

# **CASE STUDY BUILDING SPECIFICATIONS, 8TH INTERNATIONAL CONFERENCE ON PERFORMANCE-BASED CODES AND FIRE SAFETY DESIGN METHODS - A NEW ZEALAND APPROACH**

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*Presented at 8<sup>th</sup> International Conference on Performance-Based Codes and Fire Safety Design Methods, Lund, Sweden, June 2010*

## **ABSTRACT**

This paper presents a case study for a “Change of Use” of a six story office into a four story night club with two levels of office above. The building includes a number of fire engineering challenges due to the limited number and size of the egress and the potential for a large number of occupants that may be intoxicated. This case study is intended to give a New Zealand design perspective. The analysis is based on the fire related clauses of the New Zealand Building Code, specifically the “C” clauses and other relevant clauses. The three design objectives included in this study are to:

- 1) Redesign the egress systems and fire safety features to allow for the maximum number of occupants within the building.
- 2) Limit the number of occupants such that the existing building meets prescriptive document C/AS1 without changing the building egress.
- 3) Provide a performance based design that applies the proposed framework for performance based fire safety design.

The prescriptive solutions are designed in accordance with the deemed-to-satisfy documents known as the “Compliance Documents” or C/AS1 published by the Department of Building and Housing. The performance based design will apply a proposed framework currently under development by the DBH. The framework provides ten (10) scenarios that must be addressed for any performance based design in New Zealand. Design fires are specified for each scenario as well as the required acceptance criteria that must be achieved. This approach is intended to permit flexibility and innovation in design, but ensures consistency between designs for very similar uses. The framework provides a mechanism for the regulator to exercise control over the level of fire safety that must be achieved in buildings, without having to go through a formal process to calculate expected fire losses on a building-by-building basis.