



International High- Performance Built Environment Conference – A Sustainable Built Environment Conference 2016 Series (SBE16), iHBE 2016

Adding More by Using Less: Adaptive Reuse of Woolstores

Shabnam Yazdani Mehr^a, Henry Skates^a, Gordon Holden^a

^aGriffith University Gold Coast Campus, 58 Parklands Dr, Southport QLD 4215, Australia

Abstract

Having acknowledged the value and importance of heritage, it is not always possible however, to preserve heritage buildings without some form of adaptive reuse. This paper will examine the values attached to heritage buildings, the importance of and the challenges associated with various forms of adaptive reuse. It will argue that adaptive reuse can add value to such buildings and places. This paper will focus on three case studies to illustrate the importance of adaptive reuse.

© 2017 The Authors. Published by Elsevier Ltd.

Peer-review under responsibility of the organizing committee iHBE 2016.

Keywords: adaptive reuse; preservation of heritage buildings; woolstores; value of heritage buildings; challenges; case studies

1. Introduction

Heritage buildings and places have variously been described using terms such as ‘unique’ and ‘invaluable’[1]. Heritage is considered as structures, buildings, places and areas that have architectural, cultural, environmental or aesthetic importance [2]. With this in mind the long lasting protection of such heritage is important to society, and so, national and international authorities have tried to develop regulations, guidelines, methodologies, standards and measures to define and conserve historic buildings and their settings [3]. It has been noted that the conservation of such heritage has a broad spectrum of benefits ranging from purely commercial advantages such as tourism, through intangible benefits such as religious or educational values, to a better appreciation of history [4]. Conservation in this context is the process that reduces the depreciation of heritage, thus decreasing the need for fundamental interventions [5].

In Australia it would appear that there is both political and public acceptance that heritage building conservation has some value, be it economic, cultural or social, or combination of these aspects. It is also apparent that people have a greater feeling of connection to their local environment via heritage buildings compared to the construction of

new buildings [6]. In addition a heritage building may not only provide a sense of connection, but may also make people curious to know more about their history, the people and culture that produced them [7].

Adding additional value to conserving heritage buildings and places is the ‘reuse’ principle implicit in the idea of sustainability. Reusing such properties may help a city to achieve its density aims or energy efficiency and may be more affordable than a new build option.

“Cities need old buildings so badly it is probably impossible for vigorous streets and districts to grow without them....for really new ideas of any kind – no matter how ultimately profitable or otherwise successful some of them might prove to be – there is no leeway for such chancy trail, error and experimentation in the high-overhead economy of new construction. Old ideas can sometimes use new buildings. New ideas must use old buildings”. [8]

Heritage buildings and places are important, because not only do they show differences within societies, but also they tell us who we are, and how the past has helped shape our lives and our surroundings. Heritage building conservation therefore, not only preserves valuable places and buildings and contributes to sustainability; it preserves the uniqueness and history of societies including the character of community where people live, work, and re-construct.

2. Heritage Buildings

The term 'conservation' covers the whole gambit from basic maintenance to preservation, all the way through to adaptive reuse. This paper focuses on adaptive reuse. Adaptive reuse means changing a building and/or its use in order to satisfy the needs of new or even existing owner [9]. Adaptive reuse is thus a form of preserving heritage in that, although it may change a building's use, it also acknowledges its importance and implicit in that it also acknowledges its value [10]. One additional value acknowledged in heritage building adaptive reuse is the skills and efforts of the previous builders [6]. Furthermore reuse preserves the historical, cultural, and architectural values of heritage buildings [11].

The heritage and cultural value of a building has a significant effect on the decision related to whether the building will be reused and changed. In making such a decision, the architectural heritage and historical values (including emotional, experience, architectonic, cultural-historical and visual) are evaluated versus the financial as well as possible use values [12]. The visual or aesthetic value is part of architectural value [3]. Having said this, the functional and economic life cycle of a building is also important for decision making in relation to new use or demolition. Adaptive reuse usually happens when there is some potential in the quality of a building or its environment and is made possible and practical when stakeholders have an idea related to the future potential of the building. Bullen and Love [13] expresses a successful adaptive reuse project on the following way:

“Respect and retain a building’s heritage significance as well as add a contemporary layer that provides value for the future.”

