

VICTORIAN CIVIL AND ADMINISTRATIVE TRIBUNAL

CIVIL DIVISION

BUILDING AND PROPERTY LIST

VCAT REFERENCE NO. D1333/2012

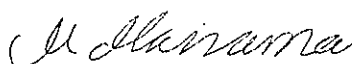
CATCHWORDS

Building and Property List; major domestic building contract for erection of house on highly reactive clay site; whether proper workmanship used in construction; extensive distress to structure caused by edge heave; whether appropriate to award damages representing the cost of demolition and reconstruction; whether damages should include any 'betterment' element representing the cost of upgrading the footing slab; damages awarded for the cost of demolition and reconstruction excluding cost of upgrading slab.


FIRST APPLICANT	Mr Earl Softley
SECOND APPLICANT	Ms Shelley Softley
RESPONDENT	Metriçon Homes Pty Ltd (ACN 005 108 752)
WHERE HELD	Melbourne
BEFORE	Judge Macnamara, Vice President Rebecca Cameron, Member
HEARING TYPE	Hearing
DATE OF HEARING	10 – 24 and 27 November 2014
DATE OF ORDER	11 December 2014
CITATION	

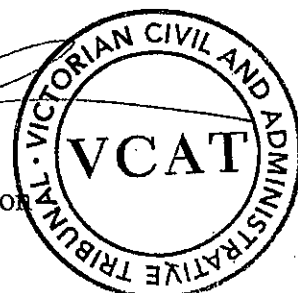
ORDER

- 1 Within seven days the parties must bring in short minutes to give effect to these reasons.
- 2 Adjourned to further hearing 9.30 am on 17 December 2014 at 55 King Street Melbourne.
- 3 Costs reserved.


Judge Macnamara
Vice President




Rebecca Cameron
Member



APPEARANCES:

For Applicants

Mr T. Margetts, QC with Mr R. Scheid

For Respondent

Mr J. Gobbo, QC with Mr B. Carr of Counsel

REASONS

BACKGROUND

1. Mr and Mrs Softley, the Applicants, have been married for 14 years as of January this year. Mrs Softley is a Policy Maintenance Officer with a major insurance company and Mr Softley is a Business Development Manager with a tyre company.
2. In late 2008 they were looking to buy their first home. They purchased a vacant allotment at what is now 7 Long Tree Drive, Melton West from Melrose Land Sales Pty Ltd. At that point the land was just an open paddock. It was delineated by pegs but no roadways or kerbing and channelling had been constructed.
3. On 25 February 2009 they signed a Domestic Building Contract with Metricon Homes Pty Ltd, the respondent to this proceeding, whereby for a total contract price, inclusive of GST of \$200,140.00 Metricon contracted to construct a dwelling on the Long Tree Drive allotment in accordance with a design prepared for Metricon, including engineering drawings by an engineering practice known as 'Structural Works'. The design seems to have derived from one of Metricon's standards known as 'Santorini 26'. The structure included a family room, a sitting room, a dining room and a rumpus room together with three bedrooms and a double garage under the main roof structure together with all necessary amenities and an outdoor room or 'alfresco area' at the rear, beneath the roofline but otherwise open to the elements. According to Metricon the price ultimately paid by the Softleys was \$199,897.01.
4. Melton West is an area on the outer western fringe of the Melbourne metropolitan area reached via the Western Highway. It forms part of a large basaltic plain to the west and north-west of the metropolis. The sub-soil is of reactive clay. The Metricon design provided for what the plans describe as 'traditional waffle slab 385mm freeboard'. The relevant part of Long Tree Drive runs approximately east-west. No. 7 is on the north side. The land is approximately flat. The plans provided:

Scrape approx 200mm on RL 100.0 and spread fill over remaining building area to level.
5. The house was to have a set back of 4.5m from the street frontage to the front porch with a tiled roof pitched at 22.5°.
6. As a preliminary to the execution of the Domestic Building Contract, Structural Works, on behalf of Metricon, carried out a site investigation on 3 December 2008, designating the site as having highly reactive clay sub-soil. This study described drainage of the block as 'fair'. A later investigation by Structural Works on 25 March 2009 downgraded this to 'poor'.

- 7 The land purchase was completed on 6 September 2009 and a building permit issued on 10 September 2009. Construction began on 10 October with the Occupancy Certificate being issued on 16 February 2010. The Softleys moved in on 10 March 2010.
- 8 It was only four months later, in early July 2010, that the Softleys began to notice cracks appearing in the plasterboard, skirting board and cornices. Mr Softley said:

At this time ... I noticed the first of many areas where the ceiling had separated from the cornice.

- 9 In November 2010, a longstanding drought affecting the Melbourne metropolitan area which stretched back to the late 1990s, broke with torrential rain. According to Mr Softley:
- ... our home went from just having internal issues that were visible to having external damage in the form of the whole back left-hand side having severe cracking and splitting through the bricks and mortar from the top corner right through to the bottom corner of that side of the building, which is the real wall of the rumpus room.

- 10 Mr Softley said that shortly afterwards, he:

Found the internal wall corresponding with the back wall [viz. of the rumpus room] had cracked and what appeared to be squashed from one end to the other [sic]. The cornice had completely split in half and there were specks of plaster all over the carpet in that room that had fallen from the ceiling ...

- 11 The Softleys had made their first contact with Metricon about cracking in July. They were told the 'issues were caused by our lack of concreting and landscaping'. Following the events of November, according to Mr softly, Metricon advised him and his wife:

to hold doing any landscaping until [Metricon] tested the plumbing to make sure there were no leaks underground. [Metricon] tested the plumbing and no leaks were found.

- 12 Mr Softley said he demanded of Metricon that their structural engineer be made available to advise Mr and Mrs Softley 'with respect to the paving'. A representative of Structural Works, who it will be recalled, on behalf of Metricon provided the engineering drawings, attended in February 2011. Structural Works issued a Distressed Building Report dated 15 February 2011 following inspection by Mr Jerome Deakin. The report was over the signature of Mr Deakin and 'P. Kennedy'. The residence was said to be

... generally in good condition. However, the following main areas of distress were noted:-

- Diagonal plaster cracking around openings in the wall between BED 1 and the WALK-IN ROBE and BED 1 and the ENSUITE (<1mm).

- Diagonal and horizontal plaster cracking over rear door and RUMPUS window; refer crack diagram and photographs.
- Separation of ceiling cornice and plaster sheet at multiple locations around the dwelling.
- Cracking of cornice mitred joints at multiple locations.
- Lifting of FAMILY/RUMPUS wall (10mm) off the slab.
- Separation of wall plaster sheet and skirting:
 - ENTRY/BED 1 wall (2mm)
 - Passageway/WIR wall (1mm)
- Horizontal movement of ceiling in RUMPUS relative to plaster sheet of OUTDOOR ROOM wall.
- Outward movement of soffit lining of outdoor room relative to brick work; refer photograph.
- Separation of cornice from DINING rear wall plaster sheet; refer photograph.
- Diagonal cracking and horizontal movement of brickwork at location of outdoor room timber beam.
- Diagonal cracking to brickwork of rear wall of house at bottom of rumpus room window.
- Cracks between tiles at floor edge in laundry.
- Wrinkling of plaster taping on external wall in corner of BED 2.

13 The report said that:

Spot levels were taken across the floor of the dwelling, which indicate that the slab has undergone edge heave around the structure, most pronounced at the north west corner – 44mm, and least pronounced at the opposite corner (garage corner) – approx 16mm.

- 14 The report observed compression of articulation joints on both sides of the house. The report noted that Austest Pipeline Solutions had carried out a CCTV survey of the stormwater system and ‘a broken pipe was found behind the garage.’ A flood test carried out ‘failed owing to the broken pipe’. According to Structural Works, they had been advised by email from Metricon ‘that the broken pipe had been repaired, the system has been re-tested and is now without leaks’. Structural Works found that the heave ‘was causing the external walls to lift, distorting the timber frame and so causing cracking at the corners of openings’. The report also noted that the trusses supported on the external walls had lifted and, as a result, there was a gap between the trusses and the top plate of the internal wall and this caused gaps between the ceiling sheet and the cornice. Mr Softley said that he prepared a pebble garden at the front of the house and to the west of the front door but had yet to install the pebbles themselves. Structural Works commented:

Pebbles can admit moisture and prevent free evaporation. Moreover, the shallow troughs, which have been dug out to hold them, have the potential to hold water against the footings, leading to additional expansion of the clays beneath.

The cause of the heave, according to Structural Works, was 'the ingress of water to the footing system causing the underlying clays to swell'. They said the possible sources of the moisture ingress were:

- a. rainwater falling on this and the adjacent block draining towards the house, collecting in the site cut zone and ponding against the slab
- b. overflow at the stormwater shoes, caused by blockages or restrictions in the stormwater drains on the western side of the house
- c. a leak in the water supply line
- d. some combination of the above

Contributing factors could be: -

- e. distribution of water by means of the stormwater trenches
- f. collection of water in the excavated areas prepared for pebble beds at the front of the house.

- 15 Structural Works said that the possible sources of water 'all should be either ruled out or dealt with'. As Structural Works interpreted the site, the stormwater trench drained to a pit in the easement drain at the rear of the property but 'significant lengths of the trench are without effective grade'. They said that during rain events:

of which there have been several since commencement of construction, it is probable that water has overflowed at the shoes and entered the stormwater trench. If the grade of the trench is inadequate, some of the water will have lain in the trench over time and seeped into the clay beneath the slab. What we have seen of the CCTV record of the stormwater inspection, in conjunction with the written report by Austest, renders this probable and if proved has a long term adverse effect on the footing performance.

