Editorial

Professor Craig Langston
Chair in Construction Management
School of Architecture and Building
Deakin University
Geelong, Australia

Welcome to the second issue of AJCEB for 2005, with Deakin University again as host. In this special issue, all published papers relate to a landmark building, known as CH_2, currently under construction in Melbourne, Australia. A preamble by the City of Melbourne introduces some of the key features of the design. Further information and updates on progress can be found on the City of Melbourne's (CoM) website (http://www.melbourne.gov.au).

Out of ten papers submitted for review, six satisfied the referees' requirements within the deadlines for this issue. Collectively they cover issues of material selection, energy harvesting, heating and cooling, lighting, ventilation, and the business case for sustainable design. All authors are academics from either RMIT University, University of Melbourne or Deakin University. Funding for these papers was provided as part of a competitive grant process managed by CoM and funded by AusIndustry. The co-operation of CoM in the publication of this special issue is gratefully acknowledged. All illustrations have been provided courtesy of CoM and its consultants.

Hes, Morrison and Bates present an interesting paper on material selection for green buildings. Using CH_2 as a case study, they report on the process of delivering a six Green Star rated outcome and the problems that were encountered along the way. Although no quantitative embodied energy analysis was undertaken, perhaps due to either accuracy concerns or time constraints, the environmental performance questionnaire (EQP) enabled knowledge to be applied in a practical context. The paper concludes with lessons learnt by the consultant architects and some reflections on industry education processes that require further attention.

Cheung investigates the issue of energy harvesting and its application to CH_2. By necessity, this paper overlaps with others more focused on heating and cooling, lighting and ventilation, and provides some context for the integrated nature of the building's energy system. The paper demonstrates that the energy design targets are achievable, and will represent best practice for a multi-storey office building. However, predicted and actual performance are not necessarily the same, so further research is essential before the energy credentials of CH_2 can be confirmed.

Aye and Fuller, in a somewhat controversial paper, outline the initial design of the CH_2 heating and cooling system and its likely effects on occupant productivity. While some novel technologies are being used, conventional back-up systems should limit the risk of adverse indoor conditions arising. Having said that, the effect of temperature on occupant productivity is not expected to be significant, and may in time work against the achievement of a favourable business case. Clearly, the measurement of actual performance, and in particular the gain in productivity that occur, are critical to conclude this study, and represent an area of further research once the building is in use.

Altomonte's paper focuses on the lighting strategy selected for CH_2. His conclusions are that the design team has come up with a good balance between energy usage and occupant comfort, especially given a constrained inner city site with adjacent buildings. The form of the

building, both externally and internally, reflects and supports the lighting strategy. Careful fit-out is necessary to maximize the benefits envisaged during computer modelling. While more new technologies are available, they have not been used nor deemed necessary to achieve the design targets.

Aye and Fuller, in their second paper, comment on the design efficiency and integrity of the ventilation system for CH_2. They highlight a number of possible deficiencies in the selected design which may need attention either before construction is completed, or after. It is clear that post-occupancy testing is crucial to the determination of system success, and this is a matter of future research and dissemination. The quality of the incoming air, particularly in toilet areas at lower levels, is of particular concern.

Finally, Lawther, Robinson and Low present the business case for CH_2. They correctly suggest that financial considerations play an important role in the decision-making process for green buildings, and that a discounted approach based on triple bottom line considerations is appropriate. The paper highlights that the CH_2 business case is reliant upon increases in worker productivity. Conservatively, the assumptions that underpin the analysis indicate a payback period of 41 years, which is high, even for an owner-occupier client. While a more optimistic view might reduce this period to 11 years, it should be remembered that the expected gain in productivity is being compared to the existing accommodation, which is stated as being at the end of its functional life and no longer meeting statutory regulations. Coupled with the budgeted construction cost premium of 22% for CH_2, the implications for future green buildings must surely be determined on a case-by-case basis, particularly where speculative development is involved. Nevertheless, this paper sets out a useful methodology for such analysis.

Since the papers were written and refereed, a number of design changes have taken place as work progresses on site. Coupled with the obvious controversy where reviewers disagree or challenge the decisions of the design team, we have taken the unusual step of providing the City of Melbourne with an opportunity to comment on the papers, and these comments are included at the end of some of the papers.

It is worth noting that in 2005 AJCEB received 47 papers for review. Of these, 8 were published in Issue 1 and 6 in Issue 2, a further 2 have been approved for publication in 2006 and another 2 pending revisions. The remainder comprise 12 still with one or more referees and 17 rejected.

I hope you enjoy AJCEB's first special issue. In 2006 the University of South Australia will take over the editorial role.

Professor Craig Langston
Editor