. It provides that a building consent must not be granted for the alteration of an existing building, or part of an existing building, unless the overall building, following the alteration, will continue to comply with the Building Code to at least the same extent as before the alteration. In *Bates v Auckland Council*[498] Gwyn J held that s 112 means that the proposed alteration to a building "must make the existing building no worse" (subject to the limited exceptions referred to in s 112 itself) and:

> …there is no obligation – either for the owner to do, or for a council to require – to improve an existing building's performance against the Building Code, even where the existing building does not comply with the Building Code pre-works.

[1508] In *Fitzgerald v IAG New Zealand Ltd*, Gendall J considered the application of s 112 to the repair of an earthquake-damaged house. He said that its import is that the Act only required the aspects of the house being repaired to be brought to current compliance levels.[499] Elements not repaired may be left at the same level of compliance as they were originally.

[1509] The plaintiffs argue that reliance on an ANARP approach which adopts the Maynard Marks tool is flawed and inappropriate because:

(a) It does not consider Mr Olsson's recommendation that all defective fire stopping be remediated as soon as possible due to life safety risks.

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497 The plaintiffs pitched their remedial case on defect 7 on the basis that given the extent of works required to remedy claimed defects 1, 2, 12 and 13, even an ANARP approach would see all defective passive fire construction rectified.

498 *Bates v Auckland Council* [2021] NZHC 2558 at [84].

499 *Fitzgerald v IAG New Zealand Ltd* [2018] NZHC 3447 at [50].

(b) There is no analysis to indicate the Maynard Marks tool is suitable for a tall building such as Gore Street.

(c) It considers fire stopping defects in isolation without considering the wider context of the building.

(d) It does not comply with the Building Code requirement to fire stop penetrations.

(e) The owners and their experts do not agree with the ANARP approach.

(f) The BRANZ study report tested penetrations to different substrates than those found at Gore Street.

(g) The plaintiffs would still need to monitor and repair the defective penetrations on an ongoing basis.

(h) The owners would still need to disclose the defective work to purchasers which affects the value of the apartments.

(i) The approach leaves fire stopping at Gore Street unremedied and presents fire safety risks for the occupants.

(j) There is no evidence that any qualified expert would provide sign off to the limited scope of works which the Council proposes or that the Council would issue a building consent for a limited scope of works.

[1510] The question is whether s 112 informs the issue of a reasonable scope of repair for defective fire penetrations. The Council has not referred to any cases in which s 112 has been utilised for this purpose and I have concluded that it does not. I do not accept that s 112 of the 2004 Act was intended to determine the extent of repairs required to restore owners of defective buildings to the position they would have been in but for the negligence of defendants. Neither would it be appropriate for plaintiffs to bear the loss in value associated with leaving known non-compliant construction at Gore Street.

[1511] I note that Maynard Marks did not rely on this tool in their evidence-in-chief.

[1512] It also became clear that what is reasonable and practicable to repair is heavily contingent on other work being undertaken. For example, where work on other defects exposes an area in which there are defective fire penetrations, the assessment of what is reasonable and practicable to repair changes. This makes an ANARP basis for assessing repair cost damages problematic. Mr Glasgow's approach was a siloed one, based on claimed defect 7 in isolation.

[1513] I also accept that it would be neither practical nor cost effective to assess the full extent of the defective penetrations for ANARP purposes. As Mr Olsson explained:

> …In terms of the penetrations, the difficulty there, as I discussed yesterday, is around quantification of risk. So firstly, one would need to identify how, where, how big the holes are across the whole building to actually be able to quantify the risk in the building. Admittedly, we've audited 960 penetrations but there's well over 10,000 in the building. There could potentially be larger voids, smaller or various other non-compliances that we haven't assessed. So that's exposing how, where, and the exact level of non-compliance. Secondly, once you've done that it's very difficult to assess the level of fire and smoke spread other than if it's a straight hole across the floor slab, for example, but if it's a non-compliant sealant with a gap with a depth of 5 millimetre rather than 10 millimetres, one may have to fire test that. So the cost of doing that is quite significant. Most of it involves actually exposing the penetration itself and once you – when I'm saying exposed, I mean investigate and opening up so you can see the penetration. A small cost of the work is putting a compliant collar, perhaps around a certain pipe.

[1514] In any event, I am not satisfied that the Maynard Marks tool has been shown on the evidence to be appropriate in the circumstances of Gore Street. Neither am I satisfied that the BRANZ study report provides a proper foundation to support an ANARP approach. I observe that the BRANZ study report requires ongoing residual risk management, elevated fire safety management and risk monitoring including establishing a risk register of outstanding non-compliant issues to communicate to those involved in future activities with Gore Street. This cuts across the purpose of tortious relief to compensate for the negligence of others. The approach merely delays remediation of repairs further downstream when future work is carried out.

[1515] Further support for rejecting the ANARP model comes from the absence of cross-examination of the plaintiffs' passive fire consultant, Mr Page. He was cross-examined about the application of the BRANZ study/Maynard Marks tool but was not asked whether it should have been adopted at Gore Street. Nor was this material put to Mr Olsson who recommended that the defective fire stopping is remediated as soon as possible to alleviate the life safety risks. Even if I had found this material compelling (which I do not); this omission would prove an obstacle to accepting the Council's argument.

[1516] The difficulty for the Council's argument is that s 112 is a minimum standard for alterations whilst the purpose of the tortious measure of damages is to make the plaintiff whole again. For all the reasons submitted by the plaintiffs, I reject the use of an ANARP approach to remediation of the defective fire penetrations.

Should the 272 fire doors be remediated by replacement or by retrofitting seals?

[1517] There are also 272 fire doors with gaps underneath of more than 10 millimetres which Maynard Marks intends to replace, along with missing architraves to fire doors in the communications and electrical riser cupboards. They do not propose to retrofit the doors with seals on the underside of the door because they intend to also reconstruct the fire separation walls in which the doors sit.

[1518] I apprehend that this relatively minor issue is informed by the Court's findings on claimed defects 1 and 2. If the Council is not responsible for the fire separation walls, and they are not reconstructed, then retrofitting the doors with seals is the most proportionate remedial option and caps the Council's liability.

Remedial scope for defect 10

[1519] The proposed remedial scope for both claimed defects 10 and 11 has a different character because the plaintiffs accept that isolated repair work is possible. It is apparent that there is no need to vacate the building during such repair. Those consequential losses claimed which flow from vacation of the building are therefore not in play. Depending on timing of this aspect of the remediation, it is also unlikely

that rental value would be affected. I do not accept that an award of general damages is appropriate for what is a negligible repair vis a vis the podium and level 3 canopy.

[1520] The respective experts caucused on the remedial scope. Aspects of that conferencing were unsatisfactory but certain matters of remedial scope are agreed as between the experts:[500]

(a) Remedial work is required to the pool deck area (but the specifics are not agreed).

(b) Remedial work is required to the main terrace including:

(i) removal of existing membrane, tiles, joinery, adjacent cladding and planter box;

(ii) installation of a new concrete nib beneath the joinery;

(iii) installation of new joinery and new adjacent cladding; and

(iv) a new membrane system and tiles.

[1521] Aside from these matters, the scope of remedial work reasonably required to rectify defect 10 is contested. The Council's approach squarely puts the plaintiffs to proof as to the reasonableness of their proposal.

[1522] Mr Klosser's evidence-in-chief described the plaintiffs' proposed works which are now consented. The Council complains that the description lacks sufficient explanation, connection to the actual pleaded defects and consequently rationale. To the extent any explanation has been provided, it was 'informally' at the remedial moisture conference.

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[500] One of the difficulties with the remedial conference held on 20 December 2021 is that the plaintiffs' experts, or some of them, made changes in the document recording points agreed and disagreed. The result was that the defendants' expert witnesses made the point that certain 'tracked changes' did not reflect the discussion between the experts. Changes included deleting conclusory opinions which had been recorded as reasons for disagreement. Only part of the questions arising in respect of the remedial scope for claimed defect 10 were addressed.

What is the contest between experts?