- 16 According to the report, Structural Works had overlaid the slab levels diagram on the site cut plan and:

The fact that the areas showing heave correspond precisely with the cut zone is suggestive. It is probable that during construction, and subsequently, water has flowed down the slope and been contained in the cut zone of the building platform, ponding against the slab. We also consider it possible that this may continue to occur.

- 17 As a result of these observations, Structural Works recommended that 'the water supply line should be pressure-tested for leaks to rule it out as a possible source of water and that a cut-off drain be installed around three sides of the house, starting at the front near the driveway...(which) should be a minimum of 1.2m away from the house and 800mm beyond the existing stormwater trench, being founded 100mm minimum into the natural clay with a minimum fall to all sections of 1% even when this runs counter to the natural fall of the land and involves deeper excavation into the clay...Silt pits should be installed well away from the corners of the house. The ground should be sloped away from the house, all the way to the AG drain with a minimum slope of 5%'. They suggested that the 'downpipes be sealed into the shoes and all the way up to the guttering to eliminate overflow and to increase the head of water (thus improving the efficiency of the 90mm drainage pipes)'.
- 18 They also said that 'landscaping be put on hold until all the drainage work is completed, as concrete paving will tend to slow down natural evaporation from the soil'. They advocated compliance with CSIRO guidelines for management of sites of this type, designated BTF 18. They also suggested that ceiling sheets should be
freed from the trusses and 'dropped-back' to rest on cornices where separation has occurred. Ceiling sheets should not be glued to truss bottom chords near internal walls.
- 19 They observed that the footing system had been constructed in accordance with Australian Standard AS2870-1996. With adequate site maintenance, the crack width was unlikely to grow larger to any noticeable extent. The effect of the Standard, however, was that a crack free, distress free performance was not guaranteed or implied. Structural Works said they strongly suspected that this site had experienced significant abnormal moisture conditions. Remedial measures should be 'directed at minimising the potential for future movement. Preventative measures, which eliminate movement, do not exist.'
- 20 This report led to the Softleys calling on Metricon to install the agricultural drain advocated by Structural Works at Metricon's expense. Metricon's representative, Mr Shaun Milne, declined to do this and in an email of 11 March 2011 stated that in Metricon's view, the installation of the agricultural drain might accelerate or exaggerate movement of the house, rather than alleviate or prevent it. Mr Milne told Mr Softley that Structural Works no longer believed that the agricultural drain was necessary. Mr Milne on Metricon's behalf, however, referred the Softleys to CSIRO BTF18 which he said recommended a concrete path being placed around the perimeter of the house.
- 21 Rectification workers attended the house on behalf of Metricon in September 2011. They consisted of a bricklayer working outside and two plastering contractors working indoors, removing cornices and plasterboard

in the rumpus room and replacing them. They realigned an internal stud wall using a sledgehammer for the purpose as shown on a video taken by Mr Softley.

- 22 The Softleys carried out only limited works, constructing a 2m wide concrete path around each side of the house with surface drainage points. Those paths do not extend to the rear corners of the house. They also installed landscaping at the front of the house consisting of mulch, crushed decorative rock and river pebbles.
- 23 According to Mr Softley, 'the home continues to experience continuous movement'. On 18 January 2012 Mr Norm Morrod of Structural Works attended on site with Mr Milne and Mr Clayton of Metricon to check the levels of the floor of the house. According to the Metricon report:

comparison between the two spot level surveys indicate [s] that the majority of the slab has remained within a recorded 4mm of its previous figure.

They said that the west side of the rear had moved the greatest amount toward original levels, viz. subsided. They said the rumpus room wall had subsided approximately 8mm but the heave to the north elevation had increased. The report said:

To explain this effect we point to the fact the direction of the recent heavy rainfall events coming from the north-west, have been concentrated on the elevation containing the pebbled garden beds previously mentioned.

They said that paving had been added to the dwelling and was 'very well shaped to drainage points and is a good width'.

- 24 On 18 December 2012, solicitors acting for the Softleys filed an application with the Tribunal commencing the present proceeding.
- 25 Movement of the property continues and a large number of spot level surveys have been undertaken over the years, including by expert witnesses who gave evidence on behalf both of the Softleys and of Metricon. The precise pattern of the movement is difficult to summarise. Suffice to say that when we undertook a view of the house on the afternoon of 19 November, we found the worst damage on the eastern side of the house immediately behind the double garage which is located at the frontage of the house on the eastern side and is in the vicinity of where an early discovery of a broken stormwater pipe was made. There is extensive cracking internally in bedroom 2 which is on the east wall behind the garage and in the external walls of the laundry and lavatory. There is also a concentration of internal cracking on the eastern side of the kitchen which is located toward the middle of the house and immediately to the west of bedroom 2. In some places, in particular in this eastern location, there has been further cracking in brickwork and plasterwork which was rectified by Metricon in September 2011.

THIS PROCEEDING

- 26 By their Amended Points of Claim, the Softleys alleged a breach of contract by Metricon in failing to carry out the building works in a proper and workmanlike manner. They alleged a breach in that respect of Clause 11 of the contract and the terms implied by the *Domestic Building Contracts Act* 1995, asserting that Metricon had warranted that the home would be suitable for occupation at the time of completion, and that upon completion would be reasonably fit for the purpose of use as a domestic home and of such a nature and quality as those building works might reasonably be expected to achieve. They said that the breaches included a failure to backfill or compact the site during construction to ensure prevention of water ingress or penetration under the footings; an absence of a drainage system as required by the contract and Clause 5.5.4 of Australian Standard AS2870. Further, they alleged that there were missing downpipes and cut-off drains and an absence of flexible fitting piping which 'allowed uncontrolled water penetration of and around the slab edge during construction and generally'. They said the slab footing 'was not constructed so as to maintain the required 85mm thickness and the slab was not properly vibrated'. They alleged further breaches including missing double studs under girder truss locations, constructing an under strength framework and missing stud ties and incorrect fittings.
- 27 The Amended Points of Claim also referred to a document styled 'The Metricon 25 Year Structural Guarantee' which was attached to the contract for the construction of the building which, it was alleged, obliged Metricon to rectify, at its cost, any structural failure of:
- i. foundation system, concrete or strip footing;
 - ii. load bearing brickwork;
 - ii. structural timber and steel in wall or roof framing.
- 28 They alleged that the filling under the concrete slab provided by Metricon was scoria which, it was said, was contrary to Part 3.2.2.2 of the *Building Code of Australia*, Class 1 and Class 10 Buildings, Volume 2 and the slab/footing system did not have sufficient thickness and strength 'and therefore the design and/or construction of the slab/footing system was and remains defective'. Further, they said the windows and doors 'have not been flashed/waterproofed in accordance with BCA 2009, performance requirements 2.2.2/weatherproofing or Australian Standard AS2047-1999'. The Amended Points of Claim draw attention to the distress and cracking in the structure which, it was alleged, were caused by Metricon's failure to carry out the work in a proper and workmanlike manner, carry it out in accordance with all laws and legal requirements including the statutory warranties under the *Domestic Building Contracts Act* and the *Building Act* 1993 and carry out the work with reasonable skill. They said the footing system had performed inadequately with a 71mm differential movement. The footings had been designed for a Class H – highly reactive clay sub-soil

- site whereas the proper classification was Class E – extremely reactive, which soil classification called for a ‘significantly stiffer and stronger’ footing system. The losses were also caused, it was said, by ‘the lack of attention to site drainage by the footing system designers and during construction’. They also complained as to the design of the timber roof trusses which was said to be in breach of Australian Standard AS1170 and AS1720 with the result that ‘the trusses are and remain unsafe. The truss system should be demolished and replaced with a correctly designed system.’ The Amended Points of Claim alleged damage by way of:

- (i) Cracking in walls;
- (ii) Bowing in ceilings;
- (iii) Movement in tiles;
- (iv) Internal walls lifting off floor;
- (v) Separation from ceiling of internal walls;
- (vi) Cracks in floors;
- (vii) Footing system failure.

The Points of Claim also alleged a breach by Metricon of the terms of the Structural Guarantee.

Damages were claimed, representing the cost of rebuilding of \$259,729 inclusive of GST, alternatively, the cost of rectification work of \$122,427 inclusive of GST. Further, damages for alternative accommodation for a period of 12 months during reconstruction of \$335 per week, calculated at \$17,420 with removal expenses of \$10,020 were also sought.

