POLICY FOR THE IN-SITU CONSERVATION
OF RAILWAY ITEMS

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The railway system of NSW is an enormous enterprise. It was developed in the mid nineteenth and early twentieth centuries as the main, if not the only, large scale transport system in the State. Today, in a vastly different world both economically and technologically, it has been significantly reduced in size and financial importance. Despite this the NSW railways still have vast holdings of land and an extraordinary number of buildings, pieces of rolling stock, structures and equipment in its charge.

The traditional classification of these articles is under headings such as the permanent way, (perway), stations and other buildings, safe working systems, rolling stock, structures, plant and machinery and workshops. Items that are found under the heading “perway” include rail lines, embankments, bridges, cuttings, tunnels, culverts, fences and the associated equipment that goes with maintaining these items. Buildings include stations, which can be either masonry or timber, residences for various classes of employees such as station masters and gatekeepers, goods sheds, parcel depots and offices. The term “Workshops” includes the smaller maintenance workshops at country centres such as Goulburn and the enormous complexes of Eveleigh and Chullora, Clyde and Cardiff. The rolling stock includes locomotives, carriages, various classes of trucks as well as the small motorised and hand-powered trolleys. Structures include the large overhead gantries, water towers, water tanks, foot bridges and cranes which are evident on many of the small platforms associated with goods sheds. Safeworking systems include the signals and signal boxes, interlocking systems, points layouts and automatic train stops. The machinery or plant used on railways comes in an enormous variety and can include all of the general light, medium and heavy engineering plant which is associated with the manufacture of locomotive and rolling stock. Some of this machinery includes compressors, pumps, overhead cranes, hydraulic presses, riveters, and massive metal shears. Besides individual items there are also the systems which are evident in the workshops, such as hydraulic systems, compressor systems which consist of a power source such as a motor, or steam boiler and engine, a hydraulic accumulator or air compressor, and a series of delivery lines which lead to various individual machines. Taken all together, the NSW railways are the largest single enterprise operating in NSW in terms of physical structures. (It could not be reproduced today for less than many billions of dollars).

Many industries undergo change in their methods of production for economic or technological reasons. Accompanying this change is often the associated disposal, demolition, sale, re-use or scrapping of a whole range of buildings, structures, machinery and plant which is obsolete. In some instances these items are neither rare nor culturally significant and their passing is accepted. In other cases these items form an important part of our industrial heritage. However, the NSW railways are not merely undergoing change but also a massive reduction in the length of rail served, the number and type of locomotives and rolling stock, the stations, structures and workshops kept operational and the personnel employed.

This has meant that a great amount of material, from bridges to buildings and including engineering plant of all types, have been made surplus to requirements in the past few years. In many cases, these items have been sold to the highest bidder and many have been demolished or scrapped. Some buildings have been re-used for non-railway purposes, as have some bridges, and some items
of machinery have found new leases of life in other workshops or museums. Others have remained in situ awaiting their fate, disused and gradually deteriorating without regular use and maintenance.

In some cases the items have not been conserved for a number of reasons, which may include:

1. constituting a safety hazard to the public,
2. poor physical condition,
3. much of the original fabric missing,
4. vital parts essential to operation or interpretation missing,
5. lack of items which were associated with the item which is was operational,
6. economic constraints which prevent conservation,
7. present location,
8. value of item as scrap and ultimately, even when none of these apply,
9. lack of knowledge of the importance of an item because no mechanism of assessment was applied to the item before.

In recent years, though, assessment procedures have been developed which can be used to identify which items should be conserved.

Those items which have been assessed as being of such significance to warrant conservation may be relocated and conserved or they may be conserved in situ in their operating environment. Some items are clearly unsuitable for relocation, such as masonry buildings and bridges, while others aren’t suitable for conservation in situ, such as obsolete signals or trackwork.

Cultural Significance and its Assessment

Assessment of cultural significance is the first step in the conservation process. The concept of cultural significance or heritage value is the value that the place or an item has to the community, beyond the immediate financial value. The assessment of cultural significance endeavours to establish why a place or item is considered important and is valued by the community. Cultural significance is embodied in the fabric of the place, and this includes its setting and its relationship to other items, the records associated with the place and response that the place evokes in the community.

There are at present a number of methods used worldwide for the assessment of both buildings and relics of potential cultural significance. Some of these methods are applicable to buildings only, others have been designed to assess relics or engineering plant. Some others are suitable for assessing both categories of item.

The Historic American Engineering Survey, The Institution of Engineers of Great Britain and the Institution of Engineers of Australia all have their own assessment methodology which is primarily aimed at the assessment of relics.

Relative rarity is a measure of a number of similar items existing now, as to the number originally made.

Social significance refers to the importance that a building or relic may have to a social group or it may be the association the item has with an important individual such as an engineer or designer.