[1523] There are two main limbs to the contest between the plaintiffs and Council. First, that until the membrane is lifted as part of the remediation, the condition of the substrate cannot be known. The Council argues that potential damage which has not been investigated cannot increase remedial works and the plaintiffs' scope is otherwise inadequately justified. The plaintiffs appear to accept that there is no direct evidence of damage to the substrate because they rely on the inference of water in the concrete substrate. Second, whether the plaintiffs' solution represents a best practice over and above a code compliant approach. The Council argues that a best practice approach goes beyond the concept of a reasonably required repair on which any liability must be based.

[1524] The Council presented a broadly described alternative solution from a third party which would reduce the scope and therefore the quantum involved.

[1525] I begin by setting out the plaintiffs' remedial scope for defect 10. It is to:

(a) Remove the timber decking on the pool deck side and direct fixed tiles on the terrace side, the existing membranes and screed.[501]

(b) Consequential removal of all of the cladding on the northern elevation walls facing the podium outside the Sailor's Lounge and joinery on all elevations facing the podium.

(c) Remove the base of the timber framing on the northern elevation walls in order to install a concrete nib to accommodate the increased height (upstand) of the new membrane. This includes removing internal linings and insulation and the installation of new linings and batts.

(d) Install Alucolux cladding on a rigid air barrier on the timber framing as the original fibre cement sheet cladding is no longer considered suitable on a building of this size.

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[501] There is also a small section of torch-on membrane under tiles at the pool gate transition.

(e) Replace joinery as the dimensions will change with the introduction of the nib below the joinery and because the existing joinery does not comply with the relevant standards.

(f) Install a new Sika Sarnafil membrane and a lightweight extruded insulation layer which takes account of the weight restriction on the podium, to create two degree falls (which the Sika Sarnafil membrane requires).

(g) Overlay membrane with tiles laid on aluminium framing on deck jacks, to ensure that the membrane can be accessed for maintenance as now required in Acceptable Solution E2/AS1.

[1526] Some of the works such as cladding removal and replacement are acknowledged to be, at best, consequential on the remedial work for defect 10.

[1527] Mr Klosser's proposed scope was reviewed by Richard Fairhead, a façade engineering expert with experience in building failure investigation and remedial design work in New Zealand and Australia. His experience has included a particular focus on weathertightness and material compatibility.

[1528] Among the issues on which Mr Fairhead gave evidence was the use of the Sika product (in more detailed fashion regarding the balcony membranes). He explained that in replacing a waterproofing membrane which has failed, it is ordinarily necessary to remove any adjacent joinery because the membrane typically extends from the horizontal surface up the vertical surface of the nib under the joinery and then under the joinery on the horizontal top surface of the nib. He explained, again in relation to the balcony joinery, that it was possible to reuse the joinery if the dimensions of the opening remain the same and there is verification available that the joinery is currently performing. (I pause to interpolate that if the reason for not reusing the joinery is performance related, that is not something for which the Council should be liable if it is not a pleaded defect.) Mr Fairhead concluded that the costs and time to attempt remediation of the existing joinery at Gore Street would be cost prohibitive so that replacement is the only viable option.

[1529] The Council's experts propose a narrower scope of remedial work (as does Mr Hunt on behalf of Equus who focuses on targeted and localised repair[502]. Mr Hunt's approach was informed by the nature of the defects pleaded against Equus and must be seen in that light). The Council's scope was at the concept level only without full designs. Conversely, the plaintiffs' scope of work is the subject of a building consent. That does not of course inform the question of whether the plaintiffs' proposed scope is reasonable since design solutions may (and often do) exceed the requirements of the Building Code.

[1530] I accept that it is reasonable to infer that the fact of water leaking into the basement carpark means water is passing through the concrete substrate to reach the carpark. That does not of itself establish damage given it is a concrete substrate with no cavity. But it is sufficient evidence of undue moisture. The efflorescence seen on the underside of the concrete supports this finding.[503] It is also reasonable to infer that water between the two layers of membrane may have caused or will cause problems with the existing membrane.[504] It is relevant that the podium serves as a roof and therefore part of the external envelope of Gore Street. It is required to provide adequate resistance to penetration by, and the accumulation of, moisture from external sources.

Conclusions as to the podium remediation

[1531] The Council's alternative scope for the pool area is merely to overlay a new membrane sheet (rather than remove the present membrane) with localised repair to the top edge defect and with the membrane correctly formed into the drainage outlets. If the membrane issue was confined to the top edge (which given my finding in relation to the drainage outlets is relevant), repair would be even simpler by forming a chase and re-adhering the existing membrane into the chase with a new flashing installed over the chase.

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502 There are different considerations had Equus been found liable as it would only have been responsible for the torched on area rather than the LAM extending over the terraced area.

503 It is possible, but not clear on the evidence, that the nature of efflorescence crosses the line and becomes damage.

504 Mr Woolgar's view is that once the timber decking is removed, any issues of water between the membrane would be detectable by walking over the membrane or using electrostatic probes which would not require uplifting even the top layer. I do not accept that would be an adequate approach in all the circumstances.

[1532] The Council's alternative scope for the terrace area is to replace the membrane with a product which does not require a two degree fall and to replace the nib and joinery to the level 1 Sailor's Lounge only with a partial reclad of the lower level cladding.[505] Producing a letter provided by membrane supplier, Ardex, Mr Woolgar proposed overlaying the membrane with the Ardex product. Ardex' s letter advised it would warrant the project use of its product notwithstanding the lack of falls.

[1533] I do not find the Ardex material to be sufficiently cogent evidence that the plaintiffs' solution goes beyond that which is reasonably required or that substituting Ardex is a reasonable approach to remediation. First, there was no witness from Ardex to test the issue with. Second, Ardex's own BRANZ appraisal for its product requires 1:60 falls for concrete substrates. That appraisal is also limited to an area of 40 square metres. Third, the Auckland Council Practice note AC2234 requires minimum falls of 1.5 degrees and recommends three degrees so the Ardex alternative is inconsistent with the Council's own recommendations.

[1534] The plaintiffs should not be left in a position where they take on the risk of performance of the lower membrane layers in an overlay solution or a substandard fix when they have established a breach of duty of care. The Council experts did not explain how their proposal accounted for the remaining durability of the existing membrane. Mr Woolgar himself acknowledged that a contractor would not necessarily provide any warranty relating to the lower membrane layers although would provide a warranty on the system. This strikes me as replete with risk for the plaintiffs and a short term solution when the plaintiffs are entitled to an enduring solution.[506]

[1535] The plan by the Council experts for both the pool and terrace area is not comprehensive nor sufficiently detailed to accept as realistically undermining the plaintiffs' proposed scope.[507] I prefer the plaintiffs' experts' evidence (subject to the comments below as to the joinery issue in the pool area). That is, I am satisfied that removal of the existing membrane and relaying of a new membrane is reasonably

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505 This is a different membrane product to that on the terraced section. According to Clinton Smith, a correct junction would need to be formed at the transition.

506 *Body Corporate 326421 v Auckland Council* [2015] NZHC 862 [*Nautilus*] at [39].

507 Nor did the Council intend it to because they rely on the point that the plaintiffs have the burden of proof.

required rather than the overlaying option in view of the impact on the existing membrane from water ingress due to the top edge defect. I am satisfied that the plaintiffs have shown on the balance of probabilities that their selection of product is reasonable notwithstanding there are other options available. It is certainly not disproportionate.

[1536] If and to the extent that the plaintiffs' scheme involves removal and replacement of joinery at the interface with the level 1 decks/units facing the pool, I agree that there is inadequate explanation because those units are separated from the pool area by a block wall.[508] This should be removed from the scope of work attributable to defect 10. Subject to arguments as to betterment, I find that the plaintiffs' solution for joinery around the gym and pool changing doors is reasonably required, save that the proposal to replace the cladding in its entirety as opposed to the bottom row of cladding goes beyond what the Council is responsible for.

