VICTORIAN CIVIL AND ADMINISTRATIVE TRIBUNAL

CIVIL DIVISION

DOMESTIC BUILDING LIST VCAT REFERENCE NO D255/2010

CATCHWORDS

BREACH OF CONTRACT – whether reasonable to assess damages commensurate with the cost to demolish and rebuild the dwelling; *Tabcorp Holdings Pty Ltd v Bowen Investments*; *Bellgrove v Eldridge.* AS 2870 – 1996 – construction of waffle pod raft slab – whether non-compliance with Standard justifies demolition and reconstruction.

APPLICANT	Gerald Paul Zammit
RESPONDENT	Home Construction & Design Pty Ltd
WHERE HELD	Melbourne
BEFORE	Senior Member E. Riegler
HEARING TYPE	Hearing
DATE OF HEARING	13, 14, 15 and 16 February 2012 (Written closing submissions last filed 9 March)
DATE OF ORDER	22 March 2012
CITATION	Zammit v Home Construction & Design Pty Ltd (Domestic Building) [2012] VCAT 320

ORDER

1. The proceeding is dismissed.
2. Either party is at liberty to apply to have this proceeding listed for further hearing on the question of costs, such liberty to be exercised on or before 4 April 2012, by filing and serving a written notice requesting that the proceeding be re-listed for hearing on the question of costs.

SENIOR MEMBER E. RIEGLER

APPEARANCES:

For the Applicant	Mr Pumpa of counsel
For the Respondent	Mr Franzese, solicitor

REASONS

1. On 2 October 2002 the Applicant (**'the Owner'**) purchased a 'house and land package' comprising land within a development created by Delfin Limited and located in Caroline Springs. As was the usual practice with such sales, Delfin Limited procured a building contract between the Owner and one of its 'preferred' builders, in this case being the Respondent (**'the Builder'**). The building contract was also dated 2 October 2002 and was in the form published by the Housing Industry Association *New Homes Contract- July 2002 edition* (**'the Contract'**). The building works under the Contract comprised the construction of a double story dwelling known as the *Delfin Warehouse Type 3* (**'the Works'**).

2. The engineering plans supplied by the Builder contemplated the construction of a waffle pod raft concrete slab. In layman's terms, this type of footing system comprised the construction of a 90 mm concrete slab laid on top of polystyrene pods approximately 1 metre square and 300 mm deep. The polystyrene pods were positioned 110 mm apart, so as to create a cavity which was then filled with cement, thereby forming the internal beams or ribs of the slab. Formwork was laid around the perimeter of the polystyrene pods to create a 300 mm edge beam. In essence, the construction of the concrete slab was essentially 'on ground', which dispensed with the need for the construction of deep footings, as would be the case had the design called for a more conventional type of construction.

3. The specification for the Works stated that the floor covering was to be a *concrete floor finish*, which comprised the application of an epoxy clear coating over the exposed concrete slab, in order to give the dwelling a "warehouse" appearance.

4. The specification also stated that the concrete slab was to be constructed in accordance with Australian Standard 2870 - 1996 and the engineer's design. To that end, the engineering drawings expressly stated that the concrete slab had been designed in accordance with AS 2870 and a soil report prepared by McGregor Soil Testing Pty Ltd dated 3 February 2003.

5. The Works commenced on or around June 2003. During construction of the Works, the Owner noticed what he has described as a *large crack* in the centre of the concrete slab floor. According to the Owner, the Builder assured him that there was nothing to be concerned about.

6. On or about 30 July 2004, the parties attended a handover inspection of the Works. The Owner engaged *Handovers.com* to assist him in that final inspection. A comprehensive list of incomplete or unsatisfactory items of work was prepared. Surprisingly, this list did not mention any crack to the concrete slab, although it did state that the finish to the floor was *rough*.

7. An occupancy permit was issued by the relevant building surveyor on 3 August 2004. However, it would appear that the Works were not completed

to the satisfaction of the Owner at that time and as a result, handover did not take place until late 2004.

8. On 6 November 2004, the Owner provided a further list of *defective* works to the Builder. The list did not specifically mention any crack in the concrete slab, although it made reference to small cracks around the house *that would need to be repainted*.

9. In late 2004 or early 2005, council trees were planted along the nature strip in front of the property and along the west side of the property. In addition, shrubs were planted along the western wall of the dwelling. It is thought that the trees and shrubs were planted by Delfin Limited as part of town planning requirements concerning landscaping for the development, although the parties were not entirely certain of that fact.

