ICOA1371: SAFEGUARDING AN IDENTITY CARVED IN STONE: HERITAGE CONSERVATION OF THE 'OAMARU HISTORIC AREA' IN OTAGO, NEW ZEALAND

Subtheme 01: Integrating Heritage and Sustainable Urban Development by engaging diverse Communities for Heritage Management

Session 2: Management, Documentation
Location: Stein Auditorium, India Habitat Centre
Time: December 13, 2017, 14:45 – 15:00

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Stacy Vallis is a PhD Candidate at the School of Architecture and Planning, at the University of Auckland. Focusing on the architectural conservation implications of seismic retrofitting masonry building precincts in New Zealand, Oamaru is as a key case study due to the lack of attention within local scholarly discourse despite its architectural significance. Contributing to various QuakeCoRE initiatives, Stacy also currently serves as a Board Member for the New Zealand National Committee for ICOMOS.

Abstract: New Zealand is a country with a short history of European settlement (post-1840) and a long record of damaging earthquakes. The Oamaru township showcases one of the country's most intact Victorian streetscapes built using local limestone construction techniques during a nineteenth century economic boom. Following the 2010/11 Canterbury earthquake sequence, the Canterbury Earthquakes Royal Commission of Inquiry (2012) suggested a nationwide problem through the proportion of deaths which occurred in public places, as a result of the prevalent historic masonry building stock. Through QuakeCoRE (NZ Centre for Earthquake Resilience), researchers from the Universities of Auckland and Otago are collaborating across various research platforms to investigate the safeguarding of heritage precincts whilst addressing this urban safety hazard.

Conservation of the Historic Area's unrivalled Victorian Italianate, Neoclassical and Moderne architecture is complex and is closely associated with a strong heritage tourism industry. The adoption of cost-effective and heritage-sensitive structural upgrades is explored by engaging multidisciplinary research methodologies. Constituting the initial phase of investigation, this paper presents the compilation of a historic building database and typological classification based on input from key community stakeholders.

Therefore the overall questions are posed: how may local conservation doctrine and specific architectural or construction characteristics inform the development of a typological classification system for the earthquake-prone Oamaru heritage building stock? In conjunction, how may participation by building owners, local authorities, conservation architects, engineers and scientists highlight key perceptions and drivers, to better facilitate the urban conservation of Oamaru's historic streetscapes?

As the foundation document for conservation in New Zealand, the *ICOMOS New Zealand Charter for the Conservation of Places of Cultural Heritage Value* (2nd edition 2010) will provide a basis for these

discussions. This will ensure that architectural and engineering or scientific commentary accompany each other, enabling holistic conservation outcomes in earthquake-prone regions such as New Zealand.

Key words: *community, stakeholder, sustainability, participation*

Introduction

The New Zealand architectural historian John Stacpoole described the historic South Island townscape of Oamaru as:

<< Reminiscent of Italy-here, if anywhere in New Zealand, Antonio might have bewailed his ships' wreck or Tybalt duelled with Romeo >>[1].

The Oamaru building stock is distinguished by persistent Victorian Classical street frontages and the use of locally-sourced limestone employed within load-bearing and ornamental capacities. An overall cohesiveness is further evident through the predominant two- and three-storey building scale. These characteristics may be linked to a shared architectural pedigree, as many of the buildings were designed by the local practice of Forrester & Lemon, subsequently operating as Forrester & Steenson.[2]

The Oamaru Whitestone Civic Trust (OWCT) Victorian Precinct presents a unique conservation challenge, calling for seismic risk mitigation against a Victorian architectural backdrop. A primary objective of the reported study was to investigate the extent to which historic architectural and urban characteristics were considered in the selection of seismic retrofitting solutions within the Precinct. Analysing previous structural upgrades of the historic unreinforced stone masonry (URM) building fabric informed this discussion, and offered lessons for ongoing and future schemes. Planning the seismic retrofitting approach requires the involvement of stakeholders within the community and local government to establish the preferred pathway to successful retrofit solutions. We explore the benefits and challenges of including a range of stakeholders in the urban conservation of Oamaru's historic streetscapes.