[1537] The mere fact that the existing cladding is not an appropriate choice if Gore Street was built today does not mean that a repair scope which sees it replaced in its entirety is a proportionate approach.[509] I glean that the plaintiffs consider that a contractor would not be prepared to warrant what would effectively be a partial reclad with some form of jointing but there was no satisfactory evidence to that effect. The reclad cost should be apportioned accordingly.

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508 It is not however clear on the evidence whether this was a misdescription or replacement at this interface is intended and/or whether it was reallocated to claimed defect 8 in Mr White's third supplementary brief of evidence during trial.

509 One of the issue in the *Argon* case was the extent to which balustrades, joinery and cladding which was to be removed and reinstated incidentally to replacement of defective membrane had to comply with the Code at least to the same extent as before or had to meet the standards now used to establish compliance if installed as new balustrades now. Andrew J held that removing and reinstating those elements to carry out work to the balcony membranes was not "building work" as defined and therefore is not governed by s 17 of the 2004 Act but s 112. It did not therefore require upgrading to comply with the current Building Code.

Defect 11

What is required to address this defect?

[1538] The experts are in general agreement that remedial work is required in the area between gridlines A and B and gridline numbers 1—8 on the level 3 canopy roof.[510] They agree that the following works are reasonably necessary:

(a) removal of all existing gutter membrane, damaged ply substrate, localised gutter framing and soffit;

(b) removal of roof access ladder;

(c) replacement of damaged soffit lining, gutter framing and ply substrate and installation of new membrane;

(d) replacement of rainwater casings beneath the level 3 roof accessed from the level 2 balconies; and

(e) "[c]areful management and coordination of the pressure flashing above the gutter".

[1539] The plaintiffs' remediation experts also include the following works in their remedial scope:

(a) removal of existing parapet capping and skylights;

(b) installation of new timber upstands around the skylight openings to achieve more clearance above the roof membrane;

(c) installation of new timber battens to provide support to the new plywood substrate to be laid to two degree falls as required by the membrane manufacturer; and

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510 Any work on the associated Sailors' Lounge roof at gridlines 9 to 10 and A to Z is not included in the scope of remedial works.

(d) install Sarnafil membranes to canopy roof, and install new parapet capping and skylights.

[1540] I infer that the additional work of removing and replacing the skylights with new skylights and timber upstands to achieve more clearance stems from the selection of the Sarnafil membrane product manufacturer, its requirement for a two degree fall and the Auckland Council Practice note AC2234.[511] For the same reasons as I have expressed in relation to claimed defect 10, I accept that this is reasonably included in the remedial scope of works. I do not accept the submission that this is a hypothetical item of cost only or in practical terms operates as an unpleaded claim against the Council.

[1541] I accept that the plaintiffs should not be required to face the likely risk that the damage extends beyond the immediate gutter area although this is the only area tested. There is evidence that where timber has decayed it is necessary to cut at least a metre away from the decay due to spores travelling. Mr Trevor Jones explained good surveying practice in response to moisture damage to structural elements in cross-examination:

> Q. So based on these samples, even if 100% of these samples said "replacement", there's no evidence that the whole roof needs to be replaced because we've only tested the gutter?
>
> A. Well, we're dealing with the structure here so the structure has to be repaired, the whole membrane, in my opinion, has to be removed. I don't agree with the notion that you can cut the membrane, one and two-layer membrane and adequately then repair the roof by adding other layers on top. It's not something that I would advance. Once you take ownership of the defect such as this, you have to make sure that the remedial approach is robust and you also have to demonstrate to council, to council inspectors that what you're doing will provide a longer-term code compliance…

[511] Cl E2.3.1 of the Building Code requires that roofs shed precipitated moisture. I note in the Equus 2020 specification documentation reference to falls on concrete roofs at a minimum of 1 in 80 and where roofs fall into a gutter, the gutter shall have a good fall to outlets, generally a minimum of 1 in 50.

Conclusions as to defect 11 remediation

[1542] As one of the few defects in respect of which many (but not all) of the remediation and quantum issues can be determined (and given the practicality of doing so) I make the following findings:

(a) Defect 11 can be repaired in isolation. No one is required to leave the premises so no consequential losses flow. Nor is there any reason to include consideration of general damages which are more properly directed to the other more significant issues at Gore Street.

(b) No part of the remedial work for the South Elevation roof should be included in the quantum assessment. The plaintiffs should positively identify in the evidence those remedial items that relate to the South Elevation roof to ensure that these are not included.

(c) The apportionment of the costs of the Body Corporate to defect 11 will flow from the end costs figure and cannot be determined until the mechanical exercise of fixing costs is completed.

(d) As best I can tell, the removal and replacement of the existing membrane is a necessary consequence of the design and construction failing associated with the lack of protection of the membrane upstands. That cost should be borne by the Council including the requirement to introduce a two per cent fall.

Remediation quantum — defects 10 and 11

[1543] While I have generally preferred the plaintiffs' evidence as to the reasonableness of the repair scope for claimed defects 10 and 11, I have excluded certain items. Those matters impact on the quantum issue and potentially even on betterment. It follows that the question of quantification (and betterment) cannot be finally resolved at this stage.

[1544] Nonetheless, I go on to discuss the approach to costs with a view to assisting the parties to resolve quantum questions or, if need be, to make further submissions.

[1545] In his first supplementary brief of evidence, Mr White updated his estimate to take into account current market conditions, namely inflationary pressures. In his second supplementary brief Mr White adjusted the remedial work cost apportioned to defects 10 and 11 as if repaired in isolation and recorded deductions for items recognised as non-claimable. The significance of the revisions can be seen in the following table which compares Mr White's summary of the first to third iteration of the MMDAS in relation to defects 10 and 11. The only explanation from Mr White was that:

> Upon reviewing these costs for the hypothetical repair, I have determined that apportioning costs to defects 10 and 11 as a proportion of the overall cost of repair significantly skewed these costs, and in my view does not produce a realistic hypothetical repair cost.

	Mr White first quantum brief (GST inclusive) – served March 2021	**Mr White first supplementary brief (GST exclusive) – served November 2021**	**Mr White second supplementary brief (GST) exclusive – served 8 June 2022**
Defect 10	$12,647,150	$11,497,025	$2,189,271
Defect 11	$10,739,779	$9, 720,312	$324,074

[1546] A cursory review of the cost line items originally included against defect 10 and excluded in the most recent version of the MMDAS lends strong support to the Council's criticism that the MMDAS allocations were inherently unreliable. It is unclear to what extent the MMDAS allocations remain unreliable.

[1547] In a third supplementary brief, Mr White revisited the MMDAS and made further deductions from line items which Trevor Jones acknowledged in his evidence

were unrelated to defects 10 and 11 or which require a deduction as a flow-on effect of concessions made by Trevor Jones. While Mr White provided a revised defendant apportionment table, he did not provide a revised summary table in his third supplementary brief to enable comparison of that summary in his primary, first and second supplementary briefs. In cross-examination it became apparent that there were still errors in the allocation of specific line items for works said to be attributable to defects 10 and 11. This adds further grist to the Council's complaint.

[1548] Mr Ranum's estimates regarding claimed defect 10 removed works associated with a change to falls. The resulting estimate is just over $1.7 million if there is a change in falls.[512] This compares with the final estimate produced by Mr White for an isolated repair of defect 10 of just over $2.189 million.[513] Thus, while the delta between the experts was very large at the outset of the case, by closing it had reduced. One would have expected that to have been resolved at expert caucusing had the plaintiffs corrected the MMDAS pre-trial. It appears to me, at least superficially, that the differences are largely explicable by scope of repair.

Costing the repair of defect 11

[1549] Costing the repair of claimed defect 11, Mr Ranum carried out the same exercise as for claimed defect 10, adjusting again to reflect Mr Woolgar's brief of evidence. Mr Ranum picked up that Mr White's estimate originally allowed for works to the entire level 3 roof although the relevant works are limited to approximately 150 square metres on the western side of the building. Mr Ranum excluded those works.

[1550] Mr Ranum's estimate for claimed defect 11 is $191,470 once adjustment reflecting Mr Woolgar's evidence is made and $300,000 (give or take) if there is no such adjustment. Mr White's final estimate for claimed defect 11 is $324,000.