DEFENCE

- 29 In its Amended Defence, Metricon referred to the ‘Structural Guarantee’ which said it granted in the Softleys’ favour, promising to rectify at its cost the structural failure of the concrete or strip footings, load bearing brickwork and structural timbers, subject to the exclusion of movement due to shrinkage evidenced by minor cracking and slab heave due to changes in soil conditions. It denied that the property had suffered structural failure, noting that the brickwork and the plasterboard are not load bearing. The defence noted the installation by the Softleys of cut-off drains and paving to the north, east and west elevations of the property. It said that stone garden beds at the front of the property remains a source of water ingress. The defence complained that landscaping of the property had not been performed in accordance with the CSIRO pamphlet BTF18. The site classification, the defence said, had been performed in accordance with AS2870 and the cracking in the house was not beyond the levels anticipated by AS2870 for normal moisture conditions. It said the trusses in the roof were not unsafe and do not require demolition. Metricon said that at all times it has been prepared to assist the applicant to rectify defects and remains willing ‘if allowed by the applicants, to return to the house to

perform rectification work to the cracked masonry and plasterboard'. Further, it said that any loss suffered by the applicants was due to a failure on their part to mitigate their damage by failing to grade surface landscaping away from the house by the construction of two pebble beds at the front of the house 'which allow both rainfall and surface runoff to pond adjacent to the footings in the front of the house'. The defence noted advice to the Softleys to install an apron of paving 'around the building perimeter' and a grated drain on the outside edge of the paving on the uphill side of the building which advice, it was said, was in accordance with the CSIRO pamphlet and correspondence between the parties in March 2011. The defence said that no remedial work had been undertaken at the front of the house and paving had not been placed at the rear corners of the house as recommended. Had those remedial measures been taken they

would have established normal moisture conditions at the front of the house which would likely have

- (a) limited further increases in the slab movement in that area; and
- (b) ensured ongoing cracking [was] within levels anticipated by AS2870.

AS2870

- 30 It is common ground that the contract between the Softleys and Metricon is a Major Domestic Contract within the meaning of the *Domestic Building Contracts Act* 1995. Section 8(c) implies a warranty on the part of the builder into all domestic building contracts in Victoria that the work will be carried out in accordance with and will comply with all laws and legal requirements, including the *Building Act* 1993 and the regulations made under that Act. It will be necessary to return in greater detail to section 8 in due course. For present purposes, it should be noted that the Regulations made under the *Building Act* 1993 section 7, namely, the *Building Regulations* 2006 by Regulation 106, give the force of law as building regulations in Victoria to the *Building Code of Australia*. This Code has been prepared by the Australian Building Codes Board under an agreement between the Commonwealth of Australia and each state and territory government

To enable the achievement of nationally consistent, minimum necessary standards of relevant health, safety (including structural safety and safety from fire), amenity and sustainability objectives efficiently.

- 31 The Code classified buildings by clause A3.2 into some ten classes. To quote from the 2009 edition of the Code, the house erected by Metricon for the Softleys falls within Class 1. Paragraph P2.1 of the Code lays down requirements for structural stability and resistance to actions. Clause 3.2.0 provides that those requirements are satisfied for footings and slabs in Clause 1 buildings if they are constructed in accordance with AS2870.

32 Australian Standards are published by Standards Australia International Limited, a private organisation. We heard evidence from Mr Fox who is the current chairman of the committee responsible for the preparation of this Australian Standard AS2870 which is entitled 'Residential Slabs and Footings – Construction'. He said that his committee was conscious of the need to maintain appropriate liaison with the Codes Board. If the Australian Standard were modified in a manner regarded as unacceptable by the Codes Board, it would be delisted, as some Australian Standards have been in the past. According to Mr Fox, the Codes Board is particularly concerned to avoid standards laying down construction requirements which might be thought to be unduly conservative because adoption of such standards as mandatory would be economically damaging by unnecessarily raising the cost of construction across the country. Amongst the goals laid down in the *Building Code of Australia* as published, is a requirement that

The Regulation generates benefits to society greater than the costs (that is, net benefits); and ... the competitive effects of the Regulation had been considered and the Regulation is no more restrictive than necessary in the public interest.

As a result, according to Mr Fox, if his committee were to stipulate a more expensive and conservative mode of construction for slab footings, the Codes Board would require it to identify some offsetting saving in the process of construction so as to avoid an increase in the net cost of building. Standards Australia published a supplement to AS 2870 – 1996 which stated at C1.3 under the heading Performance of Footing Systems:

The current costs of failure [*viz.* of slab footings] are modest compared with the costs of conservative design. Moreover, if the designs in the Standard are followed, failures should be very rare. Expectations of performance of footing systems on reactive sites depend upon the adopted standard of post-construction maintenance. If the homeowner's maintenance role is to be diminished, or higher expectations of performance are demanded, then the footing system should be designed according to engineering principles ...

Performance is based largely on the size and frequency of cracking in walls and concrete floors. All building materials move eg. bricks expand, timber and plasterboard shrink. Consequently some cracking in houses is inevitable and is independent of foundation movement. On reactive and soft or non-uniform soils, foundation movement adds to this tendency to crack. A large number of houses in Australia are constructed on clays that move with changes of soil moisture conditions arising from the imposition of the house on the ground. Generally the movements will be moderate and the prescribed designs in the Standard will cope with the movement. If extreme moisture conditions occur, which may have been avoided had a reasonable level of site maintenance been achieved, then significant damage will be more likely and probably more severe. To attempt to design for

such conditions on every clay site would add significantly to the cost of housing throughout Australia.

- 33 In its preface the Standard, itself, states that the Standard 'places particular emphasis on the design for reactive clay sites susceptible to significant ground movement due to moisture changes'. The design life provided for in the Standard 'may be taken as 50 years' (see paragraph 1.4.2). In paragraph 1.3.1 of the Standard the following statement appears:

The footing systems complying with this Standard are intended to achieve acceptable probabilities of serviceability and safety of the building during its design life. Buildings supported by footing systems designed and constructed in accordance with this Standard on a normal site (see Clause 1.3.2) which is –

- a not subject to abnormal moisture conditions; and
- b maintained such that the original site classification remains valid and abnormal moisture conditions do not develop;

are expected to experience usually no damage, a low incidence of damage Category 1 and an occasional incidence of damage Category 2.

- 34 The categorisation of damage by cracking to walls is to be found in Appendix C, Table C1. Hairline cracks which are less than 0.1mm are categorised as zero. Fine cracks which do not need repair being less than 1mm are Category 1. Cracks being less than 5 mm which are noticeable but easily filled and doors and windows sticking slightly are classed as Category 2. Category 3 cracking is described as 'cracks can be repaired and possibly a small amount of wall will need to be replaced. Doors and windows stick. Service pipes can fracture. Weather tightness often impaired.' These cracks are said to be of the range of 5mm to 15mm (or a number of cracks 3mm or more in one group). These are Category 3. Category 4 cracks are described as 'extensive repair work involving breaking-out and replacing sections of walls, especially over doors and windows. Window and doorframes distort. Walls lean or bulge noticeably, some loss of bearing in beams. Service pipes disrupted. Cracks are within the range of 15mm to 25mm, 'but also depend on number of cracks.'
- 35 It will be seen that, in accordance with the principle of avoidance of over conservatism to avoid excessive cost in building, the Standard represents a significant compromise, that is, it offers no assurance of immunity from cracking, rather it assumes that cracking may very well take place but within distinct and limited parameters. It would seem that the premise underlying the application of a standard to reactive clay soils is that construction in accordance with its standards and avoidance of abnormal moisture conditions should lead to an avoidance of cracking in the walls of the structure during its design life of 50 years except for Classes 1 and 2, or to put it another way, exclusive of Classes 3 and 4. In Appendix A to the

Standard which is said to be for information, the role of the owner of a property is described as follows:

The owner is responsible for the maintenance of the building and the site and should be familiar with the performance and maintenance requirements set out in the CSIRO pamphlet, 10-91, 'Guides to Homeowners on Foundation Maintenance and Footing Performance'.

- 36 The classification of soils which was undertaken in the case of this site is dealt with in Section 2 of the Standard. It will be necessary in due course to return to this matter in greater detail. Sufficient for present purposes to note that Metricon says that the classification made by structural works on its behalf of the site is 'H', namely, a highly reactive clay site is correct, whilst it is contended on behalf of the Softleys that the site should have been classified as 'E', namely, an extremely reactive site.
- 37 Traditional strip footings are inappropriate for either of these site classifications. Class 'H' sites require a stiffened raft slab. 'Stiffened Raft' is defined by paragraph 1.7.58 of the Standard as 'concrete slab on ground stiffened by integral edge beams and a grid of internal beams'. Traditional stiffened rafts have been dug into the ground with edge and internal beams dug to at least 700mm in the case of a brick veneer structure. The Softleys' house as noted, employs a waffle raft slab in lieu of the more traditional form just described. Paragraph 1.7.63 of the Standard defines a waffle raft as follows: 'A stiffened raft with closely spaced ribs constructed on the ground and with slab panels suspended between ribs'. The ordinary form of a waffle slab is depicted in Figure 3.4 of the Standard. It includes extensive 'formed voids'. In the design for the Softleys' property, the slab thickness was 85mm in accordance with the Standard. The slab, therefore, substantially sits on the ground rather than being dug into the ground. The extensive use of voids entails a lesser use of concrete and the costs of excavation and possible complications and additional expense arising from encountering isolated rocks during excavation are substantially minimised. The waffle slab, therefore, has become very popular as an economical foundation solution in areas of highly reactive soil such as Melton West.

EXTENT OF DISTRESS

- 38 The Performance Measure under AS2870 is the incidence of cracking. What is anticipated as satisfactory performance is set out in paragraph 1.3.1 which is quoted above at [32]. We should also note Table 4.1, which in the case of brick veneer houses, described in the Table as 'articulated masonry veneer', the maximum differential movement regarded as 'the tolerable limit ... for relative differential movement' (paragraph 4.4(b)) is 30mm. All experts were agreed that this constituted, not a performance measure for slabs, but rather a design input that slabs should be designed to meet this 'tolerable limit'. Mr McFarlane, an engineer specialising in design and performance of slabs who gave evidence for Metricon, said that this design input was intended to limit cracking to a maximum width of 5mm. (T 926

lines 11–15). Therefore, the experts proceeded on the basis that it was wrong to use the terms of Table 4.1 as a performance criterion; but it could be regarded as some sort of guide to the adequacy of the slab's performance.

