# **INVENTORIES AND SURVEYS FOR HERITAGE MANAGEMENT** Lessons for the Digital Age

**David Myers and Janet Hansen** 



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GETTY CONSERVATION INSTITUTE, LOS ANGELES

#### **Getty Conservation Institute**

Timothy P. Whalen, John E. and Louise Bryson Director Martin Coleman, Publications Manager

The Getty Conservation Institute (GCI) works internationally to advance conservation practice in the visual arts—broadly interpreted to include objects, collections, architecture, and sites. The Institute serves the conservation community through scientific research, education and training, field projects, and the dissemination of information. In all its endeavors, the GCI creates and delivers knowledge that contributes to the conservation of the world's cultural heritage.

This publication was created using Quire™, a multiformat publishing tool from Getty.

The free online edition of this open-access publication is available at getty.edu/publications/inventories-and-surveys/ and includes zoomable illustrations. Also available are free PDF and EPUB downloads of the book.

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#### First edition, 2024 github.com/thegetty/inventories-and-surveys

Published by the Getty Conservation Institute, Los Angeles Getty Publications 1200 Getty Center Drive, Suite 500 Los Angeles, California 90049-1682 getty.edu/publications

Tevvy Ball, Project Editor Leslie Tilley, Manuscript Editor Greg Albers, Digital Manager John Grizzle, Cover Design Molly McGeehan, Production Danielle Brink, Image and Rights Acquisition Erin Cecele Dunigan, Jenny Park, and Kate Justement, Digital Assistants

Distributed in the United States and Canada by the University of Chicago Press

Distributed outside the United States and Canada by Yale University Press, London

Library of Congress Cataloging-in-Publication Data

Names: Hansen, Janet (Writer on heritage management), author. | Myers, David, [date] author. | Getty Conservation Institute, issuing body.

- Title: Inventories and surveys for heritage management : lessons for the digital age / Janet Hansen and David Myers
- Description: First edition. | Los Angeles : Getty Conservation Institute, 2024. | With contributions by Lauren Weiss Bricker, Sara Delgadillo, Annabel Lee Enriquez, Katie Horak, Alastair MacIntosh, and Nicholas Yeo. | Includes bibliographical references. | Summary: "This publication provides technical advice and guidance for using inventories and surveys as tools for heritage conservation and management"— Provided by publisher.

Identifiers: LCCN 2023052837 (print) | LCCN 2023052838 (ebook) | ISBN 9781606068816 (paperback) | ISBN 9781606068830 (epub) | ISBN 9781606068823 (adobe pdf) | ISBN 9781606068847

- Subjects: LCSH: Cultural property—Inventories. | Archaeological surveying. | Cultural property—Protection. | Historic preservation.
- Classification: LCC CC135 .H365 2024 (print) | LCC CC135 (ebook) | DDC 363.6/ 9-dc23/eng/20240212

LC record available at https://lccn.loc.gov/2023052837

LC ebook record available at https://lccn.loc.gov/2023052838

Front cover: Arcade, reproduced courtesy of City of Lincoln Council.

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### Foreword

### **Timothy P. Whalen**

Inventories and related surveys are fundamental tools for conserving and managing cultural heritage places. The first step in the conservation process is to identify and understand the places we want to protect. Collecting and maintaining information through inventories and surveys is an intragenerational endeavor. Heritage organizations, professionals, and stakeholders build cumulatively upon the efforts of their predecessors. As time passes, new places become valued by communities and demand study and recognition, so our heritage truly represents our collective histories.

The Getty Conservation Institute (GCI) has been working with heritage inventories and surveys for more than two decades, beginning in the early 2000s with planning for a citywide survey of heritage resources in Los Angeles known as SurveyLA. Work with World Monuments Fund (WMF) followed, to support the creation of national archaeological databases for Iraq, with the State Board of Antiquities and Heritage, and for Jordan, with the Department of Antiquities. This work resulted in the creation of the Middle Eastern Geodatabase for Antiquities (MEGA). These undertakings led to recognition of widespread need within the heritage field for modern, purpose-built, economical software to manage heritage inventory information.

In 2013 the GCI and WMF released version 1 of the open-source Arches Heritage Data Management Platform as a system for heritage organizations to deploy to meet their inventory and survey requirements. Over the past decade, the GCI has continued its involvement in the Arches project and its open-source community; numerous new versions of the platform have been released, with progressively improving capabilities, and the community has grown to include software implementers, funders, service providers, and other contributors from across the globe.

Recent work at the GCI recognizes the evolving nature of heritage surveys to ensure inventories fully identify underrepresented and emerging heritage places. Our renewed efforts with the City of Los Angeles to undertake the African American Historic Places Los Angeles project acknowledge that surveys have not always fully recognized all communities' heritage equally. Our publication *The Twentieth-Century*  *Historic Thematic Framework* (Marsden and Spearritt 2021) provides a tool for those working to gain recognition for more recent heritage; it was undertaken in collaboration with the ICOMOS International Scientific Committee on Twentieth-Century Heritage.

Through the GCI's involvement over the past two decades in all these endeavors, we have become increasingly aware of the need for comprehensive, up-to-date, and practical guidance concerning all facets of inventory and survey work. The GCI is very pleased to produce this publication in collaboration with the City of Los Angeles's Office of Historic Resources (OHR), an institution the GCI partnered with upon the OHR's creation in 2006 to implement SurveyLA. One of the GCI's primary aims in undertaking SurveyLA with the OHR, beyond meeting the immediate needs of our own community of Los Angeles, was for the project to demonstrate its methodology and share lessons with others in the heritage field taking on similar efforts. We are delighted that this book helps realize that aspiration.

I am grateful to the lead authors—David Myers and Janet Hansen—who conceived, crafted, and wrote much of the publication, and brought about the participation of its other contributors. I also thank the other contributors, who were so willing to share their practical experience. I hope this publication will help to address the need for improved inventory and survey guidance, and ultimately contribute to the advancement of conservation practice.

Timothy P. Whalen John E. and Louise Bryson Director Getty Conservation Institute

### Foreword

#### **Ken Bernstein**

In leading Los Angeles City Planning's Office of Historic Resources, I've seen firsthand how surveys and inventories serve as key building blocks of heritage conservation. Cities can only preserve their significant places and plan for how their neighborhoods should evolve if they first know what and where their heritage resources are.

Surveys and inventories can guide the future of our communities, informing longrange planning in any dynamic city. Survey data, made publicly accessible through an inventory, can direct the attention of urban planners and policymakers to which places need special protection, while enabling areas with fewer heritage resources to change more rapidly.

We continue to find that our citywide survey (SurveyLA) and heritage inventory (HistoricPlacesLA) have been paying regular dividends, providing invaluable information to guide not only planning policies but also reviews of whether proposed development projects may adversely affect heritage resources.

Prior to SurveyLA, 85 percent of Los Angeles had never been evaluated to identify sites with historic, architectural, or cultural significance, leaving many important heritage resources at risk of demolition without any City review. Survey information has now flagged these locations for City decision-makers and the general public, ultimately making possible numerous preservation/reuse success stories. These include one of the most notable works of Late Modern/Expressionist architect John Lautner, an intact neighborhood of worker housing built by the Goodyear Tire and Rubber Company, the city's last commercial citrus orchard, and the first African American cultural center, which was constructed in response to the 1965 civil unrest in the Watts community.

Despite the many benefits of surveys and inventories, governments and heritage organizations have largely undertaken them independently, with little external guidance or support. When we started early work for SurveyLA in 2006, we benefited greatly from preparatory research conducted by the GCI, but still confronted many lingering questions: How could we fund and sustain a large-scale survey over time? What community outreach strategies would most meaningfully engage the public to contribute their knowledge to inform the survey while also building broad-based support for the project? And how could heritage survey data become transparent and usable for the public?

In addressing these questions, and many more, this publication represents an important achievement in the heritage conservation field. It builds upon Getty's past leadership, which made possible SurveyLA and HistoricPlacesLA, to capture the instructive lessons learned from these projects in ways that are transferable at any scale. Janet Hansen, who so skillfully led SurveyLA, shares her insightful guidance on survey methodology, ranging from the big picture to the very specific and practical, while David Myers, who has been engaged with diverse applications internationally of the GCI's Arches Heritage Data Management Platform, imparts valuable insights on best practices for creating a successful inventory.

*Inventories and Surveys for Heritage Management: Lessons for the Digital Age* provides heritage professionals with an essential roadmap of how to implement a survey and inventory – allowing heritage conservation to play a more central role in urban planning by ensuring that a richer understanding of our past will shape our communities' future.

Ken Bernstein Principal City Planner Los Angeles City Planning Office of Historic Resources

### Acknowledgments

We thank all of the authors who so generously prepared their valuable contributions for this publication. We greatly appreciate the following for their participation and assistance: Susan Macdonald, Getty Conservation Institute (GCI), Head of Buildings and Sites, and Ken Bernstein, principal city planner, Los Angeles City Planning Office of Historic Resources, for their input on the initial manuscript; Leen Meganck of the Flanders Heritage Agency for her peer review of the manuscript; Tamara Anson-Cartwright and Gary Miedema of the City of Toronto Planning Division for numerous conversations and for sharing information on the Toronto Heritage Survey; Emma Cunliffe of Newcastle University and Blue Shield International for her review relating to armed conflict issues; Kai Weisse for his review regarding natural disaster issues; Angela Labrador, who provided input on potential means of support for inventory and survey programs; Kate Clark for input on diagrams in the introduction and part I; and Sara Delgadillo for her input and assistance with diagrams and figures used throughout part II. We also acknowledge GCI staff member Juliette Raffaelli for logistical support to the production of the publication.

Our thanks as well to Cameron Trowbridge and Anna Duer of the GCI Information Center, who carefully reviewed the publication's bibliography and helped with its formatting, and to the GCI's Cynthia Godlewski, Martin Coleman, and Chelsea Bingham, who helped guide preparation of the manuscript to publication and liaised with Getty Publications. Finally, we wish to thank the Getty Publications team, who shepherded this book through the publication process: Tevvy Ball, project editor; Leslie Tilley, manuscript editor; Zsofia Jilling, proofreader; Greg Albers, digital manager; Erin Cecele Dunigan and Kate Justement, digital assistants; Danielle Brink, image acquisition and permissions; Jon Grizzle, cover design; Jenny Park, illustration; and Molly McGeehan, print production.

# Introduction: Importance of Inventories and Surveys to Heritage Management

### David Myers Janet Hansen

An enduring principle in the practice of cultural heritage management is that, to be effective in protecting and managing heritage, knowing what heritage you have is essential to safeguarding it. This principle holds for any organization or individual professional. The more thoroughly the heritage is understood, the better it can be managed. This makes inventories and related surveys, as well as other data collection activities, fundamental to effective heritage management.

This principle is embedded in the heritage management processes of many nations. For example, the Australia ICOMOS Burra Charter, which establishes national principles for the management and conservation of cultural sites in Australia, provides that the first step of its process (fig. i.1) is to "understand the place" (Australia ICOMOS 2013a). Likewise, in the "virtuous circle" developed by English Heritage as part of its 2005 strategy "to create a cycle of understanding, valuing, caring and enjoying" England's historic environment (fig. i.2), which continues to influence heritage practice there, the first tenet is that "by understanding the historic environment, people value it" (English Heritage 2005, 3). Similarly, guidance for local surveys developed by the U.S. National Park Service states that "to plan for the preservation and enhancement of the historic environment, it is necessary

to determine what properties make up that environment" (Derry et al. 1985, Foreword).

Although inventories and related surveys may not provide a comprehensive understanding of heritage, they provide a valuable foundation to gain such understanding, particularly when dealing with large numbers of heritage places at site, regional, national, or international scales. As shown in the Burra Charter flowchart (see fig. i.1), such understanding provides a basis for all of the heritage management and protection activities that follow.

Across the globe, heritage-related legislation at national, regional, and local levels usually mandates the establishment and use of inventories for heritage management and for keeping inventory information current through surveys. The UNESCO Recommendation Concerning the Protection, at National Level, of the Cultural and Natural Heritage (1972b) urges national heritage authorities as a matter of urgency to establish heritage inventories and keep them up to date. For organizations tasked with safeguarding heritage resources, inventories, surveys, and their linkage to legal regimes for heritage protection are the most fundamental means at their disposal for managing change to the built environment.

#### The Burra Charter Process

#### Steps in planning for and managing a place of cultural significance

The Burra Charter should be read as a whole.

Key articles relevant to each step are shown in the boxes. Article 6 summarises the Burra Charter Process.





At an international level, in addition to the abovementioned UNESCO Recommendation, the importance and role of inventories and of activities keeping them current is recognized in numerous other international heritage charters, conventions, and recommendations developed over the course of modern conservation practice.<sup>1</sup> Inventories are further recognized in regional heritage norms (Council of Europe 1985, 1992). In 2017 the United Nations Security Council also adopted Resolution 2347, which urged the creation and improvement of national and local heritage inventories to counter illegal attacks against and looting and trafficking of cultural property in relation to armed conflicts (UN Security Council 2017). This resolution relates to both immovable and movable heritage.





#### Widespread Need for Current and Comprehensive Guidance

In recent years, an increasing number of heritage agencies—from both North America and beyond—have been looking to the survey- and inventory-related experiences of the City of Los Angeles in implementing SurveyLA and establishing HistoricPlacesLA (see chapter 5). Over the past two decades the Getty Conservation Institute (GCI) has gathered experience from and exposure to a wide range of international practices, as well as to challenges relating to inventories and surveys of heritage places. This has come about through the GCI's involvement in laying the groundwork for SurveyLA and the related implementation of HistoricPlacesLA; developing and implementing the Kingdom of Jordan's national archaeological information system (Myers and Dalgity 2012); and since 2012 in the development and support for the Arches Heritage Data Management Platform and its growing international open-source community (see chapter 4).

Through these initiatives, the GCI has been involved with establishing new inventory systems in the United States, United Kingdom, Middle East, and China, and has engaged with professionals from across the world involved in heritage inventories and related standards and information technologies. These experiences have revealed renewed and growing interest in heritage inventories and surveys that employ contemporary approaches and effective practices in the field of heritage place management. Perhaps more importantly, these interactions have underscored the urgent need for new and updated guidance on inventories and surveys reflecting technological advancements in data collection and management and shifting mindsets in the heritage field that broaden the types of heritage resources and the reasons they should be identified and recorded, while also providing for greater public input and engagement.

Despite the foundational role of inventories and surveys in heritage management, related guidance that exists on how they should be created, implemented, and maintained is inconsistent and in many instances outdated. The two primary international standards relating to heritage inventories—both of which aim to identify core items of information that should form a part of any cultural heritage inventory—date from the mid-1990s, a relatively early point in the development of digital information systems and before the widespread adoption of geographic information systems.<sup>2</sup> In the United States, national professional standards and guidelines for heritage surveys date from the mid-1980s, reflecting a predigital era.<sup>3</sup> Today, the body of literature in the United States on survey and inventory methods and practice is scant, other than these arguably outdated technical publications, which still serve as go-to resources for conducting heritage surveys.

Although some jurisdictions do have more current guidance, in our experience interacting with colleagues from a broad range of heritage agencies around the world, more often than not, available guidance on inventories is not only dated but also limited. The impetus for this publication, therefore, is to draw on the authors' and others' experiences to fill information gaps by providing practical technical advice, guidance, and lessons learned for creating functional, usable inventories and conducting modern surveys based on current practices in heritage management.

Although the information provided applies to inventories and surveys in a variety of contexts, lessons drawn from SurveyLA are particularly relevant to practice relating to aboveground heritage resources in urban built environments—that is, extant resources that represent important aspects of the architectural, social, cultural, and ethnic history and development of urban areas. More generally, the contents of this book focus primarily on the application of inventories and surveys to the management of heritage places.

#### How to Use This Book

This book is organized as follows:

- This introduction offers a foundational overview of modern inventories and surveys, defining essential concepts and their relation to each other, providing a conceptual framework for their application, and overviewing the range of ways they are used.
- The main body of the book is divided into four parts: Part I discusses in detail the processes and considerations for developing and implementing inventories, while part II does the same for surveys. Part III describes a range of important uses of heritage inventory and survey information. And part IV contains two case studies on heritage inventories: one of archaeological heritage in Lincoln, England, and a second of intangible heritage in Singapore.
- A conclusion presents key considerations, common challenges, and potential remedies, as well as

forward-looking recommendations relating to initiating, implementing, and sustaining heritage inventories and surveys.

- In several chapters, sidebars like this one address a variety of relevant topics to both expand upon and augment the authors' experiences.
- Figures throughout the book illustrate a variety of structures, tools, and materials used in creating and implementing inventories and planning and conducting surveys. Some chapters in part II also include links to downloadable materials from SurveyLA that can serve as examples.
- A glossary at the back defines key terms used throughout this text.
- In addition, for online readers, author-date citations throughout the book provide easy access to related content with just a couple of clicks.

#### **Inventories versus Surveys**

We have quite frequently encountered a lack of clarity in the heritage field in how inventories and surveys are discussed, with the two terms sometimes used synonymously. Inventories and surveys each serve distinct but complementary roles in heritage practice. It is therefore important to first define what we mean with respect to these two concepts, the relationship between them, and their differences.

The contents of this volume have been prepared under the assumption that the vast majority of inventories and surveys utilize digital technologies, rather than relying on paper-based records, and that survey data should be integrated into a digital inventory.

For the purposes of this volume, we define a *heritage inventory* as an ongoing record identifying and describing significant, as well as potentially significant, cultural resources. We define a *heritage survey* as an activity carried out over a specific timeframe to identify, describe, and/or assess the significance of potential cultural resources within a defined geographic area. Surveys may also determine through evaluation which places or properties are not significant.

#### Heritage Inventories

Official heritage inventories maintained by public agencies typically include records of heritage resources designated or listed through statutory lists or registers, as well as properties determined through evaluation to meet a minimum threshold of significance (fig. i.3). While the latter are not formally listed or designated, they may nevertheless need to be considered in planning decisions. Some inventories also include properties determined through assessments to not meet a minimum threshold of significance—another important factor to inform decisionmaking.<sup>4</sup> In addition, inventories may hold records about heritage that no longer exists for purposes of posterity and research. They are established to serve as tools for a range of purposes, including heritage management and protection and public appreciation, as discussed in the Roles of Inventories and Surveys section here and the case studies in part IV.

Official inventories are typically established through legal mandate, in which case they are often known as *statutory inventories*. Inventories are also often created by nongovernmental organizations (NGOs), professional or voluntary organizations, or researchers with interests relating to geographical areas or topical concerns.<sup>5</sup> In



FIGURE i.3 The heritage items included in an inventory typically represent that subset of places evaluated that are deemed significant or potentially significant. A further subset of heritage items in an inventory is typically designated or listed. *David Myers, GCI* 

many cases, inventories first created by NGOs or researchers have formed the basis for creating or supplementing official or statutory inventories. Inventories are produced at a variety of geographic scales, including international, national, regional, local (e.g., city), and site levels. In some cases, topical or thematic inventories are produced, such as of modern or industrial heritage, shipwrecks, or intangible heritage.

Ideally, information within an inventory evolves as more is learned about heritage places, as additional heritage places are identified, and as the state of those heritage places changes. The physical environment is in a continual state of change, whether due to human or natural forces. Cultural traditions, as well as conceptions of what is culturally significant, also are in an ongoing state of flux. New information periodically emerges about the significance of heritage places, whether through public input or new research. Heritage places are newly revealed from time to time, whether through active investigation or through coincidence, such as in the discovery of subterranean ruins during construction projects.

#### Heritage Surveys

A heritage survey is one among several types of heritage data collection activities with similar purposes, including historical map regression;<sup>6</sup> analysis of remote sensing data such as satellite imagery, aerial photography, or airborne laser scanning (known as *lidar*); cultural mapping; and archaeological excavations. Ideally, surveys and other

data collection activities are designed (before implementation) to collect information in such a way that it can be incorporated efficiently within an ongoing inventory (fig. i.4). Put another way, information within inventories is best kept current as well as improved through surveys and other data collection activities with similar purposes.

Surveys may be undertaken to create or update an inventory and may have a geographic, thematic, or temporal focus. Some surveys cover entire geographic areas that have never been surveyed or formally investigated or focus on subareas that have not been included in previous surveys of a geographic area. Others focus on heritage typologies that are underrepresented in existing inventories or are from certain time periods that have never been recorded. Surveys may also be geared toward updating existing information on heritage places, for example, after a substantial amount of time has elapsed since a prior survey, in advance of planned development in an area, or in direct response to changes in the built environment, such as in the wake of natural disasters or conflicts.

Survey information provides a snapshot from a specific point in time. Potentially, a heritage resource could be demolished or substantially altered within weeks or months after it has been recorded through a survey. This is just one example of how, over time, much of the information gathered through a survey will inevitably become increasingly outdated. Thus, there is a need for long-term planning to carry out ongoing surveys over time to feed into a collective inventory record.

#### Roles of Inventories and Surveys in Heritage Management

Inventories and surveys in tandem play a variety of important roles in heritage management. As shown in figure i.5, these functions can be divided broadly between those that aid in understanding heritage and those aimed at using that understanding to make decisions and take actions with respect to heritage. Regarding the "understanding" function, the primary purpose of inventories and surveys is to identify, describe, and collect assessments of heritage resources deemed to be significant or potentially significant—or those not deemed significant. Crucially, they can provide a basis for monitoring and understanding changes to significant heritage resources over time. Inventories and surveys can also be valuable tools for progressing knowledge and



**FIGURE i.4** The inventory lifecycle. A heritage inventory is an ongoing record that is created and (ideally) updated and improved over time through a range of information collection and assessment activities, including surveys. The types of activity shown are merely examples. Aside from the initial inventory creation activity, the other activity types may occur in any sequence. *David Myers, GCI* 



**FIGURE i.5** Roles of inventories and surveys. Inventories and surveys can serve a variety of purposes that can be divided broadly between understanding heritage and providing a basis for making decisions and taking actions regarding that heritage. Bold items indicate the most common roles. *David Myers, GCI* 

understanding of the collective historic environment over broad areas, to whatever geographic extent they pertain. Such a knowledge base can be progressively added to over time through successive surveys and other data collection activities. Making inventories publicly accessible and seeking public participation in reference to both inventories and related surveys can be highly beneficial. This effort can serve as a means to elicit from stakeholders information about heritage resources not included in inventories and can allow them to contribute additional information to existing records to supplement or improve those records. This input can be particularly useful in the identification of heritage resources that are significant for their historical, ethnic, and cultural associations in ways that may not be readily apparent through visual inspection. Inventories and surveys can, in this way, provide mechanisms to generate and foster public engagement in heritage identification, understanding, and management.

In certain cases, inventory and survey information should be made confidential and access to it restricted to only those with a legitimate need or right to access. The need for limited access often arises with places held sacred by indigenous peoples, as well as with archaeological sites deemed to be at risk from looting. In many jurisdictions, laws or policies dictate confidentiality and restrict access to information concerning these types of heritage places. Detailed information on places held sacred by indigenous peoples and certain archaeological sites should be made accessible only to those who have been identified as authorized users and secured from all others.

Well-structured inventory and related survey data can aid in the classification of heritage resources. This can, in turn, enable the recognition of broad historical and cultural patterns, taking into account geographic and temporal dimensions. Inventories and surveys can thus serve as valuable bases for both answering research questions and identifying underexamined areas in need of new investigation. They can enable comparative analysis of specific resource types, including with respect to resource integrity (further discussed in part II), to better understand their commonality or rarity and assess their relative significance. For example, such analysis could show that a theater may be the only surviving example retaining the character-defining features of its typology and architectural style. In a sense, an inventory and the surveys that feed into it can provide a broad overview of the historic environment-thus allowing us to see the forest at macro scale, and the patterns within it, including interconnections and gaps, rather than only the individual trees.

By providing this basis of understanding, or evidence base, as it is referred to in the U.K., inventories and related surveys are poised to serve the more active functions of making decisions and taking actions that serve public agencies' mandates of heritage conservation, protection, management, and valorization. When connected to legal and policy regimes, they serve to identify which heritage resources are officially designated or listed; which merit protection, regulation, or incentives; and which should receive formal consideration within regulatory processes. In this respect, inventories and surveys aid in providing for sensitive development, for example by supplying the information needed to impact assessment processes and to help determine priorities in targeting heritage utilization and regeneration.

In addition, by serving as a basis for monitoring change, surveys and inventories can help heritage organizations recognize the need for interventions for heritage conservation and protection. This can include providing a basis for recording, analyzing, and responding to illegal activities affecting heritage resources, such as looting and illicit demolitions. They also serve as essential sources for public agencies to use in formulating and implementing informed planning programs, policies, and strategies that take into account the significance of heritage resources. The recognition of significant heritage resources through publicly accessible inventories also promotes broader public understanding, appreciation, and engagement with those places, which is often an important factor in heritage stewardship. This fact makes accessible inventories, as well as public involvement in both inventories and surveys, instrumental features in stimulating the "virtuous circle" developed by English Heritage (see fig. i.2).

As discussed in chapter 12, in formulating a response to heritage being caught in the midst of disaster situationsearthquake, fire, flood, or tsunami-one of the first needs is to consult an inventory. Such data can provide an essential basis for understanding the significance of damaged and at-risk heritage and determining intervention priorities. Given the urgency of emergent disaster situations and the competing demands they create, to prepare for future disasters, it is recommended that inventory information be both comprehensive and kept current through ongoing survey activities (Stovel 1998). The need for these tools is becoming increasingly apparent due to climate change, whether in coastal areas that urgently need to prepare for and respond to rising sea level, or severe storm events that seemingly may now occur anywhere.

Inventories and related surveys are also critical to heritage protection with respect to armed conflicts. This is the case from both legal and practical standpoints. Inventories are a key feature of the Second Protocol to the Hague Convention of 1954 for the Protection of Cultural Property in the Event of Armed Conflict (UNESCO 1999), which calls for their compilation as a peacetime preparatory measure. Armed forces are obliged to identify important cultural sites to be avoided in military operations, whether aerial bombing, missile strikes or artillery fire, or on-ground operations. As part of the process, consultation and cooperation between militaries and heritage organizations and practitioners, such as through Blue Shield national committees, are essential to heritage protection (Stone 2013). For postconflict situations, inventories and related condition surveys are crucial to systematically determining intervention priorities. Inventories and postconflict assessments have also contributed to the legal prosecution—and in some cases conviction—of individuals involved in intentional destruction of cultural heritage within conflicts.

In pursuing the multifaceted aims of sustainable development, inventories and surveys employed deftly through modern information technologies have the potential to be among heritage organizations' most essential tools. They can provide for proactively responding to transformational forces with the aim of enabling the continued existence and use of significant heritage to be the patrimony of future generations. Without robust inventories and surveys, the effectiveness of government agencies tasked with protecting heritage would be substantially weakened, leaving heritage at risk due to a lack of essential information.

#### Current Trends and Approaches Relating to Inventories and Surveys

In recent decades, public agencies responsible for heritage stewardship have shown growing interest in heritage inventories and surveys. We believe this interest has arisen as a result of a few different factors, in combination with the fundamental and wide-ranging utility of information provided through inventories and surveys to heritage management.

Perhaps most noteworthy is the global need for up-to-date information to manage heritage assets in an era of rapidly increasing urbanization and development. Urban centers are experiencing fast-paced growth, resulting in pressure to improve and expand infrastructure, create more housing, revitalize neighborhoods and urban centers, develop transit-oriented communities, and embrace diversity, while also dealing with issues including gentrification, displacement, and economic inequality. Cities experiencing growth need current, usable information to plan for redevelopment, reutilization, and regeneration of heritage resources in existing urban areas, as well as new development in geographically expanding cities, including planning for large-scale transportation projects: highways and above- and belowground rail lines, for example.

Many older inventories tend to focus on pre–Second World War heritage. In recent years the imperative to have current information has led to an emerging priority to record the "recent past" and themes such as modern architecture and design and suburbanization, the latter of which covers vast geographic areas of development.

Cities experiencing dramatic population decreases, such as those in the United States' Rust Belt that have lost manufacturing industries through technological obsolescence or globalization, also need up-to-date information to decide how to deal with vacant historic properties and public spaces and facilities increasingly falling into disrepair. This situation has entailed at times a need to decide which buildings or structures should be demolished and which merit public protection and support or conversion to new uses.

Usable information on heritage resources is critical to meeting planning objectives for growth and change. Many heritage agencies are faced with the challenge of working with data in various formats, many of which are largely unusable or inaccessible, including decades-old paperbased records. Others have in the past made substantial investments in creating rudimentary databases to serve as inventory systems—which have since increasingly become antiquated and in need of replacement and modernization. Technological advancements have created new possibilities for more easily collecting digital data and making it accessible and searchable online.

Another factor encouraging recent interest in inventories and surveys has been the progressively expanding definition of what constitutes cultural heritage. This expansion has resulted, in many instances, in the need to identify and take account of heritage not previously receiving comprehensive official recognition by public heritage agencies. The past focus within heritage practice on aesthetics, monumental architecture, and individual buildings has broadened to be more inclusive of places and their diverse histories and community narratives and the variety of resource types they represent. This wider focus includes recognition of cultural landscapes, historic urban landscapes, and the heritage of underrecognized groups such as ethnic and LGBTQ populations, as well as intangible heritage: folklore, customs, beliefs, traditions, knowledge, and language—and the relationships among them (explored further in chapter 14, on intangible heritage in Singapore).

From a practical standpoint, the identification of heritage resources in line with the expanding notion of what is culturally significant has been facilitated in some countries by an increasing reliance on thematic frameworks, theme studies, and historic contexts (explored in detail in chapter 2). These tools have also served as mechanisms for recognizing places of ethnic, social, and cultural significance that were largely underrepresented in earlier inventories and surveys. The identification of these places and traditions of social significance necessitates that modern survey methods engage all segments of the public as expert sources of information on places they value and as stakeholders in developing planning initiatives to enhance and celebrate them.

Recent trends in planning and heritage management to identify and preserve community, neighborhood, and landscape character have spurred interest in developing new survey methods that focus on collecting information at the area scale rather than by individual property or heritage resource. This trend has played out in international practice with the development and application of methods relating to cultural landscapes and more recently urban heritage—such as the Historic Urban Landscape approach adopted in 2011 by UNESCO's General Conference (UNESCO 2011b).

Undoubtedly, the rapid advancement and proliferation of mobile and web-based information technologies, including the ease of digital photography and video and social media, have vastly increased the ability to capture and share information about heritage resources. These technological advances have further enabled public input and comment on what is identified as heritage, as well as public reporting on adverse impacts to such resources, and have helped increase public participation in the heritage identification process through crowdsourcing efforts. At the same time, a widespread, long-term trend of decreasing public funding for heritage agencies mandated to identify and protect heritage resources has often meant that such agencies have struggled to keep up with advancing information technologies, the need to keep information on heritage resources current and accessible, and the work of further engaging with increased public

participation. These trends have also, together, at times raised questions about when the involvement of trained heritage professionals is warranted, as opposed to volunteer or crowdsourcing efforts.

We will attempt to address these and other emerging trends and challenges in the chapters that follow.

#### NOTES

- See CIAM 1946; UNESCO 1968, 1970, 1972a, 1976; ICOMOS ICAHM 1990; ICOMOS 1996; UNESCO 1999, 2001, 2003; ICOMOS CIIC 2008; ICOMOS 2011b; ICOMOS and TICCIH 2011; ICOMOS 2017; ICOMOS ISC20C 2017; and ICOMOS and IFLA 2017.
- Those two international standards, both adopted in 1995, are the Core Data Index to Historic Buildings and Monuments of the Architectural Heritage (Council of Europe 1995), and the International Core Data Standard for Archaeological Sites and Monuments, adopted by the International Committee for Documentation (CIDOC) of the International Council of Museums (ICOM) and the Council of Europe (Council of Europe 1999; see also Thornes and Bold 1998).
- 3. These include National Register Bulletin 24: Guidelines for Local Surveys: A Basis for Preservation Planning (Derry et al. 1985) and the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (National Park Service 1983).
- Inclusion of properties that have been surveyed and determined to not meet significance thresholds provides essential information for planning and ensures they are not unintentionally resurveyed over time.
- 5. For example, Docomomo International, as well as many national chapters of Docomomo, have created registers identifying and documenting significant buildings, sites, and neighborhoods of the modern movement, and these are added to on an ongoing basis. One of the specialist committees of Docomomo International is also devoted to such registers. Further information is available at https://docomomo.com/iscs/.
- 6. See further explanation of historical map regression in the glossary.

### Part I

### **Heritage Inventories**

Part I of this volume aims to convey numerous considerations, lessons, and useful information resources for building and applying inventories to cultural heritage conservation and management. It contains four chapters: Chapter 1 proposes nine key qualities that information within an inventory would ideally possess to maximize its effective use for heritage protection, conservation, and management. Chapter 2 describes common types of infrastructure, resources, and activities utilized by many heritage organizations around the world to support their inventories and to help realize the qualities proposed in chapter 1. Chapter 3 focuses on key considerations for heritage organizations seeking to establish, modernize, invigorate, or increase the effectiveness of their heritage inventories. The final chapter in part I, chapter 4, provides an overview of the current state of the open-source Arches Heritage Data Management Platform and how it is being deployed by heritage organizations around the world to survey programs.

The information presented is based on the GCI's experiences, research, and engagement with others in the heritage field over the past two decades dealing with various aspects of heritage inventories in a variety of geographic contexts. The considerations, lessons, and pointers that follow are presented from the viewpoint of maximizing the effectiveness of inventories as tools, serving the ultimate aims of heritage protection, conservation, and management. This focus on effectiveness has been informed by the practice of results-based management, which is based on defining specific desired results, or management objectives, and then monitoring and evaluating the extent to which those results have been achieved (UNESCO 2022).

1

## Key Inventory Qualities for Effective Heritage Management

#### **David Myers**

For an inventory to be effective in the broad range of uses mentioned in the introduction to this volume, information within it will ideally have certain qualities or characteristics that increase its utility. This chapter proposes what some of those desired qualities are, and explains why. Since an inventory is essentially an ongoing information record, the proposed qualities have been informed in part by guidance pertaining to general data quality, rather than qualities specific to the heritage field.<sup>1</sup> This discussion assumes that inventory users, such as policymakers, public agency staff, emergency responders, property owners, and developers, all seek some degree of certainty when consulting inventory information about the status of places and properties when making decisions.

As will be discussed further in chapter 2, some jurisdictions have statutory inventories recognized by law as the information source upon which planning decisions regarding heritage are based. Statutory heritage inventories, as well as other official inventories that public agencies rely on to carry out their stewardship mandates, are typically recognized by law as authoritative or definitive records of a particular jurisdiction or organization. Having multiple inventories for a jurisdiction can cause confusion and uncertainty about which inventory is more accurate, and can lead to unnecessary duplication of effort and resource expenditures.

#### **Key Qualities**

The qualities listed in this section are not exhaustive but are suggested as considerations for those working with inventories, who may wish to set out other qualities more fitting to their own circumstances. Various means to achieve those information characteristics are discussed in later chapters.

#### Comprehensiveness of Coverage

This quality represents the aim of identifying, even with limited information, all significant heritage places within a particular jurisdiction. Comprehensiveness is essential to actively safeguarding heritage within that jurisdiction. Gaps in the geographic coverage of an inventory, such as an area of a site, city, or region that has never been surveyed, can put heritage at risk. Organizations usually seek to address those gaps with the aim of attaining complete geographic coverage. A complete understanding of the extent of archaeological resources is normally not possible, given that buried remnants tend to be incrementally revealed over time. However, one can strive to be as comprehensive as possible based on available research and evidence. As the heritage field has evolved, additional heritage types have been recognized (e.g., cultural landscapes, modern architecture, intangible). Consequently, for an inventory to be complete, when heritage types are newly recognized by a particular jurisdiction, activities need to be undertaken to also identify those resources. If an agency has created a thematic framework delineating specific historic or cultural themes to be represented within its inventory, the agency typically strives to have the inventory comprehensively represent those themes.

#### Uniqueness

The quality of uniqueness holds that real-world phenomena, such as a building, event, or person, should be represented only once in an inventory. This is desirable to prevent confusion in determining which record is most reliable and to prevent duplication of effort. The most essential function of a heritage inventory is to definitively identify heritage resources deemed to be significant or potentially significant. This objective necessitates that, ideally, a unique record exists for each heritage resource within an inventory, and conversely that duplicate or multiple records for a given resource do not. Duplication particularly arises when combining data sets.

# Completeness of Required Information in Records

The quality of completeness holds that, for specified data fields within an inventory, if it is not already present, data needs to be added, and it should be ready for use. This quality relates to determining what data is critical and what is optional. For inventories to be effective as tools for heritage management, it is important that certain data fields critical to informed decision-making, such as location, significance, and designation status, have complete information and are not left empty or partially completed. Completeness of noncritical information may be a lesser priority.

#### Accuracy

Accuracy can be defined as the degree to which inventory information reflects the real-world places, objects, people, or events being described. Decision-makers need accurate information to make informed decisions about heritage places, whether to issue permits to demolish buildings, approve plans for development projects, or quickly respond to disasters. Errors in inventory data such as location, designation status, or significance, could have ruinous effects. More generally, users of inventory information seek out and expect accurate information. Accuracy of inventory information can be promoted by incorporating data from authoritative sources to the greatest extent possible. Authoritative sources are specific, officially designated sources of information that provide a type or types of information that are trusted, timely, and secure (U.S. Department of the Interior 2008, F-1). Examples of data from authoritative sources include geospatial data obtained from a national or regional mapping agency and property-ownership data obtained from a government agency legally mandated to maintain such information.

#### Consistency

The quality of consistency has been defined as "absence of difference when comparing two or more representations of a thing against a definition" (DAMA UK Working Group 2013). For a heritage inventory, this might include consistently recording ratings of the condition or significance of heritage resources, or consistently classifying heritage resources according to terminology and related concepts in a thesaurus. Any single inventory typically holds data compiled from a multitude of sources. Those sources may include an initial amalgamation of disparate legacy data sets, as well as the contributions of a range of individuals who may have varying interests, expertise, and experience; who may communicate in different primary and secondary languages; or who may be collecting information through varying digital hardware and software. Consistency of information enables carrying out comparative analysis of heritage resources, as well as searching across an entire inventory according to specific attributes. Periodically revising or reworking data may be required to achieve consistency.

#### Currency

The quality of currency is the degree to which information is up to date and reflective of the present state of the real world or state of knowledge. To help ensure that decisions affecting heritage places are well informed, managers of inventories strive to keep information up to date to reflect changes in the state of the environment.

The currency of certain types of information, such as the condition of a heritage resource, tends to diminish over time. In most cases, data currency can only be an aspiration due to the number of geographically dispersed heritage places and limited resources, particularly personnel. In such cases, priority can be placed on keeping current specific types of information required to carry out an organization's core responsibilities, for example, whether heritage resources still exist, their significance and designation status, and perhaps their condition.

Related to information currency, some data quality standards also specify timeliness of information: the timeframe within which certain information is expected to be updated. For example, information on the designation or listing status of heritage resources might be expected to be updated within a few weeks of a change in designation or listing status, whereas for a given heritage site the condition status of individual heritage resources might be expected to be updated annually.

#### Accessibility

Accessibility can be defined as the quality of inventory information being readily usable by intended users. For the overarching aims of a heritage inventory program to be realized, an inventory's information needs to be accessible to a range of users, who very often have differing locations and institutional affiliations. As will be expanded on in later chapters, in some cases access to specific types of information—such as detailed archaeological or indigenous site information—may be restricted by law, or confidentiality considerations may apply.