Having outlined some of the values placed on heritage buildings, it must be recognized that there are many challenges relating to their conservation. It should be noted that adaptive reuse of architectural heritage can have a detrimental effect on the social, cultural and historic values of historic buildings, particularly where a change of the original function of a building is concerned [14].

There are two main types of adaptive reuse of buildings; ‘within-use’ and ‘across-use’. When a building has been adapted based on its primary use it is within-use adaption, while across-use changes the initial use of building to another use [15]. Across use adaptation of three woolstores is investigated in this research, namely; Queensland Primary producers No, 4 Woolstore in Teneriffe, Brisbane; Dalgetys Woolstores in Geelong City, Victoria; and, The Old Woolstore Apartments and Hotel, Tasmania.

3. Woolstores

Woolstores are considered important in terms of the historical, architectural and regional development of Australia [16] and as such many have attained heritage status. They tell the story of the resilience and success of Merino sheep to Australia's vast differences in climatic conditions (originally from Alentejo, South Portugal subsequently introduced to Spain and Australia in 1788) [17]. They represent a history of pastoral development that has resulted in Australia being the largest wool-producer country in the world accounting for two-thirds of the wool on world markets at a value of \$30 billion annually [18]. They also recall the development of the railways connecting the interior with the port cities from where the wool was transported worldwide. Woolstores thus have historical and cultural significance in Australia and being located port side and built for purpose they have become significant landmarks in Australian port cities. Thus woolstore architectural heritage helps gives identity to the nation, city, street, suburb, place and country and connects people to their past [6].

3.1. Case study 1: *Queensland Primary Producers No. 4 woolstores in Teneriffe Brisbane*

Teneriffe's history is closely linked to the Brisbane River, and the wool and grain industries. The river was navigable to small ships allowing wharves to be built and adjacent were the woolstores that stored wool until it was loaded on to ships for export. With changes in transportation, and increasing ship sizes, a new deep water harbour was built at the mouth of the river and the wharves at Tenerife became untenable; so too the woolstores. The railway line from Bowen Hills to the wharves was closed in the 1990's for the same reason and more of the riverfront became vacant and many buildings fell into a state of dilapidation. The Queensland Government registered the W4 woolstores as a heritage building on 21 October 1992 for the following reasons [19]:

- This place is important with regard to showing the fundamental features of a specific group of cultural places.
- This place is important with regard to displaying special and rare features of Queensland's cultural heritage.
- This place has aesthetic values.
- This place is important due to its contribution to the development of Queensland's history.
- This place has a unique connection with a specific community or cultural group in support of cultural, spiritual and social reasons

In the 2000s a boardwalk was constructed and the change of wool stores into residential apartments began [20]. The W4 apartment complex is an example of this type of refurbishment making W4 apartments one of the most important heritage contributions to the Teneriffe area. The wool store began as a three storey brick and timber warehouse that was constructed during the 1930s [21]. Some of the challenges of converting this type of building to apartments include the structural timber grid spacing, and the fenestration. To overcome this some of the former internal structure of the building was demolished and the interior was reconstructed. Challenges regarding windows fenestration were overcome in some instances by using borrowed light in some internal spaces such as bedrooms. This type of compromise must frequently be accommodated when dealing with heritage listed facades. In locations where changes were made similar materials were used in the reconstruction as occurred in the original including multicolored bricks in three layers mimicking the original horizontal emphasis. The first and second original levels used Queensland hardwood for joists and beams but the new third level uses Oregon Pine [21]. In the new floor plan the ground and first floors have been changed into modern offices. The main entrance is near the Commercial Road end and in the center of the building where a modern timber stairway has been inserted within an impressive lobby. This exposes the Oregon Pine columns of level 3 and recognizes the historical value of the original woolstore Pastoral scene paintings have been included in the new layout [19]. A courtyard inserted in the middle of the development allows light to penetrate into what was a deep plan space, and allows for the required setback for the new apartments built above the existing woolstores, thus preserving the historical front to the road.