10. According to the Owner, at the end of 2004 he again raised the issue of the crack in the concrete slab, which he believed had *opened up.* Mr Vlado Naumovski, the director of the Builder, disputes that the issue was raised again in 2004. He said that the issue concerning the centre crack was resolved at or around handover when the Builder agreed to apply more coats of the epoxy clear finish to the slab surface, in order to fill the crack. However, he recalled that this issue was raised for a second time in 2007 and as a consequence, the Builder engaged Mr Russell Brown, consulting engineer, to investigate the Owner's complaint, which at that time concerned a number of cracks in the slab and a crack in the front façade above the central window.

11. On 19 June 2007, Mr Brown inspected the Works. Following that inspection, he prepared a report dated 11 September 2007. In the introduction to his report, Mr Brown states:

> The above property was inspected by Russell Brown on the 19th of June 2007 initially where a photographic survey was undertaken to determine the degree of cracking within the building, review with owner or so as to timeframes etc.
>
> Further, the relative level survey was conducted by this office, along with two bore logs. The purpose of the investigation was to:
>
> 1. Quantify the degree of movement
> 2. To determine its cause and if possible a methodology of reversing or repairing it.

12. Mr Brown observed that a significant crack had developed on the front facade above the window over the entrance to the dwelling. He opined that the crack was not structural but was an opening of what should have been an extension of an articulation joint located under that window, but which did not continue above the window. He further observed that the internal level of the concrete slab deviated to just under 30 mm from its lowest to highest point. He stated that the middle of the living room represented the

highest point and that the concrete floor fell away to the east and west side of the front of the dwelling. He opined that the surrounding soils were not of a constant moisture regime because trees and vegetation had dried out those soils in a differential manner, causing the building to drop on the south-west and south-east corners. He recommended that culling foliage along the side of the building in conjunction with positive watering would aid in regaining consistent moisture levels and assist in stabilizing the building. He did not consider that any of the cracks internally were of any substance and formed the view that they were Category 1 type cracks, which simply required monitoring over time.

13. In 2007 or 2008, some of the trees were removed, although small shrubs or grass trees are still growing along side the west wall. In addition, two council trees still exist on the nature strip, one facing the front facade and the other to the rear of the west wall.

14. Following Mr Brown's first inspection in 2007, the Owner engaged Mr Bill Genitsaris, consulting engineer, to provide expert opinion as to the cracks in the concrete slab and the opening of the articulation joint on the front facade. Mr Genitsaris formed the opinion that the concrete slab had failed and that the only reasonable course was to demolish the Works and rebuild them. In particular, Mr Genitsaris disagreed with the opinion of Mr Brown that the differential movement in the concrete slab was caused by abnormal moisture conditions. He believed that the differential movement was caused by the concrete slab being insufficiently stiff to resist soil movement. According to Mr Genitsaris, the stiffness of the concrete slab had been compromised because the Builder failed to properly position the steel reinforcing mesh prior to or during the pouring of the cement. As a consequence, the steel reinforcing mesh was positioned too low with the result that it has substantially decreased the stiffness of the concrete slab.

The Owner's claim

15. The Owner claims for the cost to demolish and rebuild the Works of $327,800 plus the cost to remove and store fixtures and fittings of $10,632 and alternative accommodation costs of $15,000, making a total claim of $353,432. There is no alternative claim based on rectification only. Accordingly, the Owner's claim rests solely on a finding that the Builder breached its contractual obligations in the construction of the concrete slab and as a consequence, damages are to be assessed by reference to the reasonable cost of demolishing and reconstructing the Works, plus consequential losses.

16. Mr Brown disagrees with the opinion expressed by Mr Genitsaris. Consequently, the central issue for determination is whether the Builder breached its contractual obligations in the construction of the concrete slab and if so, whether the reasonable measure of damage is commensurate with demolishing the entire Works and rebuilding them.

Mr Genitsaris' opinion evidence

17. There is a clear divergence of expert opinion between the two experts engaged by the parties. On one hand, Mr Genitsaris has expressed the opinion that the slab has failed and that the only reasonable option is to demolish and reconstruct the Works. On the other hand, Mr Brown opines that although the slab has flexed, its structural integrity has not been compromised and that the movement is still within acceptable tolerances. He disagrees that the demolition and reinstatement is required.

18. The essence of Mr Genitsaris's opinion rests on his belief that the steel reinforcement mesh has been incorrectly placed. He gave evidence that he used a cover meter to establish that the steel mesh was, in some places, more than 70 mm below the surface of slab. He produced a plan prepared by him, which showed the minimum cover of the steel in various locations of the slab. In relation to the dwelling, the cover readings varied from between 40 mm to 70 mm. He made reference to Section 5.3.2 of AS 2870, which states:

> Reinforcement in rafts and slabs shall have covers and be spliced in accordance with the following:
>
> (a) Cover for the reinforcement shall be 40 mm to unprotected ground, 40 mm to external exposure, 30 mm to membrane in contact with the ground, and 20 mm to an internal surface. The slab fabric shall be placed towards the top of the raft or slab within the zone defined by these limits.