Interpretive ability is the ease with which a building or relic can demonstrate the part it played in a process or in the development of a site.
Structural integrity refers to the physical condition of the relic and the sympathy with which alterations have been made to its fabric.

Operational ability is the ability (usually) of a relic to operate in its present condition, with a minimum amount of work being done to it and providing normal facilities such as a power source and other requisite materials are available.

Each of the above categories may be given a rating from 1, the lowest, to 5, the highest. In this rating, an average score, called the significance assessment score, can then be given which reflects the cultural significance of the relic or structure.

The different categories should not always be regarded as being equivalent when determining the final significance assessment. In some cases, the consideration of one or more of the categories may not be appropriate.

When assessing an industrial building or relic it is normal to look, initially, at the four categories of historical association, technological importance, relative rarity and social significance. If the item is assessed as having moderate significance, or higher, a full assessment is then completed. If, in the initial assessment, the relic has below moderate significance when the four initial categories are being assessed, then the remaining three categories, if used, will give an inflated value.

**Assemblages, Collection, Systems, Complexes and Precincts**

Heritage items do not exist as single neatly defined entities. Usually an industrial item, especially one associated with a railway, exists as part of a large and complex group of associated items. These groups of associated items can be defined as assemblages, collections, systems, complexes and precincts. The terms assemblages, collections, and systems are usually applied to machinery and plant, the term complex usually to an industrial complex which is a combination of machinery, plant and buildings while a precinct usually applies to a group of buildings in a single location.

Joan Domicelj, in a recent study for the NSW Department of Planning, considered the criteria for significance assessment which is currently being used by the Australian Heritage Commission is the register of the National Estate. This study was to form the platform on which the development of a NSW Estate Heritage Inventory was to be based. In that report two groups of criteria were to be applied to assessment. The criteria in Group 1 concerned the nature of significance whilst the criteria in group 2 concerned the degree of significance.

Under Group 1, Nature of Significance, the five criteria applied are historic aesthetic, social, scientific and other values.

The Group 2, Degree of Significance, the criteria are rarity, representativeness and associational importance.

One of the values of this system lies in its ability to assist with the enunciation of a statement of cultural significance. It also indicates the significance an item has to a local, regional or state community.

The Burra Charter of Australia ICOMOS, in its guidelines for the assessment of cultural significance, provides the simplest assessment methodology. It suggests that significance can be assessed in the categories of aesthetic, historic, scientific and social values. These categories provide a useful frame and basis for considering sites and items. However, they are not always directly applicable to certain relics and, on occasion, other categories need to be applied to adequately assess those items.
All of these systems have particular strengths and applications. However, no one system has yet proved adequate because of the variety of categories which must be considered when assessing both buildings and relics. In a previous paper I have outlined a system of assessment using 7 categories which may be adopted to assess both industrial buildings and industrial relics. The categories are historical association, technological importance, structural integrity, interpretive value, operational ability, relative rarity and social significance.

Historical association refers to the length of association a relic or building has had with historic environment in which it is found. Consideration must also be given to the time the item has been sited in the one place within that environment.

Technological importance of a building or relic is the contribution it has made to the understanding of the history of technology or the contribution it has made to the development of technology. It also takes into consideration such data as whether it was the first made, the largest of its type or of revolutionary design.

An Assemblage

An assemblage may be regarded as a relic or structure including all the artefacts, tools and items normally associated with it when it was operating. In the case of a workshop machine, it would include the spanners and wrenches used to tighten nuts, the tools needed to adjust gears or belts, the safety screens which prevent contact with moving parts and if applicable, samples of completed or partially completed work. It would also include signs, pipework and associated services.

A Collection

A collection is usually a number of relics or structures which belong to a group because they perform the same function or produce the same finished product.

Eveleigh Railway Workshop has a collection of nine steam hammers and electro pneumatic hammers. None of the hammers is very old, but they range in size from 5cwt to 40cwt and they illustrate the development of blacksmiths 'striking equipment early in this century. There is some duplication, especially in the lighter range of hammers, but all have significance in their own right: they illustrate the layout of the shop, they all have their own services and maintenance tools as well as an extraordinary collection of forging tools.

Systems

A system is more than a collection of artefacts, it is an operational group of related relics or structures which cannot function effectively if any of one is removed. An example of a system is the safe working network which consist of a number of systems all of which are independent. However, the removal of one part of any of those systems, whether or not they are operational, would render the system incomplete.

An Industrial Complex

An industrial complex is a number of functionally related items which are normally grouped together to form a manufacturing or production unit. A complex typically consists of assemblages, collections and systems of items plus the buildings which house them. The complex often remains as a functional entity even after a number of items or even systems have been removed. Examples of industrial complexes are the Eveleigh Workshops and Chullora Workshops. Numerous other
complexes exist throughout the NSW State Rail Authority’s holdings.