- 39 Plainly, this slab has not met the performance requirements of AS2870, whether regard is had to a test based on cracking or upon the extent of differential movement. In the course of major rectification works in September 2011, plastering contractors engaged by Metricon removed an entire plaster wall in the rumpus room. A sledgehammer was used to re-align the frame. Mr Margetts and Mr Scheid submitted that this was indicative of Category 4 damage to the walls. The descriptor of this damage was as follows, in accordance with Table C1:

Extensive repair work involving breaking-out and replacing sections of walls, especially over doors and windows. Window and door frames distort. Walls lean or bulge noticeably, some loss of bearing in beams. Service pipes disrupted.

- 40 The approximate crack width is 15mm to 25mm 'but also depends on number of cracks'. The evidence did not disclose the width of the cracks that led to this work being carried out in the rumpus room, however, we think a more likely characterisation of the cracks which led to these repairs is to be found in Category 3 which covers cracking from 5mm to 15mm or a number of cracks 3mm or more in a group with a descriptor:

Cracks can be repaired and possibly a small amount of wall will need to be replaced. Doors and windows stick. Service pipes can fracture. Weather tightness often impaired.

- 41 Whatever the correct view be, since either opinion put the cracking at worse than Category 1 or 2, cracks in which categories must be less than 5mm, the performance criterion laid down by the Standard has not been met. In addition there is at least some Category 3 cracking in the house as it now stands. At least one piece of external brickwork was photographed and identified as a Category 3 crack by Mr Price, a building inspector giving evidence for the Softleys. We observed this at the view that we carried out in the course of the hearing. Mr Price said he observed at least two other Category 3 cracks in the brickwork but there was some doubt as to their identification. Further, in identifying the work which will need to be done to rectify the house in its present state, Mr McLennan, a building surveyor and building consultant who gave evidence for Metricon, said that a 'panel', that is, part of the brickwork on the eastern wall of bedroom 2 would need to be rebuilt. Separately from chasing and re-pointing other parts of this brick veneer wall, he also recommended the removal of two to four courses in the area above window level in this wall and their replacement and re-bricking (T 985). Again, whether one characterises this as Category 3 or Category 4 cracking, it goes beyond what AS2870 regards as acceptable performance for the slab. Expert reports, photographs and our own observation at the on-site view revealed instances of windows which were

sticking and whose frames had distorted, matters which were also indicative of a performance falling short of what was required by the Standard.

42 Mr Margetts and Mr Scheid said that as to Category 1 cracking, there were a multitude of such cracks, whereas AS2870 laid down as its criterion a 'low incidence' of Category 1 cracking. Again, the reports, the photographs and the view bore out this observation. Mr Gobbo and Mr Carr however, submitted that the extent of this minor cracking had to be judged against the fact that no maintenance work had been done on the house since the applicants commenced the present proceeding. In effect, no maintenance work has been done since the major work undertaken in the later part of 2011 by Metricon. In our view, there is some substance to this observation. On balance, however, even allowing for this consideration, there remains a multiplicity of Category 1 and Category 2 cracking in this house which again goes beyond the performance criterion in AS2870.

43 It is appropriate to apply the design input criterion found in Table 4.1 as a 'check' upon the findings indicated by the above observation. Table 4.1 in selecting 30mm as the tolerable limit for differential movement in a slab focuses not upon absolute movement but rather upon differential movement, that is, bending. If, as a result of seasonal fluctuations, the breaking of a drought or the incidence of a drought for that matter, a slab were to rise, say, 70mm or subside, say, 50mm, as long as the slab moved uniformly, the superstructure of the house sitting upon it would not be subjected to distress. These absolute movements occurring in a non-differential way are the very processes which a stiffened raft slab is constructed and adopted to allow in highly reactive clay sub-soil conditions such as those ruling in West Melton. Even if movement of this type does not maintain the slab horizontal so that there is, in effect, a tilt, this is not at odds with the design input provided for in Table 4.1. The issue of slope as distinct from differential movement is dealt with in Table C2, Classification of Damage with Reference to Concrete Floors, Note 4 of which states:

Local deviation of slope, from the horizontal or vertical, of more than 1/100 will normally be clearly visible. Overall deviations in excess of 1/150 are undesirable.

We were informed in final submission by Mr Margetts and Mr Scheid that there were problematic slopes in the house. Given that these were not the subject of evidence or observation at the view, we put them to one side and focus only upon the issue of differential movement.

44 It is the edges of a slab which are exposed to the ingress of water during rain events or most exposed to drying out in the course of prolonged drought because of their proximity to uncovered ground. Areas in the centre of the slab are characteristically relatively stable. It is for this reason that heave is almost invariably 'edge heave'. Differential movement therefore will generally manifest itself in a 'dishing' effect where the edges of a slab rise or 'heave' and the central locations either remain stable or

sink slightly. The differential movement in these circumstances is measured not by a simple measurement of the difference between the altitude at the highest point compared to the altitude at the low point, rather the extent of the bow or bend is measured by drawing a line from one high point to another and measuring the maximum vertical distance from that straight line to the lowest point on that alignment of the slab.

- 45 Mr McFarlane said that since the design input in Table 4.1 was intended to create a particular result relative to the walls of the structure, viz. maintaining cracking due to differential movement below 5mm, any measurement of differential movement needed to be undertaken along the line of an internal wall system. According to Mr McFarlane, in a structure such as a warehouse which had no internal walls, a differential movement which involved dishing but no differential movement along the external walls would be in no way problematic.
- 46 Mr Fox, who it will be recalled is the chairman of the committee in charge of AS2870, in cross-examination accepted without demur the propriety of carrying out differential movement calculations simply diagonally across the house floor plan without any regard to following the line of walls. This also seems to have been the approach of Structural Works in their first report on distress to the structure.
- 47 In our view, the restriction upon the operation of the criterion in Table 4.1 proposed by Mr McFarlane is without justification. First, it entails adding words to the Standard which are not there. The Standard gives every indication of having been prepared with great care in the choice of language. The Standard does not present as some sort of relatively sketchy guide, details of which need to be implied to provide a comprehensive set of requirements and criteria. The occasion simply to add criteria, as Mr McFarlane advocates, simply does not arise. Secondly, we regard the acceptance of the opposite view, implicit in Mr Fox's evidence as weighty having regard to Mr Fox's role as the chairman of the committee responsible for the Standard. Thirdly, it is not clear to us that differential movement in a structure having internal walls but which does not follow the line of the walls is not calculated to inflict structural damage on the walls in the locations where they are erected and other structures such as roof trusses and so on. In cross-examination Mr Fox agreed that there is 44mm of differential movement along one alignment in the floor plan (T 737 lines 25–31). Mr Fox at line 10 on the following page was asked 'and you wouldn't build a slab to perform like that?', that is, with differential movement almost 50% higher than what the Standard regards as a tolerable limit, and replied 'correct'. All of the above matters support the view that the slab here has not in the past and is not now, performing as AS2870 suggests it should.

ABNORMAL MOISTURE CONDITIONS

- 48 The performance standard laid down at paragraph 1.3.1 of AS2870 is expressed upon the basis that the slab in question is 'not subject to abnormal moisture conditions'. To put it another way, if abnormal moisture conditions do exist 'all best are off'.
- 49 If it be found that abnormal moisture conditions obtain as a result of some matter outside the responsibility of the builder, then to the extent that the lack of performance of the slab is attributable to that or those abnormal moisture conditions, the lack of performance cannot be the responsibility of the builder. Here, it is contended that there have been abnormal moisture conditions. What are they? The builder refers to two pebble gardens at the front of the house and a leaking drainpipe behind the garage and in the vicinity of the distress hotspot at bedroom 2, laundry and WC. The cause of the cracked drainpipe which Metricon says it has repaired was not disclosed by the evidence. Mr Price noted that flexible couplings had not, in accordance with the Standard, been used in the subsurface joint in the stormwater drain. This could have the consequence that, in the face of what is expected movement as a result of the highly reactive clay sub-soil, the drainpipes crack at a coupling. The cracking could simply have been as a result of carelessness by a contractor on site in the course of the construction. Whichever way one looks at it, this sort of abnormal moisture conditions cannot be regarded as outside the builder's responsibility. As to the pebble gardens, one of them is, in effect, in accordance with the way the site was left by Metricon. Again, it is difficult to regard this situation as beyond the responsibility of Metricon. The other pebble garden was constructed by the Softleys. It was under construction at the time of the first Structural Works report. Structural Works were critical of it. Mr Softley says that he constructed its base so as to be graded away from the building. It is not in the vicinity of any point of significant distress in the structure, therefore, however characterised, we do not regard it as causative of the serious distress which we have found exists in the structure. There was also criticism of a failure to continue the concrete apron constructed by the Softleys to the rear corners of the house. Precisely why the Softleys have wished to abstain from continuing the pathway to those points was not clear to us from their evidence, however, again, these points are not near damage hotspots and we were not persuaded that they are causative of the distress with which we are now dealing.
- 50 As we explain below, the evidence satisfies us that there were abnormal moisture conditions on site during construction which were the responsibility of the builder.

