Risk Assessments in Heritage Planning in New South Wales


by

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Albury 2003
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Introduction

Australia is particularly prone to the occurrence and impact of natural disasters. Bushfires, floods, droughts, land slides and earthquakes are common. Despite this, to date little thought has been given by Australian heritage management agencies to the effects of natural disasters on cultural heritage places and items. The physical effects on heritage places caused by fast and slow acting disasters such as earthquakes (Collins 1991; Langenbach 2001; Wight et al. 1992), floods (Baldrica 1998; Bucher 1994), bushfires (Gleeson & Jones 2000; Traylor et al 1990), tornadoes (Reed 2000), cyclones (Nelson 1991), cyclonic surges (Spennemann 1998a), terrorist attacks (Osborne 2000), and salinity (Spennemann 1997; 2001; Spennemann & Marcar 1999), are comparatively well documented and understood. Likewise, a range of mitigation, stabilisation and repair techniques have been developed (cf. Allen et al. 1991; Bear 1991; Bonneville et al. 1991; Cox 1992; Croci 2000, 2001; Donaldson 1998; Spennemann 1999b). Despite this, whilst the picture is gradually changing in the USA (cf. Look & Spennemann 2000; 2001; Spennemann & Look 1998a–b; Spennemann 1999a; Tweedy 2000), there appears to be a lack of policy from both a heritage and emergency management point of view in Australia. Although the need for disaster preparedness for cultural heritage is well acknowledged, there appears to be a lack of application particularly in Australia (see also Riddett 2002).

If cultural heritage is able to withstand and survive the natural disaster itself it then faces a new risk: will it survive the decisions made during and after the disaster? (Spennemann 1999a). Some disaster management and recovery actions have actually exacerbated the effects on heritage sites (Craigo 1998; Kariotis 1998; Traylor et al 1990). As noted by Look & Spennemann (2000) this is perhaps the time when heritage is most vulnerable.

The 1990s were the official International Decade for Natural Disaster Reduction. Did the widespread educational activities during that decade make any impact on the community of heritage managers? A pilot study of the attitudes of heritage managers in New South Wales showed a widespread lack of awareness about the effects of natural disasters in heritage properties (Spennemann 1998b). A repeat study in 2002 confirmed the results (Graham & Spennemann in press; submitted). Furthermore, disaster management is not taken into account at the planning process either.


This report assesses to what extent during the past five years heritage management in New South Wales took natural disasters into account, drawing on the body of conservation management plans written for heritage places on the New South Wales Heritage Register.
Methodology

The Sampling Frame

The sampling frame comprises of all conservation management plans written between 1997 and 2002, as they were available at the Library of the Heritage New South Wales, Parramatta.

The library database was checked and all conservation management plans dating from 1997 onwards that could be located were pulled off the shelves on 20 May 2003. Some of the reports could not be located, although not checked out on loan. The total number of reports available for analysis was 58.

Methodology

All reports falling into the sampling period were examined as to whether they contained sections addressing with the identification of hazards and/or discussions of natural or anthropogenic-disaster related risks to the cultural heritage property under discussion. Table 1 sets out the chronological spread of the plans.

Table 1. Chronological spread of the conservation management plans included in the sample

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>14</td>
<td>24.14</td>
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<tr>
<td>1998</td>
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<td>13.79</td>
</tr>
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<td>1999</td>
<td>11</td>
<td>18.97</td>
</tr>
<tr>
<td>2000</td>
<td>11</td>
<td>18.97</td>
</tr>
<tr>
<td>2001</td>
<td>7</td>
<td>12.07</td>
</tr>
<tr>
<td>2002</td>
<td>7</td>
<td>12.07</td>
</tr>
<tr>
<td>Total</td>
<td>58</td>
<td></td>
</tr>
</tbody>
</table>

Characteristics of the Sample Population

Table 2 shows the companies authoring the studies. In case of multiple authorship, the lead company only has been shown. In total 33 different companies are represented. The range of companies represented is wide, without any company dominating the market, and thus unduly influencing the sample.
Table 2. Companies authoring the Conservation Management Plans