Removal of an item, collection or system from a complex will decrease the cultural significance of both the item and the complex. In some cases, because of the number of items within the complex, the decrease in its cultural significance may only be slight. The removed item, collection or system usually has its significance dramatically decreased.

A Precinct

A precinct encompasses a geographic areas which normally contains a number of functionally related items. It may include elements of a service industry, possibly as well as elements of production and manufacturing industries. Railway Stations with their platforms, waiting rooms and ticket offices, tracks, switches, signal boxes and overhead bridges are regarded as precincts.

Because of its nature, much of the fabric of the railways consists of precincts, collections, systems and complexes and here much of the controversy which surrounds the conservation of railway heritage is centred.

A group of closely related items is normally regarded as being of more value than the sum of the individual elements, whether that group be composed of stamps, paintings, matchboxes, railway badges or the contents of a railway workshop compressor house. Collections or systems within the railway are more significant than the individual items of which they are composed. The safe working system of the railways is monolithic. Where it exists on running lines, safety considerations are of paramount importance and the system is regularly upgraded and obsolete material which may lead to confusion is removed. In these cases, all elements of a particular section of the systems cannot be conserved in situ. It may be possible to keep selected elements of the system in situ - for example, the signal box itself, its relationship to other buildings within a precinct, the materials from which it is composed and the levers and interlocks may all be conserved. Although its significance has been decreased by the removal of the signals, its assessment of its heritage value may be such that it is still retained and conserved.

Assessment of Groups of Items

Where an assemblage, collection, system, complex or precinct is known to be substantially intact, the criteria used to assess individual relics may also be used to assess these groups. It should be noted that generally the more intact these groups are, the higher will be the significance and this significance may be higher than for any of the items within the group.

Assessing for Relocation or In Situ Conservation

Clearly it is not possible to conserve the railways as a whole, nor is it possible to conserve many of the complexes, precincts, systems and collections simply because of the nature of technological improvement or upgrading which must take place in order for the railways to remain operational. Hence the task is to rank items in order of their cultural significance and to select the most significant examples for conservation. The assessment of the total holdings must take place at all levels of complexity from individual items to systems and precincts and must identify those appropriate for conservation in situ and those suitable for relocation.

As part of the assessment process, it is necessary to consider the implications of relocation, if it is to be considered as an alternative form of conservation. Railway items typically are relocated to railway museums, rail preservation societies and to private collectors.
The aims of museums and rail preservation societies in general are to operate for both their members and the general public's enjoyment, selected items of railway history, to provide an educational experience for members of the public, and to be custodians for a range of railway items previously part of a government or private railway.

Their aims are not incompatible with those of organisations such as ICOMOS. Their agenda however, leads them to call for relocation and conservation rather than conservation in situ.

Railway museums by their nature have to run an intensive rather than extensive operation and their holdings by comparison to the SRA are modest. Both these factors affect the way in which conservation is practised in these environments.

Some items are easily relocated and conserved in a variety of museums and collections. These items can vary from railway cap badges through locomotives and rolling stock to platform furniture, machine tools and foundry patterns. Others are more likely to be conserved where they were first installed or erected. Items in this category include bridges, buildings, especially masonry ones and massive plant such as turntables.

When determining whether a relic or group of relics should be relocated in order to be conserved the following process should be adopted:

- It should be assumed that the relics have been moved to their proposed new location.

Firstly,
The relics which have been relocated should be assessed again using those seven categories.

Secondly,
The complex, precinct or system from which the relics have been removed should be assessed again.

If the decrease in cultural significance for either the relic or the site is unacceptable then the relic should remain and be conserved in situ.

The vast majority of railway items can have arguments presented for either conservation in situ or relocation and conservation. The determining factor should be:

1. The degree to which the cultural significance of an item, or group which is to be moved will be affected by relocation and;

2. The degree to which the cultural significance of the items which remain will be affected.

Relocation

Relocation in general terms decreases the significance of an item or group and as well as decreasing the significance of the fabric which remains. Taking the levers and interlocking system from the signal box detracts substantially from the significance of the signal box. The cultural significance of the levers and interlocking system are also reduced. The signal box may remain as a shell indicating simply the point from which signalling was done in the past and indicating the style of signal box used in that location.

Relocation is an acceptable means of conservation where items were made to be moved. The classic examples are locomotives and rolling stock, some machinery and plant and even some safe working equipment. By moving these items to a new location and taking associated items, collections, assemblages and systems with them, much of the significance may be retained.
Conservation procedures are also far easier to conduct where there are economies of scale. By bringing distant and widely scattered items together it is possible to restore many of them.

With large railway items such as locomotives, conservation is easier when full workshop facilities are available. The security and protection of items is usually assured while the item is in the workshop.