Far too often, information is less accessible than desired due to limitations of the information technology underlying an inventory system; for example, the system may not be web-based or may have limited search capabilities. Sometimes agencies have no inventory database, and heritage information is maintained within broader planning databases, and that can effectively prevent searching across all heritage information. In cases where digital information is unstructured (e.g., formatted as free text rather than being fielded), searchability is limited. In other cases, inventory data is inaccessible due to constraints of information formats, for example, when a digital file format is no longer readable or when analog records have not yet been digitized.

#### Security

The quality of security focuses on ensuring that inventory information is protected from accidental loss (including from disasters or conflicts), erasure, corruption, or intentional damage. A fine-tuned heritage inventory and survey program can fail if its information assets are insecure. Security also relates to maintaining privacy and confidentiality of personal or sensitive information, which are sometimes dictated by government regulations. Maintaining information security requires the creation and implementation of security policies and procedures to provide proper backup and auditing of information as well as controls to ensure appropriate access. Measures relating to information security are discussed in chapter 2.

#### Interoperability

The quality of interoperability is the ability of an information system to provide data in such a way that it can be used by another information system or service without the need for additional work, such as rekeying (English Heritage 2012). Although not essential for all inventory information systems, interoperability is becoming both advantageous and feasible in an increasing number of cases. Interoperability can enable, for example, integration between inventory systems and external authoritative data sources, such as legally authorized systems managing data on street addresses, land ownership, and locational mapping.

#### **Additional Principles**

It is worth noting two other sets of principles relating to data management and access that may be relevant to heritage inventories. The FAIR Guiding Principles, which are intended to promote data discovery and reuse, provide guidance on making data findable, accessible, interoperable, and reusable. The FAIR acronym and principles were defined in a March 2016 paper in the journal *Scientific Data* by a science-focused consortium representing academia, industry, funding agencies, and scholarly publishers (Wilkinson et al. 2016). The FAIR principles have increasingly been applied in the field of archaeology. Two of the five concepts within FAIR accessibility and interoperability—are represented in the inventory information qualities proposed above.

Also of relevance, the CARE Principles for Indigenous Data Governance were created by the Global Indigenous Data Alliance (Carroll et al. 2020) to promote the legal principles underlying the collective and individual data rights set out in the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). They are intended to complement the FAIR principles and the broader movement toward open data, to better support the particular rights and interests of indigenous peoples as they relate to data. The CARE Principles strive for the following (GIDA 2019):

**Collective Benefit** Data ecosystems shall be designed and function in ways that enable Indigenous Peoples to derive benefit from the data.

**Authority to Control** Indigenous Peoples' rights and interests in Indigenous data must be recognized and their authority to control such data be empowered.

**Responsibility** Those working with Indigenous data have a responsibility to share how those data are used to support Indigenous Peoples' self-determination and collective benefit.

*Ethics* Indigenous Peoples' rights and wellbeing should be the primary concern at all stages of the data life cycle and across the data ecosystem.

An inventory program can create metrics to assess the degree to which inventory information reflects whatever key qualities are deemed most appropriate. Such metrics are addressed further in chapter 2 under Monitoring and Evaluation.

#### NOTES

 An entire field of practice focusing on information and data quality has developed guidance, tools, frameworks, and other potentially relevant information resources. One resulting approach to data quality assessment is known as *data quality dimensions*. The inventory information characteristics identified here were in part informed by reviewing published guidance on data quality dimensions, such as the DAMA (Data Management Association) UK Working Group on Data Quality Dimensions' 2013 white paper, which details six key dimensions recommended for assessing or describing data quality: completeness, uniqueness, timeliness, validity, accuracy, and consistency (DAMA UK Working Group 2013).

### 2

# Infrastructure, Resources, and Activities to Support Inventory Effectiveness

#### **David Myers**

As discussed in the introduction, heritage inventories are considered to be ongoing records to be added to, improved, and updated over time. The introduction also covered a broad range of ways that inventories are typically utilized in heritage conservation and management. The assumptions that inventories need to be regularly improved and are in ongoing use in turn assume that an inventory program will be in a state of constant evolution. Therefore, to be effective, a heritage inventory program will require continuing support through an assortment of infrastructure, resources, and activities. Figure 2.1 lists the types of infrastructure, resources, and activities that an inventory program may require. While some of those support elements are critical to any inventory program, the necessity of others will depend on the size and nature of any given heritage organization, its mandate, and its particular inventory. This chapter discusses the elements of figure 2.1 and how each of them can support an inventory's effectiveness.

# Support through a Legal and Policy Framework

Perhaps the most important measure for making an inventory an effective mechanism for heritage management is providing that it is authorized and supported by a legal and policy framework. A statutory inventory is recognized by law as the authoritative information source upon which governmental decisionmaking regarding heritage is to be based. Such legal and policy frameworks typically specify all of the official mandates of public agencies relating to heritage protection and valorization, such as listing or designation, regulation, asset management, and providing financial incentives. A legal and policy framework can ensure that an inventory is officially sanctioned as the authoritative information record for the day-to-day application of heritage-related laws and policies, and can secure a government obligation to support it.

The following are examples of specific ways that legal and policy frameworks may provide support to heritage inventories and associated data collection activities.



**FIGURE 2.1** Types of infrastructure, resources, and activities an inventory program may require. The program's legal and policy framework is the foundation of the other elements. *David Myers, GCI* 

- Providing for the establishment of an inventory, and recognizing it as an official, authoritative record (i.e., statutory inventory)
- Recognizing necessary sources of support for an inventory and its programmatic requirements, which may be through funding or revenue generation
- Identifying roles and responsibilities of specific organizations with respect to an inventory, including obligations of specific organizations to regularly contribute information
- Defining baseline information content of an inventory
- Providing that heritage agencies keep an inventory up to date, adhere to related standards, and maintain defined levels of service
- Identifying the official language(s) of an inventory

- Mandating uses of an inventory, such as to serve as the basis for development planning and impact assessment; to inform heritage regeneration, conservation, and management projects, and governmental strategic policies and plans; and to ensure that heritage agencies provide advice based on the inventory
- Requiring community and public consultation and input with respect to an inventory
- Providing for public access to an inventory, establishing an information access policy, and defining confidentiality of certain types of inventory information, such as that relating to sensitive archaeological sites and sites held sacred by indigenous groups

In some cases, laws or their associated regulations identify criteria and thresholds for the assessment of heritage

places to determine whether their level of cultural significance merits inclusion within a statutory inventory. Very often, administrative jurisdictions have separate laws from different points in time that recognize differing inventories. Sometimes, each law specifies different heritage agencies to support these inventories. For instance, some jurisdictions have separate laws relating to archaeological, architectural, or indigenous heritage, with corresponding agencies and inventories separately devoted to archaeological and architectural heritage. Addressing challenges posed by fragmented legal and policy frameworks is discussed in chapter 3 and in the conclusion at the end of this book.

#### **Support through Resources**

The following section describes the need for dedicated resources—budget and personnel—that are indispensable for both securing infrastructure and carrying out activities supporting inventory programs.

#### Budget

An effective heritage inventory program will require an annual budget to cover regular, ongoing core costs of essential infrastructure, personnel, and activities. The sources of an inventory program's budget will vary depending on whether it is part of a public agency or an NGO. Sources may include direct public agency funding, fees charged for more robust access to inventory information systems, and service fees for time spent by inventory staff on responding to research requests. Some inventories are supported through public-private partnerships or consortia of multiple organizations, enabling pooling of resources. In certain cases, external funding such as grants might be sought to enhance the infrastructure and services of the inventory program, although grants typically have a fixed timeframe and are not a reliable source of support for ongoing operations.

#### Personnel

As mentioned, an effective heritage inventory program will also require dedicated personnel supporting it on an ongoing basis. The following are inventory program roles that may be required, depending on the size and nature of the inventory program.

 Inventory program manager. There will be a need for a lead role to provide for overall management, planning, and coordination of the inventory program, including its personnel, infrastructure, and activities. A person in this role should also serve as an advocate for the inventory program and work to help secure needed resources.

- Heritage subject matter specialists. An inventory program will need to have expertise on the types of heritage recorded through its inventory. For example, an archaeological heritage inventory will need expertise in archaeology of the particular jurisdiction covered by the inventory. An inventory recording all types of heritage places will need expertise regarding all those types of heritage represented in the jurisdiction of the inventory. Depending on the circumstances of the inventory program and the prevalence of specific types of heritage for a given jurisdiction, that expertise may exist within the inventory program's own personnel or be available through external consultants, advisors, or volunteers.
- Research and investigation support. Research and ٠ investigation activities may be conducted by personnel employed by the heritage organization responsible for the inventory, as well as by consultants, researchers affiliated with external academic or research institutions, interns, or volunteers. Research activities will require expertise in a range of disciplines relevant to the types of heritage resources included in the inventory, such as history, architectural history, archaeology, or anthropology. Some personnel conducting research may need experience in conducting oral history interviews. Personnel with research expertise might also help develop thematic frameworks, thematic studies, and historic context statements (see the related Overview sidebar in this chapter).
- Recording and documentation support. An inventory program typically needs recording and documentation support, such as expertise in field photography and image processing, mapping (perhaps including use of global positioning system [GPS] devices), geographic information system (GIS) applications, and videography. Support may also be needed in remote sensing (analysis of satellite and aerial imagery) and geophysical prospection (e.g., ground-penetrating radar), both of which also relate to investigation (see Research and Investigation, under Activities, below).
- Knowledge organization support. Some inventory programs may wish to have staff provide what is known as knowledge organization support. Most commonly this includes responsibility for managing and updating the inventory's controlled vocabularies and giving advice on their use (see the Controlled

# Overview of Thematic Frameworks, Thematic Studies, and Historic Contexts

Thematic frameworks and accompanying thematic studies and historic contexts can serve a number of useful roles within an inventory program and in related data collection activities such as surveys. All three devices were originally created to support heritage designation and listing, although internationally the meaning of these concepts is neither clear-cut nor consistent, and this author is not aware of a single source that defines all three concepts and explains their relation to each other. (See the glossary for the definitions used in this book.) Later chapters will explain and illustrate more specifically how these concepts may be applied to heritage inventories and surveys.

#### Thematic Frameworks

For purposes of this book, the thematic framework is considered the overarching concept of the three. A thematic framework is an organizing structure that broadly identifies themes relating to important trends, topics, and patterns in prehistory and history that are represented through a diverse range of heritage places. Thematic frameworks help ensure that heritage identification, designation or listing, and interpretation represent a full range of deliberately articulated themes. Thematic frameworks have been applied in U.S. heritage practice since the 1930s. For example, the U.S. National Park Service thematic framework (2000; 2018) for prehistory and history identifies the following eight themes at a national level for the United States:

- Peopling Places
- Creating Social Institutions and Movements
- Expressing Cultural Values
- Shaping the Political Landscape
- Developing the American Economy
- Expanding Science and Technology
- Transforming the Environment

Changing Role of the United States in the World
Community

This framework is designed to guide the identification and evaluation of significance of resources for listing in the U.S. National Register of Historic Places, for designation as National Historic Landmarks, and for potential addition of sites of cultural significance to the National Park System.

In addition to their application in the United States, thematic frameworks are formally utilized and applied in heritage inventory and survey work as well as designation or listing in Canada (Parks Canada 2000; 2019) and Australia (Australian Heritage Commission 2001; Heritage Council of Victoria 2010). They have also been applied within world heritage listing processes by UNESCO, ICOMOS, and others involved in world heritage deliberations (UNESCO 2005), as well as to international heritage practice more generally (Marsden and Spearritt 2021).<sup>\*</sup>

#### **Thematic Studies**

Thematic frameworks are sometimes elaborated through thematic studies or historic context statements. The latter two concepts are quite similar, and in some cases, they are difficult to distinguish. A thematic study (sometimes in the United States referred to as a *theme study*) is a narrative document that presents in-depth research and/or a synthesis of existing research on one or more themes, often those identified through a thematic framework. The studies help justify the significance of themes and associated heritage types and may include evaluation standards to help assess heritage significance.

Thematic studies are employed in combination with thematic frameworks in the heritage management systems of the United States (National Park Service 2021), Canada (Parks Canada 2023), and Australia (McDonald and Clayton 2016). Heritage organizations in the United Kingdom (Franklin et al. 2012) and New Zealand have employed thematic studies without reference to thematic frameworks (Wellington City Council 2013). World heritage practice also utilizes thematic studies, most commonly without reference to thematic frameworks (ICOMOS 2011a; TICCIH n.d.). As noted in the *World Heritage Operational Guidelines,* "As requested by the World Heritage Committee or as necessary, ICOMOS and IUCN will carry out thematic studies to evaluate proposed World Heritage Properties in their regional, global, or thematic context" (UNESCO World Heritage Committee 2021).

#### **Historic Contexts**

Historic contexts are used to organize information about related heritage resources based on theme, geographical area, and chronological period. Associated historic context statements—devices with similarities to thematic studies—are increasingly being designed in the United States (National Park Service 1983) and in Canada to inform inventory and survey work and to support designation or listing. Such context statements contain a narrative discussion of a theme or themes, identify and describe important associated heritage resource types, and more recently provide standards and guidelines for evaluations of significance. In some cases, such as SurveyLA (see chapter 5), historic context statements have been specifically designed to establish the physical characteristics, associative qualities, and aspects of integrity or authenticity a resource must have to be an important example of its type. Importantly, they can help provide consistency in the identification, description, and assessment of a range of heritage types.

Thematic frameworks, as well as theme or thematic studies and historic context statements, periodically need to be expanded and revised. Interpretations of history change over time—sometimes through new research, new survey findings, and public engagement—and through new methods of information analysis. Inevitably, at times new priorities or topics emerge that are deemed to be significant but that in the past had gone unrecognized.

\* For an overview of the use of thematic frameworks within national and international contexts, see Clayworth 2008.

Vocabularies sidebar later in this chapter). This role might also provide input on data modeling for the design of the data structure of inventory databases. In certain cases, larger inventory programs may have the need and ability for knowledge organization support on an ongoing basis. Smaller inventory programs may have only occasional need for knowledge organization support.

- Public outreach support. As discussed in chapter 3, public outreach is often an important activity for inventory programs for the purposes of soliciting input on inventory information and the recognition of significant heritage resources. In some cases, such public consultation is legally mandated. An inventory program may wish to have public outreach support within its team, in which case members might have training and expertise in conducting oral history interviews, carrying out cultural mapping, identifying stakeholders, running public meetings, recruiting and managing volunteer contributors, and publicly sharing information about the work of the inventory program, such as through social media.
- Data editor. This role helps ensure inventory data quality by using defined standards to review data

additions or changes captured through survey activities or submitted by users (the latter might be deemed to be provisional until reviewed). The data editor would also be responsible for merging inventory records and eliminating duplicates. A data editor should be detail oriented and have a thorough knowledge of the information contained across the inventory—or at least of the portion of the inventory they are responsible for—and of the relevant inventory standards.

 Database administrator. A database administrator (DBA) will be needed to oversee an inventory program's database or information system. This role often includes responsibilities relating to system setup and hosting, data import, data validation, managing system users' access, software upgrades, monitoring and optimizing system performance, system security, and migrating data to newer systems when deemed necessary. In addition to responsibilities relating to information access and security, a DBA will also need to monitor system performance, provide for optimization, and deal with database troubleshooting. The DBA or other information technology (IT) support also will be responsible for ensuring compatibility with other relevant information systems, and planning for future system capacity needs.

 Administrative support. Support for the inventory program will be required for various aspects of administration, such as budgeting, grant management, consultant contracting, and report preparation.

Some roles might be carried out by external consultants, interns, or volunteers rather than internal staff. Having personnel and support in the various required areas will require recruitment, supervision, and training, as discussed later in the Capacity Building section. In cases where roles and responsibilities are spread across an organization or multiple organizations, coordination will also be required.

#### Support through Infrastructure

The following sections describe various types of organizational infrastructure that commonly support heritage inventory programs.<sup>1</sup> This infrastructure should not be confused with another type common to heritage inventories: information repositories, which include archives holding physical collections of information records.

# Information Policies, Standards, and Guidance

Information policies, standards, and other guidance are key elements of any inventory program. Many heritage inventory programs, or their parent organization, create an information access policy as a mechanism for ensuring that information access is both provided and controlled in accordance with relevant laws for a jurisdiction, such as those covering freedom of information, information privacy, copyright laws, and the restriction of certain sensitive information relating to archaeological sites and places held sacred by indigenous peoples. Information standards and guidance also are essential to ensuring that information is created and enhanced in a consistent and valid way over time, even when many individuals with varying expertise and experience are contributing to the effort and various means of data creation are used. Digital data standards are also necessary to promote data readability over time, to integrate information seamlessly into inventory databases, and to support information comparison and retrieval.

Standards relating to what information should be recorded can be referred to as *content standards*. In specifying *what* 

#### **Example Inventory Information Record Types**



FIGURE 2.2a Example inventory information record types. *David Myers, GCI* 



FIGURE 2.2b Example attributes of a heritage resource record type. *David Myers, GCI* 

information should be recorded, this can be defined at two different levels of detail, as shown in figures 2.2a and 2.2b.

 Record types. As shown in figure 2.2a, a single inventory typically contains many types of information records, for example, immovable heritage resources (e.g., buildings, landscapes, archaeological sites, underwater heritage), intangible heritage (e.g., spiritual practices, oral traditions), collections of movable cultural materials associated with places,

#### **Controlled Vocabularies**

One key type of data standard is controlled vocabularies, which have been defined as "an information tool that contains standardized words and phrases to refer to ideas, physical characteristics, people, places, events, subject matter, and many other subjects" (Harpring 2010, 1). Controlled vocabularies range in form and complexity from simple word lists to hierarchical, multilingual thesauri. They are essential to help ensure that data creation is consistent and valid, and thus are frequently used in defining drop-down values in an inventory database.

The application of controlled vocabularies in data creation can be extremely powerful in the retrieval of inventory information within modern information systems through the indexing of records. For any particular inventory, controlled vocabularies are often created through agreement among subject-matter experts. Those controlled vocabularies should be closely managed over time, as the need for new or variant terms may emerge.

In some cases, it is useful to give thought to sharing controlled vocabularies, or even parts of them, across multiple inventories, such as when a regional inventory needs to provide data to a national inventory, or when searching across multiple inventory information systems is desired. For example, in England one official set of controlled vocabularies is used by all local, regional, and national inventories through the UK Forum on Information Standards in Heritage (FISH; see https://www.heritage-standards.org.uk/), which includes a terminologies working group. This collection facilitates cross searching more than sixty separate information records (FISH n.d.) through an online information system known as Heritage Gateway that offers local and national information relating to England's heritage; see https://www.heritagegateway .org.uk/gateway/.

activities (e.g., surveys, conservation interventions), persons (e.g., architects, historical figures), organizations, or information resources (e.g., images, reports).

 Attributes for each information record type. As shown in figure 2.2b, a heritage resource record type might include the following attributes: heritage resource name, inventory reference number, location (expressed through geographic coordinates, address, etc.), description, heritage resource type, characterdefining features, significance evaluation, designation or listing status, and date of last record update.

Defining how information should be recorded is likely to be more complex and specific. For example, for the location attribute of a heritage building within a city inventory, the *how* part of the data standard might specify that location can be recorded through street addresses derived from an official street address database and property parcel numbers derived from an official cadastral database. It may also specify which fields within a database are mandatory and which are optional, which fields should have a single value and which may have multiple values recorded, which fields have restricted dropdown values (see the Controlled Vocabularies sidebar in this chapter), which have free-text fields with a specified range of text characters, which should have geospatial coordinate or street address values, and so forth.

Heritage inventory programs very often create recording guidelines that provide an overall explanation of standards and practices to be followed in creating inventory information. Such guidelines may explain how to compile information for each record type, provide guidance for field recording, and include definitions of relevant terminology. Recording guidance might include visual glossaries of controlled vocabulary terms, including graphics and images of heritage typologies or their features. Recording guidelines may also address photography of heritage resources.

In addition, inventory guidance may address standards, criteria, and sources for assessing the significance and integrity of heritage resources, and it may direct how to assess the condition and vulnerability of heritage resources.

Because modern heritage inventories are typically digital, another essential type of standard or guideline relates to digital data and inventory databases. In some cases, organizations may wish to prescribe that specific information systems or other digital applications be used to create data. This may minimize both the effort required to incorporate data into a central inventory database and the risk of data incompatibility. An organization managing a digital inventory may otherwise wish to prescribe the data structure, formats, and other technical characteristics (e.g., minimum image resolution) of data created or provided for that inventory. Particular details will often depend on the database, or databases, used.

Standards and guidelines are also commonly created for specifying the creation of digital geospatial information about the location of heritage resources or activities. Examples include geospatial metadata standards for heritage data and guidelines for recording spatial polygons describing the location and extent of heritage resources, including for defining boundaries of archaeological sites. Such guidance may also need to address how the location of heritage resources should be linked to or otherwise related to associated property parcel records. If the location of parcels does not match with heritage resources exactly, or numerous heritage resources are located on a single parcel, or a heritage resource spans multiple parcels, then there should be a clear method for aligning the location of heritage resources with associated property parcels. There may need to be similar guidance for recording street addresses of heritage resources, including what to do when street names or numbers change. In some instances a heritage resource may have multiple addresses.

It is typically expected that information standards will be refined and otherwise improved over time through accumulated experience in their use. Some aspects of standards will require updating, such as when the areas of responsibility of a heritage agency are modified or when new information technologies are adopted.

Certain staff may need to be responsible for preparing, expanding, or improving inventory standards and guidelines. This might include knowledge organization personnel and other heritage specialists being responsible for controlled vocabularies (see the sidebar on this topic), heritage specialists who are experienced field surveyors being responsible for field recording guidance, recording and documentation specialists being responsible for certain types of technical recording guidance, and an inventory data editor, DBA, and possibly experienced users being responsible for inventory database user guidance.

# Thematic Frameworks, Thematic Studies, and Historic Contexts

A heritage organization may find it useful to implement a combination of a thematic framework and accompanying

thematic studies and/or historic contexts as mechanisms serving multiple purposes within an inventory program, as well as related data collection activities such as surveys. (See the Overview of Thematic Frameworks, Thematic Studies, and Historic Contexts sidebar.) These tools define important prehistoric and historic themes and subthemes to be represented among heritage resources that are formally listed or designated, which in turn will help provide that a full range of significant heritage resources are protected, taken into consideration within heritage impact assessments and other planning decisions, and potentially qualify for public financial incentives. Once created, they can be applied to:

- Identify gaps in themes underrepresented within an inventory (in addition to gaps in listed or designated heritage resources), helping to guide activities seeking to fill gaps and achieve inclusiveness and representativeness. This can include directing or stimulating research to address themes that need further study, the synthesis of research to convey broad patterns, and seeking stakeholder or public input on neglected or poorly understood themes.
- Help to perceive broad patterns and how individual resources fit within them (i.e., to see the forest, not just the trees) when seeking to classify and evaluate heritage resources within their broader contexts. By providing a framework, these tools aid in interpreting how people, events, and places fit within historic contexts and in explaining interconnections. In addition, through aiding in heritage resource classification, these mechanisms can help provide a structure for indexing heritage resources within an inventory database, which in turn facilitates database search and discovery.
- Provide a framework for assessment of cultural significance, including carrying out comparative evaluations of the significance of heritage resources within local, regional, national, and international contexts, including assessing the rarity or commonality of particular heritage resources.
- Enable the recognition, interpretation, and presentation of heritage resources from a full range of significant themes (including underrepresented themes such as those relating to minority cultural groups); help tie heritage interpretation and presentation more broadly to regional, national, or international stories or events; and aid in identifying the most representative examples according to particular themes. These applications can also support tourism planning.

Chapter 8 discusses in more detail the use of these mechanisms in heritage survey work.

#### Information Repositories

Inventory programs often rely on information repositories, such as archives holding physical collections of historical documents, including maps, photographs, and construction records, to support research and investigation activities. Such repositories may be maintained by the heritage organization responsible for the inventory, other public agencies, universities, NGOs, or private researchers.

#### IT Systems, Hardware, and Software

As mentioned earlier, for heritage inventories today, one of the most crucial types of infrastructure for data creation, editing, and publishing is an information system or database that is used to manage and provide for searching of inventory information. Ideally, such an information system is available online to enable direct access to intended users. Given the rapid pace of advances in information technologies, it should be assumed that after a certain period of time one information system will need to be upgraded or replaced by another, which will occasionally entail migrating inventory data to a newer system. Such data migration efforts are notorious for taking more time and effort than originally expected. An enterprise- or organization-level information system will need to be hosted either on a server or through cloudbased server services. Inventory systems may also need to ingest data from other sources, such as an authoritative street address database or data from a national mapping agency, or they may need to integrate with other information systems, perhaps for planning casework or building permits.

An inventory program may also need other types of hardware and software, such as mobile data collection devices like tablet computers, cameras for field photography, imaging software for photo editing, GPS units for accurately recording the locations of heritage places, and GIS software for creating and managing geospatial data recording the locations of heritage places or activities such as surveys. Inventory programs also typically need specialized support related to geospatial data collection, management, and use to help ensure that mapping and other location information is dealt with according to professional standards. Hardware will need to be maintained and replaced over time, and software installed, upgraded, and at times replaced.

#### **Support through Activities**

The following are potential activities to support an inventory as a tool for effective heritage management. They are grouped by the general categories shown in figure 2.1: data collection, creation, and editing; data management; and general, program-wide activities.

# Information Collection, Creation, and Editing

For any inventory program, a fundamental set of activities that typically occurs on an ongoing basis is the collection, creation, review, and editing (including updating) of inventory information. The following sections describe the most common related activities.

#### Compiling Legacy Data

When a digital inventory is created or a substantial effort is made to enhance its content, a common activity is to identify relevant sets of existing legacy data or other existing information to incorporate within the inventory. Such information could come from information maintained about designated or listed heritage resources, from past surveys of the jurisdictional area, or from other forms of relevant research about the area. This type of information may already reside within the heritage organization where the inventory program exists; may be held by other public agencies, NGOs, or academic or research institutions; or may be in the hands of private researchers. See Assessing Existing Heritage Information in chapter 6 for considerations involved in dealing with legacy data.

#### Remote Sensing

In some cases, particularly with respect to archaeological and landscape-scale investigation and recording, specialists in remote sensing may need to acquire and analyze aerial and satellite imagery or lidar data (a product of aerial laser scanning). Historic aerial or satellite images, which have particular value in showing past conditions and change over time, may be held in archives and would need to be digitized and georeferenced. As noted earlier, GIS skills are typically required to process data and record the spatial location and attributes of items of interest. Skills in satellite- and aerial-photo manipulation, analysis, and interpretation are also needed.

#### Surveys

Surveys can be a vital method of collecting, enhancing, and updating existing inventory information. Part II of this publication covers surveys in detail, including personnel
and infrastructure requirements, as well as methods used to elicit public participation and input.

### Input from Other Heritage-Related Processes

It is recommended that those working with public agencies require that relevant information collected through other heritage-related processes be input into the heritage inventory as those activities occur. Such processes include heritage designations or listings, heritage financial incentive programs, impact assessments and other development-related activities, and disaster response efforts. Some heritage agencies that issue permits for academic archaeological surveys or other investigations require as a condition of those permits that researchers submit information resulting from fieldwork for addition to the heritage inventory according to specified standards, as mentioned above.

### Research and Investigation

For any heritage inventory program, research and investigation are essential activities required for fulfilling many of the program's mandates and ensuring its effectiveness. Research fundamentally informs what is known and understood about heritage, including supporting heritage identification and recognition of significance; these in turn bolster the credibility of decision-making. Research relating to an inventory can be approached at a strategic level and also as specific research questions arise. At a strategic level, some heritage organizations create formal research frameworks that define an overall research agenda, identifying priority topics and research questions to be addressed (Nixon et al. 2002).<sup>2</sup>

For organizations that have thematic frameworks (which are oriented toward heritage resource assessment, identification, and designation or listing), the thematic framework may be mirrored in a corresponding research framework (which may outline a research agenda for the thematic framework). Priorities might focus on gaps in knowledge, understanding of the historic environment that needs updating, or heritage typologies or historical periods or events that have been newly recognized as significant. A research framework can prioritize specific research themes, time periods, geographic areas, typologies, or a combination of these topics.

Some organizations also create research strategies (Rowsome and Baker 2015) that identify research activities, sources, and timeframes to implement a research framework. Having a formal research framework and strategy can help focus and coordinate heritage-related research for a particular jurisdiction, and perhaps lead to research partnerships. Such a big-picture approach can also provide that research work is more efficient than research only carried out at the level of individual heritage resources.

Research frameworks and strategies can also relate directly to the development of thematic studies and historic context statements. The organization maintaining a heritage inventory might address some of the prioritized research topics. The research framework and strategy might also be shared with academic or research institutions operating within the same jurisdiction to encourage them to address certain topics. Such research by external institutions might be incentivized through grants or solicited under contract.

On a day-to-day basis, contributors to a heritage inventory often need to carry out a broad variety of research. This might include any or all of the following:

- Reviewing historic building permits or maps to determine the construction date of a structure
- On-site investigation for dating purposes
- Consulting historic newspapers or other documents to confirm the association of a person or event with a particular building
- Consulting unpublished archaeological survey or excavation reports or, alternatively, carrying out a site investigation to help determine the presence or dates of archaeological features within a specific geographic area
- Carrying out oral history interviews

One useful related method is historical map regression—a process used in research on the history of places in which maps of an area compiled in different time periods are compared to help determine the state of and changes to the natural or built environment (Mapping History n.d.). In archaeology, map regression can help locate features appearing only on earlier maps and assign building phases. It is frequently part of desk-based assessments before field work. Relevant historical maps may be held in research collections. They may need to be digitized and georeferenced, which requires GIS skills. However, in many cases historical maps have already been digitized and are available on the web.

It is also important that those conducting research for an inventory have access to relevant information sources, which may include both published and unpublished literature, maps, drawings, photographs, and reference publications. Some items may be analog and others digital. Those creating or managing an inventory program are advised to consider what information sources should be held and perhaps catalogued within their own organization, what arrangements might need to be made with external institutions to access their research collections, and whether subscriptions need to be secured to online research databases or online publications.

### Stakeholder Input

An often important way for inventory programs to obtain information about significant heritage resources is through stakeholder input. Information from stakeholders can be particularly valuable in recognizing the significance of heritage resources that is not apparent through visual inspection by heritage specialists. Such resources might include those significant to local, ethnic, or cultural communities; ones related to cultural traditions or that have other traditional uses; and those associated with historical events or significant organizations or persons.

Some legal and policy frameworks require public heritage agencies to obtain public input, including to their inventories. Stakeholder input can be obtained through a variety of means, such as:

- Providing for submission of information through a heritage organization's website
- Including stakeholder representatives within a heritage organization's advisory body
- Stakeholder outreach consultations
- Stakeholder and oral history interviews

Sometimes stakeholder participation activities can be led by community groups, or they can be collaborations between public agencies and community organizations.

Related to stakeholder input, cultural mapping is a methodology focused on involving communities in identifying and recording the location and attributes of local tangible and intangible cultural assets. Often such mapping is used to inform government interventions or community initiatives (Duxbury, Garrett-Petts, and MacLennan 2015, 2). This approach can be particularly useful for involving communities in determining which resources are identified in a heritage inventory— specifically those deemed important due to social significance—or in identifying socially significant attributes of places. Cultural mapping, the utility of which has been recognized prominently by UNESCO, has been applied

extensively to engaging indigenous communities to identify cultural resources. It has also been especially useful for engaging communities in identifying their intangible heritage (Crawhall 2009).

Heritage agencies may also wish to forge partnerships with certain stakeholders, which might be public agencies or NGOs, to support the ongoing improvement of inventory information. For instance, collaborations with universities, historical societies, or advocacy groups can help address identified research needs, carry out field surveys or investigations, and carry out other data collection activities.

The means of promoting stakeholder input might include a combination of public meetings (in-person or virtual/ online), social media campaigns, mechanisms for soliciting online information contributions (including photographs), and interviews to record oral histories. Some heritage agencies outsource stakeholder engagement activities to consultants or NGOs; others work to enlist and train volunteers and interns for crowdsourcing inventory information. (Public-engagement aspects of heritage surveys are discussed in detail in chapter 8.)

As with any means of data collection, mechanisms should be put in place to validate new information before it is incorporated within the inventory. In some cases, this may require research by inventory program personnel.

Stakeholder outreach and engagement require investment of time, staffing, and other resources. Interns or volunteers may be recruited to contribute to inventory activities. In some contexts, external engagement may involve outreach in multiple languages. It may also require training of staff, interns, or volunteers in public engagement activities.

Such investments in stakeholder engagement efforts can return multiple benefits. Firstly, they can help the inventory more accurately reflect the heritage resources that are truly valued by citizens. This will in turn support the informed consideration of those heritage resources in public agency planning processes, heritage impact assessments, disaster planning and response activities, and heritage financial incentive programs. Investments in meaningful stakeholder engagement can also convey that their views on the significance of heritage resources are appreciated. Stakeholder involvement in heritage inventories may help stimulate the "virtuous circle" developed by English Heritage and discussed in the introduction to this publication (see fig. i.2), which has the potential to promote stakeholders' sense of appreciation for their heritage and thereby encourage them to support its stewardship.

These various activities supporting information collection, creation, and editing require a combination of resources, including budget and personnel with required expertise, and activities, such as planning, management, and coordination.

### Information Management

The overarching task of information management is a key requirement of any inventory program. It requires personnel as well as a range of activities, policies, standards, procedures, and infrastructure. The topic of information management has many facets, and an entire field of study is devoted to it. The sections that follow highlight three core types of information management activities that are relevant to heritage inventories: data validation; storage, backup, and recovery; and access and security.

### Data Validation

For an inventory information system, a DBA will commonly be responsible for implementing data validation measures. This frequently entails creating and running database scripts to confirm that newly imported, created, or edited data meets defined data standards or other validation rules. It could include identifying duplicate records or errors in geospatial locations of newly created or edited records, such as a location erroneously recorded outside the relevant governmental jurisdiction. All such issues normally need to be resolved.

The DBA or other information technology (IT) support will at certain points in time need to migrate inventory data from one software platform to a newer and/or more capable one, which typically involves extensive checks to ensure that migrated data meets the validation requirements of the new platform.

### Storage, Backup, and Recovery

The DBA or other IT support typically needs to ensure on an ongoing basis that adequate data storage is provided for the inventory program, including its primary information system. Data storage might be implemented through a physical server or servers, cloud-based server services, or a combination of these arrangements. Ongoing data integrity is normally also made possible by implementing a strategy for regular data backups to allow data recovery in case of unintended data loss or corruption. In accordance with IT standard practices, backups typically occur on a server located separately from the primary data storage location, in part to mitigate the risk of destruction of data due to natural disasters or armed conflict. Stored data is also typically checked on a regular basis to confirm that no inadvertent loss or corruption has occurred.

### Access and Security

Intertwined with information management is managing information access and security. As previously mentioned, public heritage agencies sometimes create and implement an information access policy that applies to their heritage inventory. A DBA is also typically responsible for managing user accounts and maintaining related information access levels.

Another crucial part of information management is providing information security, which is often also a responsibility of a DBA. Potential security measures include passwords, firewalls, systems to detect network intrusions, and data encryption.

### **Program-Wide Activities**

The activity types that follow support work across the entire inventory program.

### Planning, Management, and Coordination

An inventory program will require planning as well as management of activities and investments over the annual, medium, and longer terms. Some inventory programs prepare a written plan for a specific time period. The following are elements that might be included in such a plan:

- An inventory mission statement with explicit goals
- A strategy for achieving specified goals
- Areas requiring improvement, changes, and increased resources (including staffing), or training
- A work program to realize the established goals and related objectives
- A realistic timetable and specific proposed annual budgets identifying methods, infrastructure and equipment, and personnel needed
- Performance indicators to regularly monitor how effectively the plan is being realized (see Monitoring and Evaluation)

In addition, an effective inventory program will require coordination both internally and with external public agencies and nongovernmental actors (see External Engagement).

### Capacity Building

Inventory programs also require ongoing training or capacity building for personnel carrying out programmatic activities. Capacity building is essential for the onboarding of new staff, interns, or volunteers; for maintaining the skills of existing personnel; and for keeping up with developments in the heritage field, in IT, and in data management practices. Activities may include orientation to the meaning and application of data standards, as well as training in field recording and in the assessment of heritage places.

In some cases, capacity building on techniques for public engagement may be beneficial. Very often IT-oriented capacity building is needed, such as in the use of applicable information systems, in digital data management, and perhaps in satellite or aerial image analysis. Heritage organizations may wish to develop a training plan to outline the frequency, topics, and methods of capacity building activities. They may also need a related plan for ongoing professional development of individual team members.

### IT Support

Information technology support encompasses another set of activities that is typically essential for an inventory program, particularly as it relates to supporting information collection, creation, editing, and management. IT support normally helps provide for information system procurement, hosting and setup, software upgrades, and monitoring and optimizing system performance. IT support also typically deals with hardware procurement, maintenance, and repair, as well as replacement. Ensuring compatibility and integration with other relevant information systems and planning for future IT system capacity needs are typically also the responsibility of IT.

### External Engagement

In addition to the frequent need to solicit information from external stakeholders as input to inventory information, heritage inventory programs typically need ongoing engagement with a range of external entities and stakeholders for a range of other purposes. For public agencies, this typically includes interacting with different parts of one's own organization, as well as separate government agencies, which may or may not be at differing levels of governmental jurisdiction. For example, the inventory program of a city agency may need to interact with other city agencies and with regional, state or provincial, and national agencies to carry out its mandate. These necessary interactions may be about obtaining or exchanging information, providing advice, or interpreting and using data.

External engagement may also relate to the creation or enhancement of thematic studies or historic context statements. This outreach might be augmented through targeted engagement with specific ethnic or cultural groups, including indigenous communities or historical societies. External engagement can also include providing advice, as well as responding to queries, remarks, or criticisms regarding inventory information or how it is accessed. Many public agencies are required by law to share information about their activities with the public to ensure transparency. For data to be readily integrated between a heritage inventory and other information system, multiple organizations may need to implement measures to provide data interoperability, such as shared data standards and data formats. An inventory program might also have an advisory committee that includes members from stakeholder groups and the general public to provide guidance on certain inventory functions.

Heritage organizations also often carry out activities and create resources to promote awareness of and understanding of how to utilize their inventory, such as through social media or presentations orienting others to inventory information and how to use an online inventory database. Some agencies create online videos to demonstrate such use. These efforts might include demonstrating the utility of the inventory to local heritage advocacy groups, historical and genealogical societies, and museums, and can also include engagement with schools and universities to discuss with educators how they and their students can use a heritage inventory in teaching and research activities.

The usefulness of the inventory might also be presented to investors and realtors who are interested in historic properties, to organizations that promote tourism, and to those involved in identifying potential filming locations. In some situations, it is important for the public to understand how the inventory data will or will not be used for regulatory purposes, particularly when private property is involved.

### Monitoring and Evaluation

Some inventory programs establish systems for monitoring and periodically assessing performance and the extent to which defined outcomes are being achieved. Such monitoring and evaluation systems can help identify areas in need of attention and improvement. In the United Kingdom, for example, the English and Welsh governments have each developed a series of benchmarks or specifications against which historic environment records (HERs)—regional and local government inventories—are assessed every five years (Historic England 2023b; Cadw 2017c). Although the English and Welsh systems are somewhat different, their benchmarks both apply to four inventory-related service areas:

- Content and coverage: the degree to which inventory information has been maintained, updated, and extended, including for newly discovered or recorded heritage resources. Assessments can identify specific areas of deficiency in need of updating or where inventory information needs to be extended through new data collection activities, such as surveys.
- Data standards and security: the level of compliance with data standards and relevant laws and policies, as well as regular data backup and security procedures.
- Access and engagement: the degree to which public queries have been responded to within defined timeframes and how well the inventory program has facilitated access to and helped interpret inventory information.
- Service delivery and infrastructure: the extent to which the inventory program has delivered services according to specified or defined levels of service. For example, this may include determining maximum response times of HER staff to queries from different categories of users based on the priority of their use, and assessing related performance. This benchmark is also used to determine the appropriateness of management and resourcing of the inventory.

