

# Adaptive Re-use: New Life for Old Buildings

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*The old building is a challenge for urban planners and policy makers, during the modernization process of Chinese cities. The experience from other countries could be helpful in a certain extent. Design management plays an important role in ensuring that all the issues that exist in all stages of design are well managed. The Intellectual Capital Conceptual Model for design management of adaptive re-use is introduced. In addition, two cases are studied.*

**Keywords:** Adaptive re-use; design management; case study, documentation analysis

## 1. Introduction

The development of China in recent decades is remarkable and obvious to all in recent decades. Both urban and rural areas have undergone tremendous changes. With new cities from scratch and plenty of new buildings rise, many old buildings are at stake. Although many age-old buildings are dilapidated, and contrast with the nearby modern buildings and urban modernization, these old buildings are carrying the history of urban development and the culture. Therefore, it is difficult to make decision for the urban planners and policy makers on the issue of how to deal with old buildings. The Chinese government, scholars and business organizations have come up with some different methods and also carried out some attempts: Translation Method (Si Ming Gong Suo), Additional Building Method (Garden Hotel), and Integration Methods (Shi Ku Men). All the re-use of old buildings are inseparable from the most important first step: design management for adaptive re-use. This paper will introduce the Intellectual Capital Conceptual Model for design management of adaptive re-use. And then two case studies will be discussed.

## 2. Literature Review

Adaptive re-use can be interpreted in many different but inter-related ways. This study defined it as a process of interpretation and transformation of the historical nature of the functions, structures and the fabric or building envelope of heritage buildings to new and contemporary ways to enhance architectural and/or cultural significance within the context of modern design and construction technologies and processes (Bullen 2007). Design management plays an important role in

ensuring all the issues exist in all stages of design are well managed. The specific issues related to design in adaptive re-use projects are design flexibility limitation, organizational and economic conditions and lack of clear information and guidance for designers. Hence, this paper proposes

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the Intellectual Capital Model for Adaptive Re-use projects based on design management (Figure 1).

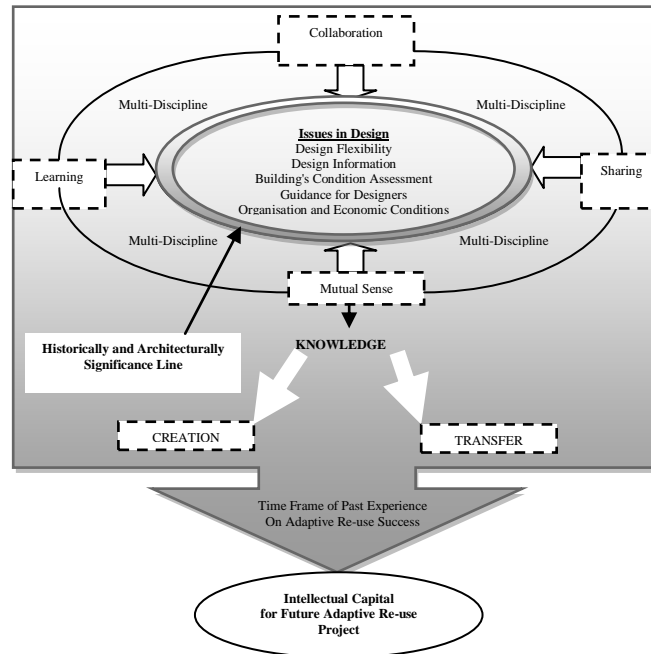


Figure 1: Design Management approach to support intellectual capital for adaptive re-use projects

This model could be used to conduct, particularly during the development of design briefs. Also it shows the importance of understanding the history of the project team to produce ideas in the design and how to manage with four critical steps of experience and skills with collaboration, sharing, and mutual sense and learn to each others. The most important point here is how they use the concept of learning from the experience gained from previous projects with similar characteristics. Experience and knowledge are used to critically and continuously to enhance adaptive re-use project to ensure continued success.

An important part of understanding the creation and transfer of intellectual capital within shared professional collaborative environments is trust often comes with a shared history, it is important to identify if there is a history with some of the key stakeholders associated with adaptive re-use projects. The project stakeholders in many cases may have developed over time a shared learning capacity within the group. The involvement in adaptive re-use processes particularly during design brief development sometimes confronts the problems related to design flexibility, design information, the assessments of building condition and the understanding of organizational and economic conditions. The group ideally should develop a mutual sense of what are the key problems to solve and develop approaches to solving future problems through the development of a particular group culture. Hence, it is important to identify that there is a history with some of the key stakeholders and project team members associated with adaptive re-use projects.