Structural upgrades of three selected buildings within the Victorian Precinct highlight conservation processes of repair, reconstruction and adaptation, referring to the 1993 and 2010 versions of the *ICOMOS New Zealand Charter for the Conservation of Places of Cultural Heritage Value.* Research methods included archival study, site survey and in-depth, qualitative interviews with key community stakeholders. The research comprised part of an interdisciplinary project undertaken to investigate the safeguarding of heritage precincts whilst addressing urban seismic safety.

Seismic, Legislative and Community Considerations: Mitigating Seismic Risk against a Victorian Architectural Backdrop

Recent destructive earthquakes in New Zealand include the 2010-2011 Canterbury earthquake sequence (M_w 7.1 Darfield earthquake and M_w 6.3 Christchurch earthquake) and the November 2016 Kaikoura earthquake (M_w 7.8).[3] The former Darfield and Christchurch earthquakes highlighted threats posed to pedestrians and building occupants by falling URM walls, facades and parapets,[4] whereas the latter Kaikoura earthquake reiterated the risk to public urban safety along with highlighting the successful performance of retrofitted structures.[5] The Alpine Fault is an eight hundred-kilometre long plate boundary

[1] (Stacpoole 1976: 142)
[2] (Bauchop/Heritage New Zealand 2016: 17)
[3] (Ingham and Griffith 2011/2012: 27-159)
[4] (Ingham and Griffith 2011/2012: 27-159)
[5] (Dizhur, Giaretton et. al 2017: 194)

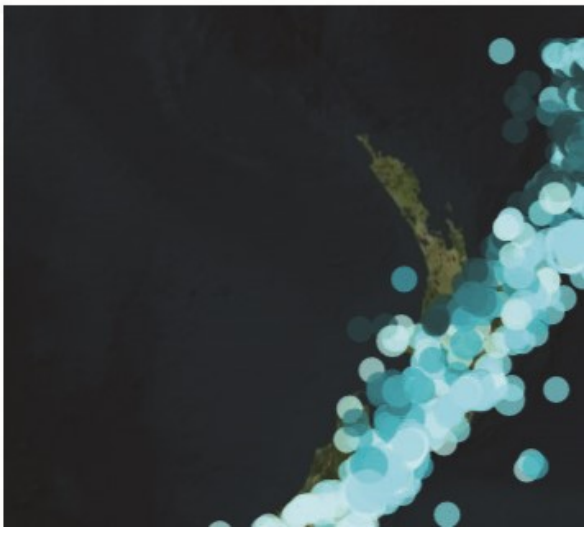
fault that lies west of the Southern Alps[6], and despite Oamaru's location within an area of low seismic risk, the town faces potential challenges in the event of a large, regional Alpine Fault earthquake. This fault has a known seismic history of generating magnitude 8 earthquakes approximately every 300 years, with the last known event being in 1717 AD. The outcomes of a future Alpine Fault earthquake will be felt across the whole South Island, and will cause significant damage to the built and natural environment.[7] Hence, Alpine Fault risk and the likelihood of damage across the South Island have resulted in Oamaru receiving renewed research attention *(Fig.1)*. Ongoing seismic activity in New Zealand resulted in the implementation of the 'Building (Earthquake-prone Buildings) Amendment Act 2016' on July 1, 2017, detailing changes to the responsibilities shared by building owners, territorial/local authorities, and designers such as engineers or architects.[8]

Managing heritage precincts in urban or provincial centres featuring historic buildings of significance, such as in Oamaru, has traditionally been undertaken by community organisations. The Oamaru Whitestone Civic Trust (OWCT) was formed in 1989 and endeavoured to acquire the town's historic buildings for conservation purposes.[9] The founding of the OWCT coincided with a local heritage conservation movement to address groups of historic structures as precincts, rather than as separate buildings alone.[10] Today the OWCT owns sixteen buildings within the Whitestone Victorian Precinct (*Fig. 2*). Key priorities of the OWCT may be summarised as:
<<Long term it's about maintaining buildings for as long as possible. On a day to day basis it's about making sure everything is paid for(…)[The Trust] would like to see buildings preserved properly and the only way to do that is to own them>>[11].