Audits of HERs in England and Wales are generally carried out on a five-year cycle to assess performance according to the outcomes and related indicators for each service area. After each audit, five-year plans are produced to identify priorities for enhancement work, including responding to inventory user feedback.

Some heritage organizations evaluate access to and use of inventory information through surveying the opinions of inventory users. This can also be done through data analytics of online inventory information systems and other websites. Periodically assessing inventory-related data analytics can provide useful insights (fig. 2.3).

Such analytics can convey trends in the overall number of unique online visitors to an inventory over time, how users tend to come upon the inventory (e.g., search engines, social media), the types of digital devices and web browsers they use to access the inventory, trends in the geographic locations of users, and insights regarding particular interests of online users. This information can help in understanding how further efforts might be made to disseminate information about the inventory (such as through social media), and whether inventory system webpages should be further optimized to be read by search engines. Statistics on user engagement are also useful to providing decision-makers information about the extent to which an inventory is being used by the public, and thereby justify ongoing support.

#### NOTES

- Organizational infrastructure has been defined as "underlying systems, structures, and processes that support the operation and management of an organization. It includes both tangible elements, such as facilities and equipment, as well as intangible elements, such as policies and procedures, systems and technology, and culture and values" (CIO Wiki n.d.).
- It should be noted that a research framework is different from a thematic framework. A research framework is aimed at identifying research questions to be answered; a thematic framework identifies prehistoric or historic themes to guide the identification and evaluate the significance of heritage resources, often ultimately contributing to designations or listings.



FIGURE 2.3 A generic website analytics dashboard. Periodically assessing website analytics can provide a range of useful information about the characteristics of visitors to inventory-related webpages. *Lindsey Gant, GCI* 

## 3

## Considerations for Building Inventories for Effective Heritage Management

## **David Myers**

Given the information presented in the preceding chapters, what might heritage organizations consider in their particular cases when approaching the establishment, modernization, or invigoration of heritage inventories or increasing their effectiveness? In this chapter, a series of considerations is presented for an organization to use in examining what is needed in its particular case given its own circumstances.

The considerations that follow are based on a checklist created by the Getty Conservation Institute, which was informed by its research as well as collective experiences over a number of years dealing with heritage inventories in a variety of contexts and stages of development. Many of these considerations relate to the potential types of infrastructure, resources, and activities to support inventories described in chapter 2.

The considerations are presented with the most fundamental first followed by others that build upon them. (Note that not all considerations will be relevant to every heritage organization.) A Resources sidebar at the end of this chapter provides descriptions and directions to further guidance, related standards, or relevant examples of inventory practice.

## Legal and Organizational Considerations

The following are considerations relating to the legal and policy framework, potential inventory consolidation, the inventory's purposes, and related roles and responsibilities.

### Does a Legal and Policy Framework for the Inventory Need to Be Established or Enhanced?

For an official heritage inventory of an administrative jurisdiction, a first consideration is to determine whether a legal and policy framework for the inventory needs to be established or enhanced. The following are specific points to consider:

 Does the existing legal and policy framework of your administrative jurisdiction explicitly authorize and support the jurisdiction's heritage inventory or inventories? If not, then consider exploring ways to provide for that formal authorization and support, perhaps through amending the legal and policy framework.

 If the inventory is already formally linked to the related legal and policy framework, are there ways the framework could be enhanced to strengthen the inventory's effectiveness as a tool for heritage management? Has the historical development of the legal and policy framework led to the creation of multiple topical heritage inventories (e.g., archaeological, architectural and urban, intangible) that would function more effectively if they were consolidated? (This question is dealt with in further detail in the next section.)

An in-depth analysis may help determine how a legal and policy framework might be enhanced to better support a heritage inventory or inventories. It may also be worthwhile to look at examples of how other legal and policy frameworks support inventories for reference. See Legal and Policy Framework and Inventory Consolidation and Integration in the sidebar for examples.

# How Many Inventories Are Needed for a Specific Jurisdiction?

When a heritage organization has the opportunity to establish or modernize an inventory program, a first-order consideration may be to determine how many inventories would be optimal for the jurisdiction. If multiple inventories and related inventory databases already exist, a related question is whether any of them should be consolidated. This question may be primarily relevant for national-level inventories, and occasionally for regionallevel ones.

Administrative jurisdictions sometimes have legal frameworks in which multiple official heritage inventories, lists, or registers are specified. In many such cases, different statutes from different points in time relate to different heritage types, and they have sometimes resulted in the creation of different government agencies responsible for those specific heritage types. For instance, some countries have specific laws relating to archaeological heritage, with corresponding agencies and inventories devoted only to that heritage. The same may be true for individual lists or inventories for other heritage types, such as maritime heritage or historic battlefields. This approach to heritage management typically arose in a bygone era when heritage administration and practice were distinctly divided among specializations.

In some jurisdictions, this is also the case for indigenous heritage, in which the separation from other heritage types has been purposeful, to uphold confidentiality of information to respect concerns among indigenous communities. More recently, separate inventories of intangible heritage are emerging in some jurisdictions, as intangible heritage is often deemed to be distinctly different from more traditionally defined tangible heritage. Such separation of heritage types into distinct inventories has often resulted in separate databases with differing data standards and structures.

As is well known, such separations in law, in administration and practice, and in data sets typically lead to numerous practical challenges and shortcomings. Having differing inventories separated by distinct databases often prevents searching across data sets. This may be compounded by different specialists using different, frequently incompatible terminology, even when referring to the same heritage item (e.g., architectural historians and archaeologists labeling the same type of building differently). Having different data structures and vocabularies for each inventory will also prove to be barriers should the inventories need to be unified in the future.

As mentioned in the introduction, in recent years the heritage field has experienced a trend toward a more holistic approach to management, in which the variety of heritage typologies are integrated within a unified system. A more holistic approach is now broadly deemed to be more efficient, effective, and sensitive. Following this trend, some heritage agencies have taken proactive measures to rationalize their separate inventories into fewer ones, or even a single inventory database, and to unify their controlled vocabularies. Some have even integrated their field survey teams to include a range of specialties, such as both archaeology and architectural history. See Inventory Consolidation and Integration in the sidebar for examples of how two jurisdictions are handling these issues.

# What Are the Primary and Secondary Purposes of the Inventory?

Another first-order consideration is what purposes an inventory will serve, at the primary and secondary levels, and perhaps beneath that. Very often, inventories of public agencies first serve the function of heritage protection and management and land-use planning, as well as informing the public (which is typically a requirement for any public agency). Then, secondarily, they serve research needs. Confirming these priorities will help guide the selection of types of information that need to be contained in an information system, culled from legacy data, collected in the field, and so on. Problems can arise when trying to make an inventory database equally serve everyone's wishes. Experience has shown that inventory databases function better when they are designed to do a limited number of tasks simply. Public agencies also typically have limited resources, and therefore need to prioritize the areas of focus of their infrastructure and activities.

# Who Will Hold What Roles and Responsibilities for the Inventory?

Another key consideration for an inventory program is who will hold related roles and responsibilities, and particularly who will serve in primary roles. In some cases, roles and responsibilities may be spread across multiple organizations. Roles and responsibilities may be determined first at an organizational level (i.e., which organization or organizations have what responsibilities), then at a suborganizational level, and finally at an individual personnel level. In some cases, roles and responsibilities may be specified within the relevant legal and policy framework.<sup>1</sup> Spreading roles and responsibilities across an organization or multiple organizations will require mechanisms for coordination.

## Users, Languages, and Access

The following are considerations relating to inventory users, the official language or languages of the inventory, and categories of information access.

## Who Will the Inventory Users Be?

One consideration is what categories of users will be using the inventory. Determining user types will flow logically from defining the purposes the inventory serves. Different types of users will have varying motivations, interests, and technical capabilities and will seek different levels of information detail. Identifying user categories and needs can in turn provide a basis for defining different categories of inventory information system access, as well as system user privileges with respect to adding, editing, deleting, and exporting information (see What Categories of Inventory Information Access Are Needed?).

Clearly, primary users will include those who are responsible for managing and maintaining the inventory and adding, updating, and editing information within it. A small number of individuals will need exclusive privileges to administer the database and its other users; in IT parlance, these would be considered superusers. Another user group of primary importance is other heritage professionals from the government agency or agencies mandated with heritage management in the jurisdiction served by the inventory. This group might include planners, architects, archaeologists, historians, and asset managers.

Typically, other types of nongovernmental heritage professionals also require inventory access, such as heritage consultants, professional researchers, and NGO staff. Other types of nonheritage specialists may need inventory access for professional purposes, for example, other government planners and environmental, planning, or design consultants. Other typical inventory users include community groups, educators and students, property owners and developers, amateur researchers, and casual users.

# Should the Inventory Have More than One Official Language?

If an inventory is for a multilingual jurisdiction, its official operating language (or languages) is an important consideration—one that is sometimes specified by law. This determination will affect things such as the text of the user interface of an inventory database, the language of database drop-down values or vocabularies, the language permitted for free-text data entry into the database, and the language used for related written guidance and other informational materials and in inventory-related public meetings. Some jurisdictions will need multilingual inventory databases as well as related materials and activities. Knowing the intended inventory users will inform the determination of inventory languages. Having a multilingual inventory may at some point necessitate efforts to translate terms and texts between languages.<sup>2</sup>

Web-based tools and standards also exist for collaborative creation and management of translations of the user interface and potentially data input components of information systems, apps, documentation, and websites. This process is known in IT practice as *internationalization and localization* (Souphavanh and Karoonboonyanan 2005).

### What Categories of Inventory Information Access Are Needed?

Another essential consideration when establishing an inventory is to determine what users should have access to which information. In some cases, most information will be made accessible to all users, including the general public. Very often, however, access to specific types of information will be restricted by law, such as detailed or location information on archaeological sites and places held sacred by indigenous peoples. Typically, certain information must be held confidential, such as personal information about property owners or information-system user credentials. Access to some data may also be limited by copyright and privacy restrictions. See Information Accessibility in the sidebar for more on this topic.

The inventory program may also need to create an information access policy. As mentioned previously, such a policy can help ensure that information access is both provided and controlled in accordance with the relevant laws for a jurisdiction, such as those covering freedom of information, information privacy, copyright laws, and the restriction of confidential information relating to archaeological sites and sacred places.

Once an information access policy has been created, the inventory DBA can create different user groups for specific categories of users, and assign to each user group appropriate privileges to access, create, edit, delete, and export or download data. For example, data editors will likely need access to provisional data edits to determine whether data standards are met before that information is approved and made accessible to the bulk of users.

## **Inventory Information**

The following are considerations related to inventory information record types, as well as controlled vocabularies.

# What Record Types Need to Be Included in the Inventory?

Another important consideration is what types of information records an inventory should contain (see fig. 2.2a). This decision may be informed in part by the types of heritage to be recorded in the inventory (e.g., buildings, landscapes, archaeological sites, districts or areas, maritime heritage, intangible heritage). Inventories also often contain records for activities such as surveys, excavations, and conservation interventions; persons and organizations such as architects, historical figures, and heritage organizations; and information sources such as images, reports, historical maps and documents, audio or video recordings, as well as archives or other repositories. Other record types may be needed depending on the particular requirements of an inventory program.

## What Are the Scope and Details of Information for Each Inventory Record Type?

Following from identifying the heritage resource types and other record types to be included in the inventory, a nextorder consideration is what set of information each inventory record type should contain (see fig. 2.2b). The specific data fields for each type of database record will need to be defined, as well as the data type of each field (e.g., free text, numeric, address, geospatial location, controlled vocabulary). When considering incorporating inventory data within an information system, many additional related details will need to be determined, depending on the characteristics of the information system. See Data Standards in the sidebar for more on this topic.

# Are Controlled Vocabularies Needed for the Inventory?

As discussed in the Controlled Vocabularies sidebar in chapter 2, if some data fields within an inventory database are to have drop-down values, an important related task is to define specific vocabularies for each field, as appropriate for a given jurisdiction. This effort may entail defining, for example, valid cultural periods, architectural styles, site or building types, categories of heritage designation, and so forth. Certain vocabularies function best when organized in hierarchies, such as the Neolithic period being a subtype of the Prehistoric period, or mineral extraction sites and furnaces being subtypes of industrial sites.

The task of defining controlled vocabularies may require the involvement of a group of professionals with expertise in the range of topics covered, as well as familiarity with knowledge-organization practices. An organization may also wish to identify specific staff that will have ongoing responsibility for the management of controlled vocabularies, and perhaps also a standing reference group to consult as questions or issues arise. See Controlled Vocabularies in the Resources sidebar for several useful tools.

## Sources, Guidance, and Activities

The following are considerations regarding sources of legacy data, ongoing management of inventory information, and external engagement.

# What Legacy Data Sets Should Be Incorporated in the Inventory?

A key step when establishing or enhancing a heritage inventory is to identify any relevant sets of legacy data to potentially incorporate. Legacy data might collectively help form an initial data set for an inventory or may otherwise add valuable information. Such legacy data might exist within your own agency or within other government agencies, academic institutions, or NGOs, or individual researchers, libraries, or archives might hold it.

Once relevant data sets are identified, they may be assessed for potential inclusion within the inventory. Factors to examine include whether information is outdated and no longer of value, as well as accuracy and precision (perhaps geographic locations were recorded before the advent of modern geospatial technologies). The format of legacy data is also an important consideration, particularly whether data is still readable (sometimes data in proprietary formats is not), and whether the investment required to convert legacy information to a usable format is feasible and justified.

After valuable legacy data sets have been identified, steps may be taken to secure copies from organizations or individuals who hold them. This may require securing usage rights and ensuring necessary credits will be included, such as the name of the person or entity that holds the rights to each image.

A later step with legacy data is to prepare the data to be imported into a target heritage database. If legacy data resides in other databases, it will need to be transferred through a multistep ETL (extract-transform-load) process. Preparing legacy data for import inevitably involves an extensive investment of time in data cleanup (e.g., addressing errors or inconsistencies), formatting, and mapping data fields from the legacy database to the target database structure. Once that legacy data is cleaned and mapped to a target database, the import process is typically an iterative one, with data errors or inconsistencies being revealed with each import attempt. Further legacy data corrections are needed after each step, until an import succeeds without errors.

## How Will Inventory Information Be Managed Over Time?

For your inventory program, what measures should be implemented to create, collect, update, add to, and improve information over time? Improving the inventory record is a continuous process that is usually best achieved through a variety of means. As discussed in chapter 2, in the section Information Collection, Creation, and Editing, common related activities include:

- Compiling legacy data or existing information
- Office- and collection-based research
- Remote sensing
- Conducting surveys
- Forming partnerships with other organizations
- Soliciting public participation and input
- Cultural mapping
- Getting input from other heritage-related processes

Consider which of those activities are needed and feasible in the case of your inventory.

An important part of improving inventory information is determining a regular schedule for proactively assessing its status to identify gaps and particular areas in need of updating. When relevant, thematic frameworks and thematic studies or historic context statements can aid in this process (see the Overview sidebar on this topic in chapter 2 for more on these tools). Through this sort of assessment, a heritage organization might recognize the need to carry out new surveys or other data collection activities or determine topical areas in need of new research to help address inventory gaps. Once needs for new data collection or research are identified, steps can be taken to determine when and how they should be undertaken.

Finally, as mentioned previously, it is important that heritage organizations strive for accuracy of inventory information to provide a sound basis for heritage management decisions. Therefore, it is recommended that heritage inventory programs put in place measures for data validation through information quality assurance (QA) and quality control (QC). The U.S. Geological Survey defines the two concepts as follows: "QA refers to defect prevention, whereas QC refers to defect detection. Generally, QA is applied before and during data acquisition, whereas QC is applied after data are in hand" (USGS n.d.).

QA/QC may include activities such as data editors regularly checking the quality of additions and edits to data and flagging issues needing correction, possibly including checking mapped locations for accuracy and precision. Another quality control example is DBAs running automated validation tests to evaluate data with respect to the established rules or standards and then flagging issues for correction.

## How Will the Inventory Program Address External Engagement, Community Outreach, and Public Participation?

As discussed in chapter 2, for inventory programs of public heritage agencies, engagement with external organizations and stakeholders, including the general public, is a key and ongoing activity (see External Engagement). This is often also the case in certain ways for heritage NGOs. Those working within an inventory program may wish to determine the nature of those engagements, some of which may be determined by the legal or administrative context within which they are operating. The following are related considerations:

- For public agency inventory programs, is there a need to exchange information with other public agencies? Do you need to share information with others, obtain it from them, provide them related heritage advice, or interpret inventory information for them?
- If data needs to be readily integrated with the information systems of other organizations, what measures should be put in place on all sides to ensure data interoperability?
- Would the inventory benefit from having an advisory committee that includes representatives from stakeholder groups or the general public?
- How can stakeholder groups, as well as the general public, best participate in identifying heritage resources they deem significant and provide other relevant information? In some cases, this decision may be enhanced through proactive outreach to stakeholder groups to encourage their participation (see Stakeholder Inclusion in the sidebar). Consider the following approaches:
  - Carrying out oral history interviews with targeted stakeholders or members of the public
  - Engaging in cultural mapping to capture the public's views on the identification of heritage resources, particularly for their social significance
  - Creating online means for the public or stakeholders to submit information

• Enlisting and training stakeholder groups or volunteers in crowdsourcing activities

To help ensure the quality of information provided, you may also wish to consider limiting publicly submitted or crowdsourced information to a subset of data within inventory records (perhaps by eliciting descriptive and factual information but not assessments of significance), as well as putting in place measures to validate publicly submitted or crowdsourced information, such as follow-up research.

- If a heritage inventory utilizes an accompanying thematic framework, thematic studies, or historic context statements, how can stakeholders be engaged to provide input on formulating or enhancing those tools?
- How can the inventory program best respond to queries, remarks, or criticisms regarding inventory information and provide heritage advice relating to the inventory?

Heritage organizations also often carry out activities to promote awareness and understanding of how to use their inventories. The following are related considerations:

- Who are target audiences for promoting awareness and understanding of the utility of the inventory? (This communication may include demonstrating the mechanics of using the inventory information system if it is publicly accessible.) Such audiences might include public agencies, heritage advocacy groups, historical and genealogical societies, community groups, museums, private heritage firms or consultants, schools and universities, property investors and realtors, tourism promotion organizations, film location scouts, and the general public.
- What means should be employed to promote awareness, understanding, and use of the inventory? Options might include in-person or virtual presentations to target audiences; tutorial videos; social media, websites, or other informational materials; published articles; and outreach to news media. Some inventory programs take advantage of certain events to encourage the public to explore information on related types of heritage within the inventory, such as calling attention to information on heritage associated with World War I on November 11, the date of the formal end of hostilities in that conflict (commemorated as Veterans Day in the United States

and Remembrance Day in the United Kingdom, Commonwealth Nations, and Europe).

## **Information Technology**

The following are considerations regarding inventoryrelated information technologies.

# What Database Technology Will Best Fit the Inventory?

One of the most important decisions to be made for a heritage inventory program is choosing the type of database technology to manage and publish inventory information. Investments in inventory information systems can be substantial, whether you procure existing software or develop a new system. Once chosen and implemented, an inventory system is typically in place for a number of years and requires ongoing software upgrades and maintenance. It should also be anticipated that an inventory database will eventually need to be replaced by a newer technology once it becomes obsolete, which will require exporting and migrating data.

Although a full review of criteria for software selection is beyond the scope of this book, the following are a few essential considerations based on the author's experience, including interactions with IT specialists:

- What are the organization's requirements and use cases for its inventory database?
- Should the information technology be web-based? This may be an obvious requirement for organizations implementing new inventory databases. It may be a more pressing question for organizations wishing to provide online access to an existing offline database.
- How can it be ensured that inventory information is readable into the future, given that system data will inevitably need to be migrated to new software when the chosen system reaches its end of life? Will the technology store and export data only in proprietary formats? Reading data in proprietary formats typically requires particular proprietary software, whereas nonproprietary data formats are readable by a range of software.
- What are the pros and cons of selecting open-source software versus proprietary software? Some organizations are most comfortable with well-known proprietary software, despite its contractual service obligations. Open-source software offers advantages

such as no licensing fees, customizable software code allowing for innovations by implementers, lack of vendor lock-in, and (typically) storing data in nonproprietary formats.

- Does the software meet security requirements or standards?
- Should the information technology be purpose-built for cultural heritage information or would more generic software suffice?
- How user friendly should the software be? How much training will be required to use it effectively?
- Who do you expect to provide IT support for the software selected? Possibilities include IT support within the same organization, from an affiliated organization, or by a commercial IT service provider.
- What is the projected total cost of ownership (TCO)<sup>3</sup> of the options being considered? How does this compare with the organization's available resources?

Chapter 4 discusses one particular open-source information technology that has been purpose built for heritage inventories and surveys based on the requirements of heritage organizations around the world.

## Should the Inventory Information System Link or Integrate with Other Information Systems?

Consider whether it would be desirable to have your inventory information system link to and/or dynamically integrate with external information systems or digital assets. For example, in some cases it may be useful to have an inventory system dynamically integrate with a building permit system that tracks demolition permits, a land use planning system, or a planning casework system that is used for impact assessments with respect to development proposals. In other cases, it may be useful to have heritage resource records within an inventory system contain hyperlinks to external online bibliographic sources.

If the desirability of such linkages or integrations is established, a next step would be to determine the feasibility of their implementation, which can depend upon a range of factors, including whether different systems share common data standards, the data formats used, and whether they can connect through an API (application programming interface). IT specialists are best positioned to advise on the feasibility of integrating or linking systems.

## **Guidance Materials**

This section discusses considerations regarding the types of guidance materials that might be needed to educate a range of participants and users about the processes and tools used in an inventory program.

# Are New or Revised Guidance Materials Needed?

It is recommended that an inventory program have a set of guidance materials for key activities and infrastructure. Such guidance is particularly helpful to new staff members, interns, and volunteers, and to those learning how to use an inventory database. Does your inventory program need to create new guidance materials or enhance an existing set? The following are some of the topics that such guidance might address:

- Field recording and assessment of heritage resources, including how to compile inventory forms, photography, and field recording of geographic locations (see chapter 10 for further discussion of some of these topics)
- Guidance on use of digital applications on mobile devices (tablet computers or phones) to create digital data in the field (recommended in chapter 8)
- Use of the inventory database by internal users those from the heritage organization managing the inventory—including how to use system features accessible only to those users, such as how to enter and edit information records and how to export data
- Access by external or public users, which might focus on searching for and visualizing inventory data, and potentially downloading data

Guidance for IT typically refers to relevant data standards, including controlled vocabularies, as discussed earlier in this chapter. Guidance can take the form of written and illustrated documents or webpages, which might include screenshots from the inventory database and mobile apps, and potentially also video tutorials.

Depending on the number of official languages of the inventory, guidance might need to be prepared in multiple languages. It is recommended that attention be given to keeping guidance up to date as changes occur, for example, when the database software is replaced, field recording technologies are updated, methods are improved, or if organizational roles and responsibilities change. See Guidance Materials in the sidebar for useful examples.

# Ongoing Support, Evaluation, and Improvement

The following are considerations regarding long-term inventory program support, evaluation, and improvement.

## How Will Inventory-Related Infrastructure, Activities, and Staffing Be Supported over the Long Term?

Given that inventory information needs to be improved and updated on an ongoing basis, one of the most important considerations is to determine how inventoryrelated infrastructure, activities, and staffing will be supported over time. Potential types of support used by public agencies and NGOs include:

- Annual agency funding
- Pooling of resources across multiple institutions through consortia or partnerships, including cooperation among institutions in the public, academic, and private sectors (including NGOs and philanthropies)
- Tourism-related taxes
- Grants providing targeted support for limited duration
- User fees for more robust access to inventory information systems
- Service fees for time spent by inventory staff on responding to research requests

See Fiscal Support in the sidebar for examples of the latter two approaches.

## What Measures Are Needed to Monitor and Evaluate How Well-Defined Inventory Outcomes Are Being Achieved?

It is recommended that heritage organizations consider establishing systems to monitor and periodically evaluate aspects of their inventory program. By delineating specific outcomes and related indicators over defined time periods, organizations can assess the extent to which those outcomes are achieved. Topical areas for assessment might include currency and comprehensiveness of inventory information, compliance with data standards, data security, levels of access and external engagement, delivery of services, and assessing the appropriateness of infrastructure, resources, and management.

Heritage organizations might additionally consider evaluating their inventories with respect to the key qualities required for effective heritage management outlined in chapter 1. These efforts can ultimately help identify areas in need of improvement, attention, and/or further investment. For example, inventory information currency can be assessed to help identify specific areas in need of updates through new data collection activities, such as surveys. See Monitoring and Evaluation in the sidebar for examples of auditing systems.

## How Might the Interactions of Multiple Inventories across a Heritage Sector Be Improved?

In many heritage sectors multiple heritage inventories need to interact with one another, which tends to involve a number of complexities and other challenges. For example, information from regional or local inventories may need to be integrated into or shared with a corresponding national inventory, or information from local inventories may need to be integrated into or shared with a state or provincial inventory. This integration can be further complicated by additional heritage organizations responsible for collecting inventory-level information within a given sector, such as public works or transportation agencies or managers of heritage sites or areas.

Related challenges may include duplication of data but also possible inconsistencies in corresponding information, potential lack of clarity among data consumers as to which information is authoritative, duplication of effort and resources expended, difficulties in exchanging data when desired, and limitations in being able to search across data sets.

Sometimes gaps in information coverage occur due to the complex range of heritage organizations collecting information within a given sector. In such cases, it is recommended that the stakeholders involved periodically consider how to improve interactions among inventories across the sector, such as by further rationalizing roles and responsibilities; bolstering the development and application of shared information standards; determining ways to reduce duplication in information held and resources expended; creating a community of practice among professionals working with heritage inventories across the sector; and considering potential IT solutions to improve information sharing, access, and searchability. Such improvements might be achieved through pooling the resources of multiple organizations.

For varied examples of means to improve inventory interactions across a heritage sector, refer to Inventory Consolidation and Integration, Inventory Communities of Practice, and Fiscal Support in the sidebar.

### NOTES

- See, for example, the statutorily defined roles and responsibilities in Wales with respect to Welsh historic environment records (Cadw 2017a).
- 2. Use of online automated translation services, such as Google Translate, is growing. Note that caution should be exercised in assessing the accuracy of such automated translations.
- 3. The management consulting company Gartner defines total cost of ownership (TCO) as "a comprehensive assessment of information technology (IT) or other costs across enterprise boundaries over time. For IT, TCO includes hardware and software acquisition, management and support, communications, end-user expenses and the opportunity cost of downtime, training and other productivity losses" (Gartner n.d.).

### Resources

The resources listed below are particularly useful references, standards, and examples of practice related to the topics covered in part I.

### **Controlled Vocabularies**

### Introduction to Controlled Vocabularies

https://www.getty.edu/research/publications /electronic\_publications/intro\_controlled\_vocab/index .html

A comprehensive overview of the characteristics, scope, and uses of controlled vocabularies for cultural heritage topics, and an explanation of integration of vocabularies in information systems and their use for indexing and retrieval is provided by *Introduction to Controlled Vocabularies: Terminology for Art, Architecture, and Other Cultural Works* (Harpring 2010, 2013).

#### **Getty Vocabularies**

https://www.getty.edu/research/tools/vocabularies/

The Getty Vocabularies are controlled vocabularies that may be useful for reference. They include the multilingual Getty Art and Architecture Thesaurus (AAT), which is used by a number of national and regional heritage inventory programs as a basis for defining their controlled vocabularies. The AAT contains an online, dynamic thesaurus of concepts of an international scope relating to historical architecture and archaeology, with many concepts in multiple languages. All concepts are validated through multiple authority references. AAT content is available in digital formats ready to be imported into databases. Because it is multilingual, the AAT could potentially serve as a useful resource for translation efforts for multilingual inventories, depending on the languages involved.

#### U.K. national heritage thesauri

https://www.heritagedata.org/blog/vocabularies -provided/

Another interesting example for reference are the controlled vocabularies used by national and local heritage inventories in the United Kingdom. They include hierarchical thesauri of building and monument types and their components, building materials, maritime craft types, temporal periods, event types, archaeological objects, types of archaeological evidence, and archaeological sciences. Both the Getty Vocabularies and the U.K. national heritage thesauri are available in formats that can be readily imported into databases, in their entirety, in part, or as selected concepts.

#### Flanders Heritage Agency's use of thesauri

https://doi.org/10.5194/isprs-annals-IV-2-W2-151-2017

Mortier et al. (2017) offer an informative review of the Flanders Heritage Agency's practical work with controlled vocabularies for its inventories over many years, including their evolution over time, how challenges were overcome, and how thesauri became an essential tool for integrating heritage recording by different disciplines.

Also see FISH, in this sidebar.

### Data Standards

### MIDAS Heritage data standard

https://historicengland.org.uk/images-books /publications/midas-heritage/

Heritage organizations or practitioners considering which record types to include in an inventory may find it useful to review the MIDAS Heritage data standard (English Heritage 2012), a well-considered example of a national standard that defines information categories.

## International and regional core data standards

https://cidoc-data.org/aswg-international-core-data -standard-for-archaeological-and-architectural-heritage

For the task of identifying and defining specific categories of information, or data fields, for an inventory, the work undertaken to establish international standards for the inventory of heritage places may be helpful. In the early 1990s, two such standards were developed to identify the essential items of information that should form a part of any cultural heritage inventory: the Core Data Index to Historic Buildings and Monuments of the Architectural Heritage adopted by the Council of Europe in 1995 (Council of Europe 1995), and the International Core Data Standard for Archaeological Sites and Monuments adopted by the International Committee for Documentation (CIDOC) of the International Council of Museums (ICOM) and the Council of Europe, also in 1995 (Council of Europe 1999).

In the late 2000s, the CIDOC Archaeological Sites Working Group made the decision to revise the Core Data Standard to bring it up to date, given that it had been developed before the introduction of mass computing, the Internet, and the development and widespread adoption of geographic information systems. The working group decided to combine the two standards mentioned here, because they were so closely linked. The CIDOC working group, with input from CIPA Heritage Documentation, a committee of the International Council on Monuments and Sites (ICOMOS), prepared a draft International Core Data Standard for Archaeological and Architectural Heritage, which was intended for use in the creation of inventories for both built and archaeological heritage. As of this writing, this newer standard has not yet been finalized; however, working drafts can be downloaded from the URL shown above.

Also see FISH, in this sidebar.

### **Fiscal Support**

### AZSITE

https://azsiteapp.rc.asu.edu/Azsite

The U.S. state of Arizona has created an interesting combination of mechanisms to support its statewide heritage inventory database, known as AZSITE. First, the governor of Arizona issued an executive order directing the AZSITE Consortium—composed of the Arizona State Historic Preservation Office, the Arizona State Museum, Arizona State University, and the Museum of Northern Arizona—to "cooperatively share data, provide shared staffing resources, seek grant funding, and develop and implement a single statewide historic property (archaeological and historical period properties) inventory database and geographic information system (GIS)" (State of Arizona 2006).

The executive order provides that the consortium shall continue to participate in the management, maintenance, and updating of the AZSITE database, and that it will cooperatively seek grant funding for database improvements. It also states that "all state agencies owning, managing, funding or causing action upon historical or archaeological properties shall help to update the AZSITE system by submitting survey and property location information to the system." Although a subset of data within the AZSITE database is freely available to the public, the consortium provides access to other secured data to individuals with certain qualifications, who must pay annual user fees that vary depending on types of information sought and user profile (see https://azsiteapp.rc.asu.edu/Azsite/forms .html). AZSITE does not have an annual budget from state funds. It receives its fiscal support through grants and user fees.

## Historic England HER access and charging policy guidance

In England, many of the more than eighty local government historic environment records (HERs) charge fees for recovering the costs of staff time for responding to queries from commercial inventory users. In some cases, HERs charge a fixed hourly rate for staff time. In other cases, HERs charge according to a tiered scale relating to the geographic scale, level of complexity, and requested response time of commercial-entity searches. Historic England has created an Access and Charging Policy template as guidance for HERs preparing their own access and charging policies. That template (and many other resources) are available at https://historicengland.org .uk/advice/technical-advice/information-management /support-for-hers/.

Further information and an example of a completed charging policy are available from Greater London Historic Environment Record (GLHER) at https:// historicengland.org.uk/services-skills/our-planning -services/greater-london-archaeology-advisory-service /greater-london-historic-environment-record/ #Charges.

### Guidance Materials

Informing the Future of the Past

https://archaeologydataservice.ac.uk/ifp/Wiki.jsp

Comprehensive guidance has been created for historic environment records in the United Kingdom on a broad range of topics relating to the operation of local authority heritage inventories (Informing the Future of the Past n.d.). Formerly a printed book, this guidance has now been published as an online wiki, allowing it to be easily updated.

### Canmore polygonisation standards

https://canmore.org.uk/content/historic-environment -polygonisation-standards-scotland

National heritage organizations in Scotland have published useful guidelines for recording spatial polygons describing the location of heritage resources and heritage-related activities.

### Information Accessibility

### International Open Data Charter

https://opendatacharter.net/wp-content/uploads/2015 /10/opendatacharter-charter\_F.pdf

Those interested in decision-making concerning making information openly accessible may wish to consult for reference the 2015 International Open Data Charter.

### **CARE** Principles

https://www.gida-global.org/care

If you need to consider the cultural sensitivities of providing access to information relating to indigenous groups, see the CARE Principles for Indigenous Data Governance. For further background, refer to Carroll et al. 2020.

### Inventory Communities of Practice

### **HER Forum**

https://historicengland.org.uk/advice/technical-advice /information-management/support-for-hers/ #Section1Text

England's Historic Environment Record Forum serves as a community of practice for professionals working with and interested in regional and local heritage inventories. The HER Forum has in-person meetings twice annually, as well as an online discussion list. Discussions are archived at https://www.jiscmail.ac.uk /cgi-bin/webadmin?A0=herforum, where you can also subscribe.

FISH

https://www.heritage-standards.org.uk/

The UK Forum on Information Standards in Heritage (FISH) is a well-established example of a sector-wide standing entity devoted to information standards (including controlled vocabularies) and their creation, ongoing maintenance, improvement, and application. The organization also includes a terminologies working group; see https://www.heritage-standards.org.uk /working-groups/.

## Inventory Consolidation and Integration

Flanders Heritage Agency

https://www.onroerenderfgoed.be/

The Flanders Heritage Agency of Belgium has published an excellent overview of its experience in unifying separate inventories for differing heritage types (Van Daele, Meganck, and Mortier 2015, 2016). As described in Van Daele et al. 2018, this amalgamation of inventories was spurred by the passage of a new heritage law in 2013 that for the first time provided unified legislation in Flanders for archaeology, architectural heritage, and cultural landscapes.

### HIAS

https://historicengland.org.uk/research/support-and -collaboration/heritage-information-access-simplified/

England's heritage sector has been implementing a multiyear initiative known as the Heritage Information Access Simplified (HIAS) strategy, which is aimed at resolving long-standing challenges of complexity and duplication of effort in the management of and access to heritage information nationally. It is composed of interlinked projects designed to simplify and improve public access to heritage information held or generated by Historic England, by regional and local agency HERs, and by other heritage organizations (see also Carlisle and Lee 2016).

Important aspects of this work have been to eliminate duplication of information held by multiple agencies and duplication of resources expended in the creation and management of information through the rationalization and clarification of responsibilities across the sector, and to further invest in the application of information standards shared across the national heritage sector.

### Legal and Policy Framework

### Cadw

https://cadw.gov.wales/advice-support/placemaking /historic-environment-records

The Welsh government's historic environment service, known as Cadw, has published statutory guidance for a range of heritage agencies in Wales on how they should use and contribute information to the Welsh national and regional heritage inventories. This serves as a wellarticulated example of how heritage inventories can be directly supported through a legal and policy framework; see especially Cadw 2017b.

### Monitoring and Evaluation

As noted previously, the English and Welsh governments have each created well-developed systems for auditing regional and local government inventories (HERs). Both systems include a range of specific benchmarks for assessment on a five-year basis; see Cadw 2017c and Historic England 2023b.

### Stakeholder Inclusion

Australia ICOMOS code of ethics

https://australia.icomos.org/wp-content/uploads/Code -on-the-Ethics-of-Co-existence.pdf

In some contexts, professional codes of practice address how heritage specialists should deal with stakeholder groups in the identification of heritage resources and related information, and this has direct relevance to work pertaining to inventories as well as related data collection activities. For example, Australia ICOMOS's Code on the Ethics of Co-existence in Conserving Significant Places (Australia ICOMOS 1998) specifies, among other things, the following ethical principles:

Article 4. Each cultural group has a primary right to identify places of cultural significance to it and this right may include the withholding of certain information.

Article 5. Each cultural group has the right of access to pertinent information and to any decision-making process affecting places it has identified as significant.

4

## The Arches Open-Source Platform: Purpose-Built Software for Heritage Inventories and Surveys

## Annabel Lee Enriquez David Myers

Inventories are an integral component for organizations seeking to implement their mandates for cultural heritage conservation and management. Web-based inventories harnessing the capabilities of modern information technologies facilitate proactive, timely, and informed decisions that mitigate a range of threats to heritage places and apply heritage-related laws and policies. However, a number of challenges continue to put developing and maintaining effective digital inventories beyond the reach of many heritage organizations. These include:

 Complexity of heritage data. Heritage data frequently includes subjective interpretations and imprecise details that require adjustment and improvement over time, and heritage resources themselves evolve with changes in form, function, and condition. A software system to manage inventories must, therefore, be sophisticated enough to handle these repeated updates and ambiguities, while preserving the details of each change to the data.

- Managing, sharing, and sustaining inventory records. Heritage organizations need to integrate legacy data as well as new survey data within their inventory databases, share data across different information systems, and ensure the long-term readability and accessibility of inventory data.
- Cost. Software is expensive to develop, license, customize, and maintain, and heritage organizations are typically chronically underfunded.
- Rapid technological advancement. Keeping up with rapid advancements in the information technology sector poses a substantial challenge to all organizations and particularly to those in the heritage field with limited resources.

Adding to the challenges described, when viewed collectively, heritage organizations around the world spend scarce resources in isolation to create individual digital inventories. Their investments often address requirements similar to those of many other institutions, far too often making them duplicative and unnecessary.

Recognizing the necessity of effective inventories for heritage protection, in 2012 the Getty Conservation Institute (GCI) and World Monuments Fund (WMF) partnered to address these challenges through the development of the Arches Heritage Data Management Platform as open-source software. The partners viewed the development of Arches as a strategic investment in helping heritage agencies around the world modernize information infrastructure that they need to more effectively protect heritage under their jurisdiction.

## **Arches Design**

Arches is an enterprise-level software platform designed to be independently deployed at an organizational or project level. It has been designed to address the challenges described above while taking into account the needs of heritage organizations internationally. To this end, Arches has been developed according to the following key principles:

- **Purpose built**. Arches is purpose built and fully featured, to manage the breadth and complexity of cultural heritage data and support the particular use cases of heritage organizations, including those relating to heritage inventories and surveys.
- Economical. As open-source software, Arches is freely available, with no licensing fees. If organizations need to expand the software's functionality, they only need to invest in the relatively smaller cost of funding that expansion, and they may be able to pool resources with other organizations that have similar needs.
- **Customizable.** The Arches open-source code can be configured and customized to meet specific needs. Its user interface and controlled drop-down values can be fully configured and represented in any language or script or in any combination thereof. Implementers can build an entirely unique instance of Arches that reflects their particular requirements.
- Standards based. Arches incorporates internationally adopted standards for heritage inventory, semantic data modeling, controlled vocabularies, and information technology. This supports data structures

that facilitate widespread interoperability and integration and retain data viability as technology advances.