<table>
<thead>
<tr>
<th>Author</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architectural History Services</td>
<td>1</td>
<td>1.72</td>
</tr>
<tr>
<td>Architectural Projects Pty Ltd</td>
<td>1</td>
<td>1.72</td>
</tr>
<tr>
<td>Christo Aitken &amp; Associates</td>
<td>1</td>
<td>1.72</td>
</tr>
<tr>
<td>Clive Lucas, Stapleton and Partners</td>
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<td>3.45</td>
</tr>
<tr>
<td>Davies, Paul</td>
<td>1</td>
<td>1.72</td>
</tr>
<tr>
<td>De Groot &amp; Benson Pty Ltd</td>
<td>1</td>
<td>1.72</td>
</tr>
<tr>
<td>DEM</td>
<td>2</td>
<td>3.45</td>
</tr>
<tr>
<td>Design 5</td>
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<td>3.45</td>
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<tr>
<td>EJE Architecture</td>
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<tr>
<td>Freeman, Peter</td>
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<td>5.17</td>
</tr>
<tr>
<td>Garry Dutaillis &amp; Associates</td>
<td>1</td>
<td>1.72</td>
</tr>
<tr>
<td>Godden Mackay Logan</td>
<td>1</td>
<td>1.72</td>
</tr>
<tr>
<td>Graham Edds &amp; Associates</td>
<td>1</td>
<td>1.72</td>
</tr>
<tr>
<td>Heritage Design Services</td>
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<td>1.72</td>
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<tr>
<td>Historic Houses Trust of New South Wales</td>
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<td>Howard, Rod</td>
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<tr>
<td>Jackson Teece Chesterman Willis</td>
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<td>1.72</td>
</tr>
<tr>
<td>John Graham &amp; Associates</td>
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<td>1.72</td>
</tr>
<tr>
<td>Kerr, James S</td>
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<td>3.45</td>
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<tr>
<td>Lavelle, Siobhan</td>
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<td>1.72</td>
</tr>
<tr>
<td>Martin, Eric</td>
<td>2</td>
<td>3.45</td>
</tr>
<tr>
<td>Mayne-Wilson &amp; Associates</td>
<td>3</td>
<td>5.17</td>
</tr>
<tr>
<td>National Trust of Queensland</td>
<td>1</td>
<td>1.72</td>
</tr>
<tr>
<td>Noel Bell Ridley Smith &amp; Partners</td>
<td>7</td>
<td>12.07</td>
</tr>
<tr>
<td>NSW National Parks and Wildlife Service</td>
<td>5</td>
<td>8.62</td>
</tr>
<tr>
<td>Orwell &amp; Peter Phillips</td>
<td>1</td>
<td>1.72</td>
</tr>
<tr>
<td>Sheppard, Jill</td>
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<td>3.45</td>
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<tr>
<td>Snelgrove, Catherine</td>
<td>1</td>
<td>1.72</td>
</tr>
<tr>
<td>Tanner &amp; Associates</td>
<td>3</td>
<td>5.17</td>
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<tr>
<td>Wayne McPhee &amp; Associates</td>
<td>1</td>
<td>1.72</td>
</tr>
<tr>
<td>Wilson, Helen</td>
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<td>3.45</td>
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<tr>
<td>Young, David</td>
<td>1</td>
<td>1.72</td>
</tr>
<tr>
<td>Department of Public Works and Services</td>
<td>3</td>
<td>5.17</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>58</strong></td>
<td>****</td>
</tr>
</tbody>
</table>

Results

The overall statistics are very disheartening. Of the 58 conservation management plans assessed only 4 (6.9%) contain statements regarding hazards. These are:

- Qantas House No. 1 Chifley Square, Sydney (Godden Mackay Logan 2002)
- The Springs, Dubbo (Clive Lucas, Stapleton and Partners 1997)
- Jones Bay Finger wharf: berths 19-21, Jones Bay, Pyrmont (Design 5 1998)
- Orange General Cemetery: conservation plan (David Young 2000).

The level to which risk is addressed in these studies varies significantly. The number of studies that contain a risk assessment in the widest sense is so small that the studies can be discussed individually.

Qantas House No. 1 Chifley Square, Sydney

The conservation management plan for Qantas House No. 1 Chifley Square, Sydney (Godden Mackay Logan 2002) addresses issues of fire safety for the ongoing use of the property. It makes reference to a building and fire safety audit (not on file in the Heritage NSW library). The conservation management plan comments that some of the recommendations in the fire safety audit are contrary to preservation ethics, but fails to identify and propose alternative performance-based solutions.

Jones Bay Finger wharf: berths 19-21, Jones Bay, Pyrmont

The conservation management plan for Jones Bay Finger Wharf: Berths 19-21, Jones Bay, Pyrmont (Design 5 1998) does comment on fire safety as an issue, again making reference to a study of fire management solutions (also not contained in the library). Again, recommendations that would affect the historic fabric are alluded to and not supported by the conservation management plan, without identification of alternative approaches.

The Springs, Dubbo

The conservation management plan for The Springs, Dubbo (Clive Lucas, Stapleton and Partners 1997) mentions that no fire protection system exists, and comments that traditional methods of fire containment may be limited, but fails to identify solutions.