19. Mr Genitsaris made further reference to AS 3600 which states that steel reinforcement mesh must be placed between the top and bottom 20 mm of the concrete slab. Similarly, the engineering drawings noted that the minimum cover to all reinforcement steel, unless otherwise shown, was to be 25 mm.

20. Mr Genitsaris stated that any reading greater than 54 mm in a 90 mm concrete slab would not comply with the two standards referred to above. He said that the ramifications of having the steel mesh too low were twofold. First, it compromised the overall stiffness of the concrete slab. Second, it reduced the durability of the slab, in the sense that insufficient cover may result in the steel being exposed to the atmosphere, which could lead to it corroding.

21. Mr Genitsaris also criticised the gauge of steel nominated by the design engineer. He suggested that a heavier gauge steel mesh should have been nominated in the engineering drawings. According to Mr Genitsaris, the failure to properly position the mesh has resulted in substantially reduced stiffness of the concrete slab, having regard to the gauge of the steel used. Based on his calculations, the stiffness of the slab has been reduced by more than 30%.

22. Mr Genitsaris suggested that this has led to a situation where the slab is less able to resist foundation soil movement with the result that the building has moved more than what would have been the case had the steel been properly positioned. He further suggested that the increased flexibility of the slab meant that the dwelling was more susceptible to movement due to seasonal changes, than would otherwise have been the case had the steel been correctly positioned.

23. In June 2010, Mr Genitsaris measured the floor levels. This was done by adopting a datum point of 0 and then measuring the differential level at different locations of the slab. Those levels were largely consistent with Mr Brown's observations of 2007, in that they revealed that the middle of the slab was higher than the west and south-east sides of the dwelling, with the largest differential movement being between the south-west corner and the north-east corner, where the difference in floor level was 28 mm.

24. Further levels were measured by Mr Genitsaris in November 2010. Those levels revealed that the south east corner of the building had lifted by 12 mm, although it would appear from the data collected at that time that largest differential movement had decreased to 24 mm.

25. According to Mr Genitsaris, the cracks observed in the concrete slab are consistent with the slab moving beyond or at the very least approaching, its design parameters. He opined that the slab had formed a mound, which was evidenced by the centre crack, which he described as a *hinge crack*. He said that the opening up of the articulation joint on the front facade of approximately 20 mm, coupled with an outward rotation of the east wall of approximately 20 mm was consistent with the slab bending at the centre.

26. He expressed the opinion that further movement of the slab was to be expected due to seasonal influences, which he did not believe were exacerbated by the effect of vegetation[1] and as a consequence, the only reasonable course was to demolish and rebuild the Works.

Mr Brown's opinion evidence

27. Mr Brown's evidence was that the slab was performing within its design parameters. He expressed the opinion that it was of no material consequence that the steel reinforcement mesh was not positioned in accordance with AS 2870 or the engineering drawings. In his report dated 14 October 2010, he opined that the consequences of positioning the F 82 steel reinforcement at the bottom of the 90 mm slab may result in minor hairline shrinkage cracks around the perimeter of the internal ribs, however, the slab remained structurally competent.

[1] His evidence as to the effect of vegetation is corroborated by the expert opinion evidence of Mathew Beshara, arborist, who gave evidence in the proceeding.

28. Mr Brown opined that the majority of cracks which he observed were *slump type failures* that would have occurred as soon as the slab was poured. In his report dated 28 April 2011, he states:

> As can be seen in my colour photographs of the particular movements, there is a turn down in the top of the concrete, indicating that the initial opening in the concrete was a "slump" type failure.
>
> This occurs often in concrete, particularly in foundation materials where locally insufficient vibration might have occurred or the mesh or similar in underneath moves as people move around and as a consequence the concrete itself slumps. Spray concrete also "slumps". The aggregates may not be as perfectly mixed as possible, they may have used set retardants to gain a better and smoother finish, which then switches off at or about the time the concrete is setting; it "slumps" down.
>
> Further, on the point of aesthetics, I understand that the property was marketed as a "warehouse" and came with a "rugged look", i.e. the use of the exposed concrete slab as part of the finish. I do not treat the top of a concrete slab that is a structural element as a covering and therefore even though there are gaps of up to 4 mm locally and therein lies the proof that we are looking at "slump cracking", it is not shrinkage cracking or there would have been a continuous, similar width line in the slab. It is discontinuous and in accordance with localised slumping of the concrete. The gaps might be 3-4 mm but the cracking is nowhere near a Category 3.