- User friendly. The Arches interface is designed to be as intuitive as possible so that most users require minimal technical training.
- Broad, controlled accessibility. Arches is web-based to provide for broad access once installed. Access, however, can be controlled at a detailed level based on individual or group privileges. An implementer can choose, for example, which users may edit which data or what types of information guest visitors may see if broader or public access is allowed.

Choosing an open-source software approach enables the work of the project to include growing a collaborative community that helps sustain and contribute to the software and provide mutual support toward implementing Arches in accordance with effective data management and inventory practices. The community as a whole can combine resources to help ensure that the software thrives and does not become outdated.

## **Arches Capabilities**

The Arches platform gives cultural heritage organizations access to powerful, modern, robust software. See the Arches in Use sidebar for example implementations. The following sections describe the platform's capabilities in three broad categories: data management, data visualization and discovery, and task/process management. More detailed information may be found on the Arches project website (see GCI and WMF n.d.).<sup>1</sup>

### Data Management

A fundamental aspect of Arches is that the platform is designed to enable implementers to manage the specific data they have defined by modifying the system to accommodate it. For example, the visual interface of Arches provides the ability to configure the underlying database and generate the necessary end-user interfaces without the need for software coding. Integrated with this configurability is the capacity for advanced management of controlled vocabularies. Arches also offers the ability to publish information online, including tools to fully control access to published information.

Additionally, Arches is built to support the ongoing work of heritage inventories and surveys to create, edit, update, and share data over the long term. This includes robust

### **Arches in Use**

Arches is currently being used independently by heritage organizations worldwide to serve their individual heritage inventory and survey goals. Because the software is powerful and flexible, it can be customized to manage heritage inventory data on a national, regional, and site-specific scale and to fit the implementor's methodology and practice. Given that Arches is open-source software that can be downloaded and installed anonymously, it is not possible to know of everyone who is using it and how. As of this writing, the GCI knows of nearly one hundred implementations of Arches (already launched or in preparation), with many more in the planning stage. The known implementations collectively record heritage spanning five continents and nearly sixty countries. See "Who Is Using Arches?" at https://www .archesproject.org/implementations-of-arches/ for further information on deployments of Arches.

To highlight a few examples, Arches has been implemented to manage the following national heritage inventories and survey initiatives:

- Barbados National Registry of Historic Places. The Barbados Ministry of Creative Economies, Culture and Sports, with support from the Organization of American States, deployed Arches as the official repository of the Barbados National Registry of Historic Places. See https:// heritagebarbados.gov.bb/.
- Canadian Register of Historic Places. Parks Canada is deploying Arches to manage and publish online federal data of the Canadian Register of Historic Places and the Directory of Federal Heritage Designations.
- England's National Record of the Historic Environment. Historic England has deployed Arches (branded as Warden) to manage England's National Record of the Historic Environment, consisting of over 550,000 records on archaeological, architectural, and maritime sites and investigations.

- England's National Marine Heritage Record. Historic England is also deploying Arches (branded as Mariner) to manage England's National Marine Heritage Record.
- Isle of Man Historic Environment Record. Manx National Heritage, the charity responsible for the care and promotion of Isle of Man's natural and cultural heritage, launched the Arches-based Isle of Man Historic Environment Record (IOMHER) to improve management of and enable access to the island's rich historic environment. See https:// isleofmanher.im/.
- Jamaica National Inventory of Historic Places. The Jamaica Ministry of Culture, Gender, Entertainment and Sport, with support from the Organization of American States, implemented Arches for the Jamaica National Inventory of Historic Places (fig. 4.1). It is maintained and updated by staff of the Jamaica National Heritage Trust. See https://siteinventory.jnht.com/.

Additionally, several public agencies have implemented Arches to manage their heritage inventories for cities or urban areas, including:

- Los Angeles Historic Resources Inventory. As mentioned above, the City of Los Angeles has deployed Arches as HistoricPlacesLA. It currently includes records of more than fifty thousand historic resources and districts. See https://hpla .lacity.org/.
- Greater London Historic Environment Record. Historic England has deployed Arches as the Greater London Historic Environment Record (GLHER) which is used to manage a heritage impact assessment consultation process (fig. 4.2).
- Lincoln Historic Environment Record. As discussed in chapter 13, the City of Lincoln, U.K., has deployed Arches as its HER, branded Arcade, to manage the city's archaeological and architectural heritage. See https://arcade.lincoln.gov.uk/.



**FIGURE 4.1** Satellite map view of heritage resources in the Kingston, Jamaica, area from the Jamaica National Inventory of Historic Places, an Arches implementation that emphasizes community engagement through public nominations of significant sites. *Jamaica National Inventory of Historic Places* 



**FIGURE 4.2** The Greater London Historic Environment Record (GLHER) online deployment of Arches. The map view is focused on the Trafalgar Square area of London, with historic environment sites shown as green polygons and archaeological consultations related to development applications depicted as red polygons. *Historic England* 

- City and County of San Francisco. The City and County of San Francisco has deployed Arches, known as SF Survey, as the city's heritage inventory and as a tool to carry out a citywide survey. See https://sfculturalheritage.org.
- Te Kaunihera o Tāmaki Makaurau / Auckland Council. In Aotearoa / New Zealand, Arches has been deployed to manage and publicly share information about heritage places in Tāmaki Makaurau / Auckland.

Arches is also being used to manage site-level heritage inventories. The Armed Forces Retirement Home (AFRH) is a U.S. federal agency that manages a 272-acre historic campus in Washington, D.C., that was established in 1851 for military veterans. The agency has deployed Arches as the AFRH Information and Resource Inventory System (AFRH-IRIS). Staff use IRIS to carry out campus planning and federal environmental compliance activities, and it is available for public research as well. See http://www.afrh-iris .com/.

capabilities to create and edit geospatial data that describes locations. For those using ArcGIS Pro, the Arches Esri Add-In module facilitates a bidirectional link between ArcGIS Pro and Arches such that the creation or editing of spatial features and attributes in either software will be reflected in the other.

The data structure of Arches provides the ability to produce semantically enhanced, self-describing data according to internationally recognized standards, such as ISO 21127:2023—more commonly referred to as the CIDOC Conceptual Reference Model, or CIDOC CRM (ISO 2023). This capability creates machine-readable data that is interoperable and portable. Because Arches uses common nonproprietary file formats, the structured data stored in Arches is software-platform independent and can be exported and migrated to other systems as necessary.

## Data Visualization and Discovery

In addition to enabling data management, Arches features robust visualization and discovery tools. The most prominent means of visualization in Arches is its geospatial features, such as navigation via the map interface, search using map filters, and the inclusion of historic map layers and satellite imagery (fig. 4.3).

End users can also visually explore the relationships among resources in Arches and find new connections via the Related Resources network visualization. This capability allows relationships to be established among people, places, and things, including historical events and activities (fig. 4.4).

Another visually oriented tool is the Time Wheel, which represents all time data in any particular implementation in a circular histogram. This feature allows users to filter and search the distribution of temporal attributes of all resources in their Arches implementation (fig. 4.5). Arches includes discovery tools that allow for in-depth interrogation of data. In addition to the geospatial and time filters mentioned above, the ability to conduct semantic searches based on the underlying data structure and controlled vocabularies provides an important way to find data in Arches. Users also have access to an advanced search capability that allows them to query any specific data field.

An administrator of an independent Arches implementation can create predefined saved searches deemed to be of interest to users. For example, the City of Los Angeles's deployment of Arches, HistoricPlacesLA, features an Entertainment Industry saved search on its homepage. All of these discovery tools can be used together to create powerful custom search queries.

## Task and Project Management

Arches can be customized to accommodate an agency's specific workflows or business processes, integrating the existing inventory data with the information entered during the steps of a workflow. For example, if a heritage agency needs to manage a process mandated by law, such as a heritage impact assessment, that agency can customize Arches to include a step-by-step workflow that accesses the existing inventory data and includes task tracking, notifications of deadlines, and management of correspondence to help ensure that the process is completed in the correct order and in a timely fashion.

## **Arches and Survey Integration**

Surveys are an important data pipeline for heritage inventories, and Arches-powered inventories can integrate with survey efforts in several ways. The most effective method is to leverage Arches Workflows, which can be



FIGURE 4.3 Using the Location filter in Arches, heritage resources that would be impacted by a proposed development project can be quickly identified. *HistoricPlacesLA* 



**FIGURE 4.4** The Related Resources graph displays relationships between Arches resources, in this instance between an architect and the buildings he designed as well as other persons related to those buildings, such as owners and occupants. *Annabel Lee Enriquez, GCI,* ©*J. Paul Getty Trust* 

customized to create a step-by-step survey data entry process that can be accessed via a mobile or desktop web browser. Surveyors can collect data in the field if they have a network connection, and automatically populate their organization's Arches implementation with the field survey data. Field data collection can be integrated with the research conducted by staff in the office, who can also use the shared Arches-powered system to record their research findings.

Another method to integrate survey data involves using other applications to collect survey data and importing the data via a separate process into Arches. Arches can bulk import large amounts of data via common file formats, such as CSV, JSON, and Shapefile, via a synchronous link to



**FIGURE 4.5** The Time Wheel allows users to filter and search the distribution of temporal attributes of all resources in their Arches implementation. This example shows the number of heritage resources constructed in the fifteenth century BCE and from 1470 to 1460 BCE. *Annabel Lee Enriquez, GCI, ©J. Paul Getty Trust* 

other systems using custom programming via an application programming interface (API), and via interaction with the underlying PostgreSQL database.

## Arches Community and Long-Term Aspirations

The Arches open-source project was established with a strategic aim of helping break the cycle of heritage organizations investing scarce resources in duplicative expenditures to independently create digital inventory and survey systems. The Arches open-source license obligates those who enhance the software to share those improvements for the benefit of the entire community. Related to this obligation, the customization of Arches for the Greater London Historic Environment Record (GLHER) has resulted in the Arches for HERs software package, which is based on the standards and requirements of England's more than eighty regional and local agency HERs. It is freely available for any of England's HERs to deploy.

The open-source approach ultimately enables pooling resources to provide both a greater combined investment

to create more robust heritage inventory and survey software as well as all-around cost savings. The net result is a state-of-the-art software platform available to all organizations. If necessary, they can make marginal investments to tailor it to meet their particular requirements.

Its design is also intended to enable data to be used, updated, shared, and available for future generations. The GCI and WMF have aimed to build a self-sustaining, opensource community composed of a rich variety of institutions working collaboratively for the benefit of the international heritage field. Ultimately, Arches is envisioned as a modern, cost-saving tool to support the aim of worldwide heritage protection.

#### NOTES

 For more information on Arches, visit the project website (https: //archesproject.org/). There, along with participating in the community forum, you can interact with an online demonstration version, download the software code, access documentation, view the project roadmap, and sign up for project updates.

# Part II Heritage Surveys

Part II of this book aims to provide a framework and practical guidance for planning, designing, and carrying out modern heritage surveys. *Modern* in this context is meant to refer to survey practices that use the latest methods, technologies (particularly digital), tools, and concepts in heritage conservation.

This narrative includes recommendations, considerations, and pointers for surveys drawn largely from my (Janet Hansen's) hands-on experiences and lessons learned in my role as lead author and manager of SurveyLA, the citywide survey of Los Angeles. City staff, consultants, and others directly involved in the project also contributed to the content.

As described in chapter 5, SurveyLA is the outgrowth of earlier research and study by the Getty Conservation Institute (GCI) to establish the need for and benefits of a survey of Los Angeles and to provide a blueprint for how it could be completed. This information served as an indispensable starting point for the city in undertaking a survey of unprecedented size and scope and implementing innovative methodologies. Various strategies were tried, tested, and revised over the course of the multiyear survey. While in the end SurveyLA proved successful for Los Angeles, it has also gained ongoing international interest as a demonstration project for completing surveys.

Using the experience of SurveyLA, part II presents the heritage survey process as a series of steps (fig. II.1) that are summarized below and detailed in the chapters that follow.

- Establish the need for a survey to assess the scope and type of information to be collected and to formulate survey goals and objectives, including the proposed uses of the resulting data and inventory to inform heritage management (see chapter 6).
- 2. **Create a survey plan** to determine the elements of the survey and to provide a framework for how it will be carried out and administered (see chapter 7).

- Develop survey tools and methods to guide data collection and recording processes and procedures (see chapter 8).
- Complete a pilot survey program to test, refine, and finalize survey tools and methods (see chapter 9).
- 5. **Conduct field surveys** to identify, evaluate, and document heritage resources that reflect the goals, objectives, and scope of the survey (see chapter 10).
- 6. **Publish survey results** through an associated heritage inventory system and other means (e.g., reports) that are accessible to a range of users (see chapter 11).



FIGURE II.1 Based on the experience of SurveyLA, a heritage survey can be designed as a six-step process; public outreach and participation are integrated into each step. *Janet Hansen* 

While the Los Angeles survey focused on a large-scale urban environment, those of us authoring this section have sought to generalize the guidance to be applicable to surveys in varying environments, cover a range of heritage typologies, and to encompass geographic areas of differing sizes and complexities.<sup>1</sup>

## **Defining Characteristics of Modern Surveys**

Surveys are essential to identifying and understanding an area's heritage and have long been a key element of effective heritage planning and management. While modern surveys are generally grounded in established standards and guidelines, they have several distinguishing characteristics that set them apart from those of the past; these characteristics are introduced below and discussed in chapters throughout part II.

Perhaps the most important characteristic of a modern survey is the use of digital technologies, which have fundamentally changed the way field surveys are completed. The practice of surveying with paper, pencil, and film photography has been supplanted by the use of portable computer devices loaded with survey

software, interactive digital maps, land use information, and other data. Surveyors can record precise geographic locations and document resource history, description, and significance using controlled vocabularies and drop-down menus. Digital technology also facilitates associated research activities as more and more sources become readily available on mobile and desktop computers. But while digital surveys may be more accurate and efficient than past surveys, they also require substantial upfront time to prepare data collection tools and methods and post-field time for data integration and management.

Surveys today also go beyond the traditional focus on monumental buildings and architecture to cover a wide range of heritage themes and typologies that represent a more holistic and inclusive view of the history and development of an area. In countries including the United States, Canada, and Australia, thematic frameworks, theme studies, and historic context statements are being used to systematically guide resource identification and evaluation as part of survey work (see the sidebar on this subject and related information in chapter 2). These mechanisms help ensure that surveys incorporate expanding definitions of heritage and heritage value and represent diverse populations and multiple narratives. They also provide a means to identify and consistently categorize and evaluate resources. Importantly, they can be designed for use in digital format and applied directly in the field.

Finally, an increasingly central feature of modern surveys is public outreach and the associated participation programs. When effective, these efforts are far-reaching, diverse, and integral to all steps of the survey process (see fig. II.1). Such programs may incorporate a range of strategies to directly involve communities in documenting their stories, foster partnerships and collaborations, and incite interest in a survey generally (Hansen and Delgadillo Cruz 2019). Today, developing and implementing thoughtful and innovative approaches to survey outreach can be a substantial, time-intensive effort that requires specialized expertise in community engagement.

## **Undertaking Heritage Surveys**

A heritage survey can be initiated by governmental agencies, NGOs, or partnerships between the two. Surveys are generally most impactful for heritage management when they are officially endorsed and managed by agencies charged with enforcing heritage legislation, such as local, regional, and national governments (Derry et al. 1985, 8). In some cases, heritage surveys may originate from programs and activities led by local universities, museums, heritage organizations, or community groups, often working toward collaborations with governmental agencies. The concept for a citywide survey of Los Angeles, for example, started as a research project of the GCI; SurveyLA subsequently became a public-private partnership between the city and the Getty.

The commitment to undertake a survey is generally secured at the beginning or upon completion of step 1 or 2 of the survey process, and it may come in phases. For example, early interest in a survey may result in funding a needs assessment, the findings of which may then provide the basis for securing a commitment to move forward with survey planning. The plan, in turn, can provide information to support allocating resources needed to complete a survey, often over a protracted period of time. The needs assessment and survey plan discussed further in the following chapters are foundational to organizational buy-in for a survey.

#### NOTES

 SurveyLA did not include archaeological resources or resources associated with indigenous peoples. Though these topics, as well as intangible heritage, are not explored in detail in part II, they are touched on throughout this publication. Archaeological resources are specifically addressed in chapter 13, and an intangible heritage inventory is described in chapter 14.

## 5

## SurveyLA and HistoricPlacesLA: A Synopsis

### **Janet Hansen**

A primary impetus for this publication is to share the experiences and lessons learned from SurveyLA, the citywide heritage resources survey of Los Angeles, and the related implementation of HistoricPlacesLA, the city's heritage inventory.

SurveyLA is considered a groundbreaking project for several reasons. It covered all of Los Angeles, about five hundred square miles (eight hundred square kilometers) and 880,000 legal property parcels, making it undoubtedly the largest single urban heritage resources survey ever conducted in the United States, and perhaps internationally (fig. 5.1). The massive scale of the survey posed particular challenges with respect to its design and implementation, including how to consistently evaluate and document a large number of heritage resources.

SurveyLA was also the first all-digital citywide survey of such scale in the country, which presented substantial data collection and management challenges. And SurveyLA achieved success through a public-private partnership between the J. Paul Getty Trust, a private philanthropic organization, and the City of Los Angeles. The Getty's involvement was motivated by a desire to provide support to its local community of Los Angeles and to undertake the project as a demonstration that would serve as a model to be followed by other cities.

### Groundwork

Groundwork for SurveyLA was initially laid in 2000 when the Getty Conservation Institute (GCI) commissioned a study to assess the need for and benefits of a citywide survey of Los Angeles. The GCI's resulting *Los Angeles Historic Resource Survey Assessment Project Summary Report* (Howe 2001) revealed that about 15 percent of the city had previously been surveyed and that these surveys were maintained by diverse city agencies and departments and for a range of purposes.<sup>1</sup> Moreover, prior surveys covered a limited temporal range of heritage resources and geographic areas, used varied and inconsistent data collection methods, and were largely outdated and inaccessible.

Importantly, the assessment project also revealed broad support for having reliable and up-to-date information on heritage resources from a wide range of public and private interests, including city government, neighborhoods, the business community, the development sector, and preservationists. This support underscored the growing need for a citywide survey to serve as the foundation for a comprehensive municipal preservation program and integration of preservation in all facets of city planning.



**FIGURE 5.1** Seven U.S. cities and the New York City borough of Manhattan could fit within the boundaries of the City of Los Angeles. *Los Angeles City Planning Office of Historic Resources* 

## Research

Following the assessment project, the GCI began preparing a series of research papers, known as white papers, on national best practices in implementing and utilizing heritage surveys, to provide a recommended approach for undertaking a Los Angeles survey. The papers covered topics including survey standards and resource evaluation criteria, community engagement, information management and dissemination, and project funding. The GCI presented the papers to managers in multiple city departments and agencies and received feedback. Following finalization and endorsement of the papers in 2004, the Los Angeles City Council passed a series of resolutions that further advanced the city's commitment to completing a citywide survey. The white papers were later published by the GCI as The Los Angeles Historic Resource Survey Report: A Framework for a Citywide Historic Resource Survey (Howe 2008).

## **Survey Effort**

In 2005 the City of Los Angeles entered into a multiyear grant agreement with the Getty Foundation to complete the survey, with Getty funding underwriting a portion of the project and the GCI providing advisory support to plan the survey process. Within a year, SurveyLA launched, when the Los Angeles City Planning department established and staffed the new Office of Historic Resources (OHR) as the managing agency for both the survey and the city's preservation program. The GCI worked with the OHR to get SurveyLA off the ground and continued to provide research, technical, and advisory assistance throughout the project's duration.

The GCI survey report became the blueprint the OHR used to develop a comprehensive plan for a massive survey effort that would be designed to meet California and U.S. federal professional standards and guidelines for survey work; engage and involve the public; cover a wide range of architectural, historic, ethnic, and cultural themes; record various heritage resource typologies; and generate data that was usable and accessible.

## **Initiation Phase**

The two-part plan included an initiation phase, during which survey tools and methods would be developed and tested, and an implementation phase, when the field surveys would be completed.

During the initiation phase, the OHR brought on a team of preservation consultants to assist planning staff with developing tools and methods to meet survey goals and objectives while creating efficiencies of scale to stay on schedule and within budget. When SurveyLA started, no off-the-shelf software designed for heritage resources data collection existed. To meet the goal of an all-digital survey as recommended by the Getty report, the project team developed an in-house customized geographic information system (GIS) survey application loaded on portable tablet computers for use in the field.<sup>2</sup>

The GCI augmented the survey budget to assist with unanticipated costs associated with developing and testing the survey system throughout the initiation phase. Other survey tools included a citywide historic context statement designed to provide a consistent framework to identify, record, and evaluate resources during the survey, and an extensive public outreach program to engage a wide and diverse audience in all aspects of the project.

## **Pilot Surveys**

The initiation phase culminated in three pilot surveys to test survey methods and tools in the field. Consultant teams received classroom and field training prior to going out on their own. Pilot surveys included a variety of heritage resource types, covered multiple historic themes of the citywide context, and took surveyors to differing geographic locations. Throughout the pilot program, tools and methods were refined and revised, and in some cases rethought.

## **Implementation Phase**

The implementation phase began in 2010 and constituted the official start of SurveyLA field surveys. Following additional training, consultant teams worked methodically through the city following the phased survey approach developed by the OHR. This approach established ten survey groups, each composed of one or more of the city's thirty-five geographically based community plan areas, thus providing a direct link between the survey project and land use planning.

Although originally scheduled for a three-year period, the field surveys took over seven years to complete, largely due to the additional time needed to process, review, quality check, and edit the data collected.

Concurrent with the surveys, the citywide historic context statement was revised and expanded to include more than two hundred themes and subthemes, reflecting the range of findings of the fieldwork. Writing context narratives continued under the direction of the OHR, using consultants, students, and highly qualified volunteers to carry out the work. And the outreach program progressed into the then-burgeoning world of social media.

## **Data Management and Access**

As SurveyLA field surveys continued, the city's key challenge became managing and making accessible the massive amount of digital data being collected. At the time of SurveyLA, City Planning did not have a heritage inventory per se. Information on designated and eligible heritage resources had been included in Planning's land use database—a web-based mapping system that provides planning and zoning reference information system on legal parcels citywide. But this system included (and still includes) only a limited set of information on heritage resources; it was not designed to integrate, display, or make searchable the amount and type of information collected for SurveyLA.<sup>3</sup>

During SurveyLA, the GCI and World Monuments Fund had been separately developing the Arches open-source software platform, which was purpose built for managing and publishing heritage inventories (see chapter 4). The GCI and city decided to customize and deploy Arches for Los Angeles as a solution for managing and making searchable online data collected through SurveyLA. This decision created additional challenges regarding the compatibility of SurveyLA and other heritage data with the data structure of Arches and the ongoing need to integrate a subset of this data into the city's land use database.

## **HistoricPlacesLA**

HistoricPlacesLA, the city's heritage resource inventory and management system, launched in 2015 with a partial set of SurveyLA data (see City of Los Angeles n.d.). In 2016 the OHR brought on a full-time data manager, and by 2019 integration of SurveyLA data within HistoricPlacesLA was complete.

At this writing, HistoricPlacesLA includes records on over fifty-seven thousand heritage resources (fig. 5.2). Integration of other heritage data not derived from SurveyLA continues, including work to enhance and keep up to date records on designated and newly identified resources and districts.

The system support, hosting, and maintenance has now been fully and permanently transitioned from the GCI to City Planning, attesting to the city's long-term commitment to manage, update, and expand its heritage inventory.

### NOTES

- 1. Although the city's 1962 Cultural Heritage Ordinance called for a survey, no comprehensive program was ever undertaken.
- 2. The customized application was not designed for longevity; the software is now outdated and there are no plans to upgrade.
- 3. The system is known as ZIMAS (Zone Information and Map Access System); see http://zimas.lacity.org/.

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**FIGURE 5.2** HistoricPlacesLA maps the location of designated heritage resources in the City of Los Angeles as well as those recorded as significant through SurveyLA and other resource evaluations. *Los Angeles City Planning Office of Historic Resources* 

## 6

## Establishing the Need for a Survey

### **Janet Hansen**

Today, organizations worldwide are undertaking heritage surveys largely driven by the need for up-to-date, accessible, and comprehensive inventories within their area of interest or administrative jurisdiction. The need for a survey may be brought to light in response to a range of factors: natural disasters, urban planning initiatives, redevelopment projects, community activism, and others. In some cases, the need for a survey is apparent, such as when a survey has never been completed in a geographic area or jurisdiction and when no inventory exists. In other cases, the need may be based on existing heritage information that is limited in scope, lacks relevancy and currency, and is not easily accessible.

A needs assessment can provide a baseline analysis of the content of existing information on heritage places, identify or confirm information gaps, and help define the scope of a new survey. The assessment may be broad based, such as one for a large-scale areawide survey (e.g., SurveyLA; see chapter 5), or focus on topics of immediate concern, such as at-risk resources associated with new development or other activities. Considerations for completing a baseline analysis are discussed in more detail below.

Oftentimes the need for a survey is concurrent with the need to develop a new inventory or to modernize, update, and enhance an existing one. Considerations for building and modernizing inventories are discussed in part I. See also the section in chapter 7 relating to the elements of a survey: Technologies for Data Collection and Management.

A needs assessment can originate as a stand-alone activity for a new survey (Howe 2001) or can be the result of a broader study to evaluate the state of a preservation or heritage conservation program (see Philadelphia Historic Preservation Task Force 2019; Portland Historic Landmarks Commission 2018).

## Participants in a Needs Assessment

Participants in a needs assessment include, at a minimum, a project manager to design a research strategy and lead the process and team members to complete tasks such as compiling information, research, and analysis. These roles may be filled from internal personnel of the agency or organization supporting the assessment, by consultants, for instance heritage professionals and information technology specialists, or both.

It is also recommended that the assessment process include a public participation strategy to engage individuals and a range of community groups, organizations, and institutions with knowledge of the survey area and with interests in shaping the focus and content of a survey. Importantly, the needs assessment phase can be the start of a successful program for longterm public engagement in a survey and associated inventory.

## Assessing Existing Heritage Information

Existing heritage information may be available from previous surveys, nominations for resource designation or listing, and other data collection activities. Existing information may also include historic contexts, thematic studies, and thematic frameworks (see the sidebar on this subject in chapter 2). While ideally this information is contained within an associated inventory, it may also be the case that no inventory exists or an existing inventory is not comprehensive. Compiling information outside of an inventory can be a challenging and time-consuming process, particularly if the information is of substantial quantity, in disparate locations, and differing in format, quality, and usability.

The following are questions to consider when completing a baseline analysis with respect to the content and usefulness of existing heritage information both within and outside of an inventory.

- What geographic areas, temporal periods, heritage themes, and resource typologies are represented?
- Conversely, what are the information gaps with regard to geographic areas, temporal periods, heritage themes, and resource typologies—those that are not represented or are underrepresented?
- What designated or listed resources are represented?
- What information is no longer current or relevant and in need of updating?
- Were applicable professional standards and guidelines used to collect the information, and have they changed over time?
- Was the public engaged in information-collecting activities? If so, in what ways?
- What formats are used (e.g., paper, digital)? Are they adequate?
  - Are formats outdated or obsolete?

- If so, what resources are needed (time, staff and/ or consultants, funding, technology) to make the information usable for digital data collection (e.g., data entry, conversion, consolidation)?
- Are there copyright considerations to utilizing existing information such as images and photographs?

## **Survey Scope and Approach**

The needs assessment can help inform survey goals and objectives, which in turn help shape the survey scope and approach. Goals and objectives may address the purpose, benefits, and value of the survey and projected outputs in terms of the kind of data the survey will yield and the users and uses of such data. The scope defines the geographical area(s) and boundaries to be surveyed, historic and/or prehistoric time period(s) of heritage resources to be covered, and one or more themes/topics and associated resource types to be included (fig. 6.1).



**FIGURE 6.1** The design approach for a heritage survey may focus on a geographic area, theme, chronological period, or a combination of these. *Janet Hansen* 

While all three of these aspects are present in every survey, typically one will provide the basis for the overall survey approach and focus, and ultimately the type of survey to be undertaken.<sup>1</sup>

 A geographically based approach focuses on identifying resources in a specific area, which may be a whole or only part of an administrative jurisdiction. Geographically based surveys are commonly carried out in advance of regional or local planning initiatives and development or redevelopment activities. Such an approach may also be undertaken in the aftermath of a natural disaster or armed conflict or in response to climate change (as discussed in chapter 12). Sometimes an entire geographic jurisdiction is covered, for example, where no inventory exists, the
inventory contains minimal information, or where no prior surveys have been completed. Area-wide surveys typically include a range of relevant themes and resource types. SurveyLA is an example of a geographically based survey that provided comprehensive coverage of the entire city of Los Angeles (see chapter 5).

 A thematically based approach focuses on gathering information on particular themes and associated resource types. This approach may be used to address underrepresented topics and resource types in an inventory or ones that are absent from previous surveys and other data collection activities. Thematically based surveys are also completed to address heritage types determined to be at risk to help ensure that they are adequately recorded and considered in decision-making, for their protection. A thematically based approach is being increasingly used to address community interests in inventories that more fully represent an area's complexity and diversity. Examples include surveys designed to document marginalized ethnic and cultural histories or newly recognized heritage types, such as intangible heritage.

 A chronologically based survey may focus on resources developed during or dating from a specific period of time. Today, such an approach is particularly relevant in cases where heritage surveys have not been completed for a substantial amount of time, so the recent past and modern-era themes and resource types have never been recorded.

Decision-making in the early phases of a project regarding the survey approach provides the framework to begin the survey planning process.

#### NOTES

The National Park Service discusses these three approaches in the National Register Bulletin *How to Complete the Multiple Property Documentation Form* (National Park Service 1999, 11–12). Although the approaches are introduced in relation to developing historic context statements, they are also useful for organizing survey work.

7

## **Creating a Survey Plan**

## **Janet Hansen**

The process of survey planning expands on the findings of the needs assessment to provide a blueprint for how the survey will be resourced, managed, designed, and carried out. While there is no single approach to survey planning that fits all agencies and organizations, there are commonalities in the topics and issues to consider, and those are the focus of this chapter. Project administration is discussed in detail first, followed by an introduction to specific components of a survey to consider when developing a survey methodology; those elements are explored in further detail in the next two chapters.

## The Plan

Survey planning culminates in a written survey plan. While survey plans may vary in format, content, and detail, certain general categories of information are recommended for inclusion, depending on the intended audience and the needs of the agency or organization supporting the plan. See the resource 7.1, Sample Survey Plan Outline (see also City of Toronto 2019).

A primary audience for a plan may be decision-makers, such as a city or town council responsible for officially endorsing a survey and allocating or securing resources for its completion. The plan can also be used to introduce the survey to stakeholders and the general public, to encourage broad-based interest in the project, and to initiate community outreach efforts. Finally, the plan can serve as the starting point for a more detailed strategy to guide day-to-day survey project management.

## **Participants in Survey Planning**

Recommended participants in survey planning include a project manager, interns, consultants, and survey stakeholders, some of whom may have been involved in the phase-one needs assessment. The manager may be internal to a lead agency or organization or may be part of a planning consultant team working with a lead agency or organization. A consultant team with contemporary experience and expertise in heritage surveys, inventories, and community outreach can provide information and make recommendations relating to project staffing, costs, and schedule, as well as for tools, methods, and technologies.

Organizations, groups, and individuals representing a range of interests in the survey can help shape decisions about what will be surveyed, how the community can be involved, and what public engagement strategies will be explored; they can also identify opportunities for potential collaborations and partnerships. Activities may include public events and more targeted workshops, meetings, and interviews. Finally, information sharing with heritage organizations and agencies that have recently completed

#### RESOURCE 7.1 Sample Survey Plan Outline

- I. Introduction and Purpose of the Survey Plan a. Initiating and establishing the need for a survey b. Survey goals, objectives, and outcomes c. Benefits of the survey II. Summary of the Planning Process a. Participants in developing the plan b. Research and design methods III. Description of the Survey Scope a. Geographic area b. What will be surveyed IV. Survey Technology a. Data collection tools and technologies to be explored/used V. Survey Methodology a. Survey standards and guidelines b. Evaluation criteria c. Prioritizing, phasing, and sequencing surveys d. Historic context and theme-based approach Recording processes and procedures e. f. Data management
- g. Pilot survey program
  - h. Publishing and reporting
  - VI. Public Outreach and Participation Program
    - a. Outreach goals and objectives
    - b. Participants and stakeholders
    - c. Tools, strategies, and activities to be explored/used
  - VII. Administrative Framework for the Survey
    - a. Staffing, consultants, interns, and volunteers
    - b. Costs and funding
    - c. Schedule and timeline
  - VIII. Conclusions and Next Steps
  - IX. Suggested Attachments
    - a. List of community participants
    - b. Outreach meeting summaries
    - c. Map of survey area
    - d. Budget
    - e. Staffing model
    - f. Schedule

surveys or have one in process can also provide direct, practical advice for survey planning.

## **Survey Administration**

Survey planning includes developing a framework for overall project administration. The managing agency or organization must address issues relating to four key and interdependent factors: project personnel, budget, funding, and schedule, as described below.

#### Survey Personnel

Survey planning will identify positions needed to manage and carry out a survey project in light of the size and scope of the survey, the skill sets needed, and available funding. Because financial resources are often limited for surveys, creative approaches may be needed to consider how funds might be secured and allocated (and potentially augmented) to fill full- or part-time staff positions, engage external consultants and other specialists, and supplement staff and consultant time with interns and volunteers. The section Considerations and Recommendations for Assembling a Survey Project Team, at the end of this chapter, defines key positions to consider, as well as the role of volunteers and interns.

#### Survey Budget

Estimating the costs associated with a survey will establish budgets for the project as a whole and for its various components. Project expenses are highly dependent on factors relating to the size and scope of the survey, adequate and qualified project personnel, technological infrastructure, state of an existing inventory data or previous survey data, available research and scholarship on the area's heritage resources, and the scope of outreach programs and activities. Figure 7.1 is a budget model with the main cost categories for a survey depicted as percentages of the total budget, based on the experiences of SurveyLA.

Table 7.1 shows a breakdown of the primary expenses within each category. Note that these expenses may not all be relevant for every survey; for example, small-scale surveys or those highly reliant on community involvement and the use of volunteers can reduce or avoid some costs.

While it is necessary to develop at least a preliminary project budget to secure a commitment to complete a

TABLE 7.1         Primary survey expenses by cost category									
Project administration	Technology and information management	Field surveys	Historic contexts/ thematic studies	Outreach and volunteer program					
Agency/ organization staff	Agency/organization staff	Agency/ organization staff	Agency/organization staff	Agency/organization staff					
Consultants	Consultants	Consultants	Consultants	Consultants					
Interns	Interns	Interns	Interns	Interns					
Project advisors	Software/hardware	Reports/ publications	Publications	Project website					
Equipment and supplies		Review committee		Outreach activities (meeting location fees, refreshments, etc.)					
		Project advisors		Publications/production					
				Multilingual translation					



FIGURE 7.1 Heritage survey budget model. Janet Hansen

survey, it is important to expect that the budget may need to be revised once the project is initiated and survey tools and methods are tested and further defined. Pilot surveys are central to estimating the time and budget needed to complete the field surveys, as discussed in chapter 9.

#### Survey Funding

The planning phase will identify potential funding sources and opportunities for the survey, which may include lead agency/organization resources, grants, and partnerships, as described below.

#### Agency/Organization Resources

The lead agency or organization for the survey must commit sufficient funds and/or identify sufficient supplemental funding sources to complete the survey. A long lead time may be required to allocate funds for a survey into annual budgets, and a phased survey approach or methodology may be necessary as a result. Creative approaches to funding could include leveraging financial resources from existing programs that overlap with the goals of the survey. For example, within a municipal planning department, a survey might dovetail with already-funded community planning activities and programs that rely on up-to-date and comprehensive heritage data, so surveys could be incorporated into those efforts. Interagency funding opportunities could result from collaborations with museums, libraries, universities, and associated cultural heritage programs.

#### Grants

Grants can be an important source of supplemental funding for heritage surveys; however, they take time to

administer, and in many cases require matching funds. Grant opportunities can be explored during the planning process and throughout the project, such that available funds and funding cycles can be accounted for in the overall project budget and schedule over the life of a survey.

#### Partnerships

Budget planning can include examining the opportunity to establish partnerships with universities and other research institutions, the private sector, and charitable foundations to help support the costs of the survey. Like grants, partnerships may provide funding for the project in whole or in part. As mentioned in chapter 5, the work of the Getty Conservation Institute to establish a blueprint for a citywide survey in Los Angeles resulted in the multiyear partnership and associated grant agreement between the J. Paul Getty Trust and the City of Los Angeles to complete SurveyLA. After the official launch of SurveyLA, the GCI funded work associated with the citywide historic context and project technology and also helped to implement Arches as the city's heritage inventory system.

#### Survey Schedule and Timeline

Developing a realistic schedule for a survey is important to managing the expectations of the lead agency or organization, stakeholders, and the public regarding how the project will unfold over time. The overall project schedule may be based on variables such as the size and scope of the survey, available resources for its completion, and the urgency of data needs. The schedule guides the work plan for the survey and typically incorporates a timeline for the project as a whole, as well as for each individual activity of the survey: when each will start and end, and areas of overlap.

## **Elements of the Survey**

Survey elements or components are identified during survey planning to drive the development of survey tools, methods, processes, and procedures.

## Technologies for Data Collection and Management

Survey planning is the time to develop a strategy to fully explore technology options and approaches for data collection and management. Surveys are ideally designed for compatibility between the field data collection system and the associated inventory information system: these systems should be in accord with respect to data structures and standards. While this is the ideal, in reality, many agencies that initiate new surveys have no existing digital inventory or have inventory systems that need to be updated or made more robust.

Creating or modernizing and improving a digital inventory system, including building a compatible data collection system, needs to happen in advance of or concurrent with a survey project. This effort can require a substantial commitment of time and funds to cover the costs associated with hardware, software, and personnel, including specialized IT consultants. Sometimes resources are made available to do this; sometimes resources are limited and only half measures are taken. These issues need to be seriously considered when making decisions about survey technology. If only half (or even more partial) measures are taken to address deficiencies in the inventory system, it will likely result in later problems. While new technologies present opportunities for improving how and what data can be captured, they should ultimately serve the survey requirements and methodologies-not drive them. (See part I for detailed information on building and modernizing heritage inventories.)

### Survey Standards and Guidelines

Official survey standards and guidelines have been developed and published by national agencies worldwide and are commonly used (or adapted for use) to develop regional and local guidelines. Applicable standards for a jurisdictional area should be identified and considered as the foundational element for a survey to provide technical assistance for survey planning and developing survey tools and methods.<sup>1</sup> Adopting such standards will help ensure consistency in survey practices and that the survey follows accepted professional practices, meets applicable legal requirements for heritage preservation, and is credible and defensible.<sup>2</sup> The use of standards is particularly important in instances where survey findings are officially approved, adopted, and incorporated into an authoritative inventory. Chapter 8 discusses the application of standards and guidelines to developing survey recording and documentation tools and methods.