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512 The Council was quick to point out that the purpose of Mr Ranum's evidence is to show that the plaintiffs' quantum evidence cannot be relied on. It does not necessarily mean that his estimates (likely overstated for the reasons set out) can be substituted as positively proving quantum for the plaintiffs. However, that is precisely what occurred in *Body Corporate 160361 v BC 2004* Ltd [2015] NZHC 2979 [*Fleet Street*]. The Court used the quantum evidence provided by consent by the Council's quantity surveyor expert.

513 The exact sum is $2,189,270.24 versus $1,770,631.00.

[1551] I have set parameters for resolving the scope of work to remediate defects 10 and 11. For example I have found that it is reasonable to provide for the costs of creating falls. Given the reduced quantum contest, and the guidance set out, I expect the parties' experts should resolve the quantum issues for both defects 10 and 11.

Professional fees

[1552] Assuming a sound contract sum is satisfactorily proven, which remains to be seen, Mr Ranum for the Council adopts a professional fee sum of 15 per cent of the remedial cost as reasonable. Mr Hunt supports that view. I agree that is clearly an appropriate provision calculated by reference to the quantification of the remedial scope for those defects which are established.

Consequential losses

[1553] There are two types of consequential loss: one-off and duration related. Both types are predicated on which proven defects cause which losses. The time related losses are inextricably connected to the duration of construction works.

[1554] The second plaintiffs seek consequential losses of approximately $26 million excluding the hotel lost profits claim. These comprise:

(a) estimated lost rental and alternative accommodation costs during the remedial works of approximately $25 million; and

(b) moving, storage, redelivery and cleaning costs of approximately $1 million.

[1555] As discussed, the plaintiffs' global approach means that there is no divisibility even between groups of defects save that it now appears to be accepted that remedial work to the level 3 canopy roof and podium does not require units to be vacated. (It may still impact rental value however).

Loss of rental and alternative accommodation costs, moving and storage

[1556] Alternative accommodation costs, while conceptually available, are dependent on any revised work programme as a consequence of this judgment. I will hear further from the parties on this aspect of the consequential loss claim.

[1557] In terms of rental loss, the parties are generally agreed on the assessment of an "unaffected" rental value as at May 2022, that is the market rental rates if the units were defect free. This is despite the difficulty of providing a reliable estimate of market rental rates so far into the future.[514] Rental received by an owner would be the net value after deduction of the management fee. I accept that this is a fee of eight per cent. Accordingly, the "unaffected" rental value should be reduced by eight per cent. This provides a base for calculating rental loss.

[1558] Rental rates are only one half of the equation. At this point in time the Court is unable to determine how long to apply them for in relation to the defects for which the defendants are held liable. The many variables at play in respect of consequential losses mean that these issues will have to be decided after hearing further from the parties. Nonetheless, I make some observations and findings to guide the parties.

Construction noise

[1559] It is common ground that construction noise will have an impact on the levels of Gore Street which require vacancy during any remedial work. The plaintiffs and the Council are at odds about the extent of that impact. This informs the calculation of lost rental and alternative accommodation costs claimed as consequential losses since the level of construction noise and interruption will determine how many floors will need to be vacant.

[1560] The plaintiffs' repair scope sees the entirety of the building vacated at the first stage of construction. In the second stage, works will be undertaken on a number of floors at any one time. The plaintiffs called evidence from Stephen MacKisack as

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514 The task was undertaken in mid-2020.

to the rental loss.[515] He calculated rental discounts between 100 and 30 per cent for certain floors above and below specific remedial work on account of construction noise. In doing so he relied on the evidence of Mr White as to the estimated programme summary and the number of days each floor of Gore Street will be unoccupiable and the evidence of Richard Finley as to the acceptable level of noise within living spaces arising from construction activity.

[1561] Mr Finley is an acoustic engineer specialising in noise and vibration assessment. The counterpart to Mr Finley's evidence was that of the Council acoustic expert Christopher Day. He is a principal of Marshall Day Acoustics Ltd, a firm that specialises in acoustic engineering design. His specialty is designing for acoustics for performing arts venues but he has been involved in apartment buildings and construction noise through his career. These experts differed as to an acceptable level of construction noise and consequently the number of floors impacted. Their divergence was driven by the particular Standard they relied on to derive noise limits. Mr Finley relied on AS/NZS 2107/2016 *Acoustics—Recommended design sound levels and reverberation times for building interiors* and the Auckland Unitary Plan. His evidence is that the level above which noise will be unacceptable is 40 dBA (decibels).[516] Mr Day's evidence is that the key level is 55 dBA. He relies on NZS 6803/1999 *Acoustics—Construction Noise.*

[1562] This reliance on different Standards leads to different conclusions as to the number of levels which need to be vacant, even assuming in both cases that the whole remedial scope proposed by the plaintiffs is engaged. Mr Finley concludes that the noise levels will exceed acceptable limits on eight floors above and below the floor being worked on, will be marginal between nine and 11 floors and acceptable on floors beyond those. Mr Day relies on the same measurements taken by Mr Finley in concluding that three floors on each side of the floor being worked on should be vacated. He notes however there are anomalies in the measurements and further analysis at the time of construction would be beneficial.

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[515] Mr MacKisack is a registered valuer and property consultant specialising in the valuation of central city apartments. He estimated the lost rental income along with associated costs arising from the proposed remedial works as well as losses suffered on sale by units 6B, 7M and 26D.

[516] In supplementary evidence Mr Finley referenced NZS 6803 as only "obliquely related".

[1563] AS/NZS 2107/2016 recommends noise limits of 35–45 dB (decibels, averaged over time and with frequencies weighted to approximate what is heard by the human ear) for residential buildings and hotels in inner city areas.[517] Mr Finley lowered this by 5 dB to account for the impulsive and/or tonal nature of construction noise to reach the relevant limit according to AS/NZS 2107/2016 of 30–40 dB.

[1564] He also referred to the Auckland Unitary Plan (Operative in Part). Standard E25.6.28 provides specific guidance in relation to inner city construction noise impacts. For construction that will last more than 15 days in the inner city, the external noise limit (averaged over 30 minutes) is 75 dB. The external noise limit is however measured outside. The exercise for Gore Street is to assess the construction noise emanating from within the building. Mr Finley's evidence-in-chief was:

> In the Gore St scenario the noise produced within the building has the potential to have much wider impact within the building due to the noise transmitting through the building structure rather than to a discrete location on the facade. Therefore the noise limits in the Unitary Plan will not reflect the scale of the impact of the noise arising from the internal remedial works at Gore St and will understate the extent of the noise impacts for the purposes of my assessment.

[1565] He then calculated the extent to which external noise would be reduced by the building façade. Based on the thickness of the windows, this is 27 dB. The noise level limit according to the Unitary Plan would then be about 45-50 dB. Mr Finley concludes that an acceptable noise level in the living spaces arising from construction activities is 40–45 dB.

[1566] Mr Day gave evidence that there is a widely accepted principle of setting noise limits about 20 dB higher for construction noise. As AS/NZS 2107/2016 states the normal noise level limit is 35–45 dB, the addition of 20 dB above gives a noise limit of 55–65 dB.

[1567] He says this was also consistent with NZS 6803/1999 which is specifically developed for the assessment of construction noise. His evidence-in-chief was:

> The second derivation of my 55 dB criterion is provided within NZS 6803:

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[517] Cl 5.4.