29. Mr Brown undertook his own engineering computations in order to establish whether the slab, as constructed, still performed within the design parameters of AS 2870. In that respect, he conceded that there had been significant movement of the slab but said that this was of no consequence, as long as the movement remained within the design parameters set forth in AS 2870. In other words, he said that *deemed to comply* clauses of the Standard could be modified as long as the slab remained within the tolerances prescribed by the Standard.

30. Mr Brown referred to Section 4 of AS 2870. The relevant parts of that section state:

> **4.1 GENERAL**
>
> Slabs or footings designed in accordance with engineering principles should be designed in accordance with the following Clauses and AS 3600 (except where more specific provisions are given here).
>
> Engineering principles may be used to extend the range of validity of the deemed-to-comply designs or to modify the design set out in Section 3 of this Standard.
>
> The general requirements for footings for rafts designed under this Clause shall be in accordance with Clause 3.1, Figure 3.1 and the relevant sections of Clause 4.4 and Section 5 of this Standard.

4.4 RAFT FOOTING SYSTEMS

A stiffened raft footing system which supports a superstructure that relies entirely on the footing system for raft stiffness to resist movement in cracking shall be proportioned as follows:

(a) …

(b) The tolerable limits for relative differential movement depend on the form of construction, surface finish and the actual detailing of the superstructure, and in the absence of more specific information shall be taken from Table 4.1.

TABLE 4.1

MAXIMUM DESIGN DIFFERENTIAL MOVEMENT, ∆, FOR DESIGN OF FOOTINGS AND RAFTS

Type of construction	**Absolute maximum differential footing movement, ∆, as a function of span, mm**	**Maximum differential footing movement, ∆, mm**
Clad frame	</300	40
Articulated masonry veneer	</400	30
Masonry veneer	</600	20
Articulated full masonry	</800	15
Full masonry	</2000	10

31. Mr Brown conducted a series of stiffness parameter calculations using data based on an assumption that the steel reinforcement mesh was actually sitting on the polystyrene pods, that being the worst case scenario. In other words, his calculations assumed that the concrete slab depth was effectively reduced for the purpose of his calculations.

32. In calculating the stiffness parameter of the 'modified' slab, he adopted the formula set out in clause 4.5.2 of AS 2870, under the heading *Modification Procedure*. According to Mr Brown, that formula allowed an engineer to check whether a concrete slab was sufficiently stiff in circumstances where the design or construction did not follow the *deemed to comply* clauses of the Standard. For example, where the *deemed to comply* depth of the slab nominated by the Standard was not adopted or as in the present case, where the *deemed to comply* position of the steel mesh was not followed.

33. Using that formula, Mr Brown calculated that the stiffness parameter logarithm of the 'modified' slab was 8.53, which he then compared against

the value of the stiffness parameter logarithm ascertained by plotting y_s/Δ into the graph in Figure 4.1 of the Standard. According to Mr Brown, if the stiffness parameter logarithm as plotted in the graph was lower than the logarithm of 8.53, the as-constructed slab was sufficiently stiff to comply with a AS 2870, even though the construction or design differed from the *deemed to comply* clauses of the standard.

34. In establishing the stiffness perimeter, Mr Brown initially used a *Ys* factor (amount of foundation soil movement due to seasonal influences) of 35 mm based upon calculations derived from bore logs previously undertaken by him or his firm. Using a *Ys* of 35mm, Mr Brown calculated that the stiffness parameter logarithm as plotted against the graph in Figure 4.1 of AS 2870 was 8.2, which was significantly less than the logarithm of 8.53. Mr Brown also calculated the stiffness perimeter using a *Ys* of 45mm, being the amount that Mr Genitsaris believed was appropriate for the site. Using a *Ys* of 45mm, Mr Brown established that the stiffness parameter logarithm was 8.4, still under the logarithm of 8.53. On the basis of those calculations, he concluded that the structural integrity of the slab had not been compromised by the fact that the steel was placed low.

35. He further opined that the ductility of the slab had not been compromised because he did not consider that the cracks in the slab extended through the whole of the slab. He was of the opinion that the slab had flexed and expressed the view that this was evident by the fact that it was slowly returning to equilibrium.

36. In his report dated 14 October 2010, he stated:

> In broad we both agree that the material on this site is reactive, however I am surprised in that no testing has been done confirming that opinion. Moreover, I did not get ground reactivity into an "H" in either of my reports and my Ys calculations (even adjusted) did not get to above 35mm. As a consequence of the highly reactive material on site and the basic reactivity where the slab is concerned is at or around 30-40 mm max. Of the traditional .6 multiplier for slab movement gives us 25mm, i.e., that which I believe has potentially occurred.