It is important to acknowledge that, in many cases, existing standards and guidelines are outdated. For example, data fields required for old paper survey forms may refer to specific ways to record spatial information that are no longer pertinent for digital data collection. As well, standards and guidelines may not apply to documenting the range of themes and heritage typologies that characterize modern surveys, such as intangible heritage. The planning phase is a critical time to assess and address the relevancy of these survey standards for a modern survey.

The sidebar Historic Preservation Practice in the United States summarizes national survey standards used in the United States, which formed the basis for the SurveyLA methodology.

### Survey Evaluation Standards

Evaluations or assessments of resource significance are typically made using official criteria established by laws, regulations, and other legislative actions that govern heritage practice in a particular jurisdiction. These criteria have been developed to guide processes for nominating and designating or listing resources in local, regional, national, or world heritage registers, but they are also commonly used for survey evaluations. Applying established criteria, and their associated thresholds for significance and other guidelines, can result in consistent classification or identification of resources and provide important information for heritage management, even though resources evaluated in a survey may not ultimately be listed or designated.

Like survey standards and guidelines, evaluation criteria may need to be enhanced or updated to align with current survey practices, such as to address a wider range of heritage types than previous surveys. See chapter 8 for more information on using evaluation criteria for surveys and chapter 10 for more on making assessments of significance.

#### Historic Context- and Theme-Based Surveys

The concepts of historic contexts and thematic frameworks, as defined in the sidebar in chapter 2, can be applied to heritage surveys to consistently identify, categorize, and evaluate resources that reflect important aspects of the history and development of an area. The planning phase is the time to consider if a context- and/or theme-based approach will be used for the survey and how the approach will be developed and implemented. Taking such an approach can be a substantial undertaking, depending on the scope and size of a survey, and it can impact survey budget, schedule, and personnel needs. Chapter 8 draws on the example of SurveyLA to provide useful information for designing historic context- and theme-based surveys.

# The Role of Community Outreach and Engagement

The public can be engaged in heritage surveys in many ways. The extent and type of outreach approaches considered will reflect the overall goals of the survey as well as available funding and staffing. Survey planning may engage key stakeholders and others with a clear understanding of the scope and content of the survey and expertise in developing and implementing a range of community outreach strategies for heritage work. See Public Outreach and Engagement in chapter 8.

#### Pilot Surveys

A pilot survey program serves as a test run to assess and refine tools, methods, and procedures in advance of the official launch of field surveys. The pilot may include one or more geographic areas, themes, and resource types. See chapter 9 for details on completing pilot surveys.

## Considerations and Recommendations for Assembling a Survey Project Team

Considerations for putting together a project team may include the survey scope and approach; internal staffing capacity; the need for specialized knowledge, skills, and expertise; and project budget and funding. Multilingual needs and relevant professional qualification standards are also considerations when selecting project participants.<sup>3</sup>

In some instances, a survey may be wholly completed by agency or organization personnel. In other instances, it may be necessary to bring on temporary personnel for the duration of the project, or to use external consultants. A request for qualifications (RFQ) process can be an effective way to create a prequalified list of consultants who best meet the skills and competencies needed for a survey. Consultants on the list can form a range of collaborations and partnerships to build strong and diverse teams whose members' skills supplement and complement the others'.

#### **Historic Preservation Practice in the United States**

Following passage of the National Historic Preservation Act of 1966 (NHPA), the U.S. Department of the Interior and the National Park Service (NPS) prepared extensive standards and guidelines concerning historic preservation activities carried out under federal programs, state and local level governments, and private parties (National Park Service 1983). This guidance serves as nationally accepted professional standards for historic preservation practice and ensures a uniform and consistent process for documenting and evaluating historic properties through surveys or property designations. The concepts and terms discussed here comprise the basic elements of these national professional standards.<sup>\*</sup>

#### **Historic Property**

The terms *historic property* and *historic resource* are used interchangeably in the United States to refer to buildings, structures, objects, sites, and districts that have been evaluated as significant (National Park Service 1997b, 15):

**Building.** A building . . . is created principally to shelter any form of human activity.

Examples are residences, schools, churches, factories, theaters, and stores.

**Site.** A site is the location of a significant event, a prehistoric or historic occupation or activity, or a building or structure, whether standing, ruined, or vanished, where the location itself possesses historic, cultural, or archaeological value regardless of the value of an existing structure.

Sites include cemeteries, designed landscapes, cultural landscapes, and natural features.

*Structure.* The term "structure" is used to distinguish from buildings those functional constructions made usually for purposes other than creating human shelter.

Examples include bridges, roadway systems, dams, and tunnels.

**Object.** The term "object" is used to distinguish from buildings and structures those constructions that are primarily artistic in nature or that are relatively small in scale and simply constructed.

An object is associated with a specific setting or environment, although it may be movable. Examples include sculpture, statuary, and fountains.

**District.** A district possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development.

Districts include residential neighborhoods, commercial areas, civic centers, industrial complexes, and institutional campuses such as hospitals and universities.

#### National Register of Historic Places

The National Register of Historic Places is the United States' official inventory of historic places worthy of preservation. The NPS established the National Register to identify properties of architectural, historical, engineering, or archaeological significance at the local, state, or national level.<sup>†</sup> The National Register provides standardized criteria for evaluating properties for significance (National Park Service 1997a). These criteria have been adapted for use by most state and local governments in developing their own designation programs and are also applied to properties during survey work.<sup>‡</sup>

To be listed in the National Register, a property must meet at least one of the criteria set forth in *How to Apply the National Register Criteria for Evaluation* (National Park Service 1997a, 2; see below) and retain integrity of those features necessary to convey its significance.<sup>§</sup>

The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and: A. that are associated with events that have made significant contributions to the broad patterns of our history; or

*B. that are associated with the lives of persons significant in our past; or* 

*C.* that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

*D. that have yielded, or may be likely to yield, information important in prehistory or history* 

### Historic Context Statements and the Multiple Property Documentation Approach

A historic context statement is a narrative, technical document specific to the field of historic preservation. Contexts organize information about important trends, patterns, and topics significant to the development history of a defined geographic area into themes, and then relate those themes to property types that share common physical and associative attributes.

Historic context-based surveys are the foundation of preservation planning in the United States. They provide a framework for establishing preservation goals and priorities and ensure consistency in resource identification and evaluation. Contexts can address a single theme and property type, such as Midcentury Modern residential architecture, or can provide a comprehensive summary of all aspects of history of an area.

The multiple property documentation (MPD) approach developed by the NPS is the format most used for context-based surveys in the United States (National Park Service 1999). Although designed to streamline the nomination of properties related by theme to the National Register, the MPD approach is also highly effective in conducting heritage surveys, particularly at a large scale. This approach provides a narrative discussion of themes; identifies and describes property types that represent the themes; and, importantly, provides specific guidance and comparative analysis regarding the physical characteristics, associative qualities, and aspects of integrity a property type and eligible for designation.

- \* Other terms used throughout this publication are defined in the glossary.
- The National Register Program was authorized as part of the NHPA. The associated National Historic Landmarks Program recognizes properties of exceptional significance to the nation.
- The City of Los Angeles Historic-Cultural Monument program, for example, has four criteria that parallel National Register criteria.
- § The National Register recognizes properties that achieved significance within the past 50 years, although there is a criteria consideration for properties less than 50 years old and of exceptional importance. *How to Apply the National Register Criteria for Evaluation* also provides detailed guidance on applying integrity aspects to a property as part of the evaluation process; see National Park Service 1997a, 44–47.



FIGURE 7.2 Heritage survey team model showing key positions for managing a survey. Janet Hansen

# Key Survey Team Positions and Responsibilities

Key survey team positions and responsibilities, including volunteers and interns, are illustrated in the survey team model in figure 7.2.

The model can be applied or adapted to a range of survey types, as not every survey will require every position described below, and some surveys may be highly dependent on community outreach and the use of volunteers.

- Survey project manager is the lead position for the survey project and is responsible for implementing the survey plan, overseeing the day-to-day activities of the survey, supervising project personnel, and keeping the survey on schedule and within budget. The project manager may also be responsible for securing project funding, acquiring and managing grants, and serving as the main point of contact for the public. In some cases, project management responsibilities may be shared by agency or organization staff and consultants, particularly in cases where allocating full-time staff is not feasible or practical or where the management skills needed for the project are better fulfilled by qualified consultants.
- The field survey manager plays a lead role in planning, designing, developing, and implementing survey tools and methods. The survey manager supervises and directs the work of field surveyors and is responsible for their safety and well-being. Ultimately, the survey manager ensures data is high quality and consistent and that surveys are completed on time and on budget. A large-scale survey may have one or more field survey managers.
- Field surveyors complete surveys under the direction of the field survey manager. The number and profile of field surveyors needed may depend on factors including technology used, size of the survey, level of detail required, experience needed, and the survey budget and schedule.
- A historic context specialist is recommended for surveys that implement a historic context-based approach. This role may be a function of the field survey manager or other heritage professionals who have extensive experience designing thematic frameworks and writing historic context statements or thematic studies.
- **The outreach manager** is responsible for leading the development of a community outreach and participation plan for the survey and implementing it. The amount of time dedicated to outreach can depend

on the size and scope of the survey, as well as the overall role of outreach defined in the goals and objectives of the survey. For surveys that are large scale (e.g., citywide), community-based, and/or focus on underrecognized communities, a full-time outreach manager is recommended.

- The volunteer coordinator is responsible for developing and managing a volunteer program for the survey. This position may dovetail with outreach activities. For surveys that are highly reliant on volunteer participation and require a broad-based volunteer program, a full-time coordinator may be needed.
- The information technology systems manager provides support for the data collection system used by the field surveyors. The IT systems manager may assist with developing, enhancing, and customizing data collection tools to meet the needs of the survey. The position may also assist with integrating heritage data from the inventory (and potentially other systems) into the survey data collection system, and vice versa. The position will be most effective if established during the early stages of the survey associated with developing data collection methods and standards. IT systems manager may be the role of personnel managing an existing inventory system; for example, the database administrator role discussed in part I.
- The data coordinator is responsible for processing survey data, assuring data quality, and integrating final data into the related, or newly developed, inventory. Data coordination may be the role of personnel managing an existing inventory system for example, the data editor role discussed in chapter 2.
- Administrative support includes part-time agency or organization staff that assist the project manager with various aspects of project administration, such as grant management and consultant contracting.
- Peer review experts are engaged to review and vet survey findings and may be organized as a committee or panel. The Peer Review in Heritage Surveys sidebar in chapter 10 provides more information on the role and process of peer review. Peer reviewers may be paid project personnel whose time is considered in the project budget. The five members of SurveyLA's peer review committee were paid a stipend to prepare for and attend each meeting.

**Project advisors** provide expert advice on various aspects of the project, as well as overall support for the survey. Although advisors may be individuals, a project advisory committee is recommended to bring a range of stakeholders to the table and provide consensus on important topics. The makeup of an advisory committee will vary based on the scope and focus of the survey and the goals and objectives established for the committee. Participants may be internal or external to the managing agency or organization and may be volunteers or paid project personnel whose time is considered in the project budget. SurveyLA's volunteer advisory committee was composed primarily of community-based stakeholders; they met on a quarterly basis while survey tools and methods were in development and less often as the field surveys were in progress. The committee provided advice on topics ranging from naming the survey to ensuring inclusive participation in the project.

#### Tips for Utilizing Interns and Volunteers

Student interns are project support personnel with education and training in heritage conservation, archaeology, urban planning, or related fields of study. While interns may be undergraduate or graduate students, those from graduate programs in conservation are particularly valuable, as they generally have the relevant skill set. Partnerships with local colleges and universities offer opportunities to recruit interns. Through survey experience, student interns receive invaluable practical training in their respective fields, often for academic credit.

Interns work under the direct supervision of project staff and/or consultants in completing aspects of the survey project. They should not be given responsibility for tasks for which they do not have sufficient experience or do not meet applicable qualification standards, such as completing assessments of heritage resource significance. It is important to note that interns need mentoring, training, and supervision, and these can take substantial time.

Intern programs are most effective when they are manageable in size. Limiting the number of interns provides the maximum learning experience for students while ensuring the quality and credibility of the survey. The ways that interns can contribute to the survey project are discussed in more detail in the chapters that follow and in particular in chapter 10.

Volunteers can play a critical role in supplementing the work of project staff, consultants, and interns while also

building public support and buy-in for the survey. Like internships, volunteer programs require substantial resources and must be adequately staffed. A volunteer program may benefit from partnerships and resource sharing with heritage organizations and other stakeholders in the survey that have extensive and wellestablished volunteer programs.

Although volunteers may have a variety of skill sets, they will have in common a desire to feel a part of and contribute meaningfully to the survey. A well-designed volunteer program identifies and describes specific opportunities that account for a range of skills and also establishes qualifications, work programs (including expected time commitments), and relevant training needed for each activity. In this way, potential volunteers have a clear understanding of what activities may or may not be available to them. The roles of volunteers in various aspects of a survey are discussed in subsequent chapters where relevant.

Volunteers, like interns, are not recommended for tasks that require specialized professional training, experience, and qualifications or that may have implications for credible and defensible survey results. A volunteer intake questionnaire, such as the one used for SurveyLA shown in resource 7.2, can aid in the process of engaging community members with a range of skills and matching them with tasks that align with individual interests and skills.

#### NOTES

- 1. For local jurisdictions where no survey standards have been developed, regional or national standards may be used.
- 2. Most heritage agencies publish standards and guidelines on their associated websites.
- A number of countries, including the United States and United Kingdom, have qualification standards for heritage professionals.

#### RESOURCE 7.2 SurveyLA: Volunteer Registration Form

https://final-pages--inventories-andsurveys.netlify.app/\_assets/downloads/ resource-7-2.pdf



The Office of Historic Resources is seeking qualified volunteers to help with SurveyLA, the citywide historic resources survey project. If you are interested in the opportunities available, please provide the following information:

Name:	
Address:	
City:	_Zip:
Phone:	_Email:
Date:	

Let us know when you are available, and hours per week during that time frame (8 hours minimum per week preferred):

Start:		
Hours	Per Week:	

Our current volunteer needs are listed below. Indicate your interest by checking the appropriate box(es):

End:

**Research:** Use your research skills to uncover and record information to help professional survey teams identify and assess significant properties and districts.

□ Draft Historic Context: Contribute to the Citywide Historic Context Statement, a narrative document that discusses Los Angeles' development from its founding through 1980. Themes within the context statement include architecture as well as social, cultural and ethnic history.

□ Neighborhood Coordinator: Head up a neighborhood effort or work independently to gather information about the history of your community and specific places that should be included in the field surveys.

 $\hfill\square$  Photography: Using your digital photography skills, help provide visual interest to survey data.

**Speakers Bureau:** Join the Speakers Bureau to help spread the word about SurveyLA throughout Los Angeles. Recruitment and training take place once a year.

Tell us about your experience/qualifications:

## 8

## Developing Survey Tools and Methods

## Janet Hansen Sara Delgadillo

With the elements of a survey identified during the planning process, the next step is to fully develop survey tools, methods, and procedures. This chapter assumes that a survey methodology will be designed in accordance with standards and guidelines identified during survey planning and will incorporate approaches that are:

- **Standards-based**, to ensure consistency in resource identification, documentation, and evaluation
- Relevant, to keep pace with current professional practices in the heritage field
- Efficient, to use cost-effective and labor-saving tools and technologies to complete survey work on a prescribed schedule and on budget
- Flexible, to allow for adjustments and refinements over the life of a survey to reflect lessons learned, changing priorities, and the evolving needs of the project
- Reliable, to result in quality data and instill broadbased confidence in and support for the survey

# Survey Recording and Documentation Standards

Public agencies of many national and regional (e.g., provincial or state) jurisdictions worldwide publish guidelines and associated instructional manuals for conducting heritage surveys that may be consulted to develop recording standards and procedures.<sup>1</sup> Survey manuals generally cover all aspects of field work, research activities, and detailed documentation requirements and specifications (see, for example, Virginia Department of Historic Resources 2017; Oregon State Historic Preservation Office 2011; Heritage Branch 2015).

# Level of Detail and Documentation of the Survey

Heritage surveys can be designed to document resources at varying levels of detail. Influencing factors include survey goals, objectives, and outcomes, as well as project management considerations such as available time, personnel, and budget. The terms *reconnaissance* and *intensive* define two levels of survey work; both include fieldwork and research, but they differ in the level of effort required and the resulting documentation (Derry et al. 1985, 12).<sup>2</sup>

A reconnaissance survey is a cursory field inspection of an area to assess its general character and development patterns and to provide preliminary information about the location, distribution, and nature of heritage resources; it may also flag resources for further study. An intensivelevel survey combines in-depth field inspections and research to thoroughly document important heritage resources in an area and to complete evaluations of significance. An intensive-level survey and documentation provides the greatest amount of information and is the most useful for heritage inventories and management.

When the objective of a survey is to comprehensively document and evaluate heritage resources, reconnaissance and intensive approaches are typically applied sequentially. See chapter 10 for a discussion of how reconnaissance and intensive surveys were carried out for SurveyLA.

The following are suggestions for when it may be appropriate to use a reconnaissance-level approach:

- When the objective of a survey is to collect information at the area scale rather than to record individual heritage resources. For example, a reconnaissance survey can provide information to identify and assess neighborhood character relating to overall patterns of development, land use, prevalent architectural styles, associated historical periods, and resource typologies. Such information can inform long-range or strategic planning initiatives to identify, preserve, and enhance the prevailing character of communities (Bertron and Mason 2012; Historic England 2017b).
- When planned as a first phase of a long-term survey effort. For example, when financial resources for the survey are limited or are spread across a number of years to accommodate organizational budgets and grant cycles.
- When there is an urgent need for rapid collection of information on a particular geographic area or resource typology due to circumstances such as natural disasters or development pressures.
- When a geographic area has never before been surveyed and the nature of its heritage resources is unknown. In these instances, reconnaissance survey data can be used to develop a scope and plan for an intensive survey.

 For archaeological surveys where there is no associated prior survey or excavation work.

#### Information Standards

As discussed in part I, many countries have official national heritage inventories that contain specific categories of information to be recorded for a variety of heritage resource types. These information categories also often apply to associated regional and local inventories and are typically used to guide information standards for heritage surveys, as detailed in relevant survey manuals.

In general, a comprehensive survey record, such as one completed for an intensive-level survey, will include information sufficient to map, classify, describe, and justify the significance of resource types ranging from individual buildings to urban districts to cultural or archaeological landscapes. Common categories of recorded information include resource name, location, typology, condition, description, important dates, development history, associated persons and events, associated historic contexts and themes, assessment of heritage significance, and photographs.

Survey recording standards may also include categories of information not required for an authoritative inventory but that help meet survey goals and objectives. For example, a survey may record known threats to a resource, historic photographs, and additional sources of information.

#### Other Recording Considerations

While the type, detail, and extent of survey documentation is generally established by official standards and guidelines, other decisions regarding what resources to record may be discretionary. Considerations may relate to the proposed uses of data, scale of the survey, available budget, and survey schedule. For example, will only resources that meet survey evaluation criteria of significance be recorded to help stay on budget and schedule? Or is there a need to record all heritage resources in an area, including those that do not meet significance criteria, to provide comprehensive information for land use planning and decision-making? Do designated or listed resources need to be resurveyed or their information updated where there have been substantial changes in the state of the environment?

For SurveyLA, decisions regarding what to record were largely based on the challenges of managing a large-scale citywide survey and considerations relating to project schedule, timeframe, and budget. While the entire city was included in reconnaissance-level surveys, only those resources that appeared to meet evaluation or eligibility criteria based on field observations, research, and public input were fully documented. Resources recorded as significant in previous surveys were either resurveyed or updated as needed, while designated resources were not.<sup>3</sup>

Importantly, establishing clear parameters for what heritage resources will be recorded will help manage public expectations regarding what is included in survey results and what will be added to or amended in the associated inventory.

## **Assessment Criteria**

Instructions and guidelines for assessing heritage significance have been published by many agencies. For example, in the United States, the National Park Service has published the *Secretary of the Interior's Guidelines for Evaluation* (National Park Service 1983, 44723) as well as the technical bulletin *How to Apply the National Register Criteria for Evaluation* (National Park Service 1997a). Other examples include guidelines published by the State of New South Wales (2023) and the Department of Natural Resources and Environment Tasmania (2021). The following are considerations for using evaluation criteria for heritage surveys:

- Surveys can evaluate resources under one or more evaluation systems. SurveyLA, for example, assessed significance under local, state, and national criteria for evaluation. Doing so makes the inventory usable for a range of purposes, including compliance with state and national environmental review laws, designation under multiple programs, and resource eligibility for a range of financial and other incentive programs.
- Where evaluation criteria do not exist for a local jurisdiction, relevant national, regional, or state criteria may be adopted or adapted for use.
- In some cases, well-defined guidelines for how criteria are applied may need to be developed or updated to comply with current heritage conservation practices, such as to address intangible heritage.
- A new or revised evaluation system should be open to public input and consideration and will need to be in place before any fieldwork commences. This process can take considerable time and effort, which should be accounted for in the overall project timeline and budget.

Further discussion of and recommendations for applying evaluation standards for surveys can be found in Making Assessments of Heritage Resource Significance in chapter 10.

## **Structuring Field Surveys**

Survey methodology will include how field surveys will be organized, ordered, and completed. The grouping and sequencing of surveys can be based on priorities established for the survey, for example, to first survey geographic areas or heritage types that have never been surveyed or that are underrepresented in existing inventories. Priorities may also address urgent needs for up-to-date information, such as to identify important atrisk resource types, inform disaster preparedness and response efforts, or support planning initiatives that rely on survey results. A phased approach to completing field surveys may also be needed, particularly for those planned to be completed over a number of years, to accommodate cyclical funding for the project.

For SurveyLA, field surveys were organized into thirty-five geographic areas based on the long-established boundaries of Los Angeles's community plan areas (fig. 8.1). These survey areas were further organized into ten groups, which were prioritized, sequenced, and phased to inform and coordinate with the city's Community Plan Update program. (See also the SurveyLA Case Study section in chapter 10 to learn how this structure informed the community planning process.)

## **Designing Digital Surveys**

A primary recommendation for a digital survey data collection system is that it be designed to collect data to be incorporated into a corresponding digital heritage inventory. As mentioned before, thought may need to be given first to whether the information system of the ongoing inventory should be modernized or upgraded, or even whether a new one needs to be created. The survey information system should temporarily store the records and evaluations of the same variety of heritage typologies to be included in the corresponding inventory, which may comprise individual buildings, structures, objects, cultural landscapes, archaeological sites, and intangible heritage.

For resources covering large areas with multiple associated features, such as a residential neighborhood, urban district, or grouping, the system should support the ability to assess and record all such features, their





locations, and the relationships between them. The system should be capable of having its data structure expanded or revised as required, as long as those modifications do not create problems for incorporating collected data within the corresponding inventory system. Considerations for the capabilities of a survey information system should closely align with considerations for heritage inventories, as discussed in chapter 3.

#### Data Standards and Specifications

Survey data standards and specifications help ensure consistency in recording resources, that the data created is valid, and that it can be readily integrated with a corresponding heritage inventory (see Data Integration in chapter 11 for recommendations on the latter point). The following are key aspects to be addressed in such standards and specifications:

- Controlled values and vocabularies. A key component of standards and specifications is controlled values and vocabularies, which use uniform concepts and terms to identify, categorize, describe, and evaluate heritage resources. These will align with those of the corresponding inventory and be in accordance with the standards and guidelines adopted for the survey. (See chapters 2 and 3 for more on these topics.)
- Geospatial locations. The geometry type employed to record the geospatial locations of heritage resources should be consistent with the inventory system. For example, districts or landscapes might be represented by polygons that capture the geographic extent of the resources, and points could be used to demarcate the location of individual buildings or features. Exact direction to surveyors on the methods to use and the precision with which to record the geographic locations of resources provides the basis for optimal geospatial integrity.
- Photographs. Digital photo standards should be consistent with those of the associated inventory in terms of image size, resolution, file format, naming conventions, other metadata, and management protocols. Photo standards may also provide guidance regarding the type and extent of photo documentation required for varying types of resources, in line with photo storage capabilities.
- Free-text fields. Providing field surveyors with clear guidance for the use of free-text fields further ensures the quality and consistency of the data. For example, surveyors can be instructed to start entries within free-text fields with standardized words or statements, or to use concise text that is informative and easily analyzed when sorted in alphabetical order. Similarly, spelling instructions should be provided for words with alternate spellings (e.g., *color* vs. *colour*) and the use of special characters and symbols (e.g., *facade* vs. *façade*) within free-text fields.

#### Geospatial and Other Reference Data

To be most useful for field surveys, the data collection system will include geospatial and other digital reference layer information. Geospatial reference layers may include the relevant content of an existing inventory, as well as legacy data and other information from previous surveys as identified during the baseline analysis (see Assessing Existing Heritage Information in chapter 6). Useful reference layers to guide fieldwork include aerial photographs, historic maps, building footprints, building or structure construction dates, resource addresses, resource parcel boundaries, and land use information. While some geospatial layers may be already available, others may need to be created prior to the survey. Creating geospatial reference layers can be a substantial undertaking that takes considerable time to complete.

Preloading geospatial reference layers in the data collection system gives surveyors the ability to use such layers singularly or in combination with one another: overlaid, viewed in relation to other information, and made visible as needed. Reference data can support field and research activities and provide potential time and cost savings for a survey project overall. For example, during fieldwork, knowing the period of development for a neighborhood or construction dates of individual resources can save valuable time when researching historic maps and building permit information.

Geospatial reference layers provided essential information to guide SurveyLA field surveys. For example, tract and subdivision data revealed important patterns of residential development citywide and were particularly useful in focusing survey efforts on vast neighborhoods of postwar suburban development. Similarly, the locations of the city's past streetcar routes (created from digital historic maps) helped identify commercial and residential areas constructed in direct response to the streetcar. Legacy data from past surveys provided information to guide new evaluations. And information collected from community outreach activities helped surveyors identify places associated with ethnic and cultural histories, as discussed later in the section on public outreach and engagement.

# Recording Information about the Survey

The survey itself is an activity associated with creating and/ or updating an associated inventory. Metadata about the survey project can be collected digitally as part of the field surveys for later integration into the inventory system. Metadata may include survey name, geographic boundaries, timespan, and the names and associations of the surveyors. More detailed descriptive information about the survey, such as the methodologies used, can be compiled into a narrative report, which can also be incorporated into the inventory as part of the survey record. Survey reports are discussed in more detail in chapter 11.

## Data Entry and Editing Procedures and Protocols

Before starting surveys, it is important to develop standard procedures and protocols for data entry and editing to be used by the field surveyors during data collection activities and by the project personnel responsible for the final data. The quality and consistency of survey data is essential not only to the credibility of the survey but also to the usability of the resulting information. The following are considerations and recommendations for developing and implementing data entry, review, and editing procedures.

- Consider continuity. Data is generally more consistent and reliable if the same survey teams are used over the life of a survey.
- Anticipate that field surveyors will become more proficient in the recording process as they gain more experience with data collection technologies and survey methods and standards.
- **Develop instructional materials** on the principles of data creation and entry for all field surveyors. For SurveyLA, training materials included a field guide to provide detailed instruction on all steps of the digital recording process as well as a photography tutorial to provide tips and techniques for taking field photos that capture the most documentary information (see Schafer 2008; see also Pini 2008, 45).<sup>4</sup>
- Hold classroom and field training sessions for surveyors before survey work commences.
- **Communicate regularly** (e.g., team meetings) and work collaboratively with surveyors to ensure a common understanding of recording processes.
- Require that field surveyors submit data for review at regular intervals, as part of the survey work scope, to help ensure quality control and consistency. Routine communication and review of survey data enables the survey manager and data coordinator to regularly evaluate data entry and editing procedures and protocols and revise or adjust them as needed.
- Limit the number of project personnel who can review and edit data (Van Daele, Meganck, and Mortier 2015, 326). This relates to in-process editing by field surveyors as well as final editing prior to publishing results.

## Historic Context– and Theme-Based Surveys

This section provides recommendations and considerations for developing historic context- and themebased heritage surveys (see the sidebar on this topic in chapter 2). It draws on the experience of SurveyLA and, in particular, the adaptation of the multiple property documentation (MPD) approach (National Park Service 1999) to guide development of a context-based methodology. As described in chapter 7, in the Historic Preservation Practice in the United States sidebar, the National Park Service developed the MPD approach to streamline the nomination of thematically related properties to the National Register of Historic Places. But this format is also highly adaptable for surveys of all types, scales, and complexities at the national, regional, or local level. It is particularly relevant to those carrying out surveys in the United States but may also be of interest to others.

Consideration for a historic context-based approach for SurveyLA originated with the GCI study for a citywide survey. Once SurveyLA was officially undertaken by the city of Los Angeles, the Office of Historic Resources further studied and refined the recommendations of the GCI report (Howe 2008, 22–23). This resulted in an extensive effort to develop a citywide historic context statement that would implement the MPD approach and be designed for digital data collection.

Figure 8.2 illustrates the structure and content of the MPD format that was adapted for use for SurveyLA. Following this structure, SurveyLA's citywide historic context was organized into eight overarching contexts as well as a number of contexts covering ethnic and cultural histories (fig. 8.3). Each context was then further organized into a framework of themes with associated resource types (note that in some cases subcontexts and subthemes are used). The citywide context now features over two hundred themes and subthemes.<sup>5</sup>

Each context, theme, and resource type combination is unique and has its own set of eligibility standards, character-defining and associative features, and integrity considerations. A template designed for SurveyLA to record these unique combinations guided the creation of data fields and related controlled vocabularies and dropdown lists for standardizing digital data collection (fig. 8.4). This approach enabled surveyors to consistently identify, classify, and evaluate resources by context, theme, and type as they were identified in the field or through research and outreach. Importantly, it also allowed



FIGURE 8.2 The multiple property documentation (MPD) structure and content can be designed and adapted for heritage surveys and integrated into a digital data collection system. *Los Angeles City Planning Office of Historic Resources* 

surveyors to associate resources with one or more contexts and themes to fully represent multiple layers of significance.

Designing historic contexts for digital data collection enables their use as analytical tools during the survey process. Over the course of fieldwork, for example, surveyors can map, review, and use context information to visualize the geographic distribution of resource types by theme. This in turn helps surveyors begin to understand the frequency, abundance, or rarity of each—factors important to comparative analysis and assessment of integrity thresholds.

When incorporated into a digital inventory, historic contexts can be managed and expanded over time to add new themes and resource types and to guide future survey work (fig. 8.5). This approach is increasingly being used in the United States and is a replicable model for digital surveys and inventories.

#### General Recommendations for Designing Historic Context– and Theme-Based Surveys

Surveys implementing an approach based on historic context or theme, such as the MPD format, require strategic planning and coordination, along with the overall

#### SurveyLA Historic Contexts

Spanish Colonial and Mexican Era Settlement, 1781–1849

Pre-Consolidation Communities of Los Angeles, 1862–1932

Residential Development and Suburbanization, 1880–1980

Commercial Development, 1850–1980

Public and Private Institutional Development, 1850–1980

Industrial Development, 1850–1980

The Entertainment Industry, 1908–1980

Architecture and Engineering, 1850-1980

Cultural Landscapes, 1850–1980

#### SurveyLA Ethnic/Cultural Historic Contexts



Figure 8.3 The citywide historic contexts developed for SurveyLA. Los Angeles City Planning Office of Historic Resources

development of survey tools and methods. It is recommended that a strategy be put into place to guide the development of the components of the approach, considering that they need to be completed before field surveys begin, including writing narrative historic context statements and integration into a digital data collection system. Other recommendations include:

- Prioritize writing historic contexts/themes that will be needed for a pilot survey program and to coordinate with the sequencing or phasing plan adopted for the survey.
- Expect that context statement narratives and associated eligibility standards may need revision during and after surveys based on actual survey findings and comparative analysis, and allow time for

Sample St	rveyLA Multiple Property Documentation Template
Context:	Architecture and Engineering, 1850–1980
Sub Context:	Engineering, 1900–1985
Theme:	Technological Developments in Construction
Sub Theme:	Hill Houses
Resource Type:	Residential
Resource Sub Type:	Single-Family Residence, Multi-Family Residential
Geographic Locations (where found in Los Angeles):	Hill districts of the city, particularly Silver Lake, the Hollywood Hills, Brentwood, Studio City, Sherman Oaks, Mount Washington, and Montecito Heights
Area(s) of Significance:	Engineering; Architecture
Evaluation Criteria:	C/3/3 (National, California, City of Los Angeles)
Period of Significance:	1920–1985
Eligibility Standards (drop-down list for surveyors):	<ul> <li>Was built or developed within the period of significance</li> <li>Is an excellent example of a residence, apartment building, or group of residences designed and engineered to adapt to the terrain and build sites</li> <li>For the National Register, a property must possess exceptional importance if less than 50 years of age</li> </ul>
Character-Defining/Associative Features (drop-down list for surveyors):	<ul> <li>Resource retains the essential character-defining feature from the period of significance</li> <li>Building(s) adapt to the terrain, through design and engineering, rather than the terrain altered to accept the structure</li> <li>Characterized by use of stepped foundations, cantilevers, visible supporting beams and/or stilt-like columns</li> <li>Characterized by use of modern materials, such as steel and concrete, as well as large expanses of glass</li> <li>Also significant under a theme/style related to L.A. Modernism</li> <li>Designed by noted architects and designers</li> <li>Original owners/builders may be significant individuals within Los Angeles history</li> </ul>
Integrity Considerations for Resource Type:	<ul> <li>Should maintain integrity of Location, Design, Materials, Worksmanship, Feeling, Setting, and Association</li> <li>Surrounding landscape should retain original slope</li> </ul>

**FIGURE 8.4** The multiple property documentation template developed for SurveyLA populated for the resource type Single-Family Residential Hill Houses. *Los Angeles City Planning Office of Historic Resources* 

that work. Developing and revising historic contexts throughout a survey is an ongoing, iterative process.

### Tips for Developing a Thematic Framework

The historic context approach as implemented for SurveyLA integrates the concept of a thematic framework



FIGURE 8.5 The historic context-based approach for digital data collection enables mapping of resources by context, theme, resource type, and geography as illustrated in the HistoricPlacesLA map showing the citywide dispersion of heritage resources recorded under the Entertainment Industry context. *Los Angeles City Planning Office of Historic Resources* 

(see the sidebar in chapter 2). In many countries, this concept is the mechanism used to organize surveys, akin to the concept of historic contexts. A thematic framework may be developed from the ground up—for example in places that have never been surveyed—or it may augment and update an existing framework. The baseline study for a survey will identify if there are existing frameworks in place that may be useful for a new survey.

The content of the thematic framework will reflect the survey scope and approach, as discussed in chapter 1 (see also fig. 6.1) and may cover a comprehensive range of themes relevant to the geographic area of a survey (e.g., citywide) or focus on limited themes and resource types, such as those not covered by previous surveys or that are underrepresented in inventories. Whatever approach is taken, consider these points:

- As discussed in chapter 2, some countries have established national thematic frameworks, including guidance for their use, that may already be in place or can serve as a starting point to create a regional, state, or local thematic framework (see, e.g., National Park Service 2018; Parks Canada 2000; Australian Heritage Commission 2001; Heritage Council of Victoria 2010). They may be used in whole or in part and can be adapted or expanded to include localized themes and heritage types.
- The process of designing a thematic framework that is holistic and inclusive is best informed by a collective

process. That is, the design process may engage a range of stakeholders (such as local historians, subject matter and community experts, scholars, and heritage organizations and agencies) in a series of workshops, brainstorming sessions, and other activities. Such an approach will help ensure that the framework is balanced, represents varied perspectives and disciplines, acknowledges interconnected histories, and covers diverse heritage themes and resource typologies.

- A framework that is flexible and expandable can be adapted over time to account for changing interpretations of history, ongoing public input, new research and scholarship, and new discoveries during surveys and other data collection activities.
- As discussed above under Designing Digital Surveys, a framework designed for digital data collection can facilitate both survey recording and analysis processes and the use of the information in the inventory.

#### Tips for Writing Narrative Historic Context Statements

The following tips may also relate to narrative thematic (or theme) studies (see the related sidebar in chapter 2), particularly when these studies are purposefully designed to guide surveys.<sup>6</sup>

- A range of heritage organizations and agencies have published historic context statements and related theme studies that may provide useful information and can be studied as prototypes (see National Park Service 2021). SurveyLA's citywide historic context statement, for example, has relevancy for other Southern California communities that share similar development patterns and related historical themes and associated resource types (see Los Angeles City Planning n.d.c).
- As with other elements of survey methodology, historic context statements must be credible and defensible and developed according to accepted professional standards where applicable.
- A historic context specialist is recommended to lead the process of designing and developing a contextbased approach and to direct the work of the writers (see fig. 7.2).
- Context writers can be members of the survey team or outside heritage professionals, scholars, local history experts, and others with proven experience

researching and writing about relevant themes and resource types. Depending on the nature of the survey, areas of expertise may include architectural history, ethnic studies, archaeology, social history, and historic landscapes.

- Community collaboration is essential when writing themes that require firsthand experience and specialized knowledge, such as ethnic and cultural histories. In such cases, advisory committees are particularly useful; when organized early on, they provide critical input to focus the theme narratives, direct and guide the writing process, and help foster overall community trust and buy-in for the process. Community collaboration can also include public meetings, workshops, and other activities.
- Interns can support the work of writers and complete secondary tasks such as research, fact-checking, photography, and document formatting.
- A writer's guide like the one shown in resource 8.1, the *Citywide Historic Context Statement: Resource Guide*, created for SurveyLA, can be an important tool to provide direction to writers and to help ensure quality and consistent final products (Los Angeles City Planning 2012). The SurveyLA guide is both a useful prototype and a particularly relevant source for developing historic contexts using the MPD approach.
- Training workshops are an efficient way to introduce and discuss the writer's guide and to help ensure that writers have a common understanding of the writing process and the expected product. Workshops are also a good way for writers to meet, share their experiences, and have their questions addressed in a collaborative group setting.

## Public Outreach and Engagement

Public outreach and engagement programs are increasingly becoming integral components of heritage survey methodologies. This section provides an overview of the roles that outreach plays in a survey, offers recommendations for developing and administering an outreach program, and presents a range of outreach activities and materials to be considered.

The challenges and lessons learned from SurveyLA's outreach approach highlight some primary considerations for outreach planning. First, outreach is an intensive effort that is highly dependent on qualified personnel and

#### RESOURCE 8.1 Citywide Historic Context Statement: Resource Guide

https://final-pages--inventories-andsurveys.netlify.app/\_assets/downloads/ resource-8-1.pdf



Source: Los Angeles City Planning Office of Historic Resources

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adequate funding. The lead agency or organization managing the survey is charged with allocating sufficient resources and time to plan and administer the outreach program, as well as to produce and publish outreach materials. Second, outreach is a long-term commitment; it should be a priority activity of the survey project from the outset and continue beyond the project to support use of the related inventory and community involvement in heritage conservation generally. Third, outreach activities are most effective when designed and sequenced to coordinate with the activities of the survey itself. Doing so will help ensure thoughtful allocation of resources and maximize the potential to inform and contribute to the survey. Finally, because not all outreach activities are as effective as expected, outreach should include a process to regularly assess successes and failures and adjust and revise approaches as needed.