Knowledge is important in the historic environment because transforming historical buildings is full of richness in interpretation. The knowledge that can be created and transferred is also concerned with the different backgrounds of project stakeholders and how this impacts upon how they individually and collectively approach the adaptive re-use problem. Shared understanding about the importance of history in relation to the building, hence history of the area and history of the building is significant and a shared understanding and respect for this amongst the stakeholders is critical. This proposed conceptual model will be adopted to analyze two case studies in this paper.

### 3. Research Methodology

This study is using a case study methodology and a qualitative data collection and analysis method. Qualitative methods can be subjective, value-laden, biased and an ad hoc process that accepts multiple realities through the study of a small number of cases. To support the data analysis from the interviews, the documents for both case studies will be used towards to understanding the completed projects (O’Leary 2004). The documents are the drawings of the buildings, the project reports, the contract documents, conservation management plans and the heritage regulations and policies that have been used for the development application for approval and along the project life-cycles until completion and occupation stage.

Case study is considered appropriate to explore the role of design management of intellectual capital as a means to ensure project success. A case study approach enables us to develop a holistic and meaningful view of real-life events. Case studies assist with the questions of “how” and “why” enabling explanatory investigations into conceptual relationships which need to be traced over time (Kurul 2007). This paper presents the exploratory and preliminary results and describes the data collection and analysis from the two case studies. The first step towards developing an understanding on the unity and wholeness of the particular case begins with developing a deep understanding of the history of the original buildings and the relationship with the brief development for adaptive re-use. The second step is an empirical study involving interviews with the design teams. However, this paper only focuses on reporting of the document analysis. The historical documents that were reviewed were conservation management plans, contract documents, drawings and other related project documents. Two completed adaptive re-use projects in Geelong, Australia were selected. The methodological design described in this paper is summarized in Fig. 2.

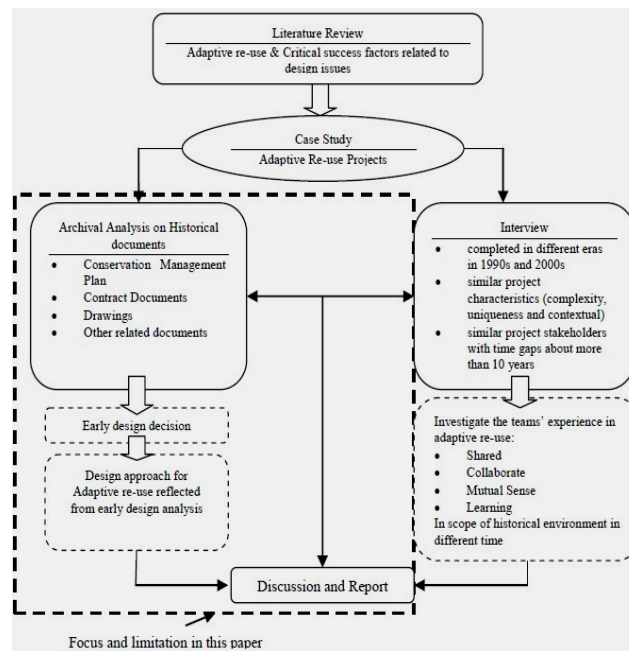


Figure 2. The methodological design

## **4. Results and Findings**

Geelong is Victoria's second largest city and fastest growing region and is located 75km south west of Melbourne. The wool business in Geelong started in 1835 when the first shipment of sheep arrived at Indented Head. Most of the wool stores near the port, and the entire basis for wool production such as woolen mills, rope works, wool-scourers and tanners were also located at the river banks. The wool stores and woolen mills still standing were active in production until other industries became prominent in Geelong economics in the 1970s. There are significant woolstore groups in other areas within Australia; however, all those structures of woolstores buildings did not match with the unique qualities of the Geelong waterfront woolstores (Department of Planning 2011)

### **Case Study 1 – Dalgetys Woolstores**

Dalgety Frederick Gonnerman was born in 1817 in Canada. He arrived at Sydney and moved to Melbourne in 1842. Wool was the core of Dalgety's business. He started his business with local squatters and then provided financial services, transport and storage for wool-growers around Australia including in Geelong (Hartwell 1972). The Dalgetys Woolstores was originally built in 1891 located nearby the waterfront and then there were numerous additional works to the original woolstores continuously until 1954. The Dalgetys Woolstores have been built through seven major stages. The building is four storeys and was still used for wool storage and business until the mid-1980s. In the 1990s, the action to protect this building started with a national architectural competition to convert the building to an appropriate function. The local firm McGlashan Everist won this competition with university function.