The reuse of W4 and other similar buildings has a profound affect on the Tennerife area. Instead of being derelict, new life and economic value was created in this area of the city and being within the domain of the Brisbane City

River Plan, the City Cat stop adjacent to W4 further enhanced the desirability of the development. Coffee shops at street level in many of the reused woolstores has added active street frontage, and breathed new life into the streets. The apartments themselves are seen as being very desirable adding further value to the area (Fig. 1). Overall the W4 adaptive reuse into apartments has been a success story. Value has been added to the building, the surrounding streets, the local area and to the city at large. In this instance, the adaptive reuse of W4 can be seen as being a positive influence, even though there has been quite a significant change in use.

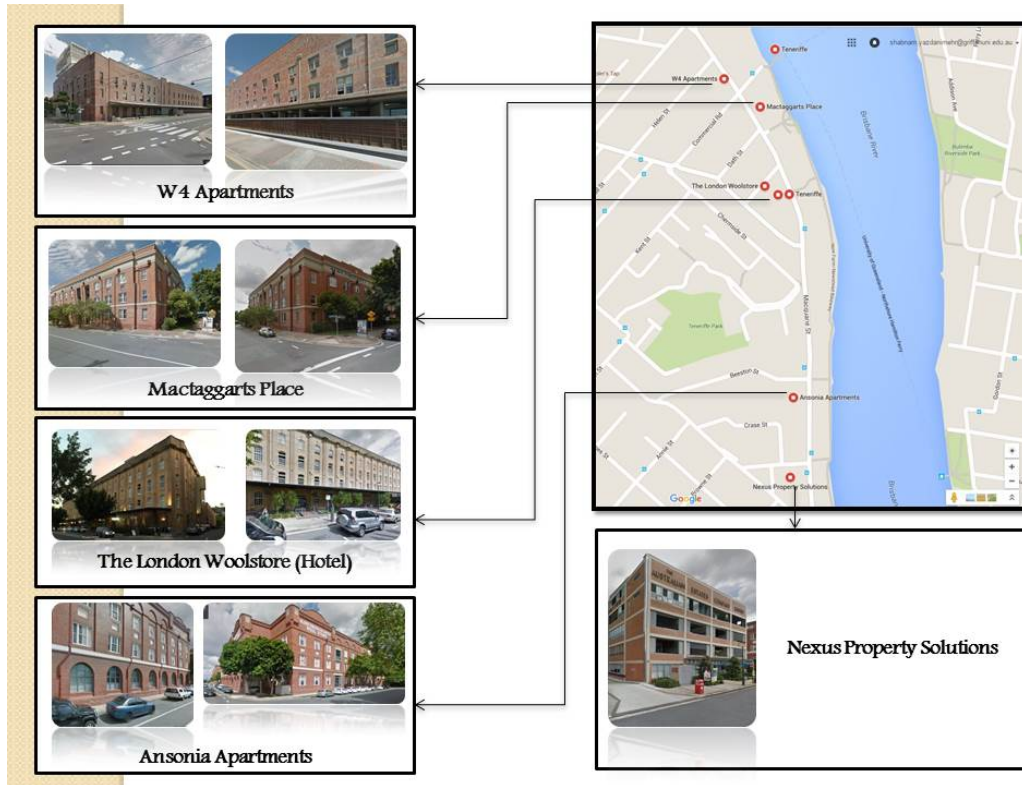


Fig. 1. Woolstores in Teneriffe area Brisbane (Source: google map/google earth, 2016)