In recent years the Oamaru Victorian Precinct has attracted increasing numbers of visitors, as a consequence of the resurgence of interest in New Zealand's heritage, provoking various changes in use within the building stock. In the year ending April 2017 (April 1, 2016 – March 31, 2017), total visitor arrivals generated a revenue of $175 million in the Waitaki region.[12] The recent rapid growth in tourism activity across New Zealand over the past two years, resulting in more than 3.5 million international visitor arrivals per year for the first time, is also reflected in Waitaki tourism growth.[13] The following analysis highlights an example of tourism-related conservation and adaptive reuse within the Victorian Precinct (
Fig.1).

[6] (Berryman, Clark et. al 2012: 1690-1693)
[7] (Orchiston, Davies et. al 2016: 1-45)
[8] (Ministry of Business, Innovation and Employment 2017)
[9] (Trapeznik 2014:85-88)
[10](Trapeznik 2014:100-105)
[11](Mark Smith, OWCT Operations Manager 2017: interview)
[12](Stats NZ 2017)
[13](Stats NZ 2017)

(a) Location of Oamaru in South Island



(b) Illustrating earthquakes greater than M 40 since 1970 (Data extracted from quakesearch.geonet.co.nz)

Fig.1- New Zealand Seismicity

Fig. 2- Oamaru's Historic Precincts

ICOMOS New Zealand Charter for the Conservation of Places of Cultural Heritage Value

Reference to the 1993 and 2010*ICOMOS New Zealand Charters* offered an overview of conservation philosophy applied to the design of structural upgrading solutions for the selected case study buildings. The currently-operative 2010 Charter addresses structural upgrading within Article 17: Degrees of Intervention, and encompasses preservation (stabilisation, maintenance and repair), restoration (reassembly, reinstatement or removal), reconstruction and adaptation.[14] The reported structural upgrades within the Trust-owned properties were undertaken during the period between 1995-2002; with reference to the 1993 version. Comparison across both Charters highlighted a specific variation in the recommendations for new work on old buildings. An observable conservatism exists in the 2010 edition stating that new work <<should avoid inappropriate or incompatible contrasts of form, scale, mass, colour and material>>.[15] The 1993 edition does allow additions and alterations and recommends that these are "compatible with the original fabric... but sufficiently distinct that they can be read as new work."[16] Whereas there is consistency across both Charters, the 2010 version goes as far as to specify factors contributing to incompatibility.

Three Case Study Buildings

[14](ICOMOS New Zealand 2010: 8)
[15] (Gatley 2011: 1-2)
[16] (Gatley 2011: 1-2)

Examination of the three case study buildings displayed a range of attitudes to the seismic retrofits. Questions for comparison included the range of retrofitting technologies employed integration within the existing historic spatial configuration or historic masonry fabric, and the relationship to Charter principles.

Case Study One: Intervention via Repair and Reconstruction of Smith's Grainstore (Hadley & Robinson Ltd. with Chris Cochran Architect)
Emulating 16th Century Italian palazzo architectural style, reflecting a period of economic prosperity, Smith's Grainstore is the first case study and explores intervention via repair and reconstruction.[17] Seismic assessment and proposals for structural upgrading for Smith's Grainstore were undertaken by the engineering practice of Hadley & Robinson Limited in 1995.[18] Archived seismic assessment reports acknowledge the use of load-bearing masonry construction with no cavity, in conjunction with the presence of substantial boundary walls and lack of concrete bond beams.[19] Both street elevations feature many openings, which contribute to vulnerability to earthquake damage.[20]