The refurbishment of the woolstores involved removing three floors of hardwood timber. The construction strategy that has been used by contractor is to maintain the structural conditions; the floor has been removed from the roof down to the foundation steps. The top floors have been used as scaffolding for roof refurbishment work. The architect for this project won the Royal Australian Institute of Architect's President Award for recycled buildings in 1997.

There is some evidence through the award that there was a collaborative and sharing attitude across disciplines - between the design team and the contractor. At the same time the architect was able to oversee the interests of the client requirements to ensure the unique historic value was preserved according to the statement in the Conservation Plan prepared by Conservation Architect in 1994 based on building's condition assessment.

### **Case Study 2 - Dennys Lascelles Woolstores**

Charles John Dennys was born in October 1818 in England. The name of Dennys Lascelles Limited was the blending of his and his mother's surname. His wool business in Geelong was started in 1857. Many woolstores were built to cover the remaining unsold wool at Geelong wool market. One of the largest woolstores was Called Dalgetys woolstores which is designed by Buchan and Laird, and constructed by C.J. Taylor and Sons in 1934. The original plan of the Dennys Lascelles Woolstores was to accommodate more than 25,000 bales of wool and to contain over 3.5 acres of floor space. The Dennys Lascelles Woolstores was equipped with lifts and modern wool-handling appliances (Victorian Heritage Database 2011)

The six storeys of the Dennys Lascelles Woolstores have been redeveloped for new functions as the Alfred Deakin Research Institute, the Deakin Geelong Health Precinct and the Alfred Deakin Prime Minister's Library. This section of the woolstores complex was opened officially by Deakin

University on 10 June 2009. The project cost to refurbish the 1934 sections was approximately \$37M AUD and was a joint project between Deakin University and the Victorian and federal governments. A sense of collaboration, sense existed at these early project initiation stages. This project was funded by the Commonwealth and Victorian Government who provided approximately \$15.6M each. The project started on October 2006 and was completed in 2009. The project manager was the Facilities Management Services Division at Deakin University. Again, the architect responsible for the design of the former Dennys Lascelles is local professional architect McGlashan Everist. We assume that since the same architect was commissioned for the two projects that the first project was a success. It is assumed also that the architect created and transferred knowledge from the first project refurbishment of the Dalgetys Woolstores project 1993-96 to the second. This refurbishment project has been constructed by design and construction management firms Wycombe Constructions. This makes a unique and interesting set of case studies to examine and explore what intellectual capital was created amongst the professional multidisciplinary project team and then the design management process of creating that intellectual capital and transferring with particular reference to the adaptive re-use building typology.

### **The significance of the area and buildings**

The two selected case studies had an original function: woolstores. The buildings were located in the City of Greater Geelong and are part of a precinct of other woolstores in the area that is referred to as the Woolstore Conservation Area 1980 in Victoria. The Dalgetys and Dennys Lascelles woolstore are a significant part of the largest complex in Victoria for wool storing. This large complex is unique within Geelong because it is representative of the early modern design for a woolstore. The construction process of both woolstores was started in 1891 until 1954. However, all the sequence of spaces is attached or adjacent and each section is under the one roof. The location of Dalgetys and Dennys Lascelles still remains in the same place. The adaptive re-use process for the Dalgetys buildings and its transformation to Deakin University was completed in 1996. Meanwhile the transformation of Dennys Lascelles buildings to Deakin University was completed in 2009. The adaptive re-use for both buildings have been managed by similar project stakeholders.

The statement of cultural significance in the Authentic Heritage Services Pty Ltd report prepared by Dr. David Rowe, the heritage advisor for the City of Greater Geelong, indicated that this building was architecturally and historically significance at a local level. The design features that needed to be retained in the remaining parts of the woolstores complex included the redbrick external wall and parapet wall, the roof and the rainwater downpipes, the lintels above the doors and windows, the doors and windows and the signage of "Dalgety Company Limited". The report also stated that the Gheringhap Street and western portion of the Brougham Street facades (and spaces within) of the Deakin University Waterfront Campus are historically significant at a local level (Department of Planning 2011). They are associated with the development of the Dalgety and Company Limited woolstores from 1891, 1929 and 1940. Parts of the building also have associations with the Geelong architectural firm of Laird and Barlow, and later, Buchan Laird and Buchan (Department of Planning 2011).