37. Mr Brown also criticised Mr Genitsaris's calculations as to what he considered to be the percentage decrease in the stiffness of the slab as constructed compared with the as-designed stiffness. In particular, Mr Genitsaris calculated the stiffness of the as-constructed slab based on three fact scenarios: steel mesh sitting on the pods; 60 mm top cover and 56 mm top cover. He then compared those calculations with the calculation of the stiffness of the slab as designed and found that:

(a) Mesh on ground: 59% more flexion;

(b) 60mm top cover: 60% more flexion; and

(c) 56 mm top cover: 32% more flexion.

38. In calculating the increased flexion, Mr Genitsaris calculated the percentage increase of each fact scenario by decreasing the value of the depth of the slab depending on the presumed position of the steel mesh compared with the as-designed value. To that end, he made the following calculations:

(a) As-designed (d = 358 mm):[2] $d^3 = 45.9 \times 10^6$;

(b) Mesh on top of pods (d = 307mm): $d^3 = 28.9 \times 10^6$ => 59%

(c) 60 mm top cover (d = 323 mm): $d^3 = 33.7 \times 10^6$ => 36%

(d) 56 mm top cover (d = 327 mm): $d^3 = 34.9 \times 10^6$ => 32%

39. Mr Brown said that the calculations were wrong because the value of d in each fact scenario should be expressed as a percentage of the value of d for the as-designed slab (45.9). Therefore, the actual values were as follows:

(a) Mesh on top of pods:

28.9 ÷ 45.9 x 100 = 63% => reduction in stiffness is 37%

(b) 60 mm top cover:

33.7 ÷ 45.9 x 100 = 73% => reduction in stiffness is 27%

(c) 56 mm top cover:

34.9 ÷ 45.9 x 100 = 76% => reduction in stiffness is 24%

40. I accept the calculations of Mr Brown over those of Mr Genitsaris, given that Mr Brown's calculations are expressed as a percentage ratio of the three fact scenarios compared with the as-designed slab. Further, it appears that Mr Brown's calculations have been accepted by the Owner in written closing submissions submitted on his behalf, where it is contended that the reduction in stiffness is 25%. [3]

41. Mr Genitsaris also used a different approach in calculating the stiffness parameters of the slab. In particular, he measured each of the sides of the slab and correlated those with column 2 of Table 4.1 in AS 2870.[4] Mr Genitsaris concluded that by using that formula, even the design of the slab did not totally comply with AS 2870.

42. Mr Brown disagreed. He said that it was incorrect to use Column 2 of Table 4.1 in isolation to calculate the design stiffness parameter of concrete slab. In particular, he suggested that data derived from Column 2 of Table 4.1 was used to feed information into Appendix F of the Standard, as part of a complete engineering design but should not be used in isolation as a method for calculating the stiffness parameter of a concrete slab.

43. Mr Brown contended that using Column 2 of Table 4.1 would lead to absurd design parameters being required. He said this was because the

[2] The value of d is the depth of the slab taking into consideration the position of the steel mesh. Therefore, d is assumed to be reduced when the steel mesh is lower than required by the Standard.
[3] Paragraph 37 of the Owner's written closing submissions.
[4] See paragraph 30 above.

formula in Column 2 was a logarithm scale and that it was never intended to be used as a stand alone formula to design a slab. He gave the example that that using the formula in isolation led to a situation where shorter beam lengths would result in a requirement for deeper beams and hence larger slabs, whereas longer beam lengths would result in shallower beams and hence, thinner slabs. He contended that this was contrary to engineering principles.

Does the slab conform to the design parameters of AS 2870?

44. I accept Mr Brown's evidence that the alternate formula adopted by Mr Genitsaris is inappropriate. It makes no sense that if the original design was developed by using a *deemed to comply* design as set out in AS 2870, then recalculating stiffness parameters using column 2 of Table 4.1 would result in the original design not meeting the required stiffness parameters.

45. I further accept that the stiffness parameter calculations undertaken by Mr Brown demonstrate that the as-constructed slab remains within the stiffness parameters established by AS 2870, notwithstanding that the steel mesh reinforcement has been positioned significantly lower than what is prescribed in AS 2870 and AS 3600.

46. This conclusion is substantiated when one compares the differential movement recorded by both experts against the maximum differential footing movement, described in Column 3 of Table 4.1. In particular, Column 3 of Table 4.1 states that the maximum differential movement for an articulated masonry veneer type of construction is 30 mm. According to Mr Genitsaris, the largest differential movement recorded by him was 28 mm. According to Mr Brown, the largest differential movement recorded by him was 29 mm.