3.2. Case study 2: Dalgetys woolstores in Geelong city, Victoria

Dalgetys woolstore is an impressive brick and timber structure located on the Geelong waterfront. This woolstore was constructed in 1891 and was in continual use until 1954 by Frederick Gonnermann Dalgety, illustrating the importance of the nineteenth century wool industry in Australia [22]. The Dalgetys woolstore has now been incorporated into an important part of the largest campus of Deakin University and is representative of successful adaptive reuse of a woolstore [23]. The Dalgetys woolstore is important historically and architecturally, with the Gheringhap Street and Western part of the Brougham Street frontage of particular importance. The Department of Planning designated that the design elements that needed to be kept included the lintels above the windows, the doors, the roof and the rainwater down pipes, the red brick external walls, the parapet walls, and the sign of “Dalgety Company Limited” [24]. During the second half of the twentieth century the wool industry was in a state of flux and due to changes in wool markets and the overall economy, the viability of the Australian wool industry was challenged. Throughout the 1980's, most of Geelong's woolstores fell into a condition of disrepair. Included in the general malaise, the Dalgety woolstore became a forgotten building in Geelong city. This occurred at around the time the Australian Government was trying to convince the general public that it was important to obtain a tertiary education. These factors facilitated Deakin University in purchasing the woolstores, converting them into university

buildings, thus preventing demolition [22]. In 1993 the transformation of woolstore into a new university campus was provided by the local firm of architects, MacGlashan Everist, who won a national design competition (Fig. 2.). The MacGlashan Everist design focused on three factors including urban connection, the connection between the current structure and the new one, and the typology of an academic campus [22].

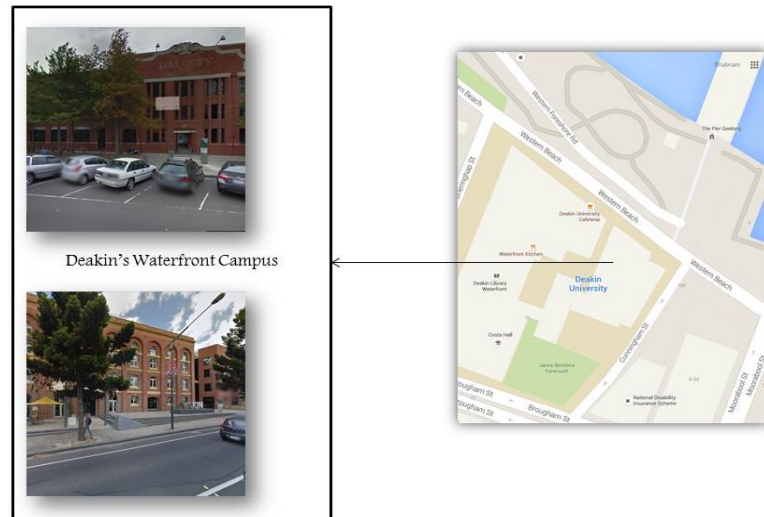


Fig. 2. The Woolstores; Deakin's Waterfront Campus Buildings (Source: google map/google earth, 2016)

Similar to the Brisbane case study, some of the main challenges in adaptive reuse of this building included the structural arrangement, the deep plan nature of the building and the fenestration. The existing building consisted of four storeys. The new design for the woolstore included preserving the structural condition of the building in some places and in others, removing three floors of hardwood timber. To achieve this the floors were removed from the top floor to the foundation level, whilst the top floor was used as scaffolding for the roof refurbishment [23]. In relation to the adaptive reuse of the Dalgety woolstore, Lee [25] noted that:

“.... the conservation requirement (was) to retain and conserve as much of the existing building as practical. This transition was achieved by retaining the existing building exterior and by dismantling some internal construction to create courts atrium, which open and connect the space, and provide natural light.”

It can be argued that the adaptive reuse of the Dalgety woolstore reveals something significant in relation to the continuing social, cultural and community values of heritage, including displaying features of sustainability in practice [22]. From a heritage and architectural point of view, MacGlashan Everist have constructed an interesting project that not only maintains a rich heritage, but also integrates technology, comfort and the functional values of a modern university [22].

This adaptive reuse of the Dalgety Woolstore has, as in the Brisbane case study, given new life to a neglected part of the city and has contributed significant social and economic value to Geelong's waterfront.