STATUTORY IMPLIED WARRANTIES

- 51 Section 8 of the *Domestic Building Contracts Act 1995* sets out certain implied warranties which are to be part of every domestic building contract in Victoria numbered (a) to (e). The section provides as follows:

8 Implied warranties concerning all domestic building work

The following warranties about the work to be carried out under a domestic building contract are part of every domestic building contract—

- (a) the builder warrants that the work will be carried out in a proper and workmanlike manner and in accordance with the plans and specifications set out in the contract;
- (b) the builder warrants that all materials to be supplied by the builder for use in the work will be good and suitable for the purpose for which they are used and that, unless otherwise stated in the contract, those materials will be new;
- (c) the builder warrants that the work will be carried out in accordance with, and will comply with, all laws and legal requirements including, without limiting the generality of this warranty, the **Building Act 1993** and the regulations made under that Act;
- (d) the builder warrants that the work will be carried out with reasonable care and skill and will be completed by the date (or within the period) specified by the contract;
- (e) the builder warrants that if the work consists of the erection or construction of a home, or is work intended to renovate, alter, extend, improve or repair a home to a stage suitable for occupation, the home will be suitable for occupation at the time the work is completed;
- (f) if the contract states the particular purpose for which the work is required, or the result which the building owner wishes the work to achieve, so as to show that the building owner relies on the builder's skill and judgement, the builder warrants that the work and any material used in carrying out the work will be reasonably fit for that purpose or will be of such a nature and quality that they might reasonably be expected to achieve that result.

52 Section 10 of the same Act prohibits contracting out of the warranties. It is common ground between the parties that these warranties are to be regarded as part of the contract. The ones relied upon by the Softleys for the purposes of this proceeding, namely those in paragraphs (a), (b) (c) and (d) are set out expressly in Clause 11 of the contract. They also placed reliance on sub-clause (f).

ALLEGED BREACHES

During construction - workmanship

53 Mr Margetts, QC and Mr Scheid, on behalf of the Softleys, submitted that Metricon breached its obligations to the Softleys during the construction period for a residence in a wide variety of ways.

- 54 They submitted, first, that there is no proper back-filling and compacting of the site during construction of the house to ensure prevention of water ingress or penetration under the footing and into the foundation material. They said no drainage system was installed by the time the residence was completed as Metricon is obliged to do and Metricon failed to ensure that during construction water would not pond against or near the footing or near the immediate perimeter of the footing. They said that downpipes should have been installed during construction once the roof was placed on the residence. The evidence showed that flexible fittings had not been applied to the drainage pipes which allowed uncontrolled water penetration of and around the slab edge during construction and generally.
- 55 They also said that the slab was not constructed so as to maintain the required 85mm thickness and the concrete in the slab was not properly vibrated.
- 56 They also complained that there were faults in construction indicated by:
- (a) missing double studs under girder truss locations;
 - (b) constructing under strength framework; and
 - (c) missing stud ties and incorrect fittings.
- 57 Next, they said there was a failure of workmanship in placing scoria fill under the concrete slab. They said this constituted a breach of paragraph 3.2.2.2 of the *Building Code of Australia*.
- 58 The making of findings as to what did or did not happen during the construction period was complicated by the general absence of evidence from Metricon and its contractors and sub-contractors as to what happened on site during construction. The only evidence along these lines was to be found in a witness statement given by Mr Thornycroft who is a construction manager employed by Metricon. He said in his statement that several site managers reported to him and that he received construction files and did a 'write up' on those files. According to Mr Thornycroft, before the commencement of construction of the Softleys' house, 'at some time prior to that', he conducted a pre-build site inspection. He said that Mr Softley 'was a frequent visitor to site to see how construction was progressing'. Mr Thornycroft remembered that the Softleys 'was a smooth build process'. He said that he arranged a pre-settlement inspection with the Softleys on 19 February 2010 where they raised a number of relatively minor matters none of which pertained to the substance of this proceeding which Mr Thornycroft arranged to have dealt with and on 10 March 2010 the Softleys 'signed off'. Mr Thornycroft referred to an inspection carried out on 11 November 2009 at the pre-plaster stage which reported that 'the walls had been plumbed to within the allowable tolerances and the trusses were buried correctly onto the wall frames and connected properly'. Mr Thornycroft said that he had not attended the home since the inspection in March 2010. In these circumstances, Mr Margetts and Mr Scheid submitted that we

should draw adverse inferences against Metricon because of its failure to call evidence from those in its camp who would have detailed knowledge of what took place during construction. They relied on the well-known decision of the High Court of Australia in *Jones v Dunkel* (1959) 101 CLR 298.

- 59 Mr Gobbo and Mr Carr submitted, however, that those involved, for instance, in the pouring of the footing slab on behalf of Metricon, would have been involved in dozens, perhaps hundreds, of concrete pours and would be unlikely to have any independent recollection of the events surrounding the 'pour' at the Softleys, therefore, no purpose would have been served by calling any of these persons. Further, they said, it would have been competent for counsel for the Softleys to cross-examine Mr Thornycroft as to his statement, rather than permitting it to go into evidence without challenge.
- 60 Mr Margetts and Mr Scheid, however, submitted that since Mr Thornycroft's statement did not really touch on the issues which they said were crucial in a critique of the construction phase, and presumably Mr Thornycroft's statement covered all relevant matters to the extent of his knowledge of them, it would have been pointless to cross-examine him. Moreover, since they were not seeking to challenge any of the material in his statement, the rule in *Browne v Dunn* did not oblige them to cross-examine him.
- 61 In our view, the absence of evidence from any of those involved in the construction for Metricon is striking where there is a full-blooded attack on the quality of its workmanship. The inference which the High Court says a finder of fact, judge, magistrate, jury or tribunal may draw in circumstances where witnesses who might be expected to be called are not called, is limited to the conclusion that the evidence of the absent witnesses would not have assisted the relevant parties' case. Where adverse inferences are drawn, they cannot go the distance of speculating as to what the absent witnesses might or might not have said. In the circumstances, we think it appropriate to draw adverse inferences from the unexplained absence of Metricon witnesses as to the construction phase. Mr Gobbo and Mr Carr made submissions as to why the witnesses might not have been of assistance; but no evidence was offered as to the explanations that were relied upon. In these circumstances, we believe that we can draw inferences from the material relied on by the Softleys favourable to their case with greater confidence than might have been the case if Metricon had called witnesses as to the occurrences during the construction phase. Say for instance, where Mr Gobbo and Mr Carr submitted that one could attach little significance to a photograph of the house with a roof installed but no downpipe on the basis that downpipes might have been installed the following day or indeed immediately following the taking of the photograph. The parties that would be able to call such evidence and prove

that such a thing happened would obviously be Metricon. No such evidence was proffered.

- 62 In our view, the contention that proper workmanship was not employed as to the matters raised by the Softleys during the construction phase is not made out
- 63 AS2870-1996 which, as previously explained, governs design and workmanship in circumstances such as the present, provides amongst other things that:

care shall be taken with surface drainage of the allotment from the start of construction. The drainage system shall be completed by the finish of construction of the house. (Paragraph 5.5.3a)

This requirement attaches to sites classified under the Standard as 'H' or 'E'. In addition, paragraph 6.6(c) provides:

Water run-off should be collected and channelled away from the house during construction.

Sub-paragraph (e) provides:

Water shall not be allowed to pond...

Clause 5.2.1 states a fundamental requirement as to drainage as follows:

Drainage shall be designed and constructed to avoid water ponding against or near the footing. The ground in the immediate vicinity of the perimeter footing, including the ground uphill from the slab on cut-and-fill sites, shall be graded to fall 50mm minimum away from the footing over a distance of 1m.

The requirement, therefore, is that the area surrounding the footing slab is to be graded away from the slab so as to take water away from it and avoid ponding next to it. Mr McFarlane, an engineer expert in geo-technical and structural issues with a special interest in residential slab and footing systems on reactive clay, said:

It was clear to me that there were some drainage issues early on otherwise we would not have had that heave. (T 945 lines 15-17)

Mr McFarlane gave evidence on behalf of Metricon, and it appeared that he had given evidence for Metricon in a number of other proceedings and written a large number of reports for Metricon. The answer just given was admittedly given in response to being pressed by the presiding Tribunal member in circumstances where Mr McFarlane noted that he had not carried out an investigation of the construction phase for this or had the opportunity to have a consultation with some appropriate supervisor. Mr Gobbo and Mr Carr submitted in those circumstances we should not attach much weight to the answer which he gave. Even allowing for the matters urged by Mr Gobbo and Mr Carr, however, we regard Mr McFarlane's evidence and opinion on this point as significant.