Orange General Cemetery: conservation plan

The conservation management plan for the Orange General Cemetery: conservation plan (David Young 2000) identifies the risk of vandalism as an issue. Increased visitation is seen as a cost effective solution to reduce the risk.
**Discussion**

The result of the survey confirms anecdotal evidence: risk assessments for impacts caused by natural disasters are largely absent from conservation management plans drawn up for heritage properties in New South Wales. A overwhelming majority, 93%, does not address such issues. Three of the four plans that make reference to natural disasters in the widest sense (including vandalism as a social disaster issue), focusing on building fires as a problem. In all three cases the fire safety audits made recommendations (unknown as to the exact nature of the recommendations), which are in conflict with heritage preservation ethics. While this is flagged in a general sense, no alternative solutions are identified. One of the studies, dealing with a cemetery, makes reference to vandalism as a threat.

None of the conservation management plans identify or comment on threats such wind storms, hail storms, flooding (riverine and/or sheet flooding), earthquakes, civil disturbance, vehicle impact due to traffic accidents.

**What should be contained**

In view of the devastating impact caused by natural and anthropogenic disasters on cultural heritage properties, modern conservation management plans should include risk assessments for the most common types of hazards, namely:

- wind storms
- hail storms
- urban fire (bush fire where appropriate)
- flooding (riverine and/or sheet flooding)
- earthquakes
- vandalism
- civil disturbance
- vehicle impact due to traffic accidents

Where appropriate due to the environmental setting of the property, hazards such as railway accidents, aircraft crashes (if under the flight path), the impact of snow loading, avalanches and landslides and the like may need to be considered and included.

If the property has a high strategic or symbolic value, or is in close proximity to such a property (which in itself may not have any heritage value), it may well be exposed to the impact of urban terrorism. In this case this hazard too needs to be assessed.

To facilitate the management of risk the information should be discussed in reasonable detail and then summarised in tabular form, setting out the hazards, their probability (with evidence for the probability level determination presented in an appendix for independent verification), the potential impact of the hazard if
unmitigated, and the suggested risk management strategy. Where applicable, reference should be made to applicable standards. Where 'standard' hazards (see list above) are non-applicable this should be spelled out out.

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Probability</th>
<th>Potential Impact</th>
<th>suggested Risk Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>wind storms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>hail storms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>urban fire</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>bush fire</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>riverine flooding</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sheet flooding</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>earthquakes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>vandalism</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>civil disturbance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>vehicle impact</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Given that conservation management plans are drawn up for the benefit of both the property owner and the administering authority, *ie* Heritage New South Wales, the inclusion of such information should be mandated.

If a risk matrix were included in all conservation management plans for New South Wales Heritage Register properties, appropriate management action could be ensured. This could entail mechanisms that mandate the preparation of disaster management plans for properties.

More importantly, in the event of a natural disaster Heritage New South Wales would be able to cross-reference the extent of the disaster with the probability that heritage properties were affected according to the data provided in the conservation management plans and thereby be capable of immediately engaging in appropriate disaster response activities as specified in the plans.

**Conclusions**

The survey of the conservation management plans completed between 1997 and 2002 has shown that risk assessments for the impacts of natural and human-induced disasters are rare. In the absence of formal requirements for such information, consulting companies had little incentive to include unpaid-for information.
Bibliography


Godden Mackay Logan (2002) Qantas House No. 1 Chifley Square, Sydney: Conservation management plan Sydney: Godden Mackay Logan Pty Ltd.


Graham, Kristy and Spennemann, Dirk H.R. (submitted) Heritage managers and their Attitudes towards Disaster Management for cultural heritage resources in New South Wales, Australia. Local Environment


Appendix 1:—Reports assessed in this Survey


DEM (2001) Macquarie Field House proposed amendment to Campbelltown City Council: Development Control Plan no. 63 Masterplan Sydney: DEM.


Freeman, Peter (2000) Sydney Harbour National Park North Head Quarantine Station: Conservation management plan Sydney: Freeman, Peter Pty Ltd.


Godden Mackay Logan (2002) *Qantas House No. 1 Chifley Square, Sydney: Conservation management plan* Sydney: Godden Mackay Logan Pty Ltd.


Howard, Rod (1997) *Conservation plan for the main building and grounds of the University of New England's C B Newling Campus, Armidale, N.S.W. / prepared for the University of New England (Estates and Facilities Directorate) by Rod Howard Heritage Conservation Pty Ltd.* Eastwood, NSW: Rod Howard Heritage Conservation Pty Ltd.


NSW National Parks and Wildlife Service (1998) *Kiama Harbour conservation management plan / prepared for Department of Land and Water Conservation (South Coast Region) / by Heritage Group, Department of Public Works & Services.* Sydney: NSW Department of Public Works and Services.