Site inspection revealed an expressive, interventionist approach to the undertaken structural conservation works. The proposed engineering solutions were implemented with three "goal post type"/ "H-shaped" steel frames, along with additional securing of structural elements to the exterior masonry walls.[21] The introduction of new red painted steel frames which are visible from ground to roof level and consists of new steel columns and cross beams eschews concealment and reflects the attitude presented by the 1993 ICOMOS New Zealand Charter (
Fig.3a-c).[22] Despite contrast in material and colour, the overall form, scale and mass remains consistent with the original timber structural matrix of columns and beams, seen at ground level. While installation involved the removal of three timber posts and replacement with steel columns, compatibility with the building's historic internal plan configuration is retained.[23] The proposed works were undertaken in conjunction with a wider scheme for redevelopment.[24] From a stakeholder perspective, a key logistical challenge faced by building tenants and business owners during seismic strengthening work is described as:
<<timing of the work (…) ideal if it wasn't done over the very busy summer period. Obviously mid-winter would be ideal (…) unless it was emergency work (…) because it's not ideal for them [the Trust] to have it [the precinct] shut down at one time>>[25]

[17](Cochran 1996: 25)
[18] (Hadley& Robinson Ltd. 1995: 2-5)
[19] (Hadley& Robinson Ltd.1995: 2-5)
[20] (Hadley& Robinson Ltd.1995: 2-5)
[21](Hadley& Robinson Ltd.1995: 2-5)
[22] (ICOMOS New Zealand 1993:4)
[23](ICOMOS New Zealand 1993: 4)
[24] (Hadley& Robinson Ltd.1995: 2-4, in Cochran 1996)
[25] (Donna Demente 2017: interview)

(a) Wall-First Floor Connection

(b) Wall Connection Detail

(c) 3 Steel Cross Beams

(c) Tyne Street Elevation

(d) Harbour Street Elevation

Fig.3- Expressed steel portal frames in Smith's Grainstore (Oamaru Victorian Precinct)

Case Study Two: Intervention via Repair, Reconstruction and Adaptation for the Criterion Hotel and Connell and Clowes Building (Hadley & Robinson Ltd. with McCoy and Wixon Architects, Mason and Wales Architects, Salmond Reed Architects)

Once serving as one of eighteen licensed hotels and one of thirty-two grog-shops, the Criterion Hotel was the subject of a full adaptation of use as a hotel/ events centre between the years of 1998 and 1999, while the adjacent Connell and Clowes Building extension also saw modification for retail use.[26] Proposals for restoration ranged from structural upgrading by securing floor/ ceiling joists and rafters to the masonry walls, providing a ceiling diaphragm, parapet modification and changes to the internal spatial configuration.[27] Site inspection revealed minimal visual impact due to the prevalence of internal finishes and linings, albeit making the examination of structural upgrading works difficult. Following a period

[26](Cochran 1996: 1)
[27] (Cochran 1996: 89)

where the original parapet finials were removed from the building, the parapet was readdressed during the 1990s conservation scheme. Archived working drawings reveal a process of dismantling the original and constructing a bond beam and stone parapet, that is perceptible from street level visual inspection *(Fig.4a)*.[28] The procedure of works entailed reinstating new parapet finials with concealed carbon fibre rods, and fixed with epoxy resin grout.[29] The parapet demanded full reconstruction, potentially reusing any remaining good stone.[30] This procedure related to the 1993 ICOMOS Charter's process of reconstruction.[31] Partial reconstruction is addressed, although clarification of whether this process involves additional new stone or other remaining materials lie outside the Charter scope, remaining to be defined on a case-by-case basis.[32] Similarly, the subject of workmanship is addressed through the use of surviving evidence or knowledge of form, design, technology and craftsmanship for the purpose of reconstruction.[33] Authenticity is defined for the first time in the 2010 Charter.[34]

(a) Visible colour variation in Oamaru limestone parapet, indicating recent reconstruction works

