Determination 2006/18

Refusal of a code compliance certificate for a building with a "monolithic" cladding system at 21 John Rymer Place, Kohimarama, Auckland

1 The dispute to be determined

1.1 This is a determination of a dispute referred to the Chief Executive of the Department of Building and Housing ("the Chief Executive") under section 17 of the Building Act 1991 ("the Act") as amended by section 424 of the Building Act 2004. The applicant is Mr Paul Marquart ("the owner") and the other party is the Auckland City Council ("the territorial authority"). The application arises from the refusal by the territorial authority to issue a code compliance certificate for a house which had its cladding installed approximately 8 years ago, unless changes are made to its monolithic cladding system.

1.2 The questions to be determined are:

1. Whether on reasonable grounds the monolithic wall cladding as installed to the timber-framed external walls of the house ("the cladding"), complies with the Building Code (see sections 18 and 20 of the Act). By "the monolithic wall cladding as installed" I mean the components of the system (such as the backing sheets, the flashings, the joints and the plaster and/or the coatings) as well as the way the components have been installed and work together.

2. Whether all other building elements, incorporated in the complex, comply with clause B2 of the Building Code, considering the age of the construction. I note that this issue was raised at the hearing by the territorial authority and both parties agreed that the determination be extended to consider this question.

1.3 This determination is made under the Building Act 1991, subject to section 424 of the Building Act 2004. That section came into force ("commenced") on 30 November 2004, and its relevant provisions are:

> ". . .on and after the commencement of this section,—
>
> > "(a) a reference to the Authority in the Building Act 1991 must be read as a reference to the chief executive; and

> "(b) the Building Act 1991 must be read with all necessary modifications to enable the chief executive to perform the functions and duties, and exercise the powers, of the Authority . . "

It should be noted that the new legislation does not amend the determination process set out under the 1991 Act, other than to transfer the power to make a determination from the Building Industry Authority ("the Authority") to the Chief Executive.

1.4 This determination refers to the former Authority:

a) When quoting from documents received in the course of the determination, and

b) When referring to determinations made by the Authority before section 424 came into force.

1.5 In making my decision, I have not considered any other aspects of the Act or the Building Code.

2 Procedure

The building

2.1 The building is a large detached house situated on a steeply sloping excavated site in a low wind zone in terms of NZS 3604. The house is on three levels, with the front south elevation three storeys high while the rear is two storeys above ground level. Construction of the house is conventional light timber frame, with a concrete block basement, retaining walls, foundations and a concrete slab. The walls of the house are sheathed in monolithic cladding, with aluminium windows and doors. The mansard roof has butyl rubber membrane over the flat portion and internal gutter, with asphalt shingles over membrane to the 55^{o} sloped perimeter areas. The house shape is simple in plan, while the roof incorporates dormer windows that provide a number of complex roof to wall junctions. The rear north elevation has eave projections of 990 mm overall, with 440 mm eaves to the other elevations.

2.2 The owner has supplied copies of the framing quotation and subsequent invoices that describe the wall framing as being H1 boric treated timber.

2.3 The cladding is a monolithic cladding system described as stucco over a solid backing. In this instance it consists of 4.5 mm fibre cement sheets fixed through the building wrap directly to the framing timbers, and covered by a slip layer of building wrap, metal-reinforced 20 mm thick solid plaster and a flexible paint coating.

Sequence of events

2.4 The territorial authority issued a building consent on 10 January 1996.

2.5 Construction of the house appears to have commenced in May 1996 with the roof, joinery and wall cladding completed by March 1997. The territorial authority carried out various inspections during that period. According to the owner, no further work was carried out on the house until November 1999 when completion of interior work

commenced, and the territorial authority carried out a "post line" inspection in December 1999. No further inspections appear to have been carried out until the final inspection on 25 April 2004.

2.6 The territorial authority wrote to the owner on 11 October 2004 regretting that it was unable to issue a code compliance certificate as:

> Since the post line inspection almost five years have elapsed. Unfortunately this means that the work relating to this building consent now lies outside clause B2 (Durability) of the Building Code….