47. Mr Brown gave evidence that it was appropriate to use Column 3 of Table 4.1 to ascertain whether the slab had flexed beyond the maximum differential footing movement permitted by AS 2870. He referred to Clause 4.5.2 which stated:

> **4.5.2 Modification procedure**
> The value of *ys*/D shall be determined where D is the permissible maximum differential movement given in column 3 of Table 4.1 for the appropriate construction. [Emphasis added]

48. Further, both experts recorded levels following the Tribunal's view of the Works on 13 February 2012. The data recorded by the experts indicates minimal change in the level of the slab over the past 15 months, compared with earlier data. In particular:

Location	June 2010	November 2010	February 2012
North-east corner	26 mm	14 mm	9 mm
Midway along east wall	22 mm	10 mm	6 mm

Behind front door (centre)	22 mm	10 mm	6 mm
Centre at internal corner	26 mm	14mm	16mm

49. Regrettably, I was not provided with more comprehensive data concerning the differential movement as of February 2012. Nevertheless, Mr Brown emphasised that the lack of significant movement between November 2010 and February 2012 indicates that the slab has largely stabilised.

50. Having regard to both experts' evidence, I find that although the concrete slab has flexed considerably, it is still within the design parameters prescribed by AS 2870. I accept Mr Brown's evidence that the Standard prescribes the maximum differential movement of the footing to be 30 mm and that in the present case the slab is yet to achieve that maximum differential movement. Having regard to the levels measured in February 2012, I further accept Mr Brown's evidence that the concrete slab is unlikely to flex beyond its design parameters and in all likelihood will move towards equilibrium with the passage of time, provided it is not exposed to an abnormal moisture regime. That will require maintenance by the occupiers of the dwelling to ensure that the recommendations set out in the C.S.R.O. *Foundation Maintenance and Footing Performance: A Homeowner's Guide* are followed.[5]

51. In relation to the centre crack, which Mr Genitsaris has described as a *hinge crack,* I accept Mr Brown's evidence that it is a slump failure and of no structural significance. That hypothesis is consistent with the Owner's evidence that the 'crack' appeared not long after the slab had been poured and well before the Works had been completed. Moreover, the centre crack was apparent well before the crack to the front façade appeared or the front façade articulation joint opened up, which I find is also consistent with the centre crack being unconnected with building movement. I note that the Owner gave evidence that the centre crack had further *opened up.* During the view of the Works, Mr Genitsaris pointed to what he described as stress marks in the epoxy resin used to seal the slab following the line of the centre crack. He said that indicated further movement of the slab at that junction, which was indicative of the slab having cracked through its whole depth. Mr Brown did not agree that the 'stress marks' were indicative of the slab having cracked through its whole depth at that point. He said that the stress marks were caused by shrinkage cracks at that point. He further said that that there was no change in offset over either side of the crack and the crack seemed to disperse at a point past midway in the slab length, which indicated that the crack did not extend to the full depth of the slab.

52. I accept Mr Brown's evidence for a number of reasons. First, there is no discernable separation of the epoxy resin over the centre crack. Moreover, the stress marks only extend for short lengths, which are then separated by

[5] This publication is available from the CSIRO website.

sections that bear no indication of stress. Second, there is no evidence that there is a change in level over each immediate side of the centre crack. Further, according to the levels measured by Mr Genitsaris, the difference in level midway in the centre crack compared with the level measured in the centre of the Gallery, which is several metres to the right, is only 2 mm, as of November 2010. In short, there is no corroborating evidence to support Mr Genitsaris' hypothesis.

53. As to the remaining cracks in the slab, I accept Mr Brown's evidence that those cracks are, in all likelihood, shrinkage cracks, given that the majority of those cracks are less than 1 mm in width and the slab had a greater potential to develop those cracks because the steel mesh was positioned too low.

54. Further, I accept Mr Brown's evidence that it is unlikely that the steel mesh will corrode even if it has been placed directly on the polystyrene pods. In that regard, I accept that the steel mesh is well insulated from the ground and from subterranean moisture by virtue of it sitting on 300 mm deep polystyrene pods. Accordingly, even if there are parts of the steel mesh which do not have any cover, the design of the footing system prevents that steel from being exposed to the elements.

Should the Works be demolished?

55. It is not in dispute that the Builder did not comply with the Contract documents. Both experts agree that the steel mesh reinforcement has been positioned too low. Both experts agree that as a consequence of the steel mesh being positioned too low, the stiffness of the slab has been lessened, albeit that Mr Brown is of the opinion that it is of no consequence.

56. I do not accept that the decrease in stiffness is without consequence. I accept Mr Genitsaris' evidence that as a consequence of the decreased stiffness, more building movement has been experienced than would otherwise have been the case. This has, no doubt, led to consequential damage, namely; minor cracks in the plasterboard joins and other issues associated with building movement.

57. However, the question remains whether it is reasonable to order that the dwelling be demolished. In my view, it is not.