[28] (Hadley& Robinson Ltd.1997: Sheet No. 5-8)
[29] (Hadley& Robinson Ltd.1997: Sheet No. 5-8)
[30] (McCoy Wixon Architects 1997: 23)
[31] (ICOMOS New Zealand 1993: 3)
[32] (ICOMOS New Zealand 1993: 3)
[33](McCoy Wixon Architects 1997: 23-24)
[34] (ICOMOS New Zealand 2010: 9)

(b) Painted steel profile improving wall-roof connection (Connell and Clowes Building)
Fig.4- External and internal structural modifications to the Criterion Hotel and Connell and Clowes Building (Oamaru Victorian Precinct)

facingportion of the Connell and Clowes Building features a visible painted steel profile evident in the building interior, providing improved wall-roof connections. Minimal invasion is an advantage of expressing the required structural upgrading solutions as compared with concealing new structural elements within the historic masonry building fabric. Article 6: Minimum Intervention is included as a specific definition within the 2010 Charter, for clarity of use and perhaps further reflecting the more conservative approach to new work.[35]

Case Study Three: Intervention via Removal, Replacement and Adaptation for Neill's Store (Hadley & Robinson Ltd. with Cochran & Murray Conservation Architects)

Lastly, Neill's Building is an example of intervention of intervention via removal, replacement and adaptation. Proposed seismic strengthening works entailed the removal, reproduction and reinstatement of the original building's parapet. In contrast to drilling carbon fibre rods into the parapet balustrade, archival drawings of Neill's Building featured replacement with concrete blocks sheathed in Oamaru stone and additional strengthening using stainless steel dowels grouted into the original Oamaru stone building wall.[36] Visible securing bolts along the Harbour Street elevation gable suggest the use of additional steel braces. Site inspection also revealed a less elaborate parapet form compared with other precinct examples, perhaps enabling the adoption of the aforementioned parapet replacement design solution, using concrete blocks. The same method for wall-roof strengthening is adopted, as seen in the Connell and Clowes Building, using a painted black steel gable profile and steel truss fixings.

Previous structural upgrading has enabled the recent change of use, from a vacant grainstore warehouse to house 'Whitestone City', a local heritage attraction for the tourism market industry. 'Whitestone City' is an interactive museum which highlights the history of Oamaru township and the Waitaki district. The development of Whitestone City by Waitaki District Council and Tourism Waitaki is an attempt to offer additional tourist experiences in the precinct as a way to generate more direct tourism income for the town. The adaptive reuse of Neill's Building also reflects an adaptation in the OWCT's role in conservation of buildings. The Trust may be increasingly viewed as a landlord of tourism enterprises, and enablers of tourism experiences, constituting a step-change in their traditional approach and ethos, and presents some challenges to their *modus operandi* and strategic vision.

[35] (ICOMOS New Zealand 2010: 3)
[36](Hadley & Robinson Ltd. 2002 :drawing set S1)

(a) Harbour Street elevation/New parapet *(b) 'Whitestone City' Museum inside Neill's Building*

Fig.5- Neill's Building (Oamaru Victorian Precinct)

Conclusion

The reported case study buildings within Oamaru's Whitestone Civic Trust precinct reflect a range of attitudes towards heritage conservation via seismic retrofitting. Past structural works range from clearly expressed to completely concealed interventions and included varying degrees of conservation processes involving repair, removal, reconstruction and adaptation. Despite being undertaken over a period of seven years, the retrofitting technologies remain similar. It is interesting to note the importance placed on addressing building parapets, even prior to the Canterbury earthquake sequence of 2010/2011. As such, the undertaken works reflect both consistencies and subtle variations in the scope of New Zealand's 1993 and 2010 ICOMOS Charters, relating to new work on historic buildings through reconstruction for example. Whether the OWCT buildings collectively demonstrate a unique approach to structural upgrading in relation to comparable historic centres of the same era remains to be determined. From the perspective of stakeholders, the management role of the OWCT is evident in the appointment of a single engineering firm and a select few architectural practices for the required works. A wider evolution in heritage management by the Trust is demonstrated in the change from preservation as landlord to enabling greater flexibility via adaptation to stimulate and enable tourism activity within the Victorian Precinct.