> (a) Table 2 in NZS 6803 provides the 'recommended upper limits for construction noise received outdoors in residential zones' for different times of the day and different durations of construction. For typical durations and daytime hours the recommended limit is 75 dB outside a building;
>
> (b) To give an indication of what is reasonable for inside a building, clause 7.2.7 of NZS 6803 states; "Where there is no practicable method of measuring noise outside a building (…), the upper limits for noise measured inside the building shall be the levels stated in tables 2 and 3 [75 dB] minus 20 dBA" ie 55 dB inside. I understand this 20 dB reduction is considered to be based on a 'typical worst case' value for the sound reduction normally achieved in New Zealand residential buildings with doors and windows closed;
>
> (c) Therefore, taking Table 2 and clause 7.27 of NZS 6803 together, NZS 6803 dictates an appropriate internal noise limit of 55 dB (i.e. 75 dB minus 20 dB);
>
> (d) The AUP section E25.6.28 also confirms this approach; "Where external measurement of construction noise is impractical or inappropriate, the upper limits for the noise measured inside the building will be 20dB less than the relevant levels…"

[1568] Therefore, his evidence is that 55 dB is not only appropriate but a conservative limit.

[1569] I prefer the evidence of Mr Day that NZS 6803/1999 is the more relevant standard to determine noise levels involving construction. AS/NZS 2107/2016 is not designed to deal with construction noise but steady-state or quasi-steady-state sounds. It sets noise criteria for noises that operate on a long-term ongoing basis such as air-conditioning, not limited duration construction noise. Limitations are specifically noted in cl 2.2(c)(ii):

> **2.2 Limitation**
>
> This Standard is not intended for—
>
> …
>
> (b) application to sounds which are not categorized as steady-state or quasi-steady-state;
>
> (c) either the assessment or prescription of acceptable recommended noise levels from transient or variable noises outside the building such as—
>
> …

(ii) construction noise such as jackhammers and pile-drivers (see AS 2436 or NZS 6803);

[1570] I accept the limitation around construction noise relates to noise sources outside the building, not inside.

[1571] NZS 6803/1999 states:

> **1 SCOPE**
>
> 1.1
>
> This Standard sets out procedures for the measurement and assessment of noise from existing and proposed construction work, including maintenance and demolition work. The Standard recommends noise limits for construction noise and provides guidance concerning methods of predicting and managing construction noise. The Standard should be read in conjunction with NZS 6801:1999 Acoustics—Measurement of environmental sound.
>
> 1.2
>
> The Standard can be used by local authorities in setting noise limits to reduce the likelihood of annoyance, nuisance and adverse health effects to people in the vicinity of construction work. It may be cited in local authority plans and resource consents as a method of measurement, assessment, and means of compliance with noise rules. Where there are no applicable rules, it can be used as a guide to appropriate numerical noise limits, measurement, assessment and noise mitigation measures. This Standard is also intended to enable developers, site operators and works contractors to manage noise emissions associated with construction work (including maintenance and demolition work).
>
> …

[1572] Mr Finley sought to explain why he ignored NZS 6803/1999 in his evidence-in-chief. He distinguished the community protection aim of NZS 6803/1999 and the individual protection focus of AS/NZS 2107/2016. With respect, the explanation was not persuasive. Occupants and users are part of the community.

[1573] Mr Finley also says that the fact the remedial works will be taking place inside the building rather than a neighbouring building generating 55 dBA into Gore Street is important; I understand this to be a utilitarian argument. Though a noise limit of 55 dB is higher than a healthy, comfortable, productive living space experiences, it is reasonable to expect people to bear it when its source is from an exterior source because there will be less people bearing it. However, where the source of the noise

is indoors, more people experience it. Mr Finley seems to be saying, in that case the noise limit should be lower to account for this.

[1574] I do not accept this argument. The guideline sets out some factors that will affect the acceptability of construction noise. Nothing in the acoustic guidelines suggest that where more people are likely to be affected by the noise, the noise limit should be lower.

[1575] I accept that NZS 6803/1999 is the more appropriate standard to apply where construction is being undertaken within a building to set noise limits. Its scope of use is for construction works, unlike AS/NZS 2107/2016 which is used to determine other types of noise limits. As stated in cl 2, AS/NZS 2107/2016 is used for the design of spaces to ensure appropriate noise levels for day-to-day use under normal circumstances.

[1576] NZS 6803 is also consistent with the Auckland Unitary Plan which states that the external noise limit on Mondays to Fridays should be 75 dB and:[518]

> Where external measurement of construction noise is impractical or inappropriate, the upper limits for the noise measured inside the building will be 20dB less than the relevant levels in Table E25.6.28.1

[1577] I prefer the evidence of Mr Day that the correct adjustment to exterior noise limits is the 20 dB as set out NZS 6803/1999[519] rather than 27 dB as the sound reduction measured by Mr Finley.

[1578] In conclusion, there is a higher noise limit for construction noise under NZS 6803/1999 and the Auckland Unitary Plan principally due to the temporary nature of construction. It is the more appropriate standard to use when setting noise limits and determining how many levels must vacate the building for construction happening in Gore Street. It applies even where the construction is happening within the building.

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518 Auckland Unitary Plan, Table E25.6.28.
519 NZS 6803/1999, cl 7.2.7

[1579] I therefore prefer the evidence of Mr Day on the question of the vacancy requirement during remedial work. However, AS/NZS 2107/2016 still has some relevance to the issue of impact on rental arising from construction noise.

Hotel lost profits

[1580] Harbour Residences owns unit GB which functions as an office space from which the hotel operates. The hotel business provides accommodation for short term and long term stays in units which are part of the hotel pool. The number of units in the hotel pool fluctuates but as at trial, numbered about 86 units.

[1581] Harbour Residences and the owners of units have entered into letting agreements. The hotel operator agrees to manage the letting on behalf of owners. It also uses unit GB as the office site for building management services for Gore Street on behalf of the Body Corporate.

[1582] The claim is not only for the share of the cost of the remedial works on behalf of Harbour Residences as second plaintiff but income loss consequent on the vacancy of hotel units for a period during the remedial work. It also claims the cost of moving furniture from those units to a storage facility and storage costs for the period of remedial work undertaken. Finally, it claims for the cost of alternative premises to run the business.

[1583] I pause to interpolate that it appears to me there is inconsistency between needing to pay for alternative premises to run the business if in fact no business may be run during the period of remediation. I accept that it may be necessary to continue to provide building management services during remediation however this was not satisfactorily explained in the evidence before the Court.

[1584] The assessed value of the hotel lost profits claim is just over $3 million.[520] The alternative accommodation costs, moving, storage, redelivery and cleaning costs are approximately $88,000.[521]

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[520] The sum actually claimed is $3,106,371.

[521] The actual costs claimed are $88,607.84 amended statement of claim dated 11 March 2021, para 60(c)(i)(ii) and sch 4, unit GB.

[1585] The claim is quantified by an independent accountant, Bruce Watt based on information provided by Graham Baskett, managing director of Harbour Residences. Mr Baskett provided to Mr Watt:

(a) details of the hotel's operation between 2014 and 2019, the budgeting profit/loss, forecasts and balance sheets for 2019 and 2020; and

(b) the Harbour Residences' earnings before interest, tax, depreciation and amortisation (EBITDA), summary information for 2016-2019 and 2020 full year forecast; and

(c) the plaintiffs' experts' estimated programme summary.

[1586] Mr Baskett impressed me as an honest and forthright witness faced with a particularly difficult task of assessing consequential impact of the remediation in circumstances where the Covid-19 crisis created massive uncertainty in the hospitality industry. Mr Baskett readily accepted the difficulty of the exercise and conceded appropriately the various uncertain elements on cross-examination.

[1587] The claim for hotel lost profits faces a number of obstacles. I distil these to the following:

(a) whether the asserted lost profits is a loss recognised as recoverable and within the scope of the duty owed to unit owners by the Council exercising its building control function;

(b) even if the law recognises the recoverability of such losses on a conceptual basis, whether the particular loss would be too remote in the present circumstances;

(c) whether losses relating to the operation of a hotel which was not a consented use and will not be a consented use pending remediation, are nonetheless foreseeable; and

(d) whether Harbour Residences has sufficiently proven the calculated loss.

Are hotel lost profits a loss recognised at law in these circumstances?

[1588] The plaintiffs argue that claims for consequential losses arising out of damage to property are orthodox in this field. They cite cases in which damages have been awarded to owners of a hotel for loss on sale and loss of profits arising out of negligent stormwater works carried out by a council which led to flooding of a hotel.[522] They also refer to a case in which the owner of a greenhouse was entitled to damages for future development losses. Damages were awarded against a government department who engaged a contractor who sprayed too close to the greenhouse and destroyed crops.