- 64 This view is supported by the evidence of Mr Softley at T 363 line 25 to T 364 line 2, that the downpipes were installed at the end of the build. A photograph at Tribunal Book, Tab 1 p36 shows the tiled roof installed on the house with no temporary or permanent downpipe. A large number of photographs from Tribunal Book, Tab 1 p7 and onwards show that following the pouring of the slab no steps were taken to channel rainwater away from the edge of the slab. On the contrary, photographs such as those to be found at Tribunal Book pp 7, 8, 9 and 10 show an effective trench around the edge of the slab surrounded by higher areas of soil and fill. A photograph at Tribunal Book p9 shows the edges of the waterproof membrane under the slab exposed. None of this is indicative of the 'care' which AS 2870 requires be taken of drainage issues during construction.
- 65 We agree that the effect of the passages quoted from the Standard as to drainage mean that the completed drainage system is required to be installed only at the conclusion of the build; but the matters just referred to are supportive of Mr McFarlane's view that there were drainage issues 'early'.
- 66 The footing layout plan prepared by Structural Works to be found at Tribunal Book, Tab 9, p311 and includes a note:
- Provide adequate surface and sub-service drainage **prior to commencement of construction** and connect to legal point of discharge. The drainage should be at least 1000 mm away from the footing and extend at least 100mm into the natural clay. [emphasis added]
- 67 There is nothing to indicate that this drainage was provided prior to construction. General Note 12 on the same page of the plan says:
- Discharge from the downpipes must be directed away from the building during construction to ensure water does not discharge or pond adjacent to the footings.
- 68 Again, the evidence of the photograph and of Mr Softley is that downpipes were not installed in a timely manner and so the objectives of this note were never carried into effect.
- 69 In our view, all of these matters are indicative of a departure from proper standards of workmanship in construction. Again, it was common ground that the heave which has been experienced by the structure occurred because of the expansion of the highly reactive clay subsoil following an extended period of draught affecting metropolitan Melbourne back to the 1990s. These matters constitute contract breaches which are apt to be causative of the structural distress which has been experienced by this house. We agree with the view expressed, albeit with some reluctance by Mr McFarlane, that they are therefore causative of the Softleys' loss and damage.

70 Mr Gobbo and Mr Carr submitted that no substantial causative affect should be ascribed to what occurred during construction because the long draught broke, according to the rainfall figures which were put into evidence, in October/November 2010, several months after the completion of construction. Nevertheless, we accept the submission put by Mr Margetts and Mr Scheid that events during construction are significant because the rainfall figures show a number of significant rain events and some 80% of the local average rainfall for the Melton area having fallen in the year in which construction took place.

71 We do not attach much significance to the alleged failure to maintain an 85mm minimum thickness for the slab. The evidence supportive of such a finding came from Mr Price, a building surveyor who carried out an audit of the building *ex post facto*. He concluded that there had been a failure to maintain the minimum depth for the slab based upon a photograph showing a 'cut out' for the installation of plumbing fittings, apparently in the main bathroom. This is a particularly inexact means of measurement and the evidence was therefore of uncertain reliability. Mr Price was also critical of the method used. He said that, rather than simply effect a cut-out in the slab, the base of the slab or soffit should simply have been dropped. This appears to be the correct method which should have been adopted. Mr Yttrup, an engineer who was the applicant's principal expert witness, attached no significance to these matters because they were located toward the centre of the slab, and the problems which Mr Yttrup believed were causative of the distress in this structure related to its edges, not its centre. Mr Price, the expert who identified the issues, did not suggest that they were relevant to the slab differential movement, rather, he said that they constituted a weak spot for termite infestation. In these circumstances we put those matters to one side.

72 AS2870 under the heading '6.6 Additional Requirements for Class H and E' sites includes the following:

- (d) Excavations near the edge of the footing system shall be backfilled in such a way as to prevent access of water to the foundation. For example, excavation should be backfilled above or adjacent to the footing with moist clay compacted by hand rodding or – tamping. Porous material such as sand, gravel or building rubble should not be used.

According to Mr Yttrup, this meant that in the present case it was incumbent upon Metricon to 'backfill' the area surrounding the slab with compacted moist clay. It was common ground that no such process was undertaken.

73 Metricon's expert said that this requirement in AS2870 related to trenches and holes dug adjacent to the slab, such as plumbing trenches. Mr Gobbo and Mr Carr submitted that the filling process advocated by Mr Yttrup would render it impossible for any sort of garden bed to be established around the edge of a slab. According to Metricon's witnesses, since the

slab here was a waffle slab and there was only a light cut applied to the site, the relevant earthworks could not be described as excavations at all.

- 74 With some hesitation we accept the contentions put by Metricon. Our hesitation derives from the fact that in Clause 5.5.3 – ‘Drainage requirements’ is in the part of AS2870 which applies to all rafts, not merely those on soils classified H or E, it is provided *inter alia* in sub-clause (b):

Plumbing trenches should be sloped away from the house and should be backfilled with clay in the top 300mm within 1.5m of the house.
The clay used for backfilling shall be compacted.

On this basis, provision is made elsewhere for the treatment of plumbing trenches and Clause 6.6(d) would not be necessary to require the backfilling of plumbing excavations adjacent to slabs with moist clay. Nevertheless, excavations may be carried out adjacent to a slab for reasons other than plumbing trenches and Clause 6.6(d) has work to do in these circumstances if it has the meaning advocated by Metricon.

- 75 We accept the submission put by Mr Gobbo and Mr Carr that a process of tamping or rodding would simply be inappropriate to describe a compaction process which followed the entire perimeter of a residential slab. We also agree that such a requirement would be inimical to the establishment of any garden beds around the slab perimeters. We observe that the site scrape could in some respects be regarded as an excavation, especially on the high side. We therefore do not accept Metricon’s submission at [73].

- 76 It follows that we do not accept the criticism of Metricon’s workmanship based on these considerations, nor do we agree with the view expressed by Mr Yttrup that since the existing concrete pathways around most but not all of the perimeter of the slab had not been founded on compacted clay they need to be demolished and re-established after the provision of a compacted clay sub-surface upon which they may be founded.

- 77 A further criticism of workmanship which was supported only by Mr Price noted the use of scoria as a quarry material laid beneath the slab. This is a criticism that was made by Mr Price, the consultant building inspector giving evidence for the Softleys. It was not joined in by Mr Yttrup, the Softleys’ engineering expert, nor was it accepted by any of Metricon’s witnesses. Mr Price’s criticism was based on his view that scoria, as a porous material, would facilitate the ingress of water under the slab and that a non-porous material should have been used instead to prevent such ingress. His criticism was based on the *Building Code of Australia*. We accept the submission put by Mr Gobbo and Mr Carr on behalf of Metricon, that the *Building Code* allows the use of a prescribed construction manual, in this case AS2870, and it applies to the exclusion of the general provision in the *Building Code*. Further, as they submitted, Clause 6.4.3(e) of AS2870 provides:

A blinding layer of sand is not required but where used shall comply with Clause 6.4.2 if deeper than 100mm.

That is, the Standard specifically contemplates the use of porous material. Mr Price observed that scoria, because of its larger grains, is more porous than sand; the premise that some non-porous material was called for under the slab was simply not borne out. We do not accept this criticism of the workmanship.

Design

- 78 The express terms of the warranties implied by section 8 of the *Domestic Building Contracts Act 1995* do not render a builder responsible for the design of a house under a domestic building contract.
- 79 In a case where the owner appoints an architect or draughtsman to prepare plans and specifications and simply invites builders to tender for a construction in accordance with those plans and specifications, the omission of any warranties as to designs by the builder is thoroughly appropriate. The present situation is more typical, however, particularly at the non-luxury end of the market, that is, the owner purchases the design from the builder, after, for instance, attendance at a 'display home'. Mr Margetts and Mr Scheid submitted that an error in design on the part of the builder could be regarded as in breach of the warranty as to suitability for occupancy contained in section 8(e) of the Act. For immediate purposes we will assume the correctness of this submission.
- 80 The principal criticism of the design supplied by Metricon and its consultant, Structural Works, was that the soil had been misclassified. A waffle slab is an appropriate design response according to AS2870 for soil classed H. If, however, the 'extreme' classification of E is adopted, a special engineered solution is called for. Mr Yttrup and a geo-technical consultant from Golder Associates, Mr Haberfield, said that the proper soil classification in accordance with AS2870 was 'E' rather than the 'H' applied to it by Structural Works on behalf of Metricon. This led to the use of an insufficiently stiff slab in the form of the waffle pod.
- 81 Clause 2.2 of AS2870 provides for soil classification by the following methods:
- (a) Identification of the soil profile and either –
 - (i) established data on the performance of houses on the soil profile;
 - (ii) interpretation of the current performance of existing buildings on the soil profile.
 - (b) Estimation of the characteristic surface movement (Y_s).
- 82 Clause 2.2.2 provides:
- Identification of the soil profile and a classification from established data on the performance of houses on the soil profile are as follows:

- (a) The typical soil profile data given in Appendix D shall be used. Where no data are provided in Appendix D, local knowledge where applicable shall be applied.

NOTE: The soil type and soil conditions should be inspected at footing excavation stage by the classifier to confirm the soil profile.

- (b) Identification of the soil profile and interpretation of the current performance of existing buildings.

Identification of the soil profile and interpretation of the performance of existing residential footing systems within the region which are not less than 10 years old and are founded on a similar soil profile shall be assessed in accordance with Table 2.2.

NOTE: The soil type and site condition should be inspected at footing excavation stage by the classifier to confirm the soil profile.