#### Understanding the Role of Community Outreach and Engagement in a Survey

The extent and type of outreach may vary depending on the scope, goals, and objectives of a survey. No single method for approaching outreach works for every survey or every community within a survey (Derry et al. 1985, 8). Planning for and developing an outreach and engagement program requires an understanding of the role outreach plays in the survey overall and the intended audiences and participants. A robust program can serve multiple purposes and communicate with a range of stakeholders to support a survey, including:

- To communicate the purpose and value of the survey
- To address community concerns regarding the implications of the survey, including from a regulatory perspective, where applicable
- To explain the survey process and keep the public informed throughout the process
- To provide a range of activities to engage the public in the survey
- To democratize the survey process and engage underrecognized and marginalized communities (Magalong 2020)
- To earn community trust in the survey and ownership of the results
- To build a volunteer base for the survey and provide a range of volunteer opportunities

- To create opportunities to support and advocate for the survey (fig. 8.6)
- To encourage ongoing use of the survey information and resulting inventory once the survey is completed



FIGURE 8.6 The media can be an ally to promote and support the project. Location shooting for a *PBS NewsHour* story on SurveyLA. The special report, titled "Preserving the LA Story, One Block at a Time," aired in May 2014. *Los Angeles City Planning Office of Historic Resources* 

#### A Note on Community-Based Heritage Surveys

One of the most intensive strategies for public involvement in modern heritage surveys is community-based or -led surveys whereby community members are engaged throughout the survey process to take a lead role in identifying and providing information on important heritage resources in a survey area. The approach can be particularly relevant for surveys that focus on intangible heritage and resources associated with ethnic and cultural histories and Indigenous peoples (UNESCO n.d.; Mayor's Fund for Philadelphia 2021).

While specific approaches to community-based surveys may vary depending on the focus of a survey, they generally involve collaborating with or working alongside experienced heritage professionals, who provide training and guidance to community members on principles and technical aspects of resource identification, research, and documentation. Community members provide valuable information and a range of perspectives to help inform resource evaluations. A community-based survey approach may have the benefit of supplementing project personnel for underfunded surveys (Heritage Council of New South Wales 2013).

## Recommendations for Developing and Administering an Outreach and Engagement Program

Survey outreach and engagement programs can only be effective when they are well resourced, designed to maximize community input and collaboration, and are identifiable. Toward that goal, the following are recommended to be implemented during the development phase of an outreach program.

 Provide qualified staff and adequate funding for outreach. As referenced above and illustrated in figures 7.2 and 8.7, recruiting dedicated staff with the required skillsets and expertise to plan, oversee, and conduct outreach is a primary responsibility of the managing agency or organization and should be integrated into the overall project administration strategy for the survey.



FIGURE 8.7 Heritage Survey Outreach Management Model illustrating key participants in developing and implementing a heritage outreach program. *Janet Hansen* 

- Organize an outreach committee or working group to assist with developing an outreach approach. This group would ideally be organized once the survey project is initiated and during the planning phase of the survey to establish preliminary outreach goals and objectives, identify challenges and opportunities, and provide recommendations for the structure and content of the outreach program.
- Identify outreach advisors to provide expertise and assistance with specialized populations, themes, geographic areas, or resource types. Advisors may have experience with specific audiences or communities where they have developed trust and established contacts and long-term relationships.
- Develop partnerships and collaborations with targeted key individuals, organizations, and community groups that can provide opportunities to collectively contribute resources to supplement staff

and often-stretched public outreach budgets. They may also be able to suggest creative approaches to plan for and carry out activities that meet mutual needs.

- Leverage resources from the lead agency or organization to take advantage of existing outreach programs' resources to develop outreach tools. In many jurisdictions in the United States, for example, heritage programs are located within planning agencies, which often have well-developed public relations and community outreach programs and outlets in place to inform and solicit input from the public on various planning initiatives. These strategies may be able to be adapted for the survey project. Likewise, these agencies may also allocate the time of specialized personnel and funds to produce tools and products, such as website or webpage development and support, and translation and printing costs.
- Seek out grant opportunities. The lead agency or organization and project partners can secure support for outreach through grants, particularly those that focus on funding projects that champion inclusive approaches to outreach and civic engagement.
   SurveyLA relied heavily on grants to fund development, production, and translation costs of outreach materials.<sup>7</sup>
- Brand the survey and outreach program. A survey name and logo help create an identity for the survey as a whole and are also essential in producing outreach materials that are readily associated with the project. For Los Angeles, SurveyLA was adopted as the brand for the citywide survey project, and MyHistoricLA branded the project's outreach materials and programs (discussed below).

# Sample Outreach Tools, Materials, and Activities

A range of tools, materials, and activities may be considered to support outreach. A number of options are presented below, each of which was implemented for SurveyLA. Materials and activities should be easily accessible, be sensitive to multilingual needs, and respect cultural values.

 Website. A survey project website or webpage has the potential to reach a wide audience and serves multiple purposes. It can explain and describe the survey project, provide an ongoing means of following the progress of field surveyors, solicit community input on important places, and publish survey results. The site can also be used to advertise paid, volunteer, and internship opportunities and to promote community meetings and workshops. Given its reach and accessibility, a web presence is a top priority for outreach and is best developed at project initiation. The website can be maintained throughout the survey.<sup>8</sup>

- Special activities. Special activities are defined as one-time or recurring events designed to promote one or more aspects of the survey project. One example would be a public meeting to announce the start of a survey project in a community or to celebrate the completion of a survey. Special activities can be held at any point during the survey project.
- Community meetings and workshops. Community outreach meetings and workshops may be held throughout the survey, and their timing in the sequencing of a survey should be carefully considered. For example, community meetings may be scheduled in advance of field surveys to let residents know when surveys will begin, what to expect during the process, and how they can contribute information or become involved. Workshops and listening sessions may be planned to solicit expertise and participation in developing historic context statements and thematic studies, particularly those associated with specialized topics such as ethnic and cultural histories and intangible heritage.
- Interviews and oral histories. Interviews with individuals and groups can provide valuable information about community histories as well as about specific heritage themes, typologies, and associated resources. Interviews can be informal or designed to meet professional standards in the field of oral history (e.g., those of the Oral History Association), although the latter can be costly and time consuming and may require advance planning. For some areas of SurveyLA, group interviews and conversations featured community-led neighborhood driving tours that were attended by field surveyors.
- Public information documents. Handouts are relatively inexpensive to produce, are easily distributed, and serve a variety of purposes. Handouts developed for SurveyLA included:
  - Frequently asked questions (Los Angeles City Planning n.d.d)
  - General informational brochure

#### **RESOURCE 8.2**

#### MyHistoricLA Historic Resources Identification Form developed for SurveyLA

https://final-pages--inventories-andsurveys.netlify.app/\_assets/downloads/ resource-8-2.pdf



Source: Los Angeles City Planning Office of Historic Resources

- Flyers to advertise public meetings, workshops, and other survey events<sup>9</sup>
- Questionnaires. A questionnaire like that in resource 8.2 can be designed to solicit ideas and information from the public about heritage resources that may be included in the survey. It can be produced in hard copy for distribution at public meetings and other venues and as an online form available on the project website, where it can be completed and submitted.
- Project video. A survey project video, or videos, is a captivating approach to outreach that can widely and consistently introduce and/or summarize the project. It can be featured at public meetings, presentations, and workshops. If it is made available on the project website in a shareable format, video can be circulated by interested parties and through social media. For SurveyLA, an informational video titled *SurveyLA*: *Preserving Los Angeles* was produced by the City-owned and operated television station in English and Spanish (Los Angeles City Planning 2008). It is available online in 30- and 15-minute formats and was also published as a DVD.
- Social media and crowdsourcing. Social media platforms and online crowdsourcing activities can both be effective tools for survey outreach to reach widespread and varied audiences, promote interest and awareness, and provide opportunities for direct

input and involvement. These tools can also provide a method to track online engagement (Hansen and Delgadillo Cruz 2019, 30). With the necessary metrics to evaluate outreach strategies, a managing agency or organization can bolster successful campaigns and adjust those that are less effective. (See Minner et al. 2015 for a case study of the use of crowdsourcing to inform heritage surveys in Austin, Texas.)

- Community training guides and workshops. Training guides and related workshops are an effective means of giving community leaders and members the information and skills they need to contribute to survey initiatives. *MyHistoricLA: Guide to Public Participation in SurveyLA* (see resource 8.3) provided a range of activities to enable individuals, neighborhoods, and organizations to take ownership of and manage their own contributions to SurveyLA (Los Angeles City Planning 2010).
- Speakers bureau. A speakers bureau is a group of speakers, usually volunteers, who can educate and inform the public about a survey. In many ways, they are ambassadors for a survey project. The SurveyLA speakers bureau participants were enlisted through the project's volunteer program. SurveyLA staff and consultants developed a training guide (see resource 8.4 for contents) and trained volunteers over three consecutive weekends.<sup>10</sup> Speakers primarily presented in their own communities and in a number of venues such as community meetings and heritage-related events throughout Los Angeles. Managing and training a speakers bureau is time consuming but can be particularly important for large-scale surveys and those with a limited budget for outreach staff.

#### Outreach and Digital Data Collection

Information and insights collected through community outreach can be formatted for compatibility with a survey's digital data collection system, where it can be used as a reference layer (see Designing Digital Surveys) or as provisional data to be validated and/or enhanced. For SurveyLA, outreach information was gathered through a range of activities, as discussed above, in both hard-copy and electronic formats.

To make the outreach information most useful for the survey, the city's Office of Historic Resources designed a spreadsheet and, with the primary assistance of graduate student interns, undertook a large-scale data entry effort to organize it as GIS reference data that would be readily available to field surveyors. The approach proved to be particularly important for resources associated with

#### RESOURCE 8.3 MyHistoricLA: Guide to Public Participation in SurveyLA

https://final-pages--inventories-andsurveys.netlify.app/\_assets/downloads/ resource-8-3.pdf



#### Source: Los Angeles City Planning Office of Historic Resources

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significant persons or events or that had social, ethnic, and cultural associations not readily apparent from field observations. It also provided a mechanism for letting the

#### RESOURCE 8.4 SurveyLA Speakers Bureau Training Guide



Source: Los Angeles City Planning Office of Historic Resources

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- 1. Introduction to the Office of Historic Resources and SurveyLA PowerPoint presentation printout
- 2. About SurveyLA
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  - Contract Information for Speakers
- 6. Miscellaneous Items
  - Meeting Calendar
  - Note Paper

public know that the knowledge shared had been incorporated and utilized for the survey.

It is important to note, however, that the data entry process was intensive and time consuming and field surveyors needed to fact-check the information for accuracy before using it to inform resource evaluations. These factors must be considered and coordinated during the earliest phases of community outreach to have a reference layer ready when field surveys begin.

#### NOTES

- Most jurisdictions have separate guidelines and standards for surveying and recording built-heritage resources, archaeological resources, and other resource types.
- 2. These terms are commonly used in the United States and Canada and are useful concepts internationally. *Reconnaissance* is also used broadly in reference to archaeological surveys that are not associated with excavation work.
- Specifically, SurveyLA did not include City-designated historiccultural monuments or historic districts (known as Historic Preservation Overlay Zones), or properties listed in state or national registers. These resources and districts included thousands of properties, and to resurvey them would have substantially impacted the overall survey timeline.
- 4. The field manual was fine-tuned as the surveys progressed to incorporate revisions to recording processes and data fields.
- For the SurveyLA citywide historic context outline and published narrative contexts/themes, see https://planning.lacity.gov /preservation-design/historic-resources/historic-themes.
- 6. See also Nelson n.d.
- In the United States, grants for survey work are available to local governments participating in the Certified Local Government program, which is administered by state preservation offices with funding distributed annually from the federal Historic Preservation Fund.
- Once SurveyLA was complete, the city closed the website. Information from SurveyLA is now available on the HistoricPlacesLA website (https://hpla.lacity.org/) and the Historic Preservation section of the Los Angeles City Planning website (https://planning.lacity.gov/).
- 9. These materials were also available on the SurveyLA project website when it was active.
- 10. The speakers bureau operated for approximately three years, after which the field surveys started and the outreach focus changed.

## 9

# Completing a Pilot Survey Program

### **Janet Hansen**

Before the official start of field surveys, a pilot survey program is critical to test and refine survey tools, methods, and procedures and to provide training for field surveyors. Ultimately, pilots fine-tune the field recording process, help ensure data integrity, and provide more precise estimates of the number of field surveyors needed, associated survey equipment required, and recording times for a variety of heritage resources. Survey budget, schedule, and staffing can then be adjusted accordingly. Pilots also help shape public participation and outreach strategies and inform the writing of historic context statements. The pilot program may result in a revised or supplemental survey plan to address additions, revisions, or adjustments to the survey process.

#### **Organizing Pilot Surveys**

The pilot program will represent a microcosm or subset of the larger survey effort and test all aspects of the survey process from training field surveyors to submitting final data and reports. The number and selection of pilot surveys may depend on the size and scope of the survey but generally will include a range of resource typologies and historic contexts/themes within one or more geographic areas (fig. 9.1). SurveyLA, for example, included three pilot surveys: two tested specific themes, and a third tested multiple themes within a large and diverse neighborhood.



FIGURE 9.1 Pilot survey model. Pilot surveys are most effective when they are designed to represent a microcosm and subset of the larger survey project and they include one or more geographic areas, themes, and resource typologies to fully test all aspects of survey methods and procedures. *Janet Hansen*  Based on the SurveyLA experience, when organizing a pilot survey program, consider surveys that test:

 Themes that have an expected high yield of significant resources. SurveyLA included a pilot for a subset of the city's expansive post-World War II residential neighborhoods (fig. 9.2). This pilot helped establish field and research strategies for surveying postwar historic districts and assessing integrity and significance thresholds for postwar housing as a whole. The pilots also helped focus the approach for writing the Post-World War II Suburbanization historic context statement.



FIGURE 9.2 SurveyLA pilot surveys helped develop and test the recording process for post–World War II residential suburbs in the city's vast San Fernando Valley. *Los Angeles City Planning Office of Historic Resources* 

- Geographic areas that have a high density of historic sites and an expected high yield of significant resources. These pilot areas may require more surveyors, time, and other resources than less dense areas.
- A range of topography, such as hillside neighborhoods and less accessible areas, as these circumstances could ultimately slow down surveyors and impact estimates of survey times.

 Themes, geographic areas, or resource types that focus on identification and evaluation of resources relating to ethnic and cultural histories. This type of testing will assess the effectiveness of the associated outreach strategies for public participation and engagement, the success of which may vary considerably from community to community.

## **Managing Pilot Surveys**

The following are general tips and recommendations for managing a pilot survey program:

- An ongoing log is a critical tool for systematically tracking issues experienced during the pilot survey. The log can be organized by categories relating to survey equipment and software, data collection and editing standards and procedures, research approaches, application of historic contexts, outreach strategies, and so forth (fig. 9.3). The log can also be used to track aspects of the survey that are particularly successful. Logged information could include date and time of recording, name of survey team member, summary of issue, date resolved, and notes. Use of a log can continue into the official field survey phase of a project, as was the case for SurveyLA.
- Regular survey team meetings are advised to discuss issues encountered during the pilot survey, such as those recorded in the log referenced above. The resolution of issues can then be prioritized and assigned to team members as needed.
- The pilot survey program can help assess the general capabilities and quality of work of varying field surveyors. The information gleaned can be important in selecting the best qualified surveyors and survey teams moving forward.
- Pilot survey areas may need to be resurveyed later, or the data modified in whole or in part, based on lessons learned and revisions to survey methods. For SurveyLA, all pilot survey areas were either resurveyed or the data thoroughly reviewed and revised to ensure consistency in content and quality with all final survey results.

The pilot survey program ends with developing survey reporting procedures and report formats that will serve as prototypes for those published after the official survey phase is completed. Survey reports are discussed further in chapter 11.

	SurveyLA Issues Log: Sample Page										
NO.	SURVEYOR	SURVEY AREA	MACHINE	DATE	ERROR CATEGORY	ISSUE	DESCRIPTION (Attach screenshots on separate page)	SCREENSHOT	STATUS	RESPONSE	
DATA	COLLECTION	SYSTEM									
1	GPA	WA	GPA1	4/2/ 08	Data Collection System	Too many district contributors	It appears that there is a limit to the number of contributors that can be added to one district. At approximately 700 entries, the Leimert Park district ceased to allow new contributors to be added, instead providing an error that says 'Unable to load photos for the resource.'	GPA #B	Resolved	Resolved	
2	HRG	ΗW	HRG1	4/2/ 08	Data Collection System	Adding a resource type	When trying to add a second property type to an individual resource, the surveyor received an error message stating that "Object Reference not set to an Instance of an Object." With this error, the surveyors were unable to move forward, or to close the "View Resources" screen. This problem appears to have been related to the character limit in the "General Comments" field noted above, as the issue was resolved once the General Comments text was edited.	N/A	Resolved	Resolved	
3	HRG, ARG, P&T	HW, WA	N/A	4/2/ 08	Data Collection System	Confirmed properties	Properties that have been "confirmed" cannot be viewed, edited, or deleted.	HRG #1; ARG #2	Outstanding	This will not be added, a training issue.	
4	ARG	WA	ARG1	4/2/ 08	Data Collection System	District error	When working on a district, it isn't possible to exit the district tool and work on something else and then come back (an error message pops up). Select District by Name-> First window of district comes up-> clicked "contributors" -> error message pops up.	ARG #3	Outstanding	Dave could not replicate on ARG.	
6	P&T	ST	PT1	4/3/ 08	Data Collection System	Object reference error	When switching from working on a district to an individual resource, an error occurs	P&T #2	Outstanding	Dave could not replicate on ARG.	
HISTO	DRIC CONTEXT	STATEMEN	Т								
7	HRG	HW	N/A	4/2/ 08	HCS/CTPs	Residential Development context	Currently, the "Residential Development" context focuses on groups of properties (freeway suburb, streetcar suburb, automobile suburb), with character- defining features and eligibility standards relating to neighborhoods and subdivisions. It would be useful to be able to evaluate individual properties under this context as well. Perhaps a "Residence" property type should be added to each of the suburbanization themes.	N/A	Outstanding		
8	HRG	HW	N/A	4/2/ 08	HCS/CTPs	Fire Stations theme	Under the "Institutional Development" context, "Fire Stations" theme, there is only one sub-theme, for Post World War II Fire Stations. It would be useful to have an additional sub-theme for earlier fire stations (pre-1947).	N/A	Outstanding		
10	HRG	HW	N/A	4/2/ 08	HCS/CTPs	Entertainment context	Under the Entertainment context>Housing & Neighborhoods, the property type is single-family residence, but the eligibility standards are written for a district. It would also be useful to have a multi- family and district property type for this theme.	N/A	Outstanding		

NO.	SURVEYOR	SURVEY AREA	MACHINE	DATE	ERROR CATEGORY	ISSUE	DESCRIPTION (Attach screenshots on separate page)	SCREENSHOT	STATUS	RESPONSE
12	ARG	WA	ARG1	4/3/ 08	HCS/CTPs	American Colonial Revival style	Architecture->American Colonial Revival -> Early. One of the eligibility standards is: "May display multiple roof dormers". This should be a CDF, not an eligibility standard.	N/A	Outstanding	
OTHER										
13	P&T	ST	PT1	4/3/ 08	Other	Tablet	Startup Error occurs "SQLDUMPER library failed initialization"	P&T #1	Outstanding	
14	P&T	ST	PT2	4/3/ 08	Other	Photography	Some issues with capturing adequate photographs of properties due to parked cars along the sidewalk and garbage bins left out for garbage collection.	N/A	Resolved	

FIGURE 9.3 During SurveyLA pilot surveys, a log was created to record issues encountered by survey team members during field recording. Los Angeles City Planning Office of Historic Resources

## 10

## **Conducting Field Surveys**

## Katie Horak Janet Hansen

Conducting a heritage field survey is a process of discovery, collaboration, and constant refinement. For many heritage professionals, a field survey is the favorite aspect of their work. It allows them to immerse entirely in the vernacular of a particular place and read the way the built fabric and cultural practices change and evolve in response to their environment, including climate and terrain, local land use policies, economy, culture, and ethnicity. There is no match for the experience of conducting fieldwork in person and, even if for only a little while, being conversant in the unique language of a particular place.

Fieldwork is both physically taxing and mentally exciting; it is at the same time rooted in technical rigor and instinctive decision-making. It is an opportunity for close and mutually edifying collaboration on a region's history and prehistory among heritage professionals, managing agencies, community members, heritage organizations, and scholars. A field survey requires endless flexibility, as no survey is without surprises or proceeds from phase to phase exactly as planned. Inevitably, methodologies need to be honed, team members may not perform as required, technology fails, or assumptions about a particular heritage resource type are proven otherwise. Thus, as much as experience and academic qualifications are important when assembling a survey team, either internal to a managing agency or organization or as part of a consultant team, flexibility and communicative collaboration among all team members are perhaps most important.

Field surveys are and have been a vital aspect of heritage conservation practice for decades (in the United States, for half a century), and in many ways the practice remains, at its core values and objectives, relatively unchanged. Field survey implementation, however, has adapted dramatically to new technologies in data collection and storage, including geographic information system (GIS) mapping and data collection software that can be used on a computer that fits in your hand, linking photos and attribute data together, and enabling integration of survey data into local planning practices.<sup>1</sup>

This chapter focuses on the technical aspects of conducting field surveys and illustrates how the concepts, tools, and methods discussed in chapter 8 are put into practice. The recommendations provided here are rooted in the experience of a heritage professional whose survey work has focused on historic aboveground resources and has been predominantly conducted in urban environments in the United States. Principal author Katie Horak conducted field surveys for SurveyLA from the pilot phase to completion, in addition to having participated in surveys in numerous diverse environments throughout California and in the city of New York, in roles including professional consultant and managing-agency staff. To the greatest extent possible, the content of this chapter has been drawn from these experiences and then been generalized to apply to heritage surveys in any area, across the world (fig. 10.1).



FIGURE 10.1 SurveyLA heritage field surveyor at work. Architectural Resources Group, Los Angeles

## Understanding the Project Scope

Field surveys may be conducted in house by staff of the managing agency or organization, by professional consultants, or by a combination of the two. Consultants are typically selected as part of a competitive bid process and then placed under contract with the managing agency or organization. While it is acknowledged that surveys may sometimes be led and conducted by members of a community and volunteers, in these cases it is still recommended that the work be managed or at least reviewed and vetted by experienced heritage professionals who meet any applicable qualification standards. When selecting external consultant teams, the managing agency or organization should carefully evaluate how well the proposer understands and responds to the scope of the survey and project objectives, as conveyed in their approach to implementation.

#### Developing the Approach to the Survey

By the time heritage professionals are solicited to conduct a heritage survey, the project may have been well defined through a planning process (see chapter 7). The initial role of the heritage professional, then, is to understand the survey project in as much detail as possible and develop the approach to project implementation.

The major components of a field survey include the following (see Field Survey Implementation for details):<sup>2</sup>

- 1. Research
- 2. Reconnaissance survey
- 3. Intensive-level survey and recording

Although all these tasks are essential to a successful field survey, they may be conducted in phases, and some tasks may be conducted concurrently (fig. 10.2). Once the parameters and goals of the project have been defined, the survey team can predict the level of effort and documentation that will be needed for all tasks within the scope of work to successfully distribute resources and plan for the work.

A survey project will ideally have a finite budget and schedule predetermined by the managing agency or organization during survey planning. Survey professionals will need to use their experience with similar projects to plan for the work within these parameters to avoid overspending and causing delays in schedule. An understanding of the following factors is important to consider when developing a survey project approach:

- Survey purpose, goals, and objectives.
- Size of the survey area, both in physical distance and number of resources to be surveyed:
  - Drawing from experience with surveys in similar environmental and geographic conditions, how many properties and/or how large an area can be surveyed in a day?
  - Are there logical ways to break up the survey area into smaller, more manageable components for multiple teams to survey concurrently?
  - How long will it take to travel to and from the survey area each day?
- Topography and geography. What is the terrain of the survey area? For instance, it will take longer to survey a hilly area with winding roads or an area that must be walked rather than driven than a relatively flat urban area of gridded streets.
- Survey technology to be used in the field:
  - Is the technology going to be provided by the managing agency or organization, or will it be up



**FIGURE 10.2** Sample SurveyLA field survey schedule illustrating the sequencing of tasks and estimated times for completion. *Los Angeles City Planning Office of Historic Resources* 

to the consultant to identify the software to be used in the field?

- Will the team need to budget for hardware, software, or data storage needed to conduct and manage the work?
- Level of documentation and amount of data to be collected. How much data needs to be collected for each heritage resource, and roughly how long will it take?

These factors should be considered when developing the survey approach, and in doing so the managing agency or organization will gain a level of comfort that the professionals implementing the survey have thoughtfully considered the defined project parameters and a path to successful implementation.

#### Tips for Consultants: Putting Together a Successful Competitive Bid

Often, a managing agency or organization will select consultants to conduct heritage surveys through a competitive bid process rather than conducting the survey with internal staff. The following recommendations are intended for heritage consultants who may be preparing and submitting a proposal for the work:

- Convey a thorough understanding of the heritage survey goals and objectives.
- Compile a diverse and expert team with direct, related project experience (see the following section for more information about project staffing).
- Illustrate an understanding of the survey area and anticipated heritage resources.
- Convey a strong communication and management framework and quality control protocols.
- Provide client references who can speak to successful completion of similar projects.

## **Assembling Field Survey Teams**

This section focuses on professional team composition for heritage field surveys, with considerations for technical skills, experience, and specialized expertise. When assembling professional team members to conduct a heritage survey, it is important not only to consider qualifications and experience with similar projects but also to look for the following:

- A proven track record of conducting heritage surveys consistently, efficiently, and accurately.
- Proficiency with the survey technology to be used in the field.
- Specialized knowledge about the subject area or resource types to be surveyed. For instance, for theme-based heritage surveys (e.g., surveys of recentpast architecture, those associated with ethnic history, or archaeological surveys), it is recommended to include team members with specialized knowledge of the themes or particular archaeological resources to be studied.

Particularly with large-scale heritage surveys, field teams may include a number of collaborators, making a strong management structure essential. Teams are led by a field survey manager, who handles day-to-day contact with the survey project manager, ensures work is adhering to budget and schedule constraints, and provides quality assurance. Technical staff working under the direction of the field survey manager should meet or exceed any applicable professional qualification standards for conducting heritage surveys and may also provide specialized knowledge in survey technology, regional history, archaeology, or other pertinent themes such as a particular facet of architectural and/or ethnographic history. Survey teams may also include interns and/or community experts, as further described below.

The number of professionals needed to complete a heritage survey can vary widely based on an assortment of variables, although generally the size of the team is directly linked to the quantity of heritage resources to be surveyed and recorded. For instance, a team recording a hundred resources may comprise only two surveyors, while a team recording ten thousand resources may need multiple teams of two surveyors working collaboratively.

When staffing a field survey, it is important to thoroughly understand the scope of the project as defined by the managing agency or organization and to consider the following:

- Project schedule, and the overall timeframe allocated for each associated task of the survey (see fig. 10.2).
   For instance, if an expedited schedule is desired, more staff will be needed to conduct the work.
- Project budget.

- Efficiency of survey technology.
- Estimated number of heritage resources to be recorded.

When working with consultant teams, heritage field survey projects are often too labor intensive for one consulting firm to handle alone, and a collaboration of multiple firms can accomplish a number of positive outcomes:

- Built-in peer review of heritage evaluations made in the field, providing benefit to the team and to the managing agency or organization. With professionals from two or three firms making field evaluations together, the agency or organization has some assurance that the survey findings have been vetted from the differing experiences and judgment of multiple professionals.
- Contributions provided by the diverse perspectives and areas of specialized expertise of team members from different consulting firms.
- A reduced pool of project bidders, saving on the time needed for the lead agency or organization to review proposals and reducing competition among professional firms.

As discussed in earlier chapters, in the case of SurveyLA, field surveys were completed in phases by geographically based community plan areas. Each survey phase included two to four plan areas, collectively comprising approximately forty thousand to ninety thousand properties. Survey teams included, at a minimum, six or seven staff from two or three professional firms, working collaboratively under the management of one lead consultant firm. The teams also included interns and community experts (fig. 10.3), as described below.

#### Student Interns

Including student (or recent graduate) interns on a heritage survey team can be an extremely valuable and mutually rewarding experience. It is recommended that student interns be paid, as they provide a professional service, although they may be paid a relatively nominal amount compared to permanent staff due to the temporary, introductory-level nature of their role; monetary compensation is supplemental to the valuable work experience of participating in a heritage resource survey with an experienced team.<sup>3</sup>

A number of tasks are well suited to interns, including:

#### Sample Field Survey Staffing Model



**FIGURE 10.3** Field survey staffing model showing key positions and participants in the field survey process. *Los Angeles City Planning Office of Historic Resources* 

- Archival research about the history, development, and character of a survey area in local and online repositories
- Heritage resource-specific research, such as reviewing permit files for building resources, researching potentially significant persons and events, and so on
- Producing field maps in GIS
- Field surveys, working in tandem with qualified heritage professionals

#### Local Heritage Experts

When compiling teams for heritage surveys, it may be important to enlist "local experts"—individuals who are experts in the history and development of a particular area and can provide an insider view of community heritage—to collaborate with heritage professionals on the survey. These experts may include local historians, cultural experts, subject experts, academics, and others.

Roles for community experts may include the following:

- Research assistance and identification of local
   repositories or other locations of relevant information
- Identification of and serving as a liaison with local constituent groups to ensure effective and comprehensive community outreach (see also Public Outreach and Engagement in chapter 8)
- Participation in a tour of the survey area, during which significant resources are shared by the expert with the rest of the team

• Review of preliminary survey findings to provide input on properties that may have been overlooked

## **Survey Training and Guidance**

Every heritage survey brings its own unique set of challenges and conditions, and even the most seasoned heritage professionals need training. In nearly all survey projects, the work evolves as the project proceeds based on lessons learned in the field, actual heritage resources encountered, and proficiency with field technology. It is important to take the time to adapt survey methodologies when change is beneficial, and for internal team training to be provided not only at the beginning but also throughout the life of the project to ensure that all surveyors are conducting work in a consistent manner. Three types of survey training and guidance may be provided:

- Classroom and field training
- Field survey manual
- Internal team training

#### Classroom and Field Training

Classroom and field training are effective ways for survey team members to get acquainted with one another and with survey tools and procedures. Training should take place before fieldwork proceeds in earnest, and all members of the survey team should attend. The nature of the training will be determined by the structure and makeup of the overall project team (see Assembling Field Survey Teams). Training, for example, may be the role of one or more survey project personnel, such as the project manager, field survey manager, and team members who specialize in survey technology and data management. Training by a professional photographer with expertise in photo-documenting heritage resources is also recommended, to provide tips and guidance about taking photographs that capture meaningful information that will meet the survey's goals (figs. 10.4 and 10.5); see also (Schafer 2008).

Topics covered in classroom and field training may include (and are not limited to):

- Use of survey equipment and technology
- General recording processes and protocols
- Recording of a variety of heritage resource types



FIGURE 10.4 Classroom training conducted for SurveyLA. Surveyors received classroom training on recording methods and procedures, field photography, and use of the citywide historic context. *Los Angeles City Planning Office of Historic Resources* 



**FIGURE 10.5** Field training conducted for SurveyLA. During hands-on field training, surveyors practiced using the mobile digital data collection system to record various resource types in geographic areas selected for the pilot surveys. *Los Angeles City Planning Office of Historic Resources* 

- Applying thematic frameworks and historic context statements
- Making assessments of heritage significance

- Field photography
- Surveyor conduct

#### Field Survey Manual

As mentioned in chapter 8, it is recommended that a written manual be developed that provides detailed instructions for survey data entry processes and protocols and making heritage resource assessments of significance. All surveyors should be provided with the field survey manual for field and classroom trainings and as an ongoing reference throughout the surveys. Topics covered in the classroom and field training should be addressed in the manual, and contact information for the project manager(s) and IT support should be provided.

### Internal Team Training

Supplemental internal training provided by field survey managers further ensures that heritage resources are recorded to a consistently high quality and standard by (at times) many different team members. Internal training sessions may be conducted periodically throughout the project as the survey progresses and as lessons are learned in the field.

In addition to the field survey manual, it is also useful to prepare survey recording standards and guidelines that are specific to resources in a survey area. Recording standards may, for example, include standardized evaluation language for heritage resource types identified during fieldwork to ensure that survey team members are categorizing and describing significance and eligibility for designation or listing in a consistent manner. This is especially important for narrative free-text fields that are not associated with controlled vocabularies.

## **Field Survey Implementation**

Once the survey team has been selected and trained, the fieldwork can commence. Field surveys that cover entire geographic areas are most accurate and effective when they are comprehensive. That is, every street should be driven, biked, or walked; every dirt road or field traversed; every trail hiked; and ultimately, every physical element considered. Only then can a comprehensive and thorough understanding of an area's heritage resources be achieved. Ever-improving online mapping, satellite imagery, and interactive panoramic street view photography (such as Google Street View or KartaView) may make it tempting to conduct some of the fieldwork online to save time and resources. Indeed, using online
satellite and aerial imagery is standard practice for certain types of archaeological site identification, as input to impact assessments, and may be necessary for areas of armed conflict. However, although this technology may be helpful for spot-checking resources and providing a highlevel understanding of an area for recording the built environment, field surveys are ultimately more accurate and effective when conducted in person, whenever possible.

The following sections describe the phases of a heritage survey. The development of historic context- or themebased frameworks for a survey project is discussed in detail in chapter 8.

#### Research

Primary and secondary source research plays a valuable role at different stages of the heritage survey project. General research takes place at the beginning of the project, in association with the reconnaissance survey, and provides the team with a better understanding of the heritage survey area and the distribution and types of resources anticipated to be encountered. More in-depth, resource-specific research is generally conducted after the reconnaissance survey, as part of the intensive-level survey and recording process, once a preliminary list of potential heritage resources has been compiled to support heritage evaluations to be made and recorded during the documentation phase.

Preliminary research may include the following:

- Review of existing inventory and previous heritage survey results and data for the subject area.
- Review and coordination of information provided by the public during community outreach efforts. (See Public Outreach and Engagement in chapter 8 for more detail.)
- Conversations with community members, who may be able to provide information about heritage resources that represent an area's social, cultural, and ethnic history. These conversations may be formal (e.g., oral histories) or informal individual or group interviews collected through community outreach activities.
- Review and analysis of historic maps and aerial photographs (hard copy or geospatial data), which can provide information relating to patterns of settlement, ethnographic movement, land use, and development and redevelopment over time. These activities relate to methods of analysis, such as historical map regression

(see the corresponding glossary entry and Research and Investigation in chapter 2).

- Review and analysis of other geospatial data and reference layers prepared for the survey area (see Geospatial and Other Reference Data in chapter 8). For SurveyLA, for example, construction or built dates provided information to produce GIS-based "chronology maps" for each community plan area. These maps shaded legal parcels by date of construction to provide field surveyors with a visual representation of periods of development of an area (fig. 10.6).
- Review of source material directly related to the history and development of the survey area, to better familiarize the survey team with what they may encounter in the field.

#### **Reconnaissance Survey**

This section explains how to carry out a reconnaissance survey using SurveyLA as an example. Level of Detail and Documentation of the Survey, in chapter 8, addresses factors for deciding when a reconnaissance survey may be useful.

A reconnaissance survey is a first look at a heritage survey area, which is often seen through the windshield of a slowly moving car or, in geographic areas where driving is not possible, on foot or by bicycle. Reconnaissance is essential to familiarizing the survey team with the project area and identifying potential heritage resources for further study and documentation. It is often conducted concurrently with the development of the survey's thematic or contextual framework, as it provides essential information about development patterns and the presence of potential heritage resources.

It is also important that information about potential heritage resources provided by the community as part of outreach efforts be reviewed as part of the reconnaissance survey. A comprehensive reconnaissance survey is essential to providing comparative analysis of heritage resources; only when you traverse every street or part of a survey area in a relatively short period can you unequivocally have information about the comparative rarity or significance of a heritage resource type.

In the case of SurveyLA, the reconnaissance survey team included several (three or four) senior-level team members working together in a single vehicle, with one member navigating using a printed GIS map and color-coding areas as they were driven to ensure no physical element was



FIGURE 10.6 Chronology map for the Westchester–Playa Del Rey community plan area illustrating a primarily post–World War II period of development. Architectural Resources Group, Los Angeles

missed (fig. 10.7). Identified potential heritage resources were also marked on the map and included in a written list, with notes. Surveyors were guided by visual observations as well as the geospatial reference layers preloaded in the digital data collection system (e.g., construction dates, previous survey data, community input).

By the end of the reconnaissance survey, the team had produced a list of potentially significant heritage resources in the survey area, which would be further considered for resource-specific research—and for recording, if identified as potentially significant. Having several team members in a car at once assures that the reconnaissance work is comprehensive and that there is dialogue about what was surveyed among experienced surveyors. This customized approach to reconnaissance work was developed by the consultant team during the early phases of SurveyLA and has since been successfully used in heritage surveys of numerous diverse geographic areas in the United States.

#### Intensive-Level Survey and Recording

As referenced above, resource-specific research is needed to bridge the gap between a reconnaissance survey and recording heritage resources, as part of an intensive-level survey. While a reconnaissance survey primarily collects information about potential heritage resources based on field observations, intensive-level recording requires supplemental research to fully understand resource significance. Research activities and information sources may include:

- Historical building records, to confirm date of construction, architect/designer, owner, alterations, and other relevant information
- Historical maps and photographs
- Historical journals, periodicals, books, and other primary and secondary sources to identify significant persons, events, architects, and other information
- Continued community outreach and consultation with knowledgeable individuals and organizations

Once research has been completed, the survey team can commence recording heritage resources using digital data collection technology. The type and level of detail of documentation required is determined by the needs of the managing agency or organization for the survey, based on defined survey standards and guidelines, as previously



FIGURE 10.7 Map developed for conducting a reconnaissance survey in the city of Tustin, California. *Architectural Resources Group, Los Angeles* 

discussed, as well as the overall goals and objectives of the project. To keep survey projects as manageable and costand time-effective as possible, managing agencies may opt to record only those heritage resources that have been identified as significant and thus belonging in a corresponding inventory. In most survey areas, only a small percentage of assets encountered in the field will be eligible and worthy of recording. Those physical elements that are not significant and eligible do not need to be revisited and recorded as part of the intensive-level survey, unless other survey objectives necessitate recording of all resources in a survey area.

To ensure consistent quality of intensive-level survey data, periodic data reviews are recommended throughout the recording process, and not done solely at completion of a survey.

#### **Final Reports**

At the culmination of any survey project, the survey team prepares a narrative report that documents and summarizes project objectives, scope, methodology, activities, and outcomes. In most cases, the report will offer valuable documentation of the survey effort and its findings for future use. In the case of SurveyLA, each phase of the survey was documented with a survey report that was published online. (For more information, see chapter 11.)

### Some Pointers on Field Photography

A field survey's photographic record of heritage resources documents the visual basis for evaluations made in the field and is valuable evidence of the condition of a resource at a specific time. Photographs collected and stored as part of a heritage survey are often consulted for many years to come, both by the agencies utilizing the data once it is incorporated into the inventory and by the public. The following basic pointers can be used to guide field photography.

- Account for environmental considerations, such as the position of the sun, when planning the field survey. On sunny days, consider what time of day will be optimal for a given survey location. Preplan for light to avoid shadows, and keep the sun behind you and out of the photographs. Overcast days are always optimal for field photography, as the light is consistent across all surfaces and glare is minimal (Schafer 2008, 12).
- If it is safe to do so and if time permits, take your photographs on foot rather than out the window of a car. It often takes some walking around a resource to ascertain the best photographic view, and this is not possible from a car window.
- Be sure to check photographs before moving on, to ensure consistency and quality.

#### Final Recommendations to Surveyors

Because survey teams are often composed of private consultants working on behalf of a governmental agency, it is important that surveyors remain cognizant of their role working in an official capacity on the agency's behalf. It is recommended that all surveyors have with them a signed letter from the managing agency that explains the purpose of the survey and provides agency contact information to serve as credentials to people they encounter during survey activities.

