

# ***Balcony drainage for a multi-level apartment building***

## **1 BACKGROUND**

- 1.1 The matter before the Authority is whether the proposed discharge of surface water from “covered” apartment balconies complies with clause E1.3.1 of the building code. The proposed discharge of surface water from the building’s open exposed balconies was not considered in this Determination.
- 1.2 The applicant is the owner acting through a consultant and the other party is the territorial authority.
- 1.3 In making its determination, the Authority has not considered any other aspects of the building code.

## **2 THE BUILDING WORK**

- 2.1 The building in question is a proposed multi-level apartment building, with each apartment to be held under a unit title and having a balcony.
- 2.2 The balconies are of 4 different types, two of which are less than 10 m<sup>2</sup> in area and two of which are greater. The balconies that are at issue have been referred to as being “covered”. While they are in fact completely overhung by the balcony above, they are still open as regards the front and, in most cases, the sides. In some instances balconies adjoin other balconies.
- 2.3 The proposed method for the discharge of surface water from the balconies involves shedding water directly to the atmosphere by way of either:
  - Linear discharge (free fall) over the edge of the balcony , or
  - Discrete piped outlets, known as scuppers.
- 2.4 The territorial authority has taken the view that the proposed method of balcony surface water discharge contravenes the relevant performance requirement of the New Zealand building code, namely E1.3.1.

### **3 THE LEGISLATION**

3.1 The relevant performance of the building code is:

#### **Performance**

**E1.3.1** Except as otherwise required under the Resource Management Act 1991 for the protection of other property, surface water resulting from a event having a 10% probability of occurring annually and which is collected or concentrated by buildings or siteworks, shall be disposed of in such a way that avoids the likelihood of damage or nuisance to other property.

### **4 THE SUBMISSIONS FROM THE PARTIES**

#### **4.1 General**

4.1.1 The Authority received a submission in the form of a written report from the applicant and a written submission from the territorial authority.

#### **4.2 The Applicant**

4.2.1 The applicant's report included an analysis of "Stormwater run-off from building facades", published in CSIRO Note 177A, *Notes on the Science of Building*, from the Commonwealth Scientific and Industrial Research Organisation, Australia ("CSIRO Note"), together with opinions from two Australian consultants. This report sought to demonstrate that there would be minimal water concentrated on the balconies and that surface water does not collect and concentrate as it "falls" down the façade of a building, from one level down to the next. It stated that there are similar performance requirements in the New Zealand and Australian building codes and that free-fall and scuppers are accepted design solutions for balconies on multi-level apartments in Australia.

4.2.2 The applicant identified a rainfall footprint for the 4 types of balconies and then calculated the amount of rain falling on each. The rainfall footprint considered was established by projecting the open areas of the façade at an angle of 65 degrees to the horizontal. In other words, the applicant assumed that only rain over the open areas of the façade entered the balcony and that the rain fell at an angle of 65 degrees to the horizontal. The applicant did not consider any contribution from rain falling on the closed parts of the façade (e.g. balustrades or closed-in parts of the structure) or that there was any cumulative effect from balconies above.

4.2.3 The report concluded that "[t]here was no concentration of any rainfall and it is not being disposed of in a way to create damage or nuisance to other property". It went on to conclude: "that the provision of balcony drainage by either:

- a) Linear discharge to atmosphere under a raised glass balustrade, or
- b) Through two outlets per balcony per apartment

in no way contradicts the performance requirements of the New Zealand Building Code."

### **4.3 The Territorial Authority**

- 4.3.1 The territorial authority's submission countered the claims made in the applicant's report.
- 4.3.2 The territorial authority also quoted from the CSIRO Note in support of its arguments while observing that the Note was not expressly written for purposes of addressing balcony run-off.
- 4.3.3 The territorial authority did not agree with the 65 degree design approach (see 4.2.2) and considered that, among other things, the applicant had not properly accounted for air flows around the building. The territorial authority noted that "the [applicant] provide[d] no factual evidence to substantiate the theoretical angle of rain fall upon which [the applicant's calculations were based]".
- 4.3.4 The territorial authority concluded that its considerations "tend to suggest that the volume of water deposited on such areas may be considerably more than the [applicant] has estimated and requires, therefore, the provision of a more controlled method of surface water discharge".
- 4.3.5 The territorial authority believed that nuisance would be interpreted as having a very broad meaning and disagreed with the applicant that staining did not need to be considered as a Building Code issue. The territorial authority also believed that the applicant had omitted to consider other relevant issues such as noise generation, visual nuisance and any other consideration of significant or intrinsic value to an affected property owner or occupier.
- 4.3.6 In a further submission to the Authority, the territorial authority advised its support for the recommendations of Report A (see 5.2 below), as regards the free-fall or scupper discharge for balconies less than 10 m<sup>2</sup> and downpipe collection for those greater than 10 m<sup>2</sup>.