- 83 In the present case, Structural Works gave two reports on this subject on 3 December 2008 (Tribunal Book p189) and on 25 March 2009 (Tribunal Book p283). There were three bore holes tested and in accordance with paragraph 2.2.3 Structural Works carried out a visual-tactile identification of the soil. Clause 2.2.3 provides for sites to be classified by reference to their characteristic surface movements which value is described as 'Ys'. This value is derived from the result of bore leg tests carried out in accordance with the Supplement Commentary C2.2.3. According to Table 2.3 of AS2870 soil is to be classified as H, that is, highly reactive, where the Ys value is greater than 40mm but not greater than 70mm. A Ys value of greater than 70mm would lead to a soil classification of E and, in accordance with the critique made by Dr Haberfield on behalf of the applicants, there would be a design error by misclassification if E were the correct classification to be applied. Golder Associates as part of the report of Dr Haberfield carried out extensive laboratory testing over and beyond that which was undertaken by Structural Works. Mr Gobbo and Mr Carr submitted that so long as Structural Works technique accorded with what was required by the Standard, the fact that more elaborate testing might yield a different result was beside the point. In the end it is unnecessary for us to express a view as to the correctness of this contention. None of the materials before us supports a classification of the soil as 'E'.
- 84 There were elaborate critiques and cross-critiques by the experts. Dr Haberfield was dismissive of the visual-tactile approach adopted by Structural Works. In cross-examination it was suggested that Dr Haberfield had made errors of calculation by applying factors at the wrong point in calculation. It was also suggested that, while Golder Associates had carried out an averaging across bore holes, they had not carried out an averaging across the various soil profiles on the site as required by AS2870. For these purposes, a 'soil profile' should be regarded as a 'layer'. The highest value

obtained in calculation by Dr Haberfield was 69mm. He submitted that even although in accordance with Table 2.3 of AS2870 this still equated with an H classification for the soil since it was near the margin, a 'prudent engineer' would upgrade the classification to E in the interests of conservatism. Without necessarily accepting the correctness of the higher values obtained by Dr Haberfield, which stood in contrast with figures of 58 and 57 obtained by Mr Eric Fox, the Standard read as a whole points away from the application of the sort of conservatism which is entailed in Dr Haberfield's view as to what a prudent engineer would do. As previously observed, AS2870 gives every indication of being a very deeply considered document. If its authors had intended that a Ys value of 70mm was appropriate to denote an E class soil, no doubt they could have said so. In fact, they have designated with a Ys factor of up to 70mm as properly designated as H. Clause 2.2 of the Standard includes Note 1 stating:

The general principles of calculating Ys are given in AS2870 Supp 1 (Commentary, C2.2.3).

This part of the supplement or commentary includes the statement:

Having determined the surface characteristic movement, the reported value of the site classification should be to the nearest 5mm.

These words mean, not that there should be a rounding up, but rather that there should be a rounding to the nearest 5mm which include the possibility of rounding down. Therefore, as Mr Fox correctly observed, a Ys of 72 is apt to lead to a soil classification of H rather than E (T 686 lines 7-10). The highest recording Ys value made by Dr Haberfield, whether subject to legitimate criticism as the respondent would have it or not, does not call for a classification of the soil as 'E'.

- 85 There is no breach of proper design standards in the soil classification.
- 86 The second alleged design default urged against Metricon relates to the roof trusses. Mr Ytrrup was highly critical of the design of the roof trusses which are continuous across the entire width of the structure. The design provides for them to derive support both from the external stud walls and from one internal structural wall; because the stud walls have risen with the edge heave there has been a parting of the trusses from the internal structural wall as referred to in the summary of damage quoted above. According to Mr Ytrrup, a proper design of trusses in accordance with traditional building practice would have had separate truss members spanning from the external walls to the internal load bearing wall with a break at the internal wall so that there were two separate trusses and, in the event of edge heave, both separate truss members would retain contact with the internal structural wall and derive support from it in contrast to the situation now where the single truss members span the entire structure with no intermediate support. According to Mr Ytrrup, there was even greater peril in the scenario where, with the relief of the edge heave, the outer walls

subsided and the single truss members were left to 'pivot' on the internal structural wall.

- 87 There are two answers to this. First, as Mr Gobbo and Mr Carr submitted, this scenario supposes that the reversal of the edge heave proceeds to such an extent that the reactive clay sub-soil shrinks to an even greater extent than it had shrunk in the course of the prolonged drought which ended in 2010. This is a highly unlikely scenario. The areas of the edge which have heaved are now covered both by the slab itself with further protection from the concrete paving which has been added by the Softleys. It is difficult to conceive therefore, that these areas around the edges could dry out to the same extent which they did in the prolonged drought where none of these protections against desiccation existed.
- 88 Mr Ashton, a structural engineer working for an organisation named Mitek Australia gave evidence that according to his expert calculations, the existing truss structure was adequate to span the distance between the two outer structural walls without the support of the central structural wall. Against the unlikely scenario of the outer structural walls dropping to a level below the levels where they were before the initial heave, Mr Ashton said that since the internal structural wall was offset, the practical effect would be that the trusses would rest for their support upon the outer structural wall closer to the inner wall and the inner wall and 'cantilever' toward and above the other outer wall. Mr Ashton also proposed a regime of bracing which he said would add conservative protection against any eventualities for the roof trusses. Mr Ashton's evidence was not effectively contraverted in cross-examination. He is an expert in truss design. We find his evidence on these points more convincing than Mr Ytrrup's. Accordingly, we conclude, either that there is no design flaw relative to the trusses or that any design flaw which does exist may be met by the bracing regime advocated by Mr Ashton as part of Metricon's case.

CONCLUSIONS – LIABILITY

- 89 In light of the breaches which we have found by Metricon of the warranty as to workmanship found expressly in the contract and in the *Domestic Building Contracts Act 1995*, the Softleys are entitled to recover damages against Metricon.

DAMAGES – BASIS OF LIABILITY

- 90 In the famous case of *Bellgrove v Eldrige* (1954) 90 CLR 613 the High Court of Australia headed by Dixon CJ considered the proper measure of damages to be awarded to a householder as damages for defective construction of a house on her land in Sandringham, Victoria. In a joint judgment the Court, Dixon CJ, Webb and Taylor JJ said:

Subject to a qualification to which we shall refer presently the rule is, we think, correctly stated in Hudson on Building Contracts, 7th ed. (1946), p. 343. "The measure of the damages recoverable by the

building owner for the breach of a building contract is, it is submitted, the difference between the contract price of the work or building contracted for and the cost of making the work or building conform to the contract, with the addition, in most cases, of the amount of profits or earnings lost by the breach".
(1954) 90 CLR 613, 617-8

- 91 The qualification referred to by their Honours was 'not only must the work undertaken be necessary to produce conformity, but ... also, it must be a reasonable course to adopt' *ibid*. On the following page their Honours said:

As to what remedial work is both "necessary" and "reasonable" in any particular case is a question of fact. But the question whether demolition and re-erection is a reasonable method of remedying defects does not arise when defective foundations seriously threaten the stability of a house and when the threat can be removed only by such a course.
(1954) 90 CLR 613, 619.

- 92 In the case before the Court, their Honours concluded that demolition and re-building was reasonable and necessary. For a generation and more this analysis was treated as authority. It was ultimately adopted by the House of Lords in *Ruxley Electronics and Constructions Limited v Forsyth* [1996] AC 344. In 2009 however, the operation of the Court's analysis in *Bellgrove* was reconsidered in what on its face was an unlikely context. In *Tabcorp Holdings Limited v Bowen Investments Pty Ltd* (2009) 236 CLR 272 the Court considered a case where a defendant had entered into a lease of office premises for 10 years which included the usual covenant restricting the tenant from making or permitting any substantial alterations or additions to the premises. The tenant sought consent for alterations but consent was refused or deferred; but the tenant commenced work remodelling the foyer. The trial judge found that the tenant had acted with 'contumelious disregard' of the landlord company's rights. The landlord sought damages to fund the reinstatement of the original foyer. On appeal to the High Court the tenant contended that, since the reconstructed foyer was on a purely economic basis, no less valuable than the original foyer which was destroyed, no more than nominal damages were recoverable. This was said to be by virtue of the so called 'doctrine of efficient breach'. Perhaps unsurprisingly the High Court declined to accept the tenant's arguments which tenant's counsel sought to support by reference to *Bellgrove* and the *Ruxley Electronics* case. The Court, French CJ, Gummow, Heydon, Crennan and Kiefel JJ said that using a measure of damages in circumstances such as *Bellgrove* or the *Tabcorp* case itself would only be appropriate 'where the innocent party is "merely using a technical breach to secure an uncovenanted profit"' (2009) 236 CLR 272, 288. This passage has sometimes been used to argue that once a 'disconformity' is shown between building work done under a building contract and the contract requirements, it will only be in exceptional circumstances that a measure of damages other than the cost of rebuilding

will be appropriate. Later in the judgment their Honours referred to what was necessary to produce conformity as being the damages which would be necessary to fund the reconstruction of the foyer as it had originally been built and as it was when the tenant took possession. (2009) 236 CLR 272, 290

93 Their Honours continued on the same page:

And the Landlord also correctly submitted that the requirement of reasonableness did not mean that any excess over the amount recoverable on a diminution and value was unreasonable. The Tenant's submissions rested on a loose principle of "reasonableness" which would radically undercut the bargain which the innocent party had contracted for and make it very difficult to determine in any particular case on what basis damages would be assessed. That principle should not be accepted.

94 The result is that, despite the reconsideration of *Bellgrove* by the Court in the *Tabcorp* case, it remains to be applied according to its original terms in the case of ordinary building contractual disputes such as the one before us now. There is certainly no greater reluctance following the *Tabcorp* case to award damages to fund demolition and rebuilding.