3.3. Case study 3: the Old Woolstore Apartment Hotel in Hobart, Tasmania

The Old Woolstore Apartment Hotel is located in the Sullivans Cove in Hobart which is one of the main historic areas in Hobart. In years gone by, this area was not particularly fashionable, but now it is a lively inner city area [26]. The old woolstore site was originally built as shanty housing and then developed into wool storage and

treatment services throughout the 1900s. The top floor of the building was originally used for wool treatment where natural light was provided through a saw-tooth roof. During the conversion the original floors and some of the original equipment were kept intact. In the new development the original equipment is used as decorative, historic and educational elements in some of the public spaces of the new apartment hotel. The building was awarded the “Best Redevelopment Industrial Building” by the Australian National Trust in 1997 [27].

The agricultural company of Roberts Ltd. used the building for wool and grain storage. At that time, wool was brought from all parts of Tasmania to be pressed and then exported from the port of Hobart. In later years, the area was used for other agricultural produce in addition to wool and grain, as farmers could drive into the building through large double doors thus allowing them to deliver or receive goods. This double door arrangement has shaped the refurbishment of the exterior of the building [26].

Converted in February 1997, the hotel currently has 242 accommodation rooms including hotel rooms, two bedroom apartments, and self-contained apartments [27]. The addition of 124 apartments along with meeting and conference rooms were constructed during 2000 and completed in 2001 (Fig. 3.) [26].



Fig. 3. The old woolstore apartment hotel, Hobart (Source: google map/google earth, 2016)

As in the previous examples, challenges to converting the woolstores to apartments included the location of structural elements, the deep plan nature of the original building and the fenestration pattern. One of the saving graces to the deep plan aspect was that light could be obtained to internal rooms through the roof light system, thus negating the need for changing the fenestration. This design feature is not appreciated by all guests, some of whom dislike the absence of windows. The use of exposed original features such as some of the equipment in the public areas facilitates users to connect with the past, and thus increases the appeal of the Hotel. The Woolstore conversion has helped to lift the overall appeal of this area of Hobart, and can be seen as contributing in a positive way to downtown life. In this case, as in the previous cases, it would appear that the value of adaptive reuse of this building goes beyond the building itself to the local area.

4. Conclusion

Some authors believe adaptive reuse of architectural heritage can detrimentally change the social, cultural and historic values of historic buildings, and they therefore disagree with adaptive reuse, especially when there is a change of the original function of the building [14]. Regarding the three case studies examined here, on the face of it, adaptive reuse has added economic value to these heritage buildings and the surrounding area. In each case the structure and appearance of these buildings to a large extent was kept intact and it was only the primary function and use of building that was changed.

Different building types present different values. The reuse of heritage buildings needs a high level of attention to detail to be successful [28]. In Australia, woolstores play a valuable role as heritage buildings, in that these buildings have contributed to industrial development and economic prosperity within Australia. The design of this type of building was very effective for its particular function but due to redundancy, the building has ceased to function as it once did. Woolstores have been converted into a variety of different functions due to their relatively generic large floor-plate areas. In the case studies presented here, the woolstores are of significance since they present unique examples of buildings, of a specific type of industry, in a given time period, that have been successfully adaptively reused. Cultural heritage preservation not only helps a society to protect its invaluable and important properties, but also preserves its environment, history and a sense of identity.

This paper has identified that heritage value may be attributed within or across national boundaries and heritage is considered as being important for both present and future generations. Such heritage provides a sense of connection to society and landscape and is thus significant as visible examples of cultural character [4]. Heritage buildings and places are important, because not only do they show differences within societies, but also they tell us who we are, and how the past has helped shape our lives and our surroundings. With this in mind the long lasting protection of such heritage is important to society, and so, national and international authorities have tried to develop regulations, guidelines, methodologies, standards and measures to define and conserve historic buildings and their settings [3]. Having acknowledged the value and importance of heritage, it is not always possible however, to preserve heritage buildings without some form of adaptive reuse. This paper has examined some of the values attached to woolstore heritage buildings, along with the importance of and the challenges associated with three different forms of adaptive reuse. It has argued that adaptive reuse can add value to such buildings and the places where they are located.

