

GIS-BASED DOCUMENTATION AND MANAGEMENT OF AUSTRALIAN URBAN ARCHAEOLOGY

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Preamble

Parramatta was settled soon after the arrival of the first European settlement/invasion of Sydney, and was important as both a gaol town and an agricultural centre for the infant colony. Since before the arrival of European colonists, the Parramatta landscape has been used by people for a wide range of activities. Today, Parramatta City boasts a rich archaeological heritage. Located approximately 30km inland, upriver, from the main City of Sydney, the area of Parramatta was established as a government farm then government town during the late eighteenth and early nineteenth centuries, developing as a place of both industry, and then later, suburban expansion during the twentieth century.

Today, Parramatta is one of the busiest and fastest growing commercial centres in Australia. The city is also home to some of Australia's earliest and most significant archaeological sites. The greater Parramatta area contains extensive physical evidence of human history. This archaeological evidence has the potential to contribute meaningful information about Parramatta's history that is not recorded by documentary sources. Some sites are also important as tangible evidence of this history — valued by an increasingly interested contemporary community. The desire to conserve this physical chronicle and ensure that resources available for the conduct of archaeological investigations are used wisely must be balanced against increasing development pressure in this major urban centre.

The Parramatta Historical Archaeological Landscape Management Study (PHALMS) was commissioned in the year 2000 by the NSW Heritage Office (the State agency responsible for statutory heritage management) as a means of addressing these competing pressures. The project provides a citywide research framework to facilitate decision-making about the management of Parramatta's archaeological resources. This project represents major philosophical and procedural changes for future archaeological investigations in Parramatta and the management of historical archaeological resources in Australia in general, providing an innovative management tool for archaeological resources in urban environments.

The archaeological potential of the entire Parramatta area was identified through survey and research, providing information at a glance about how each piece of land has

developed since the earliest days of European settlement. The resulting system is now a practical tool which can guide decisions about the management of archaeological resources.

This project is the result of a collaborative partnership between the public and private sector, including the Heritage Office, Parramatta City Council (the local government authority), the State Department of Public Works, the Property Council of Australia (a private organisation of property owners), Parramatta Rail Link (a major developer) and Godden Mackay Logan Heritage Consultants. The Archaeological Computing Laboratory at the University of Sydney provided essential technical expertise in GIS development. This project combines best-practice principles with state-of-the-art technology to provide a user-friendly management tool.

The study area, with its rich archaeological resources, is an ideal place in which to instigate fundamental change. An 'Archaeological Zoning Plan' was prepared for Parramatta in 1991, indicating areas where archaeological resources associated with the early development of the Parramatta township were likely to survive. The recent project draws on this earlier research but has expanded both the area and scope and now extends to identification of heritage significance and guidance for future management.

To date the project deals with historical archaeological resources only. A separate study of Aboriginal places is currently being prepared and it is hoped that the results of both these studies can eventually be integrated into an even more comprehensive archaeological heritage management system.

Statutory Context

In New South Wales, historical archaeological 'relics' (ie elements of European material culture older than 50 years) receive automatic statutory protection from activities involving disturbance or excavation of land. Within the study area, an additional regional planning instrument contains specific provisions which require the heritage impact of activities affecting archaeological relics to be assessed and consultation to occur with the State heritage agency.

A consequence of the effective 'blanket' protection applying to all historical archaeological relics is that, unless there is a statutory 'exception' in place, any person or organisation seeking to disturb or excavate land known or likely to contain

relics must obtain a permit. In assessing applications for permits, the Heritage Office usually requires the preparation of an 'Archaeological Assessment and a Research Design' which sets up a research context and outlines the manner in which the proposed excavation will be undertaken.

The statutory processes and protective mechanisms do not distinguish between 'relics' of high, low or even no scientific research potential, nor is there any background contextual basis available for ensuring that archaeological investigation projects produce worthwhile data and contribute to wider community benefits through providing new knowledge of history or opportunities for interpretation. The PHALMS project addresses this issue by identifying not only the presence of archaeological remains, but also their significance and research potential.

Regional Research Framework

At its heart, the PHALMS project is an innovative case study in the management of important archaeological heritage resources within a regional research framework. There has been a growing awareness within the Australian archaeological community of the need to provide an appropriate mid-range theoretical framework within which decisions about the allocation of resources to archaeology (which sites to investigate and how to analyse and present such information to an interested public), can be undertaken. The project therefore not only identifies, researches and documents significant archaeological sites but also provides a management and research framework to guide future decisions about their development or conservation.