## **5. EXTERNAL ADVICE OBTAINED BY THE AUTHORITY**

### **5.1 General**

- 5.1.1 The Authority commissioned a report from each of two consultants (Report A and Report B respectively).

### **5.2 Report A**

- 5.2.1 The author of Report A advised as follows:
- 5.2.2 "There is no agreement with the applicant's proposed 65 degree rainfall regime".
- 5.2.3 While lower level balconies might not be subjected to direct rainfall due to the covering effect of upper balconies, they will still be exposed to "the attenuated effects of other driven moisture which does not fall vertically on the balcony...".

- 5.2.4 Balconies with areas less than 10 m<sup>2</sup> do not require their rainwater runoff to be calculated as this can be considered nominal only. Accordingly, free-fall or scupper discharge would be suitable in these instances. Where the balcony area is greater than 10 m<sup>2</sup> in area, then all runoff should be reticulated in an enclosed drainage system, including downpipes.
- 5.2.5 “Considered overall, the nuisance effects for runoff from balconies up to 10m<sup>2</sup> are not seen as significant providing that the requirements as set down in [Report A] are adopted”.

### **5.3 Report B**

- 5.3.1 The author of Report B advised as follows:
- 5.3.2 As personal observations indicated that rain in a storm event was more likely to drive in at 30 degrees “the 65 deg assumed by [the applicant] does not represent the worst case”
- 5.3.3 The presence of balconies would not alter the quantity of rainwater that would impact on the face of the building.
- 5.3.4 “The affect [*sic*] of the balconies projections and other discontinuities is well covered in the CSIRO Note, and generally indicate that even the most protected areas can become wet and although a quantity of water is absorbed by the surfaces some is also collected and shed”.
- 5.3.5 “In each case the water from the upper balconies must travel downwards onto the balconies and façade below where it will increase in quantity, unless its blown away by the wind. In my opinion, unless it can be demonstrated that the total run-off from the façade is minimal, then there must be at some point down the face of the building where the discharge becomes significant.”
- 5.3.6 “The rainfall calculation should be based on the worst case scenario which is the 10% annual probability rainfall multiplied by the total façade. [This] should be used unless [further investigation and evidence is produced] which will indicate that...the figure can be reduced”.
- 5.3.7 “[T]he discharge of concentrated rainwater directly from the balcony edge or through the two outlets to the balcony will detract from the occupiers’ enjoyment of the building, except for those on the top floor”. Even a small amount of such a discharge can be considered a nuisance.

## **6 THE AUTHORITY’S VIEW**

- 6.1 The Authority accepts the view that the total volume of rainwater arriving at the façade of the building is not affected by the presence of the balconies. Accordingly, the Authority cannot accept the applicant’s assertion that only water arriving through the open parts of the façade is to be taken into account when considering the rainfall’s

effect. If wind is driving the rain at the building against balustrades and closed-in parts of the structure, then a certain amount of this must end up in the balconies.

- 6.2 The Authority is of the opinion that the cumulative effect of the water running down a building face is a crucial consideration. Even if it is established that there is some dispersal of such water, there must still be some cumulative effect for some distance down a building. As it accepts such an effect, the Authority considers that the applicant has underestimated the amounts of surface water arriving at and falling from the balconies.
- 6.3 The applicant considers that the amount of rainwater in contention will be minimal and as such, no nuisance ensues. The Authority is not convinced that is the case as it considers the applicant has not only underestimated the amount of rain falling on individual balconies but has not considered the cumulative effects of rainwater running down the façade from above.
- 6.4 The Authority notes that although the Australian consultants advised that the proposals were commonplace, neither they nor the CSIRO Note endorsed the applicant's calculation method. Further, they did not express a view as to whether a nuisance would ensue.
- 6.5 The Authority agrees with the territorial authority that nuisance must be considered in the broadest sense of the word. Further it considers the applicant has not demonstrated that nuisance will not occur. Accordingly the Authority concludes that the applicants proposed methods of discharge from the covered balconies will constitute a nuisance and therefore contravene E1.3.1 of the Building Code.

## **7 THE AUTHORITY'S DECISION**

- 7.1 In accordance with section 20 of the Building Act, that:
- (a) The Authority hereby determines that proposed discharge of surface water from "covered" apartment balconies does not comply with the provisions of E1.3.1 of the building code.
  - (b) The Authority hereby confirms the territorial authority's decision not to issue a building consent in respect of this matter.

Signed for and on behalf of the Building Industry Authority on this 3<sup>rd</sup> day of March 2003.

W A Porteous  
Chief Executive