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List of Figures

ICOA1371: SAUVEGARDER UNE IDENTITÉ INSCRITE DANS LA PIERRE: LA CONSERVATION DU PATRIMOINE DU « QUARTIER HISTORIQUE DE OAMARU », PROVINCED'OTAGO, NOUVELLE-ZÉLANDE

Sous-thème 01: Intégrer le patrimoine et le développement urbain durable en engageant Diverses communautés pour la gestion du patrimoine

Session 2: Le management, documentation
Lieu: Stein Auditorium, India Habitat Centre
Date et heure: 13 Décembre, 2017, 14:45 – 15:00

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Stacy Vallis est doctorante à l'Ecole d'architecture et d'urbanisme à l'Université d'Auckland, spécialiste des implications de la conservation de l'architecture des quartiers édifiés en maçonnerie adaptée aux risques sismiques en Nouvelle-Zélande. Oamaru en est un cas d'école majeur en raison du manque d'attention dans le débat scientifique local, en dépit de sa signification architecturale. Stacy contribue à diverses initiatives du Centre d'excellence en recherche relative aux risques sismiques de Nouvelle-Zélande (QuakeCoRE) et est actuellement membre du Conseil d'administration du Comité national néo-zélandais de l'ICOMOS.

Résumé: La Nouvelle-Zélande est un pays avec une courte histoire de colonisation européenne (après 1840) et une longue liste detremblements de terre ravageurs. La commune d'Oamaru présente un ensemble de rues de style victorien des plus intacts du pays, dont les édifices utilisent des techniques de construction en calcaire local datant de l'expansion économique du XIX^{e} siècle. Suite aux séquences de séismes à Canterbury en 2010-2011, la Commission royale d'enquête pour les tremblements de terre de Canterbury a estimé, en 2012, le problème d'envergure nationale en raison de la proportion de décès survenus dans les espaces publics, résultant des nombreuses destructions d'édifices historiques en maçonnerie. Via le QuakeCoRE, Centre pour la résilience envers les séismes, des chercheurs des Universités d'Auckland et d'Otago collaborent à travers diverses plateformes de recherche pour étudier la sauvegarde des quartiers patrimoniaux en abordant ce risque pour la sécurité urbaine.

La conservation de quartiers historiques sans égal, à l'architecture de styles victorien italianisant, néoclassique et moderne, est complexe et étroitement associée à une intense industrie du tourisme patrimonial. L'adoption d'améliorations structurelles rentables et soucieuses du patrimoine est étudiée en s'engageant dans des méthodologies de recherche multidisciplinaire. Constituant la phase initiale de la recherche, cet article présente la compilation d'une base de données d'édifices historiques et une classification typologique basée sur la contribution des intervenants locaux essentiels.

Ainsi, l'ensemble de la problématique est posée : comment la doctrine de conservation locale et les caractéristiques architecturales ou constructives spécifiques peuvent-elles guider le développement d'un système de classification typologique pour l'ensemble des édifices patrimoniaux d'Oamaru exposé aux

tremblements de terre ? Parallèlement, comment la participation des propriétaires d'édifices, des autorités locales, des architectes en conservation, des ingénieurs et des scientifiques – principaux observateurs et conseillers – peut-elle mieux favoriser la conservation de la physionomie historique des rues d'Oamaru?

En tant que document fondateur pour la conservation en Nouvelle-Zélande, la Charte pour la conservation des sites culturels de valeur patrimoniale de l'ICOMOS Nouvelle-Zélande (2^{e} édition, 2010) fournira une base pour ces débats. Ceci garantira des commentaires scientifiques conjoints en matière d'architecture et d'ingénieurie, permettant d'aboutir à des résultats de conservation holistique dans des régions sujettes aux tremblements de terre comme la Nouvelle-Zélande.

Mots-clés: *communauté, intervenants, durabilité, participation*