The territorial authority outlined the durability requirements and, in regard to this house, explained that:

> …this means that the cladding system will continue to meet standards of the Building Code until at least October 2019 if the CCC was issued today. This means a total of 23 years since it was installed. In contrast the manufacturer of the system only guarantees it for 15 years (from the date of installation) a similar length of time to that prescribed within the Building Code. Council is not able to provide you with an assurance of Building Code compliance for a period greater than this length of time, which is what we would be providing you with, in the event that we issued a CCC.

2.7 The territorial authority did not issue a Notice to Rectify as required under section 43(6) of the Act.

2.8 The owner applied for this determination on 30 October 2004.

3 The submissions

3.1 In an attachment to the submission, the owner noted that the house:

> …represents our life-time savings and was built for ourselves to be our retirement home. No expense was spared to make sure that this would be a house of enduring quality. It is important to point out that only the best quality materials and workmanship were used in its construction…

The owner went on to describe various characteristics of the house, which may be summarised as follows.

- The house has eaves, no parapets and no attached decks.
- Only treated timber has been used for framing.
- The builder has been in business for many years and is highly respected for quality workmanship.
- The cladding is painted with top quality specialist coatings for plaster surfaces.
- A special "T" section has been used around window openings to allow the window frame to be sealed against the leg of the section.

3.2 The owner also forwarded copies of:

- the plans of the building
- the details of the window installation
- the correspondence with the territorial authority
- various invoices and other statements.

3.3 The territorial authority forwarded copies of:

- the building consent documentation
- the record of the final inspection
- various producer statements
- the correspondence with the owner.

3.4 Copies of the submissions and other evidence were provided to each of the parties.

Issue 1: The wall cladding

4 The relevant provisions of the Building Code

4.1 The dispute for determination is whether the territorial authority's decision to refuse to issue a code compliance certificate because it was not satisfied that the cladding complied with clauses B2 and E2 of the Building Code (First Schedule, Building Regulations 1992) is correct.

4.2 There are no current Acceptable Solutions that have been approved under section 49 of the Act that cover this cladding. The cladding is not accredited under section 59 of the Act. I am therefore of the opinion that the cladding system as installed can be considered to be an alternative solution.

4.3 In several previous determinations, the Department has made the following general observations, which in my view remain valid in this case, about acceptable solutions and alternative solutions:

- Some acceptable solutions cover the worst case, so that in less extreme cases they may be modified and the resulting alternative solution will still comply with the Building Code.
- Usually, when there is non-compliance with one provision of an acceptable solution, it will be necessary to add some other provision to compensate for that in order to comply with the Building Code.

5 The Expert's Report

5.1 The Department commissioned an independent expert ("the expert") to inspect and report on the cladding. The expert inspected the building on 29 April 2005 and furnished a report that was completed in May 2005. The expert noted that the plaster and paint coatings appeared sound, with no significant cracking or areas of concern. The cladding finish is described as good throughout. Cladding clearances were adequate, as the ground floor walls were plastered concrete block, and penetrations through the wall cladding appeared to be adequately sealed. Apron flashings around the dormer windows appeared to be well constructed, with no areas of concern being noted. The expert observed and inspected vertical control joints to the front and rear elevations, which appeared to be adequately constructed.

5.2 The expert examined the window flashings, noting that aluminium "T" section flashings trimmed the openings and allowed the window flanges to overlap and seal against the leg of the flashing at the jambs. The doors and windows were fitted with aluminium head flashings, which extend beyond the jambs.

5.3 The expert took non-invasive moisture readings at interior linings of exterior walls throughout the house. No raised moisture levels were detected and no signs of leaks were identified. Seven invasive readings were taken at potentially vulnerable areas in exterior walls, with all readings recorded at 16% or less. Moisture levels above 18% recorded after cladding is in place generally indicate that external moisture is entering the structure.

5.4 The expert made the following specific comments on the cladding.

- While the window details differ from those commonly recommended at the time of construction, the junctions appear to be performing adequately, with no indication of moisture penetration;
- Horizontal control joints have not been installed between the plastered concrete block ground floor walls and the timber-framed first floor walls. However there is no sign of water entry or significant cracking to the junction;
- Vertical control joints have been installed on the north and south walls but omitted from the east and west elevations, which have walls that are 10 metres long. However there is no sign of water entry or cracking; and
- The deck to the north is not attached to the house, but the timber deck slats are lightly butted against the stucco plaster. However, this junction is sheltered under a 990 mm eave overhang.