[1589] The plaintiffs accept that the type or kind of damage resulting from the wrong must be reasonably foreseeable to justify recovery but the extent of that damage need not be foreseeable.

[1590] The plaintiffs argue it was foreseeable to the builder and Council that at some stage, whether from the outset or thereafter, a commercial entity would operate a business from any unit, whether in relation to management of accommodation or otherwise. They say that this is conceptually no different from other commercial units on the lower floors of the building or from apartment owners who rent out their apartments as a business activity. They also argue that Harbour Residences derive business earnings out of the ownership of its ground floor office and note that Harbour Residences is a beneficial owner of the common property in accordance with s 54 of the 2010 Unit Titles Act. That common property which includes the gymnasium and swimming pool are an important feature of the hotel operations. The plaintiffs lean heavily on the scope of the duty owed by councils in respect of both residential and commercial buildings as outlined in *Spencer on Byron*.

[1591] Clearly the loss to Harbour Residences flows directly from the physical damage to Gore Street. In one sense the hotel's losses flow from the Council's

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522 *Taupo Borough Council v Birnie* [1978] 2 NZLR 396 (CA).

negligent performance of its building control functions and the subsequent need to vacate the building for repairs. However, this is not sufficient. The Council owes a duty of care to the *owner* of the property, not a non-owner or tenant. As Tipping J stated in *Sunset Terraces*:[523]

> Protection of a non-owner occupant such as a tenant, can be achieved only through a duty owed to an owner, as it is only the owner whose pocket is damaged as a result of the negligence of the building inspector. It is only the owner who can undertake the necessary remedial action.

[1592] The claim for loss of profits is economic loss unrelated to damage to unit GB owned by Harbour Residences. In legal terms, the loss does not flow "naturally and directly" from damage to its own unit but rather from damage to other unit Owners' property within the hotel pool. As the Council argues, this is a form of "parasitic" damages annexing a head of damage to a recoverable claim does not make it recoverable in law.[524]

[1593] Even the interest in common property or part of it under the legislation does not make an interest sufficient to constitute ownership or enforceable property rights such that the interests of Harbour Residences falls within the ambit of the duty of care owed by the Council.[525] In this Court, Heath J held that Blue Sky was not owed any duty of care as a lessee of units in a defective development. Blue Sky came before the Court in various capacities, including as a previous owner of the reversion of the lease and assignee of the current owner of the reversions which complicates the factual context. The Court of Appeal upheld Heath J's findings as to Blue Sky's claim as lessee but found that it had an entitlement to claim as previous owner and assignee of the current owners' claims.[526]

[1594] In sum, I conclude that the answer to the first question is that hotel profits are not claimable within the scope of the duty owed by the Council in this case.

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523 *North Shore City Council v Body Corporate 188529* [2010] NZSC 158, [*Sunset Terraces SC Judgment*] at [53], [2011] 2 NZLR 289, per Tipping J.

524 *Spartan Steel & Alloys Ltd v Martin & Co Ltd* [1973] QB 27 at 35.

525 *Body Corporate 188529 v North Shore City Council* [2008] 3 NZLR 479 (HC) [*Sunset Terraces*] at [360] and [374]–[377].

526 *Body Corporate 188529 v North Shore City Council* [2008] 3 NZLR 479 (HC).

Is the loss claimed too remote?

[1595] It is strictly unnecessary to turn to the other issues as the answer to the first issue is the whole answer to the claim. Nevertheless, I go on to discuss briefly the other obstacles.

[1596] Economic loss not sufficiently related to any physical damage cannot be recovered on ordinary principles.[527] Clearly, Harbour Residences is owed a duty of care in relation to the unit it owns. It also has a claim to consequential loss flowing directly from damage to that unit provided it is foreseeable. That would include a claim for lost rental income in respect of that unit, alternative accommodation costs, moving, storage, redelivery and cleaning costs related to that unit. The remedial work consequences do not flow naturally and directly from damage to its own unit however. It is claimed as a result of damage to the other units, owned by other owners and second plaintiffs.

[1597] Practically speaking, Harbour Residences is seeking to claim loss derived from a contractual relationship with the other owners. This is analogous, as the Council argues, to the principle of relational contractual loss.[528]

[1598] In *Strathboss Kiwifruit Limited v Attorney-General*, the second plaintiff was declined relief in a claim relating to kiwifruit post-harvest operations.[529] The underlying claim was loss caused to kiwifruit growers by the Crown's negligence. The second plaintiff's losses were under a contract with the party who was owed the duty. They were not owed the duty themselves. Their losses arose in respect of downstream contractual rights. This Court in *Strathboss* recognised parallels to building defect cases. It observed:[530]

> In building cases the plaintiffs own the property directly impacted by the negligence if the property is constructed defectively. Although the law now views the loss as economic, rather than property damage, the loss is intimately tied to the property rights. Indeed the defective construction sooner or later

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527 Stephen Todd (ed) *Todd on Torts* (9th ed, Thomson Reuters, 2023) at 59.5.4.1.

528 *Cattle v Stockton Waterworks Co* (1875) LR 10 QB 453; *Simpson & Co v Thompson* [1877] 3 At pp CAS 279; *Société Anonyme de Remorquage à Hélice v Bennetts* [1911] 1 KB 243 (KB); *Tait & Lyle Industries Limited v Greater London Council* [1983] 2 AC 509 (HL); and *Esso Petroleum Co Limited v Haul Russell & Co Limited* [1989] AC 643 (HL).

529 *Strathboss Kiwifruit Ltd v Attorney-General* [2018] NZHC 1559.

530 At [424]–[429].

> will likely lead to property damage (defective foundations lead to cracks and partial or total building collapses and leaky homes lead to mould and saturation which is ultimately likely to affect the building's soundness as well as affecting the health of its occupants). Similarly, kiwifruit orchardists who own the vines or their crop have property which is directly impacted if they are infected because risk goods, containing a pathogen, are used in the vicinity of their vines (from which the pathogen can spread). In contrast, the [post-harvest operators] do not own the property directly affected by the negligence.
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> …
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> For these reasons I consider the alleged duty of care under the first cause of action is supported by the New Zealand cases in relation to those who had "property rights" in the kiwifruit vines or crops affected by PSA3 (either because they were infected or because they were at the risk of infection and were therefore treated as if they were infected). I consider the alleged duty of care under the first cause of action is not supported by the New Zealand cases for those who did not have "property rights" in the kiwifruit vines or crops affected by PSA3.

[1599] On this issue too, I accept the Council's argument with the result that the claim by Harbour Residences for loss of profits is not available.

Are hotel profits foreseeable if they relate to an unlawful hotel operation?

[1600] Harbour Residences accepts that it Gore Street was not originally designated a hotel. However, it argues it would be vastly disproportionate to deny relief by reference to what is, at most, a technical breach of local government planning regulations. It distinguishes between the circumstances in those cases cited by the Council dealing with illegality. It makes the point that a change of use can be made at any time. While that may be so, there was no evidence led as to how straightforward a change of use application would be, the time at which it could be made, or attendant conditions. I apprehend that additional work would be possibly required in terms of the legal framework for providing accommodation services, such as disabled access and the like. I make no definitive finding to this effect as evidence was not led. I would not be inclined to reject a claim to loss of profits on the basis that Council consent would be required to operate as a hotel. I agree that the cases of illegality are distinguishable.

Is there cogent and reliable evidence on which claimed loss can be calculated?

[1601] The plaintiffs' evidence was challenged by expert witnesses called by the Council, Michael Clark and William Apps. The evidence of Mr Clark was not challenged. The evidence of Mr Apps was not undermined on cross-examination.

[1602] Much of the challenge to Mr Baskett's evidence was focussed on when the hotel would see a return to pre-Covid levels of occupancy. That challenge has been diluted somewhat by the passage of time since the losses were calculated.

