The development of infrastructure has been a critical part of the expansion of cities and nations and underlies the historic fabric of heritage precincts. Some of this infrastructure is utilitarian, while other elements may be highly significant places in their own right, or have had a defining influence on the development of an area. However, by the late 19th century, industrialization necessitated the rapid expansion of infrastructure, often to standard designs particularly in areas such as electricity, rail, bridges, water and sewerage, to facilitate the structural change occurring to cities, landscapes and economies.

Much of that historic infrastructure survives and, in some cases, remains in use. Certain types of infrastructure become iconic representations of places, particularly large elements such as bridges. Demands on these items of historic infrastructure have however changed radically over the period since their original construction, in terms of function, service expectations, safety and operational standards. In addition, many items of infrastructure were built to a standard template or design, sharing common characteristics in terms of form, function and history. But where such items are to remain in service, how can their owners and managers begin to make decisions as to what items should be preserved, in circumstances where it may not be practical, financially viable or even desirable for all similar items to be retained?

This paper examines these questions in the context of two types of historic infrastructure in New South Wales, Australia – timber truss road bridges and electricity distribution substations. It examines the operational issues which surround these types of items and the pressures on the managing agencies which have required a strategic approach to making conservation decisions. In situations where decisions must be made, to ensure resources are wisely invested, how can distinctions be made to prioritize preservation and operational decision-making? Different methodologies are examined within the context of these two types of infrastructure, where the author has successfully developed strategic management programs to facilitate the long-term preservation of key elements of these historic types of infrastructure.

1. The challenge of historic infrastructure
A. Historic infrastructure is a critical aspect to understanding the development of towns and cities, due to its role in shaping the physical, social and economic characteristics of an area.
B. Infrastructure is generally built for a specific purpose and with a design life.
C. The routine maintenance of historic infrastructure may be an issue, with problems allowed to reach the point of failure rather than being dealt with as a matter of routine.
D. Changing expectations in terms of level of service, safety and environmental requirements may drive the need to replace or upgrade historic infrastructure.
E. The inherent nature of such items may limit the ability for adaptive reuse, even in circumstances where the item is iconic and significant in its environment.

2. Developments of types and commonalities within these types

A. Infrastructure is often designed to a common set of standards, types and styles.
B. Technical functions of infrastructure items such as bridges, substations, pumping stations and similar facilities may be similar across historic periods, with change defined more by technical innovation and minor stylistic difference.
C. Historic infrastructure was built in a specific location for a specific purpose.
D. It is important to understand how and why such items fit within the context of the systems that they support or of which they are a part.
E. This will allow the development of typologies based on relevant characteristics that can assist in making preservation management decisions.

3. Developing methodologies for preservation decision-making for historic infrastructure

A. In the case of major operational upgrades to historic infrastructure, or in decisions about decommissioning, it may be necessary to make judgments about preservation between very similar items.
B. Preserving all items of a particular type of historic infrastructure may not be practical, cost effective or even physically possible.
C. The development of typologies described above provides the basis for the development of decision-making criteria based on historic characteristics and operator requirements.
D. This requires conservation experts to look beyond the surface question of historic value and make fine-grained distinctions between different items which may be very similar.
E. Where such decisions allow an item of historic infrastructure to remain in service for its original purpose will generally lead to better preservation outcomes, over adaptive reuse or functional obsolescence.
A Matter of Solid Foundations; the Structural Legacy of the Blue Ridge Parkway

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Territory: the Macro Scale; CS09—Historic Infrastructure

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VI. Conclusions
Title: The National Park Service Mission 66 Initiative: Preservation Challenges Fifty Years On (the Jetsons meet the Flintstones)

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Abstract

While World Heritage listing is generally viewed as a positive outcome for heritage places, such listings come with a great number of expectations and requirements for future management and planning. While protective legislation may have been put in place, which provides notional protections at a domestic level, the practicalities of actually managing and conserving World Heritage places may not be as robustly addressed. The authors examine these issues within the context of two World Heritage areas in which they have worked together over the last several years: the Brickendon and Woolmers Estates in Tasmania, Australia and Georgetown, Penang, Malaysia. While the two home nations sit at opposite ends of the developmental scale, both places have real challenges for managing their World Heritage places due to limited expertise and training available at the local level, as well as site managers with limited formal training in heritage and minimal access to skilled tradespeople required to effectively conserve the places.

Brickendon and Woolmers are early 19th century convict farm estates in a serial listing of Convict Sites of World Heritage significance (2008). Brickendon remains in the ownership of the founding family and is a working agricultural property, with some cultural tourism, while Woolmers is a tourist destination managed by a private trust. As places in a relatively remote part of Australia, there have limited resources and expertise to draw upon, as well as a vast range of conservation priorities which need to be managed at a practical level. For 5 years the authors have been involved in a local training and educative program involving the site managers, local professionals and tradespeople to build knowledge, networks and expertise at the local level.