### **The conservation management plan analysis**

There were two key protagonists responsible for the large and complex woolstores buildings located in Geelong, Frederick Gonnerman Dalgety and C. J. Dennys. The founder of Dalgety & Co, Frederick Gonnerman Dalgety built the first warehouse complex located at the Gheringhap Street in 1891. The company was successful and grew as the industry developed till the 1840s. The company began with a double storey brick and render store in 1891, and they continued to expand spatially gradually and attached new blocks under an enlarged roof. It took eighty years to

complete the whole series of spaces within the woolstores complex between 1891 and 1954. Between the sequences of construction of Dalgetys Woolstores, Dennys Lascelles Company was formed and the Dennys Lascelles Woolstores was built in 1934. The overall scale, form and construction systems of the store is similar to the Dalgetys Woolstores. The following point is the summary of structures of Dalgetys woolstores based on fabric and structure:

- Wall: solid red brick.
- Door and Window : timber frame with reinforced concrete for lintel and sills as decorative elements
- Frame: 1891 used timber frame. 1901 timber frame and I-shape steel column was used. In 1940 reinforced concrete for the whole structure was used to Dalgetys Woolstores.
- Storey height: one to four storeys. Most of section have four storeys
- Roof: Timber and steel trusses with asbestos cement sheet roof covering

The fabric and structure of Dennys Lascelles woolstores repeated the Dalgetys Woolstores design and materials. The only different was the storey height. This 1934 section was built with six storey heights.

The external wall is solid brick and there is a skeletal frame structure of timber hardwood which forms the internal space. The woolstores are unique and special in how the original architect Buchan, Laird and Buchan employed an unusual design solution on in relation to the building height. The ceiling to floor height of the Dennys Lascelles Woolstores is inappropriate for store functions. To maximize the building space, the former architect has increased the floor space by increasing the height of the Dennys Lascelles building to six floors while the Dalgetys Woolstore was only four storeys (Department of Planning 2011). The evidence of this situation is mentioned in the local heritage advisor's report "Laird and Buchan used a totally new design concept for the woolstore, incorporating lower floor to ceiling heights to achieve six floor levels in a height which would normally only cater for four". The other issue that complicated the construction of Dennys Lascelles is that special shaped bricks were used on the north east and south east corners where the corners had angles greater than 90 degrees. In 1905, a different architect was commissioned to design the buildings with additional elements such as a boiler house, engine room, work room, coal house, chimney stack, wc's and urinals (Hartwell 1975). However, the basic design approach still maintained the classical style and used the similar structure from past buildings. After that, the Dalgetys returned to commissioning architectural design services from Buchan, Laird and Buchan. The review shows that there was design improvement from addition to addition. McGlashan Everest was awarded the architectural commission for the Deakin University design because this firm was engaged in re-roofing design the 1891, 1929 and 1954 sections in 1993. Besides that, it is a local firm and has assumed had a strong relationship and understanding on local history and in particular the two woolstores.

This section summarised the Dennys Lascelles woolstore was proposed to create an exciting multipurpose environment, providing light-filled spaces of varying dimensions. The value of this building in history merges with technology, and environmental sustainability as a critical part in design development for Dennys Lascelles that the stakeholders learned from Dalgetys woolstores. The location of this building at well-known corners with waterfront views also provides the answer that understanding the history of area (surrounding) and the buildings itself is important and critical in the way to gain intellectual capital. The decision on designing Deakin University is under historical influences and the importance of protecting the architectural and historical significance. This project was successful in design because the University's Masterplan was consistent with the Environmentally Sustainable Design (ESD). As stated in Deakin Prime corporate education and

Geelong Waterfront Campus Master Plan, ESD allows the design teams to create a good design for Denny's Woolstores re-use and the pattern has been established for future adaptive re-use projects that involve historical buildings. However, ESD is not discussed in this paper.

## 5. Conclusions and Future Research

The modernization process of Chinese cities is accelerating. How to deal with the old building is still a challenge. The experience of developed countries is worthy of studying. Due to the importance of design management for adaptive re-use, this paper introduced the Intellectual Capital Conceptual Model for design management of adaptive re-use. In addition, two case studies are provided in the hope to be helpful for China. The research will continue further and we will embark upon the empirical phase and conduct face-to-face interviews with the various project team members and the client and also conduct a document analysis on key project documents. To ensure the validity of the situations, the project manager, client, the architect and the contractors chosen are the same person for both projects. The empirical data analysis will seek to refine the conceptual model proposed and evaluate its effectiveness in relation to critical success factors for multi-disciplinary project team design management with different backgrounds, skills and knowledge for continued success of future adaptive re-use projects.

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