References

- [1] A. ICOMOS, The Burra Charter: The Australia ICOMOS charter for places of cultural significance 1999: with associated guidelines and code on the ethics of co-existence, Australia ICOMOS2000.
- [2] N. Bhawan, Conservation of Heritage Buildings - A Guide, Directorate General, Central Public Works Department 2013.
- [3] S. Wilkinson, H. Remøy, C. Langston, Sustainable building adaptation: innovations in decision-making, John Wiley & Sons2014.
- [4] P. Commission, Conservation of Australia's historic heritage places, SSRN Working Paper Series, (2009).
- [5] K. Dardes, J. Levin, L. Souza, preventive Conservation - A discussion, GCI Newsletter Summer 2000.
- [6] P.A. Bullen, P.E. Love, Adaptive reuse of heritage buildings, Structural Survey, 29 (2011) 411-421.
- [7] B. Feilden, Conservation of historic buildings, Routledge2007.
- [8] J. Jacobs, The life and death of great American cities, New York: Random House, 1961.
- [9] S.J. Wilkinson, K. James, R. Reed, Using building adaptation to deliver sustainability in Australia, Structural Survey, 27 (2009) 46-61.
- [10] A. Jack, Built heritage management systems: the framework of a digital tool for the conservation of Brisbane City Hall, (2014).
- [11] D. Latham, Creative Re-use of Buildings: Principles and practice, Donhead Publishing Company2000.
- [12] J. Roos, De ontdekking van de opgave : herontwikkeling in de praktijk = Discovering the assignment : redevelopment in practice, VSSD, Delft, The Netherlands, 2007.

- [13] P. Bullen, P. Love, Factors influencing the adaptive re-use of buildings, *Journal of Engineering, Design and Technology*, 9 (2011) 32-46.
- [14] Y.K. Ahn, Adaptive reuse of abandoned historic churches: building type and public perception, 2009.
- [15] L. Ellison, S. Sayce, Assessing sustainability in the existing commercial property stock: Establishing sustainability criteria relevant for the commercial property investment sector, *Property Management*, 25 (2007) 287-304.
- [16] Your Brisbane: Past and Present; Australian Estate Wool Store, 2009.
- [17] Australian Association of Stud Merino Breeders, 2015.
- [18] The Importance of the Wool Industry in Australia, Hills Adventist College - Archibull, 2012.
- [19] R. The University of Queensland, South Brisbane Municipal Chambers (former), in: A. E-Heritage (Ed.), *The University of Queensland, Australia*, 2014.
- [20] Teneriffe Woolstores, Brisbane australia's new world city; Visit Brisbane, Brisbane Marketing, 2016.
- [21] W4 Apartments, W4 APARTMENTS, 2011.
- [22] U. de Jong, Positing a holistic approach to sustainability, ANZASCA 2007: Proceedings of 41st annual conference. Towards solutions for a liveable future: progress, practice, performance, people., Deakin University, 2012, pp. 76-84.
- [23] K. Alauddin, K. London, Adaptive Re-use: New Life for Old Buildings, (2012).
- [24] P. Victoria Planning, Department of Planning and Community Development, Victoria, Australia, 2009.
- [25] J. Lee, Inner Space-Deakin Woolstores Campus, ARCHITECT VICTORIA, (1997) 10-10.
- [26] WELCOME TO THE OLD WOOLSTORE APARTMENT HOTEL HOBART TASMANIA, The Old Woolstore, 2016.
- [27] The Old Woolstore Apartment Hotel, Tourism Industry Council Tasmania, 2011.
- [28] S. Sandbhor, R. Botre, A systematic approach towards restoration of heritage buildings-a case study, *International Journal of Research In Engineering Technology (IJRET)*, 2 (2013).