Georgetown, Penang is the early 19th century colonial core of a busy and highly populated island state of Malaysia, and is increasingly subject to a range of pressures including urbanisation and gentrification. Like Tasmania, it lacks a strong local professional base and has limited access to heritage-sensitive tradespeople. Georgetown has its own additional challenges to the impracticality of sourcing highly trained overseas experts and language barriers between the English, Chinese, Malay and Hindi-speaking populations. Here the authors have been working with Georgetown World Heritage Incorporated, the local heritage authority, to build capacity and awareness of issues within the local professionals, government agencies and property owners.
This paper examines how the collaborative learning approach can lead to positive outcomes in both contexts, by helping to build local skills, expertise and confidence in managing World Heritage places.

1. The challenge of World Heritage Listing

A. The APT Australasia Chapter has for more than three decades endeavoured to carry into practice APT principles for learning and information sharing, including hands-on workshops to build capacity in the correct means of conserving traditional structures and building fabric.

B. The Australasia Chapter has extended these opportunities by facilitating and delivering focused workshops in SE Asia and by accommodating SE Asian practitioners in the annual Longford Academy, the Chapter’s flagship Australian event.

C. There are no great differences between practices and principles in North America and Australia, despite the very great geographical separation of the two, but there are substantial differences between Australia and its near neighbours in Asia.

D. Religious and cultural differences are such that conservation and the value of old buildings and heritage environments are perceived very differently.

E. This paper compares and contrasts the differences between World Heritage sites in Tasmania and Penang and the learning experience with heritage conservation workshops run by the APT Australasian Chapter in the two places.

2. The Longford Academy in Tasmania

A. The Longford Academy has been run for 5 consecutive years in Tasmania, focussed on the practical conservation of the World Heritage sites of Brickendon and Woolmers Estate, near Launceston. These sites were World Heritage listed in 2010.

B. The sites are farms run by different branches of the same family (the Archers) since the 1820s.

C. Woolmers Estate is now run by a private trust as a tourist enterprise. Brickendon remains a working farm by the 7th generation of the Archer family, with some accommodation and tourism elements.

D. Both sites have large numbers of structures, outbuildings and grounds with an array of conservation challenges.

E. These challenges in turn complicate the management of the site, but provide fertile ground for training in heritage skills.

F. Tasmania is relatively poorly resourced compared to mainland Australia and has a limited field of heritage expertise readily available.

3. George Town World Heritage Site Workshops

A. Georgetown Penang, Malaysia is a historic port city settled from the 1790s and was an early trading rival to Singapore.
B. The area is a vibrant commercial and residential area with a mixed Malay, Chinese and Indian heritage.
C. Georgetown was World Heritage listed in 2008.
D. The World Heritage listing has been a boon for tourism, but has driven gentrification and increased pressure on the historic urban core.
E. Attitudes to heritage conservation differ from those in Western countries, which is further complicated by the mix of religious and ethnicities.
F. There is a very small cadre of local heritage practitioners and a considerable challenge in working across language barriers with local tradespeople, professionals and government representatives.

4. The Collaborative Learning Model

A. The APT Australasia adopts a collaborative learning model in its workshops and programs. The model has evolved over time in response to the experience of presenting more conventional courses, workshops and symposia.
B. The aim of such a process is to both impart and receive information, for training to become a two-way dialogue, rather than a teacher-student relationship.
C. In both Tasmania and Penang, this approach has been adopted in conservation training to involve heritage and allied professionals, government representatives, tradespeople and owners of historic places to improve understanding of conservation issues and grow local knowledge.
D. This process has been occurring over several years at both sites, with some success but with a great deal of additional work to do.
E. In general, the reception of the collaborative learning exercises has been positive, but change on the ground remains slow.

5. Lessons learned, Observations and conclusions

A. Accommodating different levels and experience creates challenges, but it is important to draw everyone into the learning process.
B. It is necessary to accept that the learning process may take many repetitions to ‘take’, especially where the initial skill level is low.
C. In areas such as Tasmania and Penang, there may be little ongoing support for practitioners and interested parties outside of the workshops. A major goal should therefore be in the building of local networks for peer support.
D. Enormous goodwill may exist at the individual level but this does not necessarily translate into support at the institutional or governmental level.
E. Bringing together people with a range of skills, experiences and perspectives is important in the ‘collaborative’ aspect of the training programs, and provides an opportunity for the experts to learn.