5.5 Copies of the expert's report were provided to each of the parties and both accepted the report.

6 The hearing

6.1 The owner requested a hearing, which was held before a tribunal consisting of the Determinations Manager and one Referee acting for and on behalf of the Chief Executive by delegated authority under section 187(2) of the Building Act 2004. At the hearing the owner Mr Marquart appeared on his own behalf. The territorial authority was represented by one of its officers. Three staff members of the Department attended. The owner and the territorial authority spoke and called evidence at the hearing, and evidence from those present enabled me to amplify various matters of fact that were identified in the draft.

6.2 The owner spoke to the written submission that he had forwarded to the Department. The applicant voiced concerns that the territorial authority could require re-inspections of the house on a continuing basis. If some structural items required replacing, this could lead to the demolition of the house. The owner had engaged and paid the territorial authority to undertake inspections and the owner had requested inspections as they fell due. The owner had complied with any remedial requests made by the inspection officials. The owner noted that good quality materials had been used throughout the house, Boric treated timber was used for the external wall framing, and the house did not leak. The owner also queried some of the references made in the determination and produced a record of the inspections that the territorial authority had carried out. The owner verified that he had moved into the house in October 2001.

6.3 The territorial authority stated that the draft determination had shown that the building was not code compliant. However, the territorial authority accepted that the building complied with the requirements of clause E2. The remaining issue now related to durability issues in relation to clause B2.

6.4 The Department queried whether the parties would be prepared to extend the determination to cover the overall durability of the house and both parties were in agreement with this proposal. The Department referred to a clause that had been used in previous determinations relating to the durability of construction elements. The territorial authority indicated that it would give consideration to this approach to durability on receipt of the draft determination.

7 Discussion

General

7.1 I have considered the submissions of the parties, the expert's report and the other evidence, including that presented in this matter. The approach in determining whether building work complies with clauses B2 and E2 is to examine the design of the building, the surrounding environment, the design features that are intended to prevent the penetration of water, the cladding system, its installation, and the moisture tolerance of the external framing. The Authority and the Department have described the weathertightness risk factors in previous determinations (refer to

Determination 2004/01 *et al*) relating to monolithic cladding, and I have taken these comments into account in this determination.

Weathertightness risk

7.2 In relation to these characteristics I find that the house:

- is built in a low wind zone;
- is a maximum of three storeys high;
- is simple in plan, although there are some complex roof to wall junctions around the second floor windows;
- has eave projections above all walls, which vary from 440 mm to 990 mm;
- has no attached decks;
- has external windows and doors that have aluminium head, jamb and sill flashings;
- has monolithic cladding which is fixed directly to the framing with no drainage cavity; and
- has treated wall framing that will offer some resistance to the onset of decay if the framing absorbs and retains moisture.

Weathertightness performance

7.3 Although the stucco cladding has been installed in a tradesman-like manner, some of the control joints normally required in the system have been omitted. The expert's report (refer to paragraph 5.4 above) names these omissions as being:

- the horizontal control joints in the plaster at the junction of the concrete block retaining walls to the basement garage and the timber-framed walls at ground floor on three of the elevations
- the vertical control joints in the plaster on the east and west walls.

7.4 The seriousness of these omissions is offset to some extent by the fact that the stucco cladding has been in place for approximately eight years and, apart from the missing vertical control joints, appears to have been installed according to good trade practise, and there are no signs of cracking or moisture entry.

7.5 During that period, all drying shrinkage in the concrete plaster (and supporting framing) will have likely occurred, and the cladding's future performance will be governed solely by response to environmental factors such as imposed temperature and moisture effects, wind, earthquake forces, and seasonal foundation movements.

7.6 With regard to this building, I have considered carefully both the consequences of any future failures and the compensating factors that will reduce the effects of these omissions, particularly as:

- the house is in a low land and low service zone, with the result that there will be minimal stresses around openings and along the horizontal joint between the basement block walls and the timber framing above
- the external paint coating is of high reflectivity, and interior environment (eg garage space) is relatively benign in terms of temperature and moisture variation
- whilst the basement of the house is founded on soils that are normally subject to seasonal movement, these foundations are set at such depth that foundation movement from this source can be considered highly unlikely
- most ceilings in the basement-garage areas are unlined so that, in the event of moisture ingress, the framing affected would be able to dry out
- the external wall framing supporting the stucco cladding will offer some resistance to the onset of decay if the supporting framing absorbs and retains moisture.