It is also recommended that surveyors document the process in a journal and, most importantly, with digital photographs. Each day in the field brings a new adventure that does not make its way into the record of the project: a conversation with a community member, the discovery of local cafés for lunch or coffee, unexpected encounters with heritage assets, and interactions with survey team colleagues. Photographic documentation of all phases of the project from beginning to end—including pilot surveys, training, fieldwork, and recording—will help ensure not only that the collective memories of the process are not be lost but also that the lessons learned are carried forward for future survey projects.

# Making Assessments of Heritage Resource Significance

Heritage resource assessment or evaluation is the process of applying established local, regional, national, or international assessment criteria, thresholds, and other guidelines to determine heritage significance based on intensive-level field observations, research, community input, and comparative analysis. Assessments identify resources that best represent important aspects of the history and development of an area, as defined by the criteria, and provide information to guide heritage designation, planning, and management programs.

Because the assessment process is based on the evaluation criteria, and associated guidelines for their applications, this section does not provide detailed information on the evaluation process itself. Rather, it provides general considerations and recommendations for assessments related to the process of conducting heritage surveys, and in particular those applying a historic context– and/or theme-based approach, using a case study example from SurveyLA. (See also Heritage Council of New South Wales 2021.)

# Participants in Making Assessments of Significance

Resource evaluation is a primary responsibility of heritage professionals who have completed the field surveys. (Note, when assessing certain types of heritage, such as those of importance to indigenous communities or intangible heritage, community-affiliated leaders or experts may be relied on to make assessments.) In some cases guidelines require assessments to be performed by "persons qualified by education, training, and experienced in applying the relevant criteria in the geographical area under consideration" (National Park Service 1983, 44724). Field professionals will have extensive experience applying assessment criteria and other guidelines for evaluation. They will also have a broad understanding of the type, quality, and distribution of resources in the entire survey area and the contexts and themes they represent. Surveyors will have an informed perspective on relative

significance based on comparative analysis and considerations such as how common, rare, or unique typologies may be; integrity and authenticity; and other factors.

Collaborating and consulting with the public throughout the survey process helps ensure that properties that are documented and evaluated represent the values and interests of the entire community. (Various opportunities to involve the public are discussed in chapter 8, in the section Public Outreach and Engagement.) Input is particularly valuable for resources that have social, ethnic, and cultural meaning that may not be readily apparent from field observations. Community members can bring to light stories about places, people, events, and practices that are not yet well known or documented, provide important research, and identify additional contacts and sources of information.

#### Role of Peer Review

Public input in heritage assessments of significance can also include a peer review panel or committee that meets at regular intervals, under the direction of the survey project manager, to review survey findings. The frequency of the meetings may be decided based on the phasing or sequencing plan for the surveys. Special meetings may also be called if there are particular issues to work through.

Peer review can provide an important check against consistent bias among field surveyors, and the panel can represent a range of disciplines and perspectives. For details, see the Peer Review in Heritage Surveys sidebar.

# Considerations for Making Assessment of Heritage Significance

The process for assessing heritage significance can be designed to align with the professional standards and methodology of the survey. The following are points to consider.

- In many cases, particularly in larger or more complex heritage survey projects, it may be advantageous to involve multiple heritage specialists and community experts in the evaluation process. The ability to leverage this combined expertise to build consensus during the evaluation process can help produce consistent and defensible evaluation findings.
- Resources may represent layers of significance and may be evaluated under multiple contexts and themes. For example, a commercial building may be

### **Peer Review in Heritage Surveys**

#### Lauren Weiss Bricker

The following is drawn from the author's experiences both managing and serving on peer review panels associated with California-based heritage surveys of all sizes, from a single neighborhood in San Francisco to the citywide survey of Los Angeles. These experiences provide some perspective and guidance on organizing and executing a peer review program. Through peer review, the methodology and results of a survey are subject to the scrutiny of subject matter and community experts whose participation will "enhance the quality, objectivity, utility and integrity" of the information generated (Frost 2008, 2).

#### Panel Composition

The scope of a survey and the goals and objectives established for peer preview will determine factors to consider when selecting panelists (fig. 10.8). Participants should have a knowledge of current survey practice, methods, and technologies, including an understanding of thematic frameworks and historic contexts as strategies for resource identification and evaluation (see the sidebar on this subject in chapter 2). The survey scope defines the geographic area and nature of the resource types to be identified. Panelists, therefore, may be experts in the history and development of a city or region or individuals with expertise on particular building typologies, distinctive construction materials and systems, or topics relating to social, ethnic, and cultural histories.

Participants may contribute subject matter expertise to inform the development of historic contexts as well as survey findings. Peer review is also benefited by the knowledge of heritage preservation agencies and advocates who are aware of current issues in local or regional heritage management. During review sessions, guest panelists with specialized knowledge of the history of an area or community may also supplement the knowledge base of the panelists. This may be particularly important for large-scale citywide or regional surveys. Guest panelists may also be city planners and others engaged in implementing the survey findings through land use management and environmental review. In sum, peer review panelists



FIGURE 10.8 Sample structure for organizing a heritage survey peer review panel. *Janet Hansen* 

provide a number of functions to support quality control of survey findings:

- Fill gaps in or augment the knowledge of the surveyors
- Bring new perspectives and suggest different ways to analyze, and consequently assess, the resources identified by the survey teams
- Confirm the findings of the survey teams, thereby validating and contributing to the credibility of the findings
- Reinforce and support the importance of using the professional standards set for the survey
- Provide a final check to assure a level of consistency in the evaluation of significance

An important consideration in managing the survey peer review process is whether the same panelists will participate throughout the life of the survey or if there may be changes in the panelists, for example, when surveys are phased and take many years to complete. Long-term membership on a panel helps assure continuity of judgment, particularly when analyzing a large number of similar resources; this can be of considerable benefit to the survey.

A second important consideration is the number of participants on the panel. The temptation to add members who cover different areas of expertise must be mitigated by the need to maintain a panel of a reasonable size. Not only does an overly large panel raise the challenge of reaching consensus among many experts but it may impose an undue financial burden on the project—assuming that some type of payment or honorarium is included in the project budget.

#### The SurveyLA Peer Review Program

SurveyLA provides an example of a peer review program for a large-scale survey. The review panel consisted of five paid members from varying areas of expertise. In general, the panel remained consistent throughout the life of the project—about eight years. The panel convened approximately four times per year, but rather than following a preset schedule, timing of meetings coincided with the completion of surveys following a phasing plan.

The meetings were organized by the City of Los Angeles Office of Historic Resources, the managing agency for SurveyLA, and were facilitated by survey staff and field survey consultants. Student interns and city planners, as well as local history experts (who were compensated for their time) often attended the meetings. Findings for the geographic areas to be covered in each meeting were submitted to the panelists for review before the meeting.

Typically, the meetings began with a discussion of the geography and topography of the survey area, followed by a presentation of the history and development of the area, a summary of the major categories of property types identified, and a summary of the survey findings. While the peer review panel process looked broadly at the survey findings, panelists also identified specific issues for further discussion and consideration.

Over time, several types of questions surfaced at these meetings. There was considerable discussion by the surveyors and the peer review panel about the assessment of popular and standardized building types. One such example was the significance of the ubiquitous car wash as a typology whose significance derives from its association with the automobile in Los Angeles. Similarly challenging was the city's post-World War II program to construct standardized fire stations. The panel members asked if the stations were individually significant or if they were important as components of the building program. If the latter was the prevailing rationale, what was the best way to recognize this program in the findings on a citywide basis?

Another extremely challenging aspect of SurveyLA was the recognition of ethnic identity and changing demographics associated with places in Los Angeles. In the Leimert Park community, for example, initially, the consultants evaluated the area as an important planned residential community whose prevailing historic architectural character was defined by period revival-style residential development and planned commercial spaces (fig. 10.9). An aspect of this history was that the developer included restrictive covenants that barred minority members from owning property in the area. However, by the 1950s, a number of African American families had moved into the region, and the population grew from 70 to approximately 4,200 within a decade (Kurashige 2008, 252). Based on comments from the panel and further analysis by survey teams, the district evaluation now recognizes the significance of this period through additional themes associated with the African American community and their contributions to the history of the area.

### The Value of Peer Review

The peer review panel plays an essential role in validating the heritage survey findings. While occasionally the panelists may offer additional information or suggest different ways to analyze a property, more frequently the panel confirms the findings and reinforces the objectivity—and credibility—of the survey process. The inclusion of peer review panelists in the process reaffirms the use of professional standards by the field surveyors. The review panel provides a final check to assure a level of consistency in making evaluations of heritage significance. It also affords a level of quality control that is especially important given that survey results may be used to inform preservation programs and policies.



FIGURE 10.9 SurveyLA's peer review committee provided input to identify the multiple layers of significance relating to Los Angeles's Leimert Park neighborhood. *Los Angeles City Planning Office of Historic Resources* 

an important example of its architectural style as well as associated with an important business in a community.

- Resources may be evaluated for significance under one or more heritage designation or registration programs (e.g., national, regional, local). For instance, SurveyLA evaluated resources for listing in the National Register of Historic Places, the California Register of Historical Resources, and as Los Angeles Historic-Cultural Monuments.
- Anticipate that some resource types may need to be reevaluated after a survey is complete and final data has been compiled. At that time, the entire pool of a resource type will be known, and a more complete comparative analysis will be possible to best understand significance thresholds.
- When using a context- or theme-based approach, provide training to surveyors in the application of contexts, themes, and eligibility standards to both categorize and evaluate resources.
- It is recommended that the field data collection system and process include a mechanism to flag resource types that may be important but that have not been identified in a context or theme developed for the survey. This information can help revise and

augment thematic frameworks and narrative historic contexts over time.<sup>4</sup>

# Evaluation as Part of the Survey Process

Heritage resource analysis and evaluation is a sequential process that is guided by the consistent application of field survey tools and methods (Howe 2008, 32). Following the previous discussion on conducting field surveys, and using SurveyLA as a model, assessment steps (fig. 10.10) include the following:

- Identify the heritage resource for inclusion in a survey through prefield research, community outreach, and/or a reconnaissance survey.
- Complete intensive-level field work, research, and community outreach and consultation sufficient to provide a complete understanding of the history of the heritage resource, including physical characteristics, changes and alterations over time, and associative values.
- 3. Identify and classify the resource type within one or more historic contexts or themes developed for the survey or for the related heritage inventory.

- 4. Apply the evaluation criteria and associated eligibility standards established for the resource type; that is, determine whether the resource retains the relevant essential physical and/or associative qualities and characteristics and retains sufficient integrity or authenticity to convey its significance.
- 5. Complete the evaluation, including a comparative analysis with other identified resources of the same type, and make a final determination that the resource meets one or more of the evaluation criteria used for the survey.
- 6. Prepare a narrative significance statement to summarize and justify the findings of the evaluation.
- 7. Record and incorporate the findings of the evaluation into the survey and then the inventory.



FIGURE 10.10 Evaluation process for heritage surveys. Resource evaluation is the culmination of field surveys, research, and community outreach and collaboration. *Janet Hansen* 

# SurveyLA Case Study in Heritage Resource Assessment: Goodyear Gardens Historic District

The survey and evaluation of the Goodyear Gardens Historic District in Los Angeles illustrates the assessment model presented above. The potential historic district was documented by SurveyLA field surveyors as part of the Southeast Los Angeles community plan area, which comprises roughly fifty-four thousand legal parcels and is located directly south of downtown Los Angeles. Goodyear Gardens is an example of a heritage resource that was not identified as part of any prefield research or community outreach. Rather, it was newly discovered during the field survey process. The sections below describe the assessment steps followed for the potential district.

#### **Reconnaissance Survey**

During the reconnaissance survey, the survey team methodically drove every street in the community plan area, keeping track of progress on a paper map and noting potential heritage resources to research further and possibly record during the intensive survey.

Southeast Los Angeles is mostly flat in terrain and composed of numbered streets laid out in an expansive rectilinear grid plan. The area was historically developed with early twentieth-century single-family neighborhoods, linear commercial corridors, and some industrial development, and was well serviced by streetcars. To surveyors, the visual character appeared very consistent: street after street of modest cottages and Craftsman bungalows.

When surveyors drove down 59th Place, they noticed a small shift in visual character, likely perceivable only to those who had driven countless blocks in the same neighborhood paying close attention to the aesthetics of the built environment. Although the street was composed of single-family residences similar in scale to surrounding blocks, the houses appeared to have been designed as part of a small subdivision of modest houses with only a few consistent models and architectural styles: a Tudor Revival model, a Colonial Revival model, a Craftsman model, and a flat-roofed model that resembled Prairie School, which is uncommon in Los Angeles (fig. 10.11).

Using the preloaded reference layers in the mobile survey application (see Designing Digital Surveys in chapter 8), surveyors could see that these houses were all constructed in the same year: 1920. Field observations also noted the



**Figure 10.11** Representative architectural styles of houses from the Goodyear Gardens tract identified by SurveyLA as a historic district. Goodyear Gardens is a rare intact example of worker housing in Los Angeles. *Los Angeles City Planning Office of Historic Resources* 

houses' condition and alterations that had been made to them. The survey team members agreed the neighborhood was something to research further, and they noted it on the reconnaissance map for additional study.

#### Research and Outreach

Upon review of research materials, including subdivision maps, historic building permits, and archival Los Angeles Times newspaper articles, surveyors discovered that the houses on this block of 59th Place had been subdivided by the Goodyear Tire & Rubber Company. In its purchase of 480 acres of land in Southeast Los Angeles in 1919 for a tire factory, Goodyear set aside 80 acres for affordable housing to be sold to Goodyear employees. Called Goodyear Gardens and designed by prominent Los Angeles architects Sumner Hunt and Silas Burns as modest interpretations of their respective styles, the residential tract was advertised as being conveniently located near factory jobs and streetcar lines. Only forty-nine of the planned subdivision of eight hundred single-family residences were actually built; in 1922, Goodyear began selling off the rest of the land to real estate speculators, possibly due to the rapidly increasing value of land during the Southern California boom years of the early 1920s. Community outreach did not yield any additional information on the housing tract.

### Application of the Citywide Historic Context Statement

Based on the reconnaissance survey and research, surveyors identified the housing tract as a potential residential historic district associated with three contexts and associated themes of the citywide historic context: residential architecture, residential development, and industrial development/labor history in Los Angeles. Based on analysis of the potential district within the eligibility criteria and standards for each theme, surveyors determined that the district met only those associated with labor history. It is a significant example of an early housing subdivision constructed by an important industrial manufacturer, Goodyear Tire & Rubber Company, for its workers (fig. 10.12). This type of housing development, planned and constructed by an industrial employer, was extremely rare in Los Angeles in the early twentieth century. Under comparative analysis, no other examples of company-built single-family worker housing have been recorded for SurveyLA, making this district the only known survivor of the heritage resource type.

# Intensive Field Survey, Documentation, and Final Assessment

Field surveyors documented the Goodyear Gardens Historic District in the digital data collection system categorized as follows:

- Context: Industrial Development
- Theme: Labor History
- Heritage resource type: Worker Housing/Residential
   District

During intensive-level documentation, each residence was recorded as "contributing" or "noncontributing" to the district based on an analysis of the impacts of alterations to the houses and integrity assessments. Although SurveyLA assessed heritage resources for significance under local, state, and national criteria for evaluation, due to a large number of contemporary intrusions in the district, including demolition, infill, and substantial alterations to some houses, surveyors determined it to meet local (city) criteria only. Surveyors prepared a narrative summary statement of significance to justify and complete the evaluation process.

SurveyLA Multiple Property Approach Applied to Worker Housing					
Context:	Industrial Development, 1850-1980				
Theme:	Labor History, 1870-1980				
Sub Theme:	Working-Class Communities, 1870-1980				
Property Type:	Residential District				
Property Sub Type:	Worker Housing				
Geographic Location:	Citywide				
Area of Significance:	Industry; Social History; Ethnic Heritage				
Criteria:	A/1/1				
Period of Significance:	1880-1980				
Eligibility Standards:	<ul> <li>Was constructed or used during the period of significance</li> <li>Is a significant example of purpose-built worker housing or was an important place of recreation and socialization for the working class</li> </ul>				
Character-Defining/ Associative Features:	<ul> <li>Retains most of the essential character-defining features from the period of significance</li> <li>For the National Register, properties associated with events that date from the last 50 years must possess exceptional importance</li> <li>Worker housing may be associated with noted architects</li> </ul>				
Integrity Considerations:	<ul> <li>Should maintain integrity of location, design, materials, feeling, and association from the period of significance</li> <li>For historic district, the district as a whole should retain integrity of location, design, feeling, and association</li> <li>Some original materials may be altered or removed</li> <li>Adjacent land uses may have changed</li> <li>In some cases, original use may have changed</li> </ul>				

**FIGURE 10.12** Multiple property documentation approach applied to the evaluation of Goodyear Gardens tract in Los Angeles. *Los Angeles City Planning Office of Historic Resources* 

#### NOTES

- In the more than twenty years that primary author Katie Horak has been conducting field surveys, the countless hours formerly spent on labeling photos, coloring maps by hand with colored pencils, and printing thousands of pages of survey inventory forms have been reduced to mere clicks of a button.
- Although community outreach is an integral component of a successful field survey, the focus of this section is implementation of the technical aspects of the survey. See Public Outreach and Engagement in chapter 8.
- 3. Using interns for field surveys is also a low-risk way for consulting firms to test the capabilities of junior staff in a project-specific, time-limited role. Interns who perform highly are often offered permanent employment at the end of the term of the internship, as was the case for many SurveyLA interns.
- 4. SurveyLA also included a placeholder category called "Other" for resources identified during field surveys that merited further study but that did not fall within the context, themes, or property types defined for the citywide historic context (Los Angeles City Planning 2016a).

11

# **Publishing Survey Results**

# Janet Hansen Sara Delgadillo

The publication of survey results marks the final step in the heritage survey process. While digital survey data are published in an associated inventory, survey results can also be published in the form of a written report or reports. This chapter discusses both of these publishing formats.

### **Data Integration**

Data integration, as it relates to heritage inventories, is the process of adding or merging data from multiple sources into an inventory to publish it and provide users with a unified view of the data. When the same software, data structure and content (e.g., terminology), and methodological approaches are used to both collect and publish survey data, the integration process is ongoing as data is collected. If these factors differ from those used to publish the data, data migration is necessary. Data migration is a process through which data is verified and changes are made to ensure the data content and format are compatible, readable, and/or interoperable for successful integration into the software that will be used to publish it.

The procedures to achieve data integration can vary in complexity and time required, depending on the amount

of data and the degree of compatibility between the survey and inventory systems. For this reason it is strongly urged that survey planning give due attention to ensuring compatibility between field data collection and associated inventory information systems regarding software, methodologies, and terminologies to be used before survey work begins (see chapters 7 and 8).

While quality control review and data validation take time regardless of the data collection system, it is far more complex and time consuming to introduce to an inventory data that was recorded through a separate system not associated with the inventory. SurveyLA data, for example, was collected through a separate application not associated with HistoricPlacesLA, the city's heritage inventory system, which was in development at the time of SurveyLA (see chapter 5), consequently, SurveyLA data included different terminology than that used in the inventory. To integrate and publish the survey data in HistoricPlacesLA, the terminology needed to be reconciled as part of the data migration process. This process included conversion of existing data and the limited creation of supplemental data to match the underlying methodologies of the inventory system. For reasons such as this, it is a less troublesome path to record data through a system directly associated with or built into the inventory.

The ongoing experiences of the authors provide thoughts and recommendations for others charged with data integration and management:

- Data integration will take considerable time, particularly if the data collection system has not been designed with inventory data upload or integration in mind. However, a data collection system independent of the inventory system can be designed or configured to facilitate easier data integration. Be sure to allow sufficient time and resources for either approach.
- For quality control reasons, limit the number of people involved with data integration. Ideally, one person—a data manager—will perform and oversee data integration.
- Additional support personnel for data review and editing will help to facilitate faster data processing and formatting. For example, detail-oriented interns with relevant experience can help prepare records for integration under the direction of the data manager.
- For new inventories, the initial process of adding data can help establish a workflow and specific protocols for data entry, review, validation, and editing during the survey process (see chapter 8), as well as processes for data entry and editing within the inventory after survey data is published.
- For established inventories, the overall process of data integration to the inventory serves as an opportunity to examine the content compatibility and uniformity of the data that is being migrated into the inventory. While time-consuming, this step ultimately helps refine existing procedures and protocols to best serve data quality and the growth of the inventory. It can also help define what data is necessary to constitute a complete record in the inventory and, conversely, what data may not be pertinent within the inventory.
- Preparing survey data for inventory integration requires a detailed and cautious review by the data manager, who must identify any commonalities and differences between the inventory system data structure and that of the survey. Most often these can be found in the controlled vocabularies used for the organization of data. For example, the survey data in review for integration may include the use of different, yet parallel, terminology than that established for the inventory. Alternatively, the survey data in review for integration may include terminology for which an equivalent term is lacking in the inventory. It is critical to reconcile discrepancies such as these before survey

data is integrated into the inventory. In cases when it is not possible to import or merge records simply, it may be necessary to edit the existing inventory, the survey data structure, or the controlled vocabularies to support the data being integrated.

Figure 11.1 illustrates the steps necessary to integrate survey data that is not recorded directly into an inventory system.

Survey-to-Inventory Data Integration Process



FIGURE 11.1 Survey-to-inventory data integration process. Survey data not collected directly into an inventory system requires careful review and revision of the data itself or the inventory system to which it will be introduced. *Sara Delgadillo* 

# **Final Survey Reports**

The jurisdictional survey standards and guidelines adopted for a survey may include detailed final reporting requirements to follow once a survey is complete. Final reports may also be required by an agency or organization that partnered in the survey or that provided funding for the survey. In addition to any technical requirements, it is important that survey reports be understandable and accessible to the public.

Public reports are an important source of information describing and explaining the survey project and summarizing findings. For smaller surveys, a single report may be completed; for larger-scale surveys, a series of reports may be needed, perhaps to coordinate with a survey phasing plan. Where multiple reports are prepared over time, it is recommended that a report template be developed so that each report is consistent in format and content and can be easily recognized as part of the survey.

It is also recommended that reports describe aspects of a survey project with respect to:

- Who commissioned, carried out, and supported the survey
- What types of heritage resources were surveyed
- When survey activities were carried out—the overall timeframe
- Where survey activities occurred—the geographic extent
- How the survey was done—the methodology and standards followed

For SurveyLA, thirty-five separate reports were prepared by survey consultant teams, corresponding with the thirty-five community plan areas surveyed (Los Angeles City Planning n.d.b). The report for each area included appendices summarizing survey findings by resource category used for SurveyLA (e.g., individual properties, historic districts, etc.), and they were published sequentially as the surveys were completed. The *Field Survey Results Master Report* was also developed to function as a cover document for the plan area reports (Los Angeles City Planning 2016b). It explains the survey data collection tools and methods, introduces the citywide historic context statement, and outlines the resource evaluation and documentation process.

The report formats developed for SurveyLA may serve as useful references or templates. A sample report is shown in resource 11.1.

# **Publishing Survey Reports**

Survey reports can be published to serve a range of users and uses. Public websites are a primary venue for publication as they are widely accessible. SurveyLA reports, for example, are published on Los Angeles City Planning's Historic Preservation, Historic Resources Surveys webpage, where they are accessible via an interactive map featuring all of the city's community plan areas (Los Angeles City Planning n.d.b). Selecting and clicking on any one area on the map navigates to a list of hyperlinks corresponding to the survey report and appendices for that area. SurveyLA reports are also accessible through the online inventory, HistoricPlacesLA (City of Los Angeles n.d.), where the profile for each SurveyLA-recorded resource includes a hyperlink to the corresponding report.

#### RESOURCE 11.1 SurveyLA Historic Resources Survey Report: Northeast Los Angeles Community Plan Area

https://final-pages--inventories-andsurveys.netlify.app/\_assets/downloads/ resource-11-1.pdf



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Ultimately, published survey findings, both in the inventory and in report format, provide information to support preservation programs and initiatives by public agencies, heritage organizations, and community members, as explored further in chapter 12.

# Part III Using Information

This book's introduction provides an overview of the various uses that heritage inventory and survey information can serve, including helping people understand heritage and, on that basis, make decisions and take actions (see fig. i.5). Part III provides more detail about how inventory and survey information is typically used with respect to a number of common and emerging issues in international heritage practice.

# 12

# Using Inventory and Survey Information for Heritage Management

# David Myers Janet Hansen

This chapter describes how inventory and survey information has been used with respect to six specific heritage management issues deemed to be worthy of particular attention: recognizing cultural diversity, urban planning, heritage impact assessments, disaster preparedness and response, sea level rise, and armed conflict. The sections that follow include relevant considerations and examples from practice, and point to references for further reading.

### **Recognizing Diversity**

The shift in many parts of the world in heritage practice to further recognize diversity and promote social inclusion has resulted in efforts to identify and document places associated with traditionally marginalized communities, including ethnic, racial, and religious minorities; indigenous people; women; those identifying as LGBTQ; and the economically disadvantaged (Avrami 2021, 10). To tell the whole story, heritage surveys and inventories are being designed to identify and document underrecognized communities and to make digital information widely available for a range of purposes.

Integral to these efforts are broad-based community outreach and engagement programs, and in some countries, thematic frameworks and historic context surveys—tools that directly involve the public in identifying a range of important historical themes and heritage types, both tangible and intangible, and in telling their stories. Importantly, surveys focusing on diverse populations have called into question traditional survey approaches and practices that focus on monumental buildings and notions of integrity solely defined on architectural quality.

Heritage designation or listing can be a significant step in integrating a wider range of histories and community narratives into inventories to inform planning initiatives and build collaborations with heritage-based agencies and organizations. Many organizations and jurisdictions are, in fact, designing and promoting surveys to focus specifically on properties and groups underrepresented in inventories and historic registers or designation lists (Mayor's Fund for Philadelphia 2021; National Park Service 2023). In the United States, such surveys and related historic contexts have resulted in an uptick of resources listed in the National Register and designated under local programs. Importantly, many of these nominations are being initiated by community organizations that have directly participated in creating historic contexts and identifying important resources through surveys and inventories.

In Los Angeles, for example, SurveyLA and the subsequent creation of a Jewish History context statement spurred the community's nomination of the Beverly Fairfax Historic District to the National Register (fig. 12.1) (Hansen and Delgadillo Cruz 2020). That district reflects the westward shift in Los Angeles's Jewish population starting in the 1920s, and by the end of the 1940s it was firmly established as the residential anchor of the city's Jewish community. The nomination was made on behalf of Save Beverly Fairfax, an advocacy organization, working with a consultant team that surveyed the area for SurveyLA.



FIGURE 12.1 Street view of North Stanley Avenue, Beverly Fairfax National Register Historic District. Los Angeles City Planning Office of Historic Resources

Surveys and inventories are accelerating the designation of resources that better represent an area's diversity, but perhaps more importantly they are provoking discussions of how data can serve larger initiatives to celebrate community diversity and cultural identity. For governmental agencies, while heritage data is being used for city planning (see Urban Planning, below), it can also inform interdepartmental programs and initiatives relating to diversity and inclusion, for example, the activities of city offices associated with arts and culture.

Surveys and inventories are also supporting broader goals and objectives to create long-term collaborations and partnerships with heritage organizations and governmental agencies. The national organization Asian and Pacific Islander Americans in Historic Preservation (APIAHiP) partnered with the City of Los Angeles to identify places throughout the city related to Asian American histories. While the partnership culminated in a National Register Multiple Property Documentation form titled Asian Americans in Los Angeles, 1860–1980, it has also spurred APIAHiP to provide ongoing educational resources and advocacy support for other nominations in Los Angeles, as well as to continue in their efforts to promote inclusive preservation practices and policies nationwide (Magalong 2020, 154). Other heritage organizations are using inclusive surveys and inventories to celebrate diversity through interpretive programs, heritage tours, and websites.

As more and more surveys and inventories are collecting and making available information on underrecognized communities, research opportunities are growing to, for example, initiate new or further studies on certain topics, themes, and heritage typologies. As well, digital data and mapping can inform analyses regarding the location and distribution of ethnic and cultural resources within a geographic area and related studies examining neighborhood growth and change, shifting demographics, overlapping histories, and intersectionality.

# Urban Planning

Local governments throughout the world are increasingly using inventories and their associated surveys as tools to develop programs and policies that integrate heritage preservation into urban planning initiatives. Because planning practices and priorities change and evolve over time, heritage data that is up to date, comprehensive, and easily accessible will have the most relevancy for local planning. Today, cities of all sizes are creating or updating digital inventories and undertaking modern surveys as tools to manage heritage in urban environments that are changing rapidly, whether from growth or decline.

When survey and inventory datasets are integrated within land use databases and data sets, planners can overlay, map, visualize, and query heritage data in combination with land use information to understand the distribution and type of heritage resources present. Perhaps as important, planners will know places where heritage resources are less common and where development may proceed unimpeded.

While heritage data has traditionally supported standalone heritage programs and activities such as those related to resource designation, listing, and incentives, uses are expanding to include informing disaster preparedness and response programs, redevelopment initiatives, day-to-day development project review and impact assessment, and long-range community planning. In the United States, legacy cities experiencing decreasing populations and economic decline, such as Detroit, Michigan, and Muncie, Indiana, have undertaken so-called rapid mobile surveys to inform programs aimed at demolition of vacant and neglected buildings, many of which (despite their condition) meet heritage designation criteria and can contribute to neighborhood revitalization efforts (Evans 2014).

Other cities are using heritage data in thoughtful ways to inform community planning. These uses include crafting goals, policies, and programs that maintain and enhance the unique historic character of neighborhoods; establishing preservation priorities; encouraging restoration and adaptive reuse; regulating demolitions and alterations to existing buildings; providing guidelines for compatible new construction and infill development; and celebrating diversity and cultural identity. As discussed in part II, the City of Los Angeles organized and sequenced SurveyLA surveys to guide updates to the city's geographically based community plans (Los Angeles City Planning n.d.a). These local land use plans guide future development in neighborhoods and are reshaping the city's growth patterns around the region's major investment in new transit lines.

To facilitate broad-based thinking about how planners can use survey data, staff of the Office of Historic Resources developed and held workshops for city planners to summarize the survey process; provide an overview of the historical patterns of settlement, growth, and development in each plan area; and review survey findings for both individual heritage resources and potential historic districts. Overall, the training helped planners understand the prevailing character of each community, the range and location of significant heritage resources, and the typologies, contexts, and themes they represent (fig. 12.2).



**FIGURE 12.2** City planners in Los Angeles attended workshops to discuss the findings of SurveyLA and how they can inform community plan updates. *Los Angeles City Planning Office of Historic Resources* 

Community plan tools informed by SurveyLA include character residential districts that provide for demolition and alteration review and compatible infill in potential residential historic districts (those meeting eligibility criteria for designation or listing), as an alternative to protections offered by historic designation. SurveyLA data has informed the development of other neighborhood planning tools, including special overlay zones for the city's overhaul of its 1946 zoning code, as well as contextsensitive zoning in single-family neighborhoods (Bernstein and Hansen 2016).

In some instances, surveys are being designed to focus on identifying and protecting overall neighborhood historic character rather than on documenting individually eligible resources (Bertron and Mason 2012; Historic England 2017b). Planners in Los Angeles have used SurveyLA data to identify planning districts: areas within historic neighborhoods that have consistent planning concepts and features—such as height, massing, setbacks, street trees, and streetlights—but may not meet significance thresholds for designation or listing as historic districts. The concept is akin to neighborhood conservation districts or areas used in many U.S. jurisdictions as tools to protect communities.

Heritage inventories and surveys can also be used to promote interdepartmental collaboration and information sharing regarding heritage assets owned or managed by other city departments outside of planning. Resource typologies may include infrastructure such as bridges, public art, street trees, streetlights, libraries, parks, and fire stations. Knowing which heritage resources are significant helps in developing capital improvement programs related to those that may be replaced, upgraded, rehabilitated, or decommissioned (Hansen and Delgadillo Cruz 2019).

### **Heritage Impact Assessments**

The legal and policy frameworks of many jurisdictions require heritage impact assessments (HIA) as part of broader land use planning processes known as environmental impact assessment. An HIA is a formal process to ensure that the cultural significance of heritage resources is taken into account when developing and designing proposals for change. As stated in Welsh guidance on HIAs, "Conservation is about the careful management of change. This means that it is vital to understand the implications of any proposed change from deciding what to do and how to do it, to deciding whether or not to give consent" (Cadw 2017a, 2). HIAs typically relate to proposed development projects, as well as proposed substantial modifications to or changes in the use of places. Many HIA regimes consider impacts of proposed changes that would affect heritage significance, including aspects such as setting and views associated with heritage resources (Historic England 2017a). Impact assessment processes normally provide for public input and engagement.

A key typical outcome of an HIA process is determination of whether a permit or consent for a proposed project will be approved or denied, whether it might be approved under certain conditions or with modifications, or, if the project proposal offered different options, whether a certain option is preferred. Depending on the legal and policy context, in some cases the HIA process may determine that heritage resources can be demolished or destroyed through development but require mitigation through their investigation, documentation, and possibly recovery of artifacts.

Legal and policy frameworks commonly define a specific threshold that triggers the HIA process. Many jurisdictions also require that related investigations be carried out according to professional standards, including that those personnel involved meet qualification standards.

Once triggered, an initial step of an HIA process is to determine the presence or absence of any culturally significant, or potentially significant, heritage resources within the area to be affected. This determination is ordinarily first pursued by consulting the relevant heritage inventory. For an inventory to be effective for use in HIA processes, its information should, ideally, cover the area of jurisdiction comprehensively, the geographic location and extent of heritage resources should be accurately recorded, and the inventory information should be relatively current. Some places, including the United States, require that new information be collected for HIA processes if existing inventory or survey information is beyond a certain age. The inventory would also ideally reference when, where, and how field surveys or investigations have been undertaken, as well as related reports or documentation, to help determine whether new information gathering is needed.

It is also beneficial for prior investigations to record the absence of significant heritage resources for the area examined. This type of information is valuable for knowing where development projects can be directed to avoid negatively impacting heritage.

If inventory information for the project area is absent, outdated, or lacks sufficient detail, it is recommended that actions be taken to collect or update data to inform the HIA process. If all or part of the project area has never been investigated to identify heritage resources, new research and investigations may need to be commissioned to inform the HIA process. Some jurisdictions require that those submitting proposed projects pay for at least part of the investigations or studies required for a related HIA process. Many government agencies have administrative processes tied directly to statutory heritage inventories that track the status and outcomes of HIAs (Mlungwana 2015).

There is often some degree of uncertainty about whether archaeological resources exist within areas of a jurisdiction not yet investigated. Such features might be present but not visible: underground, under existing development, underwater, or obscured by vegetation. HIA processes regularly employ archaeological predictive modeling to assess the likelihood of the presence of archaeological remains based on a range of factors, including patterns within the current archaeological record for the area in question. Sources for establishing such patterns may include existing inventory information, records from prior field investigations, and historical map regression.

Predictive modeling has been applied to produce maps of archaeological sensitivity (also called *archaeological priority* and *archaeological potential*) that require differing levels of investigation, consultation, or caution when approaching proposed development projects. For example, Historic England's Greater London Archaeological Advisory Service utilizes a set of formally defined and mapped Archaeological Priority Areas (fig. 12.3), in combination with the Greater London Historic Environment Record, when assessing the potential impact of development proposals within its jurisdiction (Historic England 2016, Historic England n.d.).

# Disaster Preparedness and Response

The most fundamental requirement for safeguarding heritage when facing natural disasters is identifying its location, significance, and vulnerabilities. Heritage inventories and related data collection activities such as surveys are vital to meeting this requirement.

The practice of cultural heritage disaster preparedness and response has been extensively studied, with various methodologies proposed. The disaster risk management framework of the ARCH project (fig. 12.4) conveys one such approach (Milde, Lückerath, and Ullrich 2020, 31).<sup>1</sup> While details of different methodologies vary, they generally

Archaeological Risk Model	Outside APA	Archaeological Priority Area		
Scale of development	Tier 4	Tier 3	Tier 2	Tier 1
4 large major	Medium*	High	High	High
Site area 2 hectares of more	Low			
2 minor	Negligible	Low	Medium	High
Site area less than 0.5 hectares				
New basements				
1 very minor	Negligible	Negligible	Negligible	Medium
Householder developments** and equivalent minor works				

\* Very large majors with a site area of 10 hectares or more

\*\* Other than new or extended basements

FIGURE 12.3 The Greater London Archaeological Priority Areas assign all land within the jurisdiction to one of four tiers denoting different levels of sensitivity to development indicated by an archaeological risk model. © *Historic England 2022* 

approach natural disasters in three phases: predisaster preparation, responding during a disaster, and postdisaster activities, as discussed in the following sections in terms of considerations specific to inventories and surveys (see Stovel 1998).

#### Predisaster Preparation

Steps taken in anticipation of disasters—to reduce risk and adverse consequences—include the following:

• **Prepare the ground.** This stage includes the central task of identifying and documenting significant heritage resources through ongoing preparation and maintenance of an inventory, including through surveys. Doing so provides baseline information about what heritage needs to be protected. This data is required to carry out subsequent steps in the disaster preparedness and response process, yet the importance of this work as an investment in disaster preparedness is seemingly overlooked in many published sources devoted to the topic. The more a heritage agency's inventory is complete, current, accurate, and accessible, the better the agency can be prepared for a disaster. Because disaster events often span across jurisdictional boundaries, response efforts can also benefit from standardized data that is readily shareable with external agencies (McCarthy 2013, 17). Heritage recording guidance also advises that digital repositories, including inventories, should be backed

up in a secure alternate location to prevent loss due to disasters (ICOMOS 1996).

- Assess vulnerabilities and risks. Disaster preparedness requires systematically assessing vulnerabilities of and risks to identified heritage resources in relation to the types of natural hazards likely to occur in the specific geographic area. Current, high-quality inventory information and related contextual data (particularly geospatial) provide an essential basis for carrying out such analyses.
- Mitigate risks in advance. The assessment of vulnerabilities and risks to heritage identified in an inventory can lead to designing interventions to mitigate harmful effects of future disasters. For example, the U.S. state of Washington, susceptible to periodic earthquakes, commissioned the creation of a statewide inventory of masonry buildings not reinforced to withstand seismic events (Architectural Resources Group 2018). This inventory of several thousand buildings was created through both reviewing existing data in state and local inventories and conducting new field assessments. This analysis led to an ongoing program to provide for new interventions to reinforce buildings determined to be at risk. Inclusion of the function of buildings (e.g., hospitals, fire stations, schools) has helped prioritize interventions. Determining appropriate interventions often requires research, particularly in looking at lessons from past disasters.



**FIGURE 12.4** The disaster risk management framework of the ARCH project for Advancing Resilience of Historic Areas against Climate-Related and Other Hazards. *ARCH* 

 Prepare response procedures. In certain cases, inventories and surveys can also help in preparing response procedures in advance of a disaster. For example, the identification of mudbrick historic buildings within a city's inventory may help determine for which buildings nonwater fire retardants should be used in the case of fire.

#### Responding During a Disaster

The reaction during a disaster to mobilize, assess impacts, and prevent further damage includes the following:

 Mobilize resources and personnel to carry out emergency response plans. If properly detailed, an inventory may help with search-and-rescue efforts in the first three to seven days after disaster strikes. For example, in certain cases the managers of an inventory may decide to include architectural plans for certain structures in the inventory to aid emergency responders in their efforts.