[1603] I accept the opinion evidence of Mr Apps which undermined the methodology for the preparation of the financial data Mr Baskett provided to Mr Watt. In particular:

(a) The focus on occupancy rates alone without reference to tariffs undermines the financial data.

(b) Mr Watt's evidence was entirely reliant on the data provided to him by Mr Baskett.

(c) There was insufficient analysis of the likely economic environment, market dynamics, competitive environment or analysis of the tourism sector (acknowledging how difficult that was at the relevant time).

[1604] The Council makes good on its argument that the loss assessment only went as far as what might happen if the expected financial performance was to mirror that forecasted for the 2020 year rather than what would happen.

[1605] It follows that even if a claim for hotel lost profits was available, it has not been adequately established on the evidence presented to the Court. On that basis alone, it would fail.

Diminution in value of units

[1606] Three second plaintiffs seek compensation for loss suffered on the sale of their units. As the Council recognises, the sums sought are very small relative to the overall claim. Valuation experts called by the parties agree as to the "unaffected" market

valuation of the units at issue. The plaintiffs approach the issue in a simplistic manner, assuming that the shortfall between "unaffected" market value and the sale price was entirely caused by alleged defects at Gore Street. It is not difficult to accept that the knowledge of defects had a critical role in underselling. In each sale the defects were either expressly disclosed or disclosed by providing AGM minutes for the years 2013, 2014 and 2015. A reasonable inference is available that the purchase prices, being lower than the unchallenged 'unaffected' values were impacted by the building defects.

[1607] The difficulty that arises is assessment where not all identified defects have been established or sheeted home to the Council or other defendants. The plaintiffs relied on the combined effect of the defects as causative of loss. The Council has not been found liable for all of the defects. It argues that it cannot be liable for the full extent of any loss suffered and that there is insufficient evidence from the second plaintiffs to establish that awareness of claimed defects was causative of loss. That is, while those second plaintiffs have given evidence of the fact of sale, their evidence does not touch on their knowledge of value at the time or their negotiations. Thus, there is nothing tangible on which to connect any diminution with the defects for which the defendants are responsible.[531]

[1608] The inference of sale at less than market value is not only available but strong. I find that it is unnecessary to attribute impact to specific defects. What matters is whether there is a causal relationship between the established defects for which the defendants are liable and loss in broad terms. I find there is a causal relationship on any common sense approach. The following second plaintiffs are therefore entitled to judgment for losses on sale:

(a) Unit 6B – Kar Ming (Jody) Leung - $19,000;

(b) Unit 7M – Onewa Limited - $15,000; and

(c) Unit 26D – SHP Investments Limited - $75,000.

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[531] The owner of unit 6B was called for cross-examination. The other two unit owners were not.

Are the second plaintiffs entitled to general damages?

[1609] The second plaintiffs who are natural persons claim general damages for distress, anxiety and mental suffering. They point to the recovery by apartment owners in *Victopia Apartments* and suggest that the awards made in that case would be appropriate with an uplift of $5,000 for inflation.[532]

[1610] Those awards distinguish between single resident owners, joint resident owners, single non-resident owners and joint non-resident owners.

[1611] Since then, Andrews J delivered his judgment in *Bianco Apartments*.[533] He adopted the same "holistic assessment" based on the approach in *Victopia Apartments.* He reduced the general damages on the basis that none of the unit owners would have to move out for the remedial works save for a limited number for a short period. In the present case apartment residents will have to move out for a period of time which is not yet determined given the liability findings in this judgment.

[1612] There is general agreement that an award of general damages requires three things:

(a) claimants have suffered a certain type of damage;

(b) the consequences must have been reasonably foreseeable; and

(c) there must not be any public policy concerns which prevent recovery.

[1613] The plaintiffs acknowledge that assignee plaintiffs are not entitled to general damages. They also agree that owners who own more than one unit only receive one award of general damages and trustees who have no personal economic interest in the unit are not entitled to general damages.

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532 *Body Corporate 346799 v KNZ International Co Ltd* [2017] NZHC 511 [*Victopia*] at [112]–[127].
533 *Body Corporate 406198 v Argon Construction* [2023] NZHC 3034 [*Bianco Apartments*].

[1614] The distress caused by the litigation itself is not compensable by an award of general damages. Nor is the distress caused by defects for which there has been no finding of liability.

[1615] The second plaintiffs in this case face a situation much like the apartment owners in *Victopia Apartments.* The remedial cost they have faced even in respect of the claimed defects for which liability has been established is substantial. It is agreed that Owners will need to vacate their units. I am satisfied that there is evidence of hardship and distress which warrants an award of general damages. The precise period of time that they will be required to vacate Gore Street more directly impacts consequential losses rather than general damages and does not need to await resolution of those issues. A common sense approach is needed and such damages are generally appropriate in a case like the present. I also accept that the awards in *Victopia Apartments* are instructive and that inflationary impact should be recognised.

[1616] I consider that the amounts claimed by the second plaintiffs under this head of damage, graduated according to whether they are owner occupiers or absentee owners, are appropriate. I record that second plaintiff assignees are not entitled to general damages and owners of more than one unit are only entitled to one award. Trustees who have no personal economic interest in a unit are not entitled to general damages.

[1617] I direct that GST is not payable in respect of the general damages award.[534]

Has any betterment been established?

[1618] The concept of betterment addresses the potential for an award of remedial costs to over-compensate plaintiffs beyond their actual economic loss suffered. It has been described by Miller J in the Court of Appeal:[535]

> The object of damages is to restore the plaintiff to the position it would have occupied but for the defendant's wrongdoing. Betterment is a tool used to achieve that objective where, as here, the defendant's negligence forces the plaintiff to replace property with something of greater value. Any deduction

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534 *Body Corporate 406198 v Argon Construction Limited* [2023] NZHC 3034 [*Bianco Apartments*] at [336] citing Grant Pearson, Mark Keating and Craig Macalister *Taxation – GST – A to Z of New Zealand Law* (online ed, Thomson Reuters) at [57.G.36.8.5].

535 *Invercargill City Council v Southland Indoor Leisure Centre Charitable Trust* [2017] NZCA 68, [2017] 2 NZLR 650 at [151].

> for betterment is net of an allowance for any disadvantages associated with the untimely and unavoidable nature of the plaintiff's investment.

[1619] In the light of the intrinsic connection between betterment and the remedial scope (and therefore costs) ultimately awarded, it is not possible to finally determine claimed betterment at this stage. It may even be that some of the betterment 'sub-issues' fall away as a result of the liability findings in this judgment. Nonetheless, I set out the relevant principles as guidance to the approach I intend to take once in receipt of further submissions.

[1620] The Council argues that there are two limbs to betterment in this case:

(a) Where remediation will result in the plaintiffs receiving new building elements in lieu of elements which are now two decades old. It points to the balcony joinery replacement in the remedial scope for claimed defect 8, the podium joinery replacement for claimed defect 10, the level 3 canopy roof (claimed defect 11) and bathrooms/kitchens for claimed defects 12 and 13.

(b) Where remediation of one defect for which liability is established will indirectly remedy another defect for which liability is not established.[536]

[1621] The plaintiffs argue that in any remedial works undertaken in relation to a building defects claim, some of the works will include a new-for-old replacement where the plaintiffs had no choice but to replace property. They contend it does not immediately follow that those replacements constitute betterment.

[1622] They also say that the calculation of any reduction for betterment needs to address the disadvantages associated with the untimely and unavoidable nature of the plaintiffs' investment. Pressed to explain why that would be so when the plaintiffs are not making any investment themselves but requiring funds from liable defendants, counsel had no ready answer.

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[536] The Council argues this can be viewed as either a damages/causation issue or a betterment issue.

[1623] I reject the plaintiffs' proposition. I consider that it misconstrues the purpose and nature of adjustments for early expenditure. While it is an orthodox consideration in cases where the plaintiffs have carried out remediation before liability is established, it does not apply in the present case.