7.7 I have therefore decided, in this particular case, to accept the adequacy of the stucco plaster system as constructed, without the retrofitting of the omitted control joints that were required in the general case by the Standard.

7.8 Notwithstanding the fact that the backing sheets are fixed directly to the timber framing, thus inhibiting drainage and ventilation behind the cladding sheets, I do not accept that the lack of a drainage and ventilation cavity in itself prevents the house from complying with the weathertightness and durability provisions of the Building Code.

7.9 I note the expert's comments regarding:

- the non-typical flashing of the windows, and accept that the system used appears to be performing adequately, with no evidence of moisture penetration
- the abutment of the decking against the stucco on the north elevation, and accept that this junction is well sheltered under the large roof overhang above.

7.10 I acknowledge the territorial authority's concern regarding the age of the house but in this case the passage of time has enabled weathertightness performance to be demonstrated as the lack of elevated moisture levels indicates were observed. Therefore I consider that if the house continues to be well maintained, the cladding is likely to meet the durability requirements of the Building Code.

7.11 I note that the elevations of the house demonstrate a low (for 3 elevations) to medium (south elevation) weathertightness risk rating using the E2/AS1 risk matrix. The matrix is an assessment tool that is intended to be used at the time of application for consent, before the building work has begun and, consequently, before any

assessment of the quality of the building work can be made. Poorly executed building work introduces a risk that cannot be taken into account in the consent stage, but must be taken into account when the building as constructed is assessed for the purposes of issuing a code compliance certificate.

8 Conclusion

8.1 I consider that the expert's report establishes there is no evidence of external moisture entering the house, and that the monolithic cladding complies with clause E2 at this time. In addition, because the cladding is unlikely to allow the ingress of moisture in the future, the house also complies with the durability requirements of clause B2.

8.2 I note that effective maintenance of monolithic claddings is important to ensure ongoing compliance with clause B2 of the Building Code. That maintenance is the responsibility of the building owner. The code assumes that the normal maintenance necessary to ensure the durability of the cladding is carried out. For that reason clause B2.3.1 of the Building Code requires that the cladding be subject to "normal maintenance". That term is not defined and I take the view that it must be given its ordinary and natural meaning in context. In other words, normal maintenance of the cladding means inspections and activities such as regular cleaning, re-painting, replacing sealants, and so on.

9 The decision

9.1 In accordance with section 20 of the Act, I determine that the house is weathertight now and the cladding complies with clauses B2 and E2. Accordingly, I reverse the territorial authority's decision to refuse to issue the code compliance certificate.

9.2 Finally, I consider that the cladding will require on-going maintenance to ensure its continuing code compliance.

Issue 2: The additional durability considerations

9.3 I note that the relevant provision of clause B2 of the Building Code is that building elements must, with only normal maintenance, continue to satisfy the performance requirements of the Building Code for certain periods "from the time of issue of the applicable code compliance certificate".

As set out in paragraph 1.2, the territorial authority has concerns about the durability, and hence the compliance with the Building Code, of certain elements of the house, considering the building work was completed in 1998. My opinion is that the territorial authority should amend the original building consent by making it subject to a modification of the Building Code in accordance with section 34(4) of the Act.

This must be done to the effect that the durability of the elements it may have concerns of is measured from the date of the substantial completion of the house, instead of from the time of the issue of the code compliance certificate. The land information memorandum for this complex should also be amended in line with the above. For the purposes of this Determination "substantial completion" of the house is achieved when the house was ready for occupation as determined by the territorial authority. This was established at the hearing as being October 2001.

9.4 I therefore determine that the territorial authority is to amend the original consent, issued in 1996, to incorporate a modification of clause B2 of the building code to the effect that the required durability periods for the building elements put in place in the course of work carried out under that consent are to be measured from the date of the substantial completion of the building and not from the date of the issue of a code compliance certificate. For the avoidance of doubt I determine that this modification is not to be applied to elements that have been renewed or replaced since the original construction and for which little of the required durability period has elapsed at the time of this determination.

9.5 Following this amendment, any code compliance certificate subsequently issued by the territorial authority should be issued in line with the amended building consent.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 13 March 2006.

John Gardiner
Determinations Manager