95 Mr Margetts and Mr Scheid placed primary reliance upon a decision of the Queensland Court of Appeal in *Kirkby v Coote* [2006] QCA 61, in particular in the judgment of Keane JA (as he then was) where His Honour said at [53]:

[53] It should be noted here that the researches of counsel for both sides have been unable to identify any case in which it has been held to be unreasonable for a plaintiff to recover the costs of demolition and reconstruction where the defendant's defective work has affected the stability of a house structure. This suggests that the courts will be slow to characterise as unreasonable the position of a plaintiff who is unwilling to "live with" the risk of the serious consequences which may result from substandard work which affects the stability of a structure. There is no support in principle or authority for the proposition that a court will determine a level of risk of instability which it is "reasonable" for a plaintiff to be required to endure when the plaintiff has bargained for a level of stability which is, for all practical purposes, risk free.

96 Mr Gobbo and Mr Carr submitted that His Honour's remarks had to be seen in their proper context. The house in *Kirkby's* case was erected on steeply sloping land and heavy rains had led to some of the footings subsiding. At paragraph [54] His Honour assessed the chance of future failure as at least 1 in 20.

97 In closing, Mr Margetts and Mr Scheid referred us to another paragraph from the judgment of Keane JA in *Kirkby's* case where His Honour said:

[59] As the High Court emphasised in the passage from *Bellgrove v Eldridge* cited above, because the respondents' damages are assessed "once and for all", the law must be astute to ensure that the measure of damages accurately reflects the restoration of the respondents to the position they would have been in had the appellants not failed in their duty. The respondents should recover the amount of damages necessary to enable them to own a house free of risk so far as its stability was concerned. As McLure JA, with whom Steytler P and Wheeler JA agreed, said in *J-Corp Pty Ltd v Gilmour*: "Reasonableness does not require the respondent to carry those risks."

- 98 Their submission was that in the circumstances it was reasonable to require an award of damages sufficient to fund demolition and re-erection of the house because to do otherwise would leave the Softleys bearing the risk of future distress in the structure.
- 99 Mr Gobbo and Mr Carr referred to the possibility of further claims being made under Metricon's Structural Guarantee or perhaps some further general contractual claim if additional problems were encountered. In our view, the proper approach here is to regard ourselves as assessing damages once and for all without making any allowance for the possibility of future claims. It would require a lengthy exposition at this point to examine all of the considerations which might be brought into play relative to the doctrine of *res judicata* and the operation of the limitation provisions to be found in the *Building Act* 1993 without concluding that there definitely could not be any further claims relative to distress in the structure. Even a cursory consideration of the matters just mentioned would indicate that it is far from clear that any further claim could be made.
- 100 The choice which confronts us, therefore, in framing an appropriate remedy in damages is to determine whether, in the circumstances, it should be concluded that the worst is over and that the damage and distress which the structure has suffered already are referable to 'one off' events during construction and that further large scale movements will not occur having regard to the 'covered structure' phenomenon and the protective effect of the pathways constructed by the Softleys. Or on the other hand if there are further factors in play that perhaps had not been fully explained, with the result that further movement beyond the parameters assumed to be reasonable in accordance with AS2870 will occur.
- 101 If the former conclusion is reached then damages should be awarded sufficient to fund a rectification of the existing structure. If the latter conclusion is reached, then the funding should be sufficient to allow for a demolition and reconstruction.
- 102 The most significant factor here is a consideration where the most significant distress is now manifesting itself. This is in the area on the eastern wall in the vicinity of bedroom 2, the laundry and WC. This is the area where, even according to Metricon's case, some of the external

brickwork is in need of demolition and replacement *viz.* a section of approximately 7 to 8m above the windows varying from two to four courses. Apparently, there was some rectification work carried out here in 2011 but the distress and cracking has re-manifested itself. This area is remote from either of the pebble gardens. It is also protected by a concrete path. There is a related 'hotspot' of distress on the eastern side of the kitchen manifesting itself at the cornice level which is in the relatively close vicinity of the main area of distress. The persistence of these problems, despite a rectification work, to our mind, gives the lie to the contention that the worst is over and any future movement will be within what are regarded as acceptable parameters in accordance with AS2870. In accordance with the principles stated by the High Court in *Bellgrove* it is reasonable to fix the measure of damages by reference to the cost of demolition and a re-erection in these circumstances. To quote their Honours in the context of *Bellgrove* itself:

To give to the respondent the cost of a doubtful remedy would be no means adequately compensate her, for the employment of such a remedy could not in any sense be regarded as ensuring to her the equivalent of a substantial performance by the appellant of his contractual obligations.

These principles apply equally here as between the Softleys and Metricon.

MITIGATION OF LOSS

103 We reject Metricon's contention that the Softleys have failed to mitigate their loss. The matters relied upon are the pebble gardens and the extent of the concrete path constructed by the Softleys. Mr Gobbo and Mr Carr conceded, correctly, that at least initially and before the manifestation of seals distress, the Softleys were entitled to receive their house in the manner in which Metricon delivered it to them. The first pebble garden bed was constructed by Metricon. Mr Softley supplied the pebbles. The second was erected in an area where the Metricon design contemplated that some sort of flower bed would be established. That is, there was no assumption that an impervious perimeter would be established there. The centres of distress in this structure now are not in the vicinity of either of the pebble gardens nor in the areas which have not been covered by the concrete paths *viz.* the back corner. In those circumstances, whatever the reasonableness or otherwise of the Softleys' decisions relative to these matters, they cannot be regarded as causative of the damage for which relief is now being given.

QUANTUM OF DAMAGES

104 The primary claim made by the Softleys was for damages sufficient to demolish and rebuild the house at 7 Long Tree Drive, West Melton. A building consultant, Mr Croucher costed this work at \$259,729. Mr Croucher agreed that his figures represented the costing of somewhat different works than were provided for in the original contract. This entailed a slab appropriate to a soil classification of 'E' (T 621). In cross-

examination it was put to Mr Croucher that this entailed the award of damages for the construction of a house superior to the one which was provided for in the contract between the parties. This was said by the cross-examiner (Mr Carr) to amount to an inadmissible element of 'betterment' in the assessment of damages. In the face of objection from Mr Margetts on behalf of the Softleys that this constituted cross-examination on a point of law, this line of cross-examination was not pressed (T 622). The Softleys' position was, as we understand it, that the contract as a whole required an upgraded slab despite the express terms of the plans which formed part of the contract. The basis for this contention as we understood it, was that an upgraded slab was necessary to render the house suitable for occupation in accordance with the warranty implied by section 8(e) of the *Domestic Building Contracts Act* and that this obligation overrode the express terms of the plan. It was not competent for a home owner to bargain away the benefit of the section 8 warranty (see section 10 of the *Domestic Building Contracts Act* 1995). This contention might have been correct if we had upheld the Softleys' contention that there was a design error in classifying the relevant site as H rather than E and that, therefore, a house erected on this site would not be fit for residential purposes unless it had a slab adequate to the requirements of an E Class site. As explained earlier, we have not sustained this part of the Softleys' case, and so the premise on which Mr Croucher has done his calculations has not been made good. Other costings have been provided to the Tribunal both by the Softleys and by Metricon on the premise that the correct quantum of damages represents the cost of rectifying but not demolishing and re-erecting the present structure. We have reached the point, therefore, where there are no detailed costings for the work which our findings say should be covered by the damages to which the Softleys are entitled. Mr Croucher however attributed about \$8,000 of his costing to the slab upgrade. (T 615 line 7). This costing will have to be stripped out. The amounts claimed for removal and accommodation also seem appropriate.

- 105 In the circumstances we propose leaving it to the parties to agree upon these final calculations.

FLASHINGS

- 106 Whilst in the view we take the issue of the allegedly missing flashings does not strictly arise, we should say something about it. The applicants' case is that the house as constructed lacks the flashings around the windows required by the *Building Code of Australia*. Mr Price said his tests inserting edges above the window frames demonstrate the absence of these flashings. Nevertheless, we accept the evidence of Metricon's building consultant at T 980-1 that the use of a pliable blue building membrane shown on photographs depicting the construction process substituted for the flashings which would be required if there was simply a base timber frame. The process is known as 'wall wrap'. This would be a compliant alternative solution in accordance with the *Building Code of Australia*.

COSTS OF RECTIFICATION

107 Had we concluded that the cost of repair was the appropriate measure of damages rather than the cost of demolition and reconstruction, it would have been necessary to resolve a dispute as to quantum between the assessments of Mr Croucher, on behalf of the Softleys, and Mr McLennan giving evidence for Metricon. Mr Croucher assessed the cost of works at \$134,703.50 composed of a costing of \$120,136 to carry out the work recommended by Mr Yttrup and \$14,567 for the replacement of windows. These calculations included the relatively high builder's margin of 35%. Mr McLennan, on the other hand, costs these works at \$59,465. This figure was based on rates derived by Mr McLennan from the standard reference work *Rawlinson* with a 20% builder's margin. Both figures were inclusive of Goods and Services Tax. If it had been necessary to resolve the conflict in these costings we would have favoured the higher figure advocated by Mr Croucher because the higher builder's margin is appropriate when the exact process of causation and what would be discovered during rectification work remain uncertain. We would also have concluded that Mr Croucher's scope of works more nearly comprehended what was required to rectify this structure if that were the appropriate measure of damages.

RELIEF

108 We direct the parties to bring in short minutes to give effect to these orders.

109 We have heard no submissions on the question of costs and so we reserve that issue.

MFM:RB