58. Mr Pumpa of counsel who appeared on behalf of the Owner referred me to the well known passage in *Robinson v Harmon* that:

> The rule of the common law is that where a party sustains a loss by reason of a breach of contract, he is, so far as money can do it, to be placed in the same position, with respect to damages, as if the contract had been performed.[6]

[6] (1848) 154 ER 363 at 365

59. Mr Pumpa conceded that in spite of the recent High Court decision of *Tabcorp Holdings Pty Ltd v Bowen Investments*,[7] damages must be still be reasonable. He referred to *Bellgrove v Eldridge* [8] and contended that the only qualification to demolition and rebuilding was:

> Not only must the work undertaken be necessary to produce conformity, but that also, it must be a reasonable course to adopt.

60. Mr Pumpa submitted the demolition and reconstruction was the only reasonable course to produce conformity with the contract requirements and the warranties provided by the Builder. He made reference to *Tabcorp Holdings Pty Ltd* in support of his submission that the decrease in stiffness and resultant increase in flexibility of the slab has impacted on the aesthetic amenity of the dwelling, such as the cracking to the clear finished concrete floor, which cannot be repaired without replacement of the concrete slab.

61. I do not accept that the contract documents required the concrete floor to be without any cracking. In fact, the McGregor soil report stated:

> 8.7 Shrinkage cracking for concrete slabs
>
> Surface cracking for concrete slabs is to be expected as the concrete cures. This problem is of no structural significance and will not affect the performance of the slab. However, this shrinkage cracking may transmit through brittle floor tiles causing them to crack. Therefore the placement of floor tiles should be delayed as long as possible and flexible adhesive and week grout should be used.

62. Moreover, Mr Brown gave evidence that it was inevitable that there would be some cracking to the concrete slab and this was consistent with the intended 'warehouse' look.

63. I also do not accept that the Contract documents required the footing system to resist any movement. In that respect, I find that some movement was to be expected, albeit that the degree of movement experienced by the Owner is beyond what one might have envisaged as normal. Nevertheless, as I have already indicated, the movement is still within the design parameters of the applicable standard and as such I do not consider that it would be reasonable to demolish and rebuild the Works.

64. In *Clarendon Homes Vic Pty Ltd v Zalega*,[9] Senior Member Walker carefully reviewed a number of authorities relating to the assessment of damages. He stated:

> I think the following principles concerning the assessment of damages for the breach by a builder of a domestic building contract can be spelled out from the cases referred to:

[7] [2009] 253 ALR 1
[8] (1954) 90 CLR 613
[9] [2010] VCAT 1202

(a) Where the work and materials are not in conformity with the contract, the prima facie measure of damages is the amount required to rectify the defects complained of and so give to the owner the equivalent of a building which is substantially in accordance with the contract *(Bellgrove);*

(b) The qualification, however, to which this rule is subject is that, not only must the work undertaken be necessary to produce conformity, but that also, it must be a reasonable course to adopt *(Bellgrove);*

(c) Reasonableness is a question of fact *(Bellgrove)* and the onus of proving unreasonableness so as to displace the prima facie measure is upon the builder. It is the builder who is seeking to displace the prima facie position *(Tabcorp per Rares J.)*;

(d) In considering whether it would be unreasonable to award the cost of rectification, the tribunal should consider all the circumstances of the case before it. The nature and significance of the breach should be looked at in terms of the bargain the parties had and the relative importance of the breach within the context of the contract as a whole The decision in *Ruxley* suggests that account can be taken of the following matters at least:

(i) Whether and to what extent the work, although not in conformity with the contract, is nonetheless serviceable;

(ii) Whether and to what extent the defect has affected the value of the work or the building as a whole;

(iii) The cost of rectification, the proportion that the breach bears to the cost of rectification and whether the cost of rectification would be wholly disproportionate to the real damage suffered by reason of it;.

(iv) The likelihood that, if rectification cost is awarded, the sum so ordered will actually be spent on rectification. Obviously, a successful plaintiff can spend his damages as he sees fit but this may be a useful indicator of whether the amount sought is greater than the real loss suffered.

Quite obviously, this list is by no means exhaustive. Other matters might be relevant according to the facts of the particular case. For example, the innocent party might have elected to accept the non-conforming work, whether by taking the benefit of it or otherwise; the owner might have waived the breach or so acted after becoming aware of the breach as to create an estoppel or to make rectification impracticable. There might also be many circumstances in which it could be argued that an award of

rectification cost would give the innocent party an uncovenanted profit *(Radford)*.