[1624] I also reject the proposition that betterment in this case encompasses indirect benefit where remediation of one defect coincidentally remedies another defect for which liability is not established. No authority was advanced. The issue is more relevant to the question of whether the remediation scope for the established defect is reasonable in respect of the established liability. That in my view is the only appropriate enquiry.

[1625] It is for the Council to establish any alleged betterment. It says that has not been possible to quantify betterment because of the plaintiffs' "fundamentally flawed" approach to quantifying anticipated remedial costs.

[1626] I accept the plaintiffs' expert evidence that the joinery adjacent to the balconies and podium must be replaced when the remediation takes place. The Council's experts do not dispute this. There is no evidence that replacement of joinery results in an increase in value of the Gore Street apartments. No pecuniary benefit is shown. No present leak in the joinery as installed has been identified. There is no evidence as to the duration over which the joinery might remain in situ without leaking. I am not satisfied that there is any requirement to bring the joinery up to the present Building Code standard but for the removal and replacement imperative associated with remediation. In those circumstances, the Council fails to establish that any betterment attaches to the replacement of the joinery at Gore Street.

[1627] The Council contends that replacement of a new level 3 canopy roof in lieu of an existing roof which has surpassed its Building Code durability period is a classic instance of betterment. I make four points:

(a) The fact that the membrane has passed its durability period of 15 years does not necessarily mean that it is due to be replaced because that

conflates the Building Code's durability requirement with the likely lifespan of a membrane.

(b) The actual life of a membrane depends on many factors including maintenance and condition.

(c) There is cogent evidence that the maintenance has not been at a recommended level.

(d) The fact that the Body Corporate intends to undertake replacement of the Sailor's Lounge roof at the same time may be a choice to incur early expenditure (opportunistic if another party is responsible for replacing the adjacent membrane) but also tells in favour of the desirability of replacement. In turn that supports the Council's argument that there is some betterment if the membrane is replaced.

[1628] Those factors led me to a provisional view that there is some betterment in relation to the level 3 canopy roof but nowhere near the level where the plaintiffs would be required to meet the full cost. Provisionally, and subject to hearing further from the parties, I consider the level of betterment is in the range of ten to thirty percent but only in relation to some and not all aspects of the proposed remediation. The same considerations apply to the replacement of the membrane on the podium.

[1629] The betterment issues in relation to the bathrooms are too interwoven with proposed remedial work in respect of other defects to proffer even a provisional view. Mr Klosser signalled that the works associated with the remediation of the bathrooms and adjacent kitchens are impacted by other defects. However, Mr Woodworth's evidence that refurbishment of bathrooms, kitchens and interiors for large multi-unit developments usually take place on a 10 yearly cycle suggests that the betterment element will need careful consideration and may be relatively significant.

Are any defendants entitled to contribution from any other defendant?

[1630] Potential issues under s 17 of the Law Reform Act 1936 were not addressed in closing submissions.[537] I will need to hear further from the parties with due regard to the solvency of joint tortfeasors.

Is Goods and Services Tax (GST) payable?

[1631] It is common ground that any damages representing remedial costs awarded to the Body Corporate are on a GST exclusive basis. This is because the Body Corporate is registered for GST and therefore entitled to a GST input tax credit on the costs of the remedial work.

[1632] Given my determination in respect of the standing of the Body Corporate to recover cost of repairs damages, most of the arguments around GST are moot. I apprehend that the only remaining GST issue lies in respect of the repair cost for claimed defect 13. These damages are payable to the second plaintiffs rather than the Body Corporate.

[1633] It is not disputed that second plaintiffs who use their units either for personal use or for residential tenancy purposes cannot receive GST input tax credits in respect of expenditure for their unit. This is because neither personal use nor residential tenancies are taxable activities. GST is also not payable on general damages.

[1634] In the usual course, an award of compensation directly to second plaintiffs in respect of the remedial costs of claimed defect 13 will lead to the Body Corporate levying owners on a GST inclusive basis for those costs. Whether owners are entitled to claim back the GST portion of their levies will depend on whether they are GST registered and whether they use their units in a taxable activity.

[1635] Commercial uses of units are taxable activities. Second plaintiffs whose units are in the hotel pool or who rent their unit via Air BnB or similar are engaged in taxable

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537 There was no need to address such as between Equus and the Council by agreement of those parties.

activities and liable to be registered for GST where the total value of supply meets the thresholds set out in the Goods and Services Tax Act 1985 (GST Act).[538]

[1636] The second plaintiffs argue therefore that any compensation made directly to second plaintiffs who are GST registered and use their apartment for taxable activity should be on a net GST basis. Compensation to all other second plaintiffs should be on a GST inclusive basis.

[1637] The Council's response is that it is not only those second plaintiffs who are GST registered to whom payment should be on a net GST basis but also those second plaintiffs who are not GST registered but are *liable* to be GST registered. In short, that second plaintiffs should also have to prove that they are not liable to be GST registered before they can claim the GST component as part of an award of damages.

[1638] Mr Powell took the Court to valuation evidence which, while not directed to this point, provided some information on the likely total income derived from a unit rented on AirBnB. This suggested that owners of a single unit in Gore Street in short stay accommodation will not reach the threshold for GST registration. That analysis does not however take the matter very far since the registration threshold relates to the total value of taxable supplies made by the owner from carrying on all of their taxable activities.

[1639] I accept the Council's argument that it was for the second plaintiffs to prove that they are neither GST registered nor liable to be GST registered. It follows that compensation to all second plaintiffs who use their apartment for short stay accommodation should be net of GST. Compensation to other second plaintiffs should be on a GST inclusive basis.

SUMMARY OF DETERMINED CLAIMS

[1640] The Council is jointly and severally liable to the Body Corporate for damages in relation to claimed defects 1 (limited to beams B4 and B5), 7, 8 (limited to the types

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[538] Goods and Services Tax Act 1985, s 51

of balconies defined in the judgment), 10, 11 and to the second plaintiffs in relation to claimed defect 13 (in the respects defined in the judgment) to be assessed:

(a) based on the factual findings in this judgment; and

(b) following further submissions addressing a consequentially revised remedial scope.

[1641] Mapei is jointly and severally liable to the Body Corporate for damages in relation to claimed defect 8 (limited to the types of balconies defined in the judgment) to be assessed:

(a) based on the factual findings in this judgment; and

(b) following further submissions addressing the remedial scope.

[1642] Holmes is jointly and severally liable to the Body Corporate for damages in relation to claimed defects 1 (limited to beams B4 and B5) and 7 to be assessed:

(a) based on the factual findings in this judgment; and

(b) following further submissions addressing the remedial scope.

[1643] Clark Brown is jointly and severally liable to the Body Corporate for damages in relation to claimed defects 8 (limited to the types of balconies defined in the judgment), 10 and 11 to be assessed:

(a) based on the factual findings in this judgment; and

(b) following further submissions addressing the remedial scope.

[1644] The plaintiffs' claims against Equus fail.

[1645] Chenery is jointly and severally liable to the Body Corporate for damages in relation to that part of claimed defect 7 attributable to its installation of fire stopping (and I will hear further submissions as to that extent).

[1646] The following claimed defects are time-barred: defects 3, 4, 6 and 12.

[1647] I dismiss the affirmative limitation defences to claimed defects 1, 2, 9 and 10.

[1648] The second plaintiffs are entitled to awards of general damages in accordance with their claims set out in paragraph [2075] of their written closing submissions. I will hear further from the parties as to whether any contributory negligence offsets should be deducted from the award of general damages.

[1649] I will hear from the parties as to the form of orders and terms of judgment to be entered.

[1650] The remaining issues, including as to any apportionment between defendants, will be determined after receipt of further submissions and/or hearing to be convened as early as possible.

[1651] I direct the Registrar to allocate a case management conference in person before me on the first available date after 15 March 2024. At least two hours should be allocated. Memoranda are to be filed and served no later than five working days before the allocated conference date.

[1652] Leave is reserved to apply for further directions.

[1653] Costs are reserved pending further submissions.

[1654] Finally, it remains for me to thank counsel for their assistance and patience in this extraordinarily complex litigation.

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Walker J