Historical themes were identified following a review of heritage and archaeological projects, secondary source documents and a stakeholder workshop. The themes are arranged within an overall framework provided by the Australian Heritage Commission and a State framework provided by the Heritage Council.

The research questions for the Parramatta area are set within the framework provided by the historic themes. The focus of the research framework on 'answerable' research questions that may be addressed through physical investigation of documented sites, which may contribute to a greater understanding of Parramatta's, and Australia's, history. The research framework also identifies specific data and analysis relevant to each research question. This framework is flexible, however, allowing archaeologists to vary the identified research design for a particular site, if they believe that a different approach is more appropriate to the specific circumstance.

Methodology

Archaeological Management Units

The study area was divided into approximately 360 Archaeological Management Units (AMUs) which form

the basis of the project structure. AMUs are areas with comparable history and similar ability to demonstrate historical themes. They vary in size from single allotments to aggregated city blocks.

The Parramatta AMUs were defined through thematic consideration of the historical development of a site and its current physical condition. The archaeological resources within each AMU have similar levels of archaeological significance and archaeological research potential, and have been subject to similar levels of disturbance.

The area within each AMU, therefore, has the same management requirements for archaeological resources, including statutory consent approvals, indicative requirements for physical investigation or conservation and/or interpretation.

Every part of the study area is located within an AMU, and therefore has pre-specified archaeological heritage management requirements. Future development within the study area must address the management requirements for archaeological resources, as part of the planning consent process.

Database Inventory

One key documentation tool is a database which presents all of the information about each AMU in a structured format. An entry has been created for each AMU, including property information, historical development, thematic context, research framework, archaeological significance and management requirements. The database is a modified version of a database developed and maintained by the Heritage Office. The use of this pre-existing database allows integration of the archaeology data with other heritage information. The database has been developed over a number of years and is familiar to heritage practitioners, so users are likely to be familiar with the structure of the information.

Geographical Information System

The other essential element of the historic data management and operation of the system is a Geographical Information System (GIS). The advantage of GIS is the integration of a wide variety of different data, derived from different sources, combined in a consistent, spatially-referenced system.

Current cadastral information for the study area, provided by the local government agency, forms the baseplan to which all other information is linked. A series of historical maps, showing key developments in the settlement from c1790 to 2000 were georegistered to the baseplan — points on each historical map were corresponded to known locations on the modern map base, therefore locating the images in modern real world coordinates and displaying the historical layers in the correct relationship to other data layers in the system. This method allowed the features shown on historical maps to be accurately located within modern property boundaries (even where the original source is distorted or inaccurate).

The degree of accuracy is, of course, limited to the accuracy of the original maps, though identifiable inconsistencies have been corrected.

The boundaries of the AMUs were defined in the GIS, with each AMU represented by a map object, with the AMU number attached (as generated from the database). The software used for this project (MapInfo Professional) allows attributes recorded in the database to be associated to each map object (for example, all AMUs of State significance can be automatically shaded the same colour). This tool allows for the dense information recorded in the database to be effectively represented using the graphic capabilities of the GIS. In practice this means that summary ‘maps’ of information can be produced easily.

Provision has been made in the GIS database to allow linking of AMUs displayed on the map to the corresponding inventory record, allowing the user to access the database directly through the map interface.

Implementation

This new documentation and management system was developed to work within an existing archaeological statutory framework. One of the primary objectives was to streamline the current consent process in order to free up resources from sites of lower significance so as to focus them on more significant sites. The information provided in the database should accurately inform consent authorities of the nature of the archaeological issues associated with any site in the Parramatta area (from no archaeological issues to sites of exceptional significance and research potential). This fosters well-informed conservation or development decisions.

Once fully implemented, the system allows for the local planning authority to manage archaeological resources of local significance through the research and management framework. Sites of higher significance, however, will still be managed through the State heritage agency.

The study was undertaken in close consultation with

stakeholders, including heritage professionals and other interested parties to facilitate outcomes which meet the needs and concerns of those who are most affected.

A review mechanism has been built into the system to ensure that the research framework and database are updated and corrected as required. The flexibility of the research framework also allows for the users of the system, particularly archaeologists, to draw on their own experience and knowledge.

The system is not intended to replace the need for independent archaeologists, but rather to offer proactive recording, assessment and management. The database and GIS provide a preliminary archaeological assessment of the entire study area, highlighting areas of archaeological significance and potential in order to direct future resources to important archaeological sites, rather than approaching the resource in an ad hoc manner on a site-by-site basis — as is the traditional method.

The implementation of this system and research framework should simultaneously provide greater certainty of process for owners and developers and a better contribution to history and archaeology from archaeological investigation.

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