(e) If it would be unreasonable in the circumstances to award rectification cost, what damages will compensate the owner for the breach? Matters to be taken into account might include:

(i) the magnitude of the breach;

(ii) the significance of the breach to the owner;

(iii) whether the owner, after becoming aware of the breach, has acted unreasonably so as to make rectification more expensive;

(iv) whether and to what extent an owner might have accepted a benefit from the non-conforming work that should be taken into account;

(v) since the breach is not to be rectified, the reasonable cost of mitigating the effect of it;

(vi) compensation for any lesser appearance or functionality;

(vii) loss of amenity;

(viii) if it appeared likely that less than complete rectification would be undertaken, the cost of that.

Again, this is not intended to be an exhaustive list. It must not be forgotten that the object is to fully compensate the innocent party for the breach but not provide him with an "uncovenanted profit".

65. In present case, evidence was given by Mr Genitsaris that as an alternative to demolishing the Works, the slab could be underpinned. However, Mr Genitsaris said that the cost of underpinning the concrete slab, together with all consequential works exceeds what it would cost to demolish and rebuild the dwelling. Further, Mr Brown recommended against underpinning. I do not accept that underpinning or any foundation work is required in order to stabilise the footings. As I have already indicated, I accept the evidence of Mr Brown that the building has, in likelihood, reached equilibrium or close to it. Provided the footings are maintained, I do not consider that it is likely that the building will move further to any great extent. The consequential damage caused by building movement is minimal. The cracks in the concrete floor are not of a structural nature and do not require rectification. I accept Mr Brown's evidence that they are either shrinkage cracks or slump cracks or gaps. That conclusion is consistent with the fact that the concrete slab in the carport has minimal cracks, if any; despite the fact that the steel mesh in that area has less cover than with the concrete slab as it steps up into the dwelling itself.

66. The cracks in the plaster joins are not significant, although they are exacerbated by the Builder having taped the square set joints. Consequently,

as the building has moved the tape has torn from the plaster sheet giving an appearance of damage greater than what has actually occurred.

67. Although there is no evidence as to the cost to make good consequential damage caused by the building movement, I do not accept that the cost is in any way comparable to the cost of demolishing and rebuilding the Works. In all likelihood, the cost to make good all consequential damage caused by the building movement is a fraction of that cost.

68. Further, I am not persuaded that there are any structural ramifications resulting from the Builder's failure to follow the Contract documents. In other words, as the building reaches equilibrium, the likelihood of further movement and consequential damage decreases. At worst, the decreased stiffness of the slab and increased potential for movement may require maintenance in the form of re-painting, etc at more frequent intervals that would normally be the case had the steel been positioned correctly. However, this does not justify demolition and reconstruction of the Works.

69. For the reasons outlined above, I find it would be unreasonable to order that the building be demolished and rebuilt. The building is clearly serviceable and merely requires repair of consequential damage caused by building movement. Once so repaired, I do not consider that the amenity or aesthetic value of the property has been compromised by the failure of the Builder to follow the Contract documents.

70. In passing, I should say something as to the expert evidence given in this proceeding. I am troubled by Mr Genitsaris' recommendation that the dwelling should be demolished. Mr Genitsaris acknowledges in his report that the house slab is structurally sound and in those circumstances I fail to understand why the dwelling should be demolished due to the technical non-compliance with AS 2870. Further, although Mr Genitsaris is of the opinion that the slab will continue to move beyond its design parameters, that point has not been reached notwithstanding that the dwelling is now approximately 8 years old; nor was any justification for that opinion proffered. That said, I can well understand that the opinion expressed by Mr Genitsaris may have instilled fear and apprehension in the mind of the Owner as to the structural integrity of the building and may have encouraged the Owner to prosecute this claim in the way in which he has, rather than looking at alternative avenues for resolution.

71. Given that there is no alternate claim to the claim for the cost to demolish and rebuild the dwelling, I am left with no option but to dismiss the proceeding. I note that Mr Pumpa indicated in his written submissions in reply that under section 53 of the *Domestic Building Contracts Act* 1995, it is open for the Tribunal to make any order it considers fair to resolve the domestic building dispute. Although that may be correct, I do not consider it appropriate for the Tribunal to construct what would be an alternative claim, especially where I invited the applicant at the close of evidence to consider

whether he wished to make submissions for leave to pursue an alternative claim.

72. That opportunity was not taken up. Further, there is no evidence as to the cost to carry out remedial repairs, other than the cost estimate provided by Mr Genitsaris to underpin the slab together with associated consequential works. However, that cost estimate is based on a scope of work far greater than simply making good consequential damage caused by building movement. Accordingly, I do not consider that this evidence is entirely relevant given my findings. Moreover, the Builder has not adduced any evidence as to the cost to make good damage caused by excessive foundation movement, given that the Owner has prosecuted this proceeding solely on the basis that he seeks damages for the cost to demolish and rebuild the Works.

73. Accordingly, I do not make any finding as to damages. The proceeding will be dismissed.

SENIOR MEMBER E. RIEGLER