Visibility is also an important incentive to conservators. If, for example, a significant but isolated set of rail points is under threat, there will be little motivation to conserve them if few enthusiasts and practically none of the general public will ever get to see them. In this case there are two options to be followed:

The first is leave the relics in situ and to allow them to decay but recognise that the resulting ruin will have significance conferred by its remaining fabric and its location, or secondly relocate the relic and conserve it by possibly by placing it in operation in a working museum.

One of the major problems associated with relation, even from one place to another within a complex, is that seldom is the total assemblage of the system kept together. Small, seemingly insignificant features are lost, others found to be in poor condition are replaced or reconstructed rather than being restored, while still others, are discarded because they do not fit the image of the new operator or conservator.

A second problem with relocation, especially as far as private or public collections are concerned, is the tendency to over-conserve. Many items of industrial plant and equipment, cranes and furniture in museums looks newer than when they were first commissioned. Steam engines or hydraulic pumps when in use were generally oiled and maintained with affection by their operators. They had the appearance of being cared for but they also had the scars of age; the bumps and dints that go hand in hand with major repairs.

A third concern is that insufficient or no conservation measures are applied to the relocated items or groups. In some cases, items are relocated with the intention of re-erection and re-use in the near future. However, lack of funds and time frequently means that items lie unattended for years before any action is taken. During this time many locomotives, signal posts, machines and pieces of rolling stock have deteriorated to such an extent that conservation is impractical.

These items then form ruins in their relocated position. The loss of significance is twofold, firstly they are no longer in their original location, and secondly, they have deteriorated to such an extent as to be inoperable, separated from their associated relics and often have become impossible to interpret.

On the other hand, items or groups of items which have outstanding significance and which are under threat, such as early crossing systems which will be removed or vandalised shortly after the track is abandoned, should be relocated and conserved. If left in situ, their subsequent loss of integrity and hence significance would be greater than if they were relocated.

Other items such as steam cranes or massive derrick cranes which cannot be accommodated in the years in which they worked should be moved. However, if storage is available and security can be ensured, they should be left in situ, at least while the status quo is maintained.

The Case for In Situ Conservation

Much of the fabric of both the SRA and the private railways was made for a specific location. That fabric, sometimes present today as single items or in other cases as groups of items, complexes and precincts indicates the way in which the railways operated. The giant workshops at Eveleigh have
closed but much of the fabric of the original 1876 buildings remains. Inside the locomotive shop there is a range of plant which was manufactured between 1874 and 1950. Much of this plant is still operable. This needs conserving in situ in order for it to retain its cultural significance.

There are numerous signal boxes which no longer house safe working equipment, or which house interlocking systems no longer linked to the safe working system itself, which indicate the nature, form and general importance of single boxes through time. Most of these signal boxes are part of the precinct and although neither masonry nor operating they should nevertheless be conserved in situ.

Conclusion

Items, assemblages, collections and systems in their original location, especially when interpreted, are enormously important to understand our rail heritage. Of special significance are the sites such as the station precincts of Tenterfield, Crookwell, Black Mountain and Homebush, the Eveleigh workshops, and systems such as the pumphouse at Chullora. However there are many others.

Crookwell is a terminus complete with a yard, stockyard, goods shed and platform, weather board station, safe working system, turntable and stationmaster’s cottage. It is a precinct which is still complete and one which deserves attention. Eveleigh has been treated badly but the engine shop, erecting shop, workshop bays 1 to 15 and the timekeepers office remain. Much of the equipment and plant was sold, but that remaining in bays 1 to 4, (some of which has been relocated, some of which is preserved in situ), make Eveleigh one of the most important rail workshops in the western world. The pump house at Chullora is a 1920s masonry building which supplied the Locomotive Shop with hydraulic power and compressed air. Both systems are still intact and compressed air is still supplied from the pump house to the workshops. The hydraulic system still has its water tower, pipes, accumulator and three massive electrically-driven hydraulic pumps. The pump house exists as a series of assemblages, as a collection and as two systems. With the external accumulator, water tower and air receivers converted from boilers, it is also centre of a precinct.

All these examples, and other railway items and industrial complexes which still exist, have uncertain futures. Their sites are being considered for redevelopment and at Eveleigh, Chullora and Enfield much of the material surplus to requirements has been sold or disposed of.

Throughout its history, the NSW railways have been a major factor in government finances and in times of high government deficits, its assets will inevitably be measured in financial terms. Conservation of the significant elements of the railways is a daunting task and by necessity will require a combination of both relocation and conservation in situ. Relocation, however, can rarely satisfactorily substitute for conservation in situ. For many items particularly systems, complexes and precincts, it cannot be considered an acceptable conservation procedure. It is necessary to recognise, in attempting to conserve the heritage of the railways, that conservation in situ is the primary aim and that the majority of our conservation effort should be directed to this goal.