Identify which heritage items to prioritize. A
heritage inventory is a primary source for identifying
which significant heritage should be prioritized for
attention as soon as disaster strikes, in accordance
with an emergency response plan, if one has been
prepared. A properly detailed inventory can be
important for prioritizing temporary stabilization and
protection of important heritage items, for identifying
which heritage should preferably not be demolished,
and for salvaging significant architectural elements or
artifacts from damaged or collapsed structures.

#### Postdisaster Activities

Measures taken after a disaster to continue to assess impacts, plan and implement actions to repair and conserve or restore heritage, and to prevent future damage include the following:

- Assess and document conditions of heritage resources and prioritize interventions. As is the case with predisaster preparations, having a robust inventory already in place provides a ready basis for planning, carrying out, and recording assessments of the condition of heritage resources. This also affords a foundation for determining priorities for short-, medium-, and long-term response when considering all resources across an entire jurisdiction or area. This typically involves carrying out field surveys to assess and document conditions.
- Rebuild or reconstruct as the situation requires. As with previous steps, an inventory can provide a necessary basis for planning, tracking the implementation of, and documenting postdisaster interventions.
- Feedback into the inventory. To further the aim of keeping inventory information current, it is recommended that relevant information from postdisaster assessments of conditions of heritage resources, as well as postdisaster interventions, be fed into inventories.

Experience has shown that natural disasters are an ultimate test of the completeness, quality, and usability of heritage inventories. As noted by McCarthy (2013, 16), "Without an accurate inventory, responders spend valuable time identifying instead of evaluating resources, slowing the response and preventing recovery." In some cases, disasters have revealed the urgent need for more robust inventories, which has in turn led to renewed investments in inventory preparation (ICOMOS Nepal 2015).

# Sea Level Rise

Heritage in coastal areas is under increasing threat from global sea level rise, as well as severe coastal storms and erosion, induced by global climate change. As with other types of natural disasters, identifying heritage places through inventories and related surveys is a crucial first step to understanding which heritage is at risk, and that knowledge underpins determining appropriate responses. As the U.S. state of Florida's guidance for climate change vulnerability assessments and adaptation planning notes, "a large part of setting the planning context will include identifying and inventorying existing historic and cultural resources. . . . If no baseline inventory currently exists, the involvement of historic preservation agencies and organizations is important in the creation of a new historic resource inventory" (Florida Department of Economic Opportunity 2015, 24). If a heritage inventory for a coastal area is incomplete, areas that have not been investigated and that are most vulnerable to sea level rise-related impacts may be prioritized to be surveyed. Inventories in some places include submerged heritage resources; inventories of such resources may become increasingly necessary as sea levels rise.

Once heritage resources have been identified and recorded, steps may be taken to assess the vulnerability of those resources to impacts resulting from sea level rise. It may be important to carry out a survey to establish baseline conditions of at-risk heritage resources. This information can provide a basis for periodic monitoring of change, which might include focusing on indicators providing an early warning of resources at high risk.

Given the large number of heritage sites to be monitored in many coastal regions, several public heritage agencies, universities, and NGOs have organized and trained students and volunteers to complement the work of heritage professionals in carrying out ongoing condition surveys monitoring impacts and threats to archaeological sites. These efforts have also identified unrecorded sites to be added to heritage inventories. Such work includes Scotland's Coastal Heritage at Risk project, the Florida Public Archaeology Network (FPAN)'s Heritage Monitoring Scouts, the Mississippi River Delta Archeological Mitigation Project, and Maine's Midden Minders (Dawson et al. 2020; Britt et al. 2020).

Data from heritage inventories and related surveys can also provide a basis for predictive modeling to forecast future higher sea levels, storm surges, and other negative impacts as an additional step in vulnerability analysis (Miller and Murray 2018). Such modeling typically considers the location of known heritage resources relative to surrounding topography and in relation to predicted scenarios of sea level rise, storm surges, and other environmental factors (fig. 12.5).

Through vulnerability analysis and predictive modeling, agencies can then identify, evaluate, and prioritize appropriate responses (Taylor Engineering et al. 2020). This process may involve modeling and then planning for a range of scenarios due to uncertainties about future changes. Predictive modeling and condition monitoring



FIGURE 12.5 Known cultural resources in Florida potentially affected by sea level rise according to differing future projections. *Florida Division of Historical Resources, Florida Master Site File* 

can together aid in identifying and prioritizing responses based on the significance of heritage resources and their corresponding vulnerability. If heritage is expected to be destroyed or abandoned, or if resources are limited and other heritage places are deemed to be of higher priority, potential responses may include excavation (in the case of archaeological sites) or more detailed recording. Alternatively, if heritage resources are deemed to be of particular significance, if resources are available, and if such adaptations are feasible and have limited negative impacts on the integrity of heritage resources, plans may be made for interventions to adapt heritage resources or their surroundings to mitigate the effects of sea level rise. Examples include reducing groundwater extraction (which can cause ground subsidence), constructing barriers and other water-diversion and pumping mechanisms, raising the height of structures, and relocating structures away from eroding coastlines.

### **Armed Conflict**

In the case of armed conflicts, inventories and related surveys are essential measures for heritage protection as well as rehabilitation. Inventories are an important component of the 1999 Second Protocol to the Hague Convention of 1954, which explicitly calls for inventory compilation as a peacetime preparatory measure.

A practical implication for nations that are signatories to the 1954 Hague Convention, or otherwise choose to comply with it, is that their armed forces are obliged to identify cultural sites deemed to be "of great importance" through no-strike lists of locations to be avoided in military operations, whether aerial bombing, missile strikes, or ground-based or naval operations. Through the published *Guidelines for the Implementation of the 1999 Second Protocol* (UNESCO 2019), national governments may under certain conditions apply to the Committee for the Protection of Cultural Property in the Event of Armed Conflict for inventory and survey support specifically relating to preparedness for and response to armed conflict; this support is available through a fund set aside for the purpose. Such support during peacetime may take the form of technical advice on preparing and updating inventories and undertaking surveys; during armed conflicts it may include emergency support for preparing inventories and surveys. The *Guidelines* also provide that national governments may request expert advice through UNESCO regarding the preparation and regular updating of inventories.<sup>2</sup>

The identification of cultural sites near legitimate military targets can also lead to those targets being placed on restricted-target lists, according to which any attack on the objective must be conducted under stringent conditions, such as employing a specific weapon, to limit collateral damage to the nearby cultural property. However, as O'Keefe et al. (2016, 25) note,

But information gathering is only the first step. Information gathered must be communicated in accessible, utilizable form to those engaged in the planning and execution of military operations. How this is done will depend largely on the military operation in question. In the case of targeting decisions, best practice involves the compilation and entry into any relevant military databases of official "no-strike" lists. . . . In the case of planning for ground attack and subsequent belligerent occupation, it may involve the preparation and distribution of detailed, specially marked maps.

Cooperation and consultation between militaries and heritage organizations, such as international and national committees of the Blue Shield,<sup>3</sup> as well as other heritage organizations and professionals, are essential to effectively compiling and conveying such lists. It is not a military skillset to identify what is cultural heritage "of great importance." Archaeologist Peter Stone has conveyed related practical considerations based on his experience as advisor to the U.K. Ministry of Defence regarding the protection of archaeological sites in Irag leading up to the invasion of 2003, as well as with respect to conflicts in Libya in 2011 and Mali in 2012 (Stone 2013). Unfortunately, experience has shown that often such no-strike lists have been hastily prepared in the lead-up to conflicts, resulting in limited information (Gerstenblith 2006; Kane 2013). Worse, if they fall into the wrong hands, no-strike lists can also be used to intentionally target heritage (Cunliffe 2020).

Inventories and related condition surveys are also key tools for systematically determining intervention priorities to rehabilitate heritage places damaged during armed conflicts. Using remote sensing technologies, such as satellite imagery, in conjunction with inventories, it is possible to carry out ongoing damage assessments during conflicts to help prepare postconflict intervention priorities and plans (fig. 12.6) (Fiol and Tabet 2018; Danti, Branting, and Penacho 2017). These remote activities can be supplemented by on-the-ground surveys when feasible.

Inventories and surveys also have contributed to the legal prosecution of those involved in intentional destruction of cultural heritage during armed conflicts. During the Balkan wars of the 1990s, amid the collapse of the nation of Yugoslavia, military forces intentionally targeted, damaged, and destroyed sites of cultural significance, including places of worship, archives, and libraries. In response, heritage specialists carried out extensive surveys of hundreds of cultural sites to document the extent and nature of damages. Evidence gathered, in addition to comparison with prior heritage inventory records, documented systematic intentional destruction of numerous culturally significant sites (Riedlmayer 2002, 2007). This evidence contributed to the indictment and eventual conviction of several individuals for crimes against humanity at the International Criminal Tribunal for the Former Yugoslavia at the Hague (SENSE 2024).

#### NOTES

- ARCH (Advancing Resilience of Historic Areas against Climate-Related and Other Hazards) was a European-funded research project running from 2019 to 2022 that aimed to better preserve areas of cultural heritage from hazards and risks. The project teamed with the cities of Bratislava, Slovakia; Camerino, Italy; Hamburg, Germany; and Valencia, Spain, to cocreate tools to help cities save cultural heritage from the effects of climate change. The ARCH website (https://savingculturalheritage.eu/) offers a wealth of information, tools, and other resources.
- 2. See https://en.unesco.org/protecting-heritage/International -fund for details on the fund and how to apply.
- 3. The Blue Shield is an international organization founded in 1996 to protect the world's cultural heritage from threats such as armed conflict and natural disasters. The Blue Shield is an advisory body to UNESCO on the protection of cultural property in the event of armed conflict with a legally granted mandate under the Hague Convention's 1999 Second Protocol. The Blue Shield is formed from national committees around the world, coordinated by the Blue Shield International Board. More details are available at https://theblueshield.org/.



FIGURE 12.6 Sites of reported damage in the Palmyra area during the Syrian conflict from 2014 to early 2016. Events are color coded by cause of damage. Larger circles indicate more recent events. *American Schools of Oriental Research; satellite image* © *Digital Globe* 

# Part IV Case Studies

Part IV of this book expands on the heritage inventory and survey work described in part III to present two case studies that are practical applications by public agencies in the United Kingdom and Southeast Asia. Chapter 13 describes how the City of Lincoln, England, applied its historic environment record (HER) for archaeological management. Chapter 14 details how the Singapore National Heritage Board conducted a nationwide survey and used the resulting data to create a broadly accessible inventory of intangible cultural heritage.

# 13

# Archaeology and Local Heritage Inventories in England: The View from Lincoln

# **Alastair MacIntosh**

### Historic Environment Records in England

Local heritage inventories have a long pedigree in England, from the early card indexes compiled in the 1960s to the present system of digital databases and mapping systems known formally as historic environment records (HERs),<sup>1</sup> which provide a single point of access to information about the heritage of an area. There are now more than eighty HERs based in local government authorities around England, providing coverage of the entire country.

Many resources are available to guide the operators and users of England's HERs:

- Historic England publishes specifications to guide local authorities delivering HERs (Historic England 2019).
- MIDAS Heritage, the U.K. Historic Environment Data Standard, defines what information should be included on HERs when recording heritage information (English Heritage 2012).

- The United Kingdom's Forum on Information Standards in Heritage (FISH) maintains standard vocabularies used by all HERs (FISH n.d.).
- Working guidelines for HERs have been published as an online wiki (Informing the Future of the Past n.d.).
- The HER Forum provides an online discussion list and holds in-person meetings to share best practices.<sup>2</sup>

These resources ensure that HERs are mutually comprehensible across the whole country, while allowing them to retain locally distinctive information. The benefits of a standardized approach can be seen on the Heritage Gateway website, which allows users to search across multiple participating HERs as well as national datasets maintained by Historic England (Heritage Gateway n.d.).

A typical HER in England maintains a core data set of three linked data types:

 Monuments: physical remains that provide information about the past, also known as heritage assets

- Investigative Activities: activities undertaken to record and interpret heritage assets and their contexts, also known as events
- Sources: bibliographic and spatial data, in which information about monuments and investigative activities is recorded

Although a local HER is not a primary archive, each commonly holds digital and/or physical copies of sources for reference purposes. All HER information is held on behalf of and for the benefit of the public and is available for consultation through the relevant local authority.

# HERs and Archaeological Heritage Management

HERs are typically maintained by local government planning authorities, who are responsible for considering approval of applications for new buildings and other construction projects.

As part of new construction projects, developers are required by English planning policy to submit a full appraisal of heritage assets that will be affected by their scheme and any impacts upon them. In turn, government officials are expected to validate submissions against their own knowledge of the site and its wider context. Both parties are expected to base their conclusions on information held in the relevant HER.

Archaeological investigation can add significant costs to new development, often to the extent of making the project unprofitable for the developer. This fact makes it vital for the HER to be as up to date and accurate as possible; doing so is typically the duty of a dedicated records officer. It is equally important that the information held by the HER can be easily understood by nonspecialists, to enable effective decision-making by developers before resources are committed to a project (fig. 13.1).

Typically, construction projects in Lincoln involve discussions between the applicant and the heritage team, which comprises the city's experts in built heritage and archaeology. For both Lincoln's archaeological and conservation officers,<sup>3</sup> the HER is a key resource to identify any relevant historic buildings or archaeological remains that may have been recorded from previous excavations in the area affected by the proposed development.

One of the most effective techniques for this effort is map regression, whereby all available historic maps of a



FIGURE 13.1 Lincoln Cathedral from the walls of Lincoln Castle. These high-profile historic buildings are set in the most archaeologically rich area of the city, which would make their management very difficult without access to an effective and upto-date inventory. *Alastair MacIntosh, reproduced courtesy of City of Lincoln Council* 

location are compared. This technique is made possible through the Lincoln HER database known as Arcade, described below. Map regression can tell us whether a site that currently appears empty has previously been built upon, or vice versa. This information is useful for establishing whether archaeological remains may exist under later buildings and for identifying undeveloped sites that may contain undisturbed archaeological deposits.

Following desk-based assessment, further intrusive archaeological investigation may be required to gather more accurate information. Those findings can be combined with existing information from the HER to provide an archaeological predictive model. The model can be used to inform the design of foundations, allowing remains to be preserved in situ where possible, or excavated in targeted interventions if harm or loss cannot be avoided.

Any resulting information is submitted to the HER, where it is recorded to inform future applications and decisions. Thus, the heritage record is constantly enhanced and updated, with benefits to the academic community through the gathering of knowledge, to developers in the greater certainty and confidence of their finances and timetables, and to the public through greater understanding of their past and in the provision of new, sustainable construction.



**FIGURE 13.2** A typical commercial search of the Arcade system. An applicant has identified an area of possible impact due to development and used the map filter function to generate a tailored search of known heritage assets in the surrounding area. *Arcade, reproduced courtesy of City of Lincoln Council* 

# Arcade: Lincoln's HER Information System

In Lincoln, the information system used to perform all these tasks is called Arcade (City of Lincoln Council n.d.); it is an Arches-powered heritage inventory launched in 2018 (see chapter 4). The system enables real-time online access to the city's HER and is used by academic and commercial researchers to gain a better understanding of the city's heritage (fig. 13.2).

Where data is restricted, such as that relating to ongoing planning applications or the detailed locations of sensitive archaeological sites, it is maintained in a protected area of the system. All other information in Lincoln's HER is publicly accessible on the Arcade system (fig. 13.3).

For trusted users outside the organization, including members of local heritage societies or university staff, Arcade provides for data entry and upload. This capability has sparked new crowdsourcing initiatives, including providing a volunteer group with the ability to make provisional additions to Arcade (subject to verification) to identify and help protect particular historic buildings and enhance existing records. Such tasks would traditionally have been undertaken solely by council officers, who are now free to spend more time on casework, such as reviewing development proposals.



FIGURE 13.3 The information provided by Arcade makes it possible for developments to avoid impacts to known archaeological sites or, as shown in this picture, helps archaeologists design appropriate mitigation strategies that enable development to proceed. *Alastair MacIntosh, reproduced courtesy of City of Lincoln Council* 

# **Lessons and Considerations**

The experience of the English HER sector suggests the following key principles for incorporating archaeological data into heritage inventories:

• Data should be collected and maintained according to defined standards and vocabularies.

- A data collection strategy should be employed to ensure that records contain an appropriate and proportionate level of detail and can be restricted where necessary.
- Sources should include historic maps where available, to allow for historic analysis and map regression.
- The interpretation of information should take into account the needs of a range of audiences and disciplines.
- The data set should be considered a living, evolving resource, with appropriate resourcing to incorporate new information as it becomes available.

Adhering to these principles has helped ensure the effectiveness of Lincoln's HER as an essential tool for the city's archaeological heritage management.

#### NOTES

- 1. *Historic environment record* (HER) is the term used in the United Kingdom for heritage inventories.
- 2. The HER Forum online email list is available at https://www .jiscmail.ac.uk/cgi-bin/webadmin?A0=herforum.
- 3. Archaeology and historic building conservation are separate (though linked) disciplines in the U.K. heritage community. Each derives its authority and place in the planning system from a different set of legislation and guidance. However, in practice, both archaeological and conservation officers are required to employ standardized heritage data in their work, and Lincoln is at the forefront of a growing movement to provide a unified information system that serves both equally.

# 14

# Surveying and Inventorying Intangible Cultural Heritage in a Multicultural Society: The Singapore Case Study

### Nicholas Yeo

Home to more than 5.6 million people, the nation of Singapore is one of the most densely populated cities in the world. Within the boundaries of just 734.4 square kilometers lies a rich tapestry of intangible cultural heritage (ICH) practices celebrated by people of various ethnicities and religions – a result of centuries of crosscultural interactions that began with the arrival of migrants from various countries and regions, including China, India, and the Malay Archipelago.

The 2003 UNESCO Convention for the Safeguarding of Intangible Cultural Heritage (UNESCO 2003) defines ICH as follows:

Intangible Cultural Heritage means the practices, representations, expressions, knowledge, and skills – as well as the instruments, objects, artifacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognize as part of their cultural heritage. This intangible cultural heritage, transmitted from generation to generation, is constantly recreated by communities and groups in response to their environment, their interaction with nature and their history, and provides them with a sense of identity and continuity, thus promoting respect for cultural diversity and human creativity.

In Singapore, these cross-cultural influences have evolved over time into ICH practices treasured by the different communities. Today, they are most evident in Singapore's rich multicultural food heritage, where popular dishes like *mee goreng* (a stir-fried noodle dish made with Chinese noodles using Indian spices) are made possible through the marrying of ingredients and cooking techniques among the communities.

# Importance of ICH and Inventorying

ICH contributes to the sense of identity and rootedness that shapes Singapore's multicultural identity. A big part of ICH in Singapore is the celebration of cultural festivals such as Lunar New Year, Hari Raya Puasa, and Deepavali by the Chinese, Malay, and Indian communities, respectively. Each festival consists of a myriad of practices that contribute to the identities of the communities and form part of Singapore's multicultural ICH. These ICH practices include the traditional crafting of *rangoli* (intricate patterns made from colored rice powder or rice grains) as part of Deepavali, the making of traditional baked goods or *kuehs* (sweet or savory snacks) like pineapple tarts and *kueh baulu* (sponge cake), and social customs such as the kissing of elders' hands as a sign of respect practiced by the Malay community during Hari Raya Puasa (fig. 14.1).



FIGURE 14.1 A Malay-Muslim family gathers in traditional Malay attire to celebrate Hari Raya Puasa, a day that marks the end of the fasting month of Ramadan. *National Heritage Board, Singapore* 

The importance of ICH was further recognized under Our SG Heritage Plan (National Heritage Board 2018), Singapore's first heritage master plan, which outlined the broad strategies for Singapore's heritage and museum sector to be carried out from 2018 to 2022. The plan was developed in consultation with academics, cultural practitioners, community leaders, educators, students and members of the public.

One of the four pillars of the Heritage Plan – Our Cultures – focuses on ways of safeguarding and promoting ICH in Singapore. The initiatives under the plan include strengthening research and documentation of ICH, developing an ICH inventory through carrying out a nationwide survey, and raising awareness of ICH in the community. The development of such an inventory is also one of the obligations of a state party under the UNESCO ICH Convention (2003), to which Singapore is a signatory.

## Singapore's Preparatory Work

Prior to carrying out research on Singapore's ICH, the National Heritage Board (NHB) studied and referenced that convention, which focuses on the significance of ICH practices to communities and the viability of these practices (UNESCO 2003). NHB also studied ICH surveys carried out in other cities in the region, such as Hong Kong and George Town, Penang, Malaysia, and learned from their experiences before embarking on the project.

# **First Nationwide ICH Survey**

In July 2016, NHB launched a nationwide survey to identify and document key aspects of Singapore's ICH practices. The objectives of this survey were to provide a more definitive understanding of Singapore's ICH, document the practices and experiences of ICH practitioners, inform policymaking on a state level, and increase public awareness and appreciation of ICH.

To complement the ICH survey and to support the development of the ICH inventory, NHB organized engagement sessions with more than seventy participants from various communities, from September 2016 to November 2017, and sought their views on the elements that could be included in the inventory. The 2003 UNESCO Convention recognizes five ICH domains: oral traditions and expressions, including language as a vehicle of intangible cultural heritage; performing arts; social practices, rituals, and festive events; knowledge and practices concerning nature and the universe; and traditional craftsmanship (UNESCO 2011a). Singapore included all of these as well as a sixth category of Food Heritage, after a nationwide poll of over three thousand respondents in 2018 saw it voted as the most important aspect of Singapore's ICH, a reflection of Singaporeans' love for food.

Due to the extensive nature of the survey, NHB commissioned a research company with a network of trained researchers to conduct it. Survey forms and a related comprehensive set of guidelines, both adapted from the UNESCO ICH convention and related guidance documents (UNESCO 2021), were codeveloped with these researchers to collect information.

The survey involved two layers of research: primary and secondary. Primary research was in the form of fieldwork and captured information through photography, videography, and interviews with practitioners and other informants, typically conducted on-site with each practitioner, in the locale of his or her practice. Where required, those involved in fieldwork were matched to the interviewees based on their language preference, as a sizable number of older ICH practitioners are more conversant in languages other than English, including Chinese, Malay, and Tamil. Secondary research involved acquiring information from sources ranging from archival documents and oral history interview records to online and print media.

The research content was then consolidated, transcribed, and logged, and subsequently developed into a final research report for each of the ICH elements. Accompanying each research entry was a short video of the ICH element in which a practitioner would share his or her trade or craft, personal views, and experiences.

#### Launch of Singapore's ICH inventory

After compiling information from the ICH survey and community engagement sessions, in 2018, NHB launched Singapore's first National Inventory of ICH, with an initial list of fifty ICH elements. That certain ICH elements are listed in the inventory does not suggest they are prioritized over others. Given the multicultural nature of the country, it is important to ensure diverse representation of ICH elements in the inventory. The number of ICH elements in the inventory has continued to grow, and the content in the ICH inventory continues to be updated as ICH evolves over time and more research is conducted.

### Making the Inventory Accessible

To ensure that the inventory is accessible, and its content engaging for the public, NHB has taken a comprehensive digital approach to cater to a digitally connected Singapore audience. At the core of this approach is the online ICH inventory on Roots, NHB's public facing heritage resource portal (National Heritage Board 2023b). In this portal, content from the ICH inventory is featured regularly and also interlinked with articles on tangible heritage in Singapore, such as related artifacts from the National Collection and built heritage.

As of this writing, the inventory is home to 102 elements that reflect the practices of the various ethnic groups in Singapore. The content in the inventory is written for the general public and features the associated social and cultural practices, viability, and future outlook of the ICH elements, as well as the experiences of the practitioners. It has also been utilized by schools to educate students on ICH in Singapore, through classroom learning and/or school projects. Social media, particularly Facebook and Instagram, is also actively embraced to further promote awareness of ICH to the wider audience (fig. 14.2).



FIGURE 14.2 To help raise awareness and understanding of Thaipusam, an ICH practice carried out by Hindus in Singapore, NHB produced a campaign titled A Journey of Devotion— Celebrating Thaipusam in Singapore, which involved using digital media to document the procession route. Devotees carry spiked metal structures known as *kavadis* as a form of devotion to the deity Lord Murugan. *National Heritage Board, Singapore* 

### Expanding on ICH Research

In March 2023, Our SG Heritage Plan 2.0 was launched, to guide strategies for the next chapter of Singapore's heritage landscape from 2023 to 2027; it includes plans to strengthen research and documentation of Singapore's ICH (National Heritage Board 2023a). NHB administers the Heritage Research Grant, which encourages academics, researchers, and heritage NGOs to embark on heritagerelated research projects that document and preserve Singapore's heritage (fig. 14.3).



FIGURE 14.3 As part of the Heritage Research Grant administered by the National Heritage Board, a team of researchers and students from the Nanyang Technological University conducted an in-depth study on the Nine Emperor Gods Festival in Singapore. Such research projects have encouraged the involvement of young Singaporean cultural researchers. *National Heritage Board, Singapore* 

# Lessons for ICH Surveys and Inventorying

The extensive research and documentation efforts carried out by NHB, including through the nationwide survey, laid the foundation for the development of Singapore's ICH inventory. The research on various ICH elements and their history, current practices, and challenges, together with the establishment of the ICH inventory, have been essential to NHB's efforts to develop new initiatives to safeguard ICH in Singapore and facilitate the transmission of ICH to the next generation of practitioners. Two key lessons were derived from NHB's process on surveys and inventorying of ICH that will be essential to guide its future documentation and safeguarding efforts:

- The establishment of collaborative networks between ICH practitioners, researchers, and the communities is a key factor in successfully capturing the multicultural dynamics of ICH elements in Singapore.
- Integrating research with community engagement, be it through focus groups or readily available digital content, is essential to ensuring the documentation and continued transmission of ICH practices.

# Conclusion: Considerations, Challenges and Remedies, and Recommendations

# David Myers Janet Hansen

In closing, we offer the following thoughts based on our collective experiences, those shared with us by others, as well as research. They summarize salient points, common challenges and potential remedies to them, and strategic recommendations relating to heritage inventory and survey practice. Much of what follows has been discussed earlier in this volume and is consolidated here for the benefit of readers.

# **Key Considerations**

The following summarizes noteworthy points regarding heritage inventories and related surveys discussed throughout this volume.

 Recognition of the need for heritage inventories and surveys is increasing. Increased interest in heritage inventories and surveys has been prompted by several factors, including international trends of rapidly increasing urbanization and development, as well as climate change. Rapid advances in information technologies and increasing availability of digital information have also led heritage agencies around the world—at national, regional, and local scales—to seek accurate, up-to-date, accessible information to inform decision-making.

- ٠ Inventories and surveys are fundamental tools for conserving heritage. For organizations tasked with safeguarding heritage resources, the fundamental need to identify and understand the heritage they are responsible for makes inventories and surveys among their most critical tools. When they are linked to legal frameworks, statutory inventories are essential mechanisms for implementing public heritage policies, including identifying which heritage resources are officially designated or listed; which merit protection, regulation, or incentives; and which should receive formal consideration within regulatory processes. Therefore, support for inventories and surveys needs to be viewed as a fundamental investment by heritage organizations.
- Inventories are never complete. Inventories should be viewed as ongoing records that continue to be improved over time, rather than as projects of limited duration.
- Ongoing investments in inventories and surveys are critical to heritage management. Investments should be made to support inventories, along with

surveys and other data collection activities that feed into them, over the short, medium, and long term. Categories of required investments include dedicated personnel and capacity building, IT systems, and activities in planning, management, dissemination, and promoting public engagement.

- Inadequate investments in inventories and surveys will undermine their effectiveness in heritage management. To the extent that investments are not made in maintaining an inventory or supporting periodic surveys, the quality and usability of essential heritage information will likely diminish, in turn reducing the inventory's effectiveness in safeguarding heritage. For instance, certain types of inventory information can be expected to become outdated over time, including the condition of heritage resources and even whether they still exist. The currency and usefulness of those types of information can likewise depreciate if it is not periodically updated through surveys or other data collection activities.
- Inventories and survey activities should be integrally tied together. Survey activities should not be viewed as ends unto themselves. The content and structure of survey data needs to be designed to feed into the associated inventory. If an inventory does not already exist to incorporate the survey's data at the time that a survey is being planned, it is recommended that steps be taken to create such an inventory prior to or concurrent with the survey's implementation.
- Planning for inventories and surveys is critical to success. For any given jurisdiction, there is a need for long-term planning to carry out multiple surveys over time and to target those activities based on the needs of the corresponding inventory.
- Inventory and survey practices are increasingly embracing inclusive approaches. The increasing democratization of heritage processes in many parts of the world has been reflected in shifts in inventory and survey work. In the past, such work primarily reflected professional perspectives. Now, increasingly, we see broad-ranging and inclusive participation, including from community members.
- Inventory and survey practices are increasingly accounting for traditionally marginalized communities. There is growing recognition in much of the world of the need to comprehensively identify and document the heritage of underrecognized cultural and ethnic groups and to fully represent

associated resources within inventories and related surveys.

- The scope of inventories and surveys should expand as definitions of heritage broaden. As public agencies officially recognize more types of heritage, the breadth of inventories and surveys should expand accordingly.
- Unified inventories can be more effective than separate topical inventories for heritage management. Inventories can potentially be more effectively and efficiently used as tools for heritage management when they are unified for all immovable heritage types, rather than having separate inventories for different heritage types (e.g., separate inventories for architectural and archaeological heritage).
- Thematic frameworks, thematic studies, and historic contexts are key to seeing the big picture. These tools enable inventories and associated survey activities to distinguish the forest from the trees when identifying, describing, and evaluating heritage. Their application can be useful for comparative analysis of heritage resources and determining the degree of representativeness and potential gaps with respect to identified historic themes or contexts. They are most useful when designed to be used practically for such tasks—for instance, when their description of heritage typologies specifies accompanying character-defining and associative features for assessing integrity—and less useful when they are strictly narrative documents.
- Information technology advances are substantially influencing the scope and methods of heritage inventories and surveys. Rapid advances in information technologies in recent decades continue to expand the possibilities of inventories and surveys, necessitating adequate technical expertise and investments.
- Pilot surveys can be essential prior to implementing surveys. Because in many cases alldigital surveys are being undertaken for the first time, pilot surveys play a critical role in testing data collection technology, tools, and methods and in refining survey budgets and schedules.
- Inventories need to be widely accessible and usable to serve multiple heritage management functions. Accessibility and usability are key to inventory effectiveness, including serving the needs and interests of the general public.

 Public outreach and participation are important to maximizing the effectiveness of inventories and related surveys. Organizations administering inventories and surveys can make creative use of a range of programs and activities to reach a broad audience and start public outreach at survey project inception.

# Challenges and Potential Remedies

The following sections describe common challenges relating to heritage inventories and surveys, as well as potential remedies.

# Overcoming Organizational and Disciplinary Silos

As mentioned previously, sometimes the historical development of legal and policy frameworks results in separate heritage inventories or lists for different heritage types that could be better managed if they were integrated.

Potential remedies include:

- Assess the legislative and policy framework in place. If it is the source of siloed inventories, surveys, and related practices, determine whether unifying reforms to the framework might be beneficial. If so, design and work to implement such reforms.
- If the legislative and policy framework is the source of such silos but reform is not feasible, then explicitly recognize those issues and devise ways to overcome them, such as:
  - Forging ways to cooperate across organizations
  - Developing shared, unifying information systems and controlled vocabularies
  - Implementing a shared, interdisciplinary approach to inventory and survey practice

# Securing Long-Term Investment and Support

A primary constraint on the effectiveness of inventory and related survey programs is inadequate long-term investment of resources. Public heritage agencies generally tend to be poorly resourced, and support for such agencies has commonly been diminishing over time. In some cases, this situation can be exacerbated by a lack of awareness of organizational leadership about the fundamental importance of heritage inventories and related surveys for achieving agency mandates.

Potential remedies include:

- Measures to raise awareness of decision-makers about the essential functions and benefits of effective inventories and related data collection activities, including surveys, that inventories and surveys should be core activities of heritage organizations, and the consequent need for ongoing investment and a dedicated program for their support.
- Pooling resources through partnerships or consortia of multiple organizations, including public, private, and academic.
- Open-source software as a cost-saving approach for inventory and related survey information systems, including through pooling resources of multiple organizations.
- Revenue generation, such as through:
  - Charging fees for more robust access to inventory databases.<sup>1</sup>
  - Recovering costs for certain inventory-related services, such as agency staff time for responding to certain types of queries from commercial entities. One rate might be applied to searches requiring a standard response time, and a higher rate charged for priority searches needing a quicker response time.<sup>2</sup>
- Grant funding to meet periodic or particular needs, including the initial establishment of an inventory.
- Tourism-related taxes.
- National governments may, under certain conditions, apply to the Committee for the Protection of Cultural Property in the Event of Armed Conflict for inventory and survey-related support specifically concerning preparedness for and response to armed conflict. (See Armed Conflict in chapter 12 for details.)

#### Keeping Information Current

A constant challenge of most inventory programs is keeping information current to reflect inevitable changes in the state of places caused by both human and natural influences. At times it may also be necessary to update an inventory to address broadening definitions of what
heritage is deemed to be significant. Keeping information current requires ongoing activities and related investments, and it is often challenging to keep up with these costs, as annual budgets for public heritage agencies have commonly been declining over time.

Potential remedies include:

- Recognize the need for dedicated staffing to continually update information.
- Update information through periodic, targeted survey activities.
- Choose tools and workflows that maximize efficiency in data collection as well as in incorporating data into the corresponding inventory.
- Prioritize critical information for heritage protection.
- Establish linkages so that new information generated through processes external to the inventory is integrated into the inventory, such as that from impact assessments and development permitting processes (e.g., building demolition permits).
- Create partnerships among public agencies and educational or research institutions, professional organizations, and heritage NGOs. Such partnerships may lead to coordinated contributions from professionals, researchers, students, and volunteers.
- Implement mechanisms for increased public input, such as crowdsourcing.<sup>3</sup>
- Utilize newly captured imagery, for example, satellite or aerial imagery or indicative information from online mapping services that provide panoramic street view imagery, such as Google Street View or KartaView.

## Keeping Up with Evolving Technology

Keeping up with rapid information technology developments can be a significant challenge when heritage organizations—often with limited resources and IT expertise—must decide whether to invest in newer software applications. Data in proprietary formats can also become unreadable if related software becomes obsolete.

Potential remedies include:

 Heritage organizations may seek to pool resources, rather than making scattered small-scale investments, to be better positioned to invest in keeping pace with rapid advancements and to gain access to IT specialists who stay abreast of and are adept at implementing new technologies. This type of approach could include multiple organizations jointly investing in shared, purpose-built IT applications. One way to enable pooling of resources is to adopt open-source software, such as the Arches Heritage Data Management Platform described in chapter 4. The Arches for HERs software package is an example of one such solution. It was created based on the standards and requirements of England's more than eighty regional and local agency historic environment records.

- Heritage organizations may wish to, whenever possible, create inventory and survey data in nonproprietary formats so that data can be read in the future without relying on particular software.
- Employing data standards can also help ensure longterm data readability and interoperability.

## Developing Inclusive Approaches to Inventory and Survey Work

As discussed throughout the book, in many parts of the world there is increased recognition of the need to identify and document resources associated with ethnic and cultural histories and to represent diverse populations and multiple narratives more fully in inventories and surveys. A vital part of such an effort is engaging community stakeholders to work alongside heritage professionals as partners. This approach is a departure from previous surveys and inventories that relied solely on heritage professionals for the most part, so new strategies are needed.

Potential remedies include:

- Consider heritage inventory and survey tools and methods that:
  - Incorporate broad-based engagement strategies, programs, and activities
  - Design inventories for ongoing community input
  - Engage the public throughout the entire survey process from survey planning to publishing data in inventories
  - Employ thematic frameworks and historic contexts as a means to help identify a comprehensive range of relevant themes and related heritage types
  - Build partnerships with a range of stakeholders

- Take into account multilingual needs
- Consider building inventory and survey teams that:
  - Include expertise in public participation, outreach, advocacy, and community building
  - Take an interdisciplinary approach to the work
  - Engage community, cultural, and topic experts as project advisors and peer reviewers whose time is considered in the project budget

## Recommendations

The following are concluding recommendations for improving the effectiveness of heritage inventory and survey practice.

- Heritage organizations and professionals can benefit greatly from increased sharing of inventory- and survey-related experiences and practices. This can be furthered through a variety of means, including:
  - Creating both virtual and in-person communities of practice (such as England's HER Forum, discussed under Inventory Communities of Practice in the Resources sidebar in chapter 3)
  - Disseminating information through additional publications, dedicated conference sessions and workshops, and webinars
  - Developing additional case studies on a range of related topics (e.g., community participation, disaster preparedness and response, armed conflict)
- Take actions to further support inventory- and surveyrelated capacity building, such as:
  - Preparing and publishing inventory- and surveyrelated didactic materials, including case studies
  - Providing more in-depth learning regarding inventory and survey practices through university education as well as professionally oriented training
  - Offering additional internship opportunities within heritage agencies and organizations that provide inventory- and survey-related experiences

- Conduct studies to analyze differing levels of investment into public heritage inventory and survey programs to:
  - Measure the resulting impacts of investment options on the ability of public agencies to effectively carry out their heritage management mandates, and on the ability of inventories to inform development and reduce risk to developers
  - Publish resulting findings to inform public-agency leadership and other decision-makers, as relevant, about return on investment in heritage inventories and surveys
  - Create and publish a methodology for conducting return on investment studies and analyses relating to heritage inventories and surveys

The authors hope that these conclusions and recommendations can help promote additional dialogue and collaboration among organizations and professionals working with heritage inventories and surveys, spur the creation of additional resources and learning opportunities to improve the effectiveness of practice, and ultimately further protect significant cultural heritage around the world.

## NOTES

- As an example, as discussed under Fiscal Support in the Resources sidebar in chapter 3, AZSITE, Arizona's Cultural Resource Inventory website, offers annual database access subscriptions at tiered pricing rates based upon the number of users and type of user organization. See https://azsiteapp.rc .asu.edu/Azsite/forms.html.
- Historic England has made available a model historic environment record (HER) access and charging policy for use by England's more than eighty local government authority inventories that includes options for cost-recovery charging of this sort. See Fiscal Support in chapter 3's Resources sidebar for details.
- As an example of crowdsourced information, see Historypin (https://www.historypin.org/en/), an online, user-generated archive of historical photos, audio recordings, videos, and personal recollections. Users can use the location and date of their content to pin it to Google Maps.

# Glossary

The following terms relating to cultural heritage inventories and surveys are used in this publication.

## archaeological predictive model

A method to assess the likelihood of the presence of archaeological remains for a particular area based on a range of factors, including geographic and environmental characteristics and patterns within the cumulative known archaeological evidence for the area in question. Key sources for establishing such patterns may include existing inventory information, records from prior field surveys or investigations, and **historical map regression**. Archaeological predictive modeling is commonly applied within heritage impact assessment processes.

### archaeological sensitivity map

A map produced through archaeological predictive modeling to convey the probability of encountering archaeological features across a specific area, and sometimes also the likely degree of significance, or other characteristics of potential archaeological features. Such maps are often applied within heritage impact assessments. Related Terms include *archaeological potential* and *archaeological priority*.

#### authoritative data source

A single, officially designated source authorized to provide one or more types of information that is trusted, timely, and secure and on which lines of business rely (U.S. Department of the Interior 2008, F-1).

### controlled vocabulary

An information tool that contains standardized words and phrases to refer to ideas, physical characteristics, people, places, events, and subject matter, among other topics. It is used to index and/or to retrieve content through browsing or searching and typically includes preferred and variant terms, has a defined scope, or describes a specific domain (Harpring 2010, 1, 215).

## cultural mapping

A methodology focused on involving communities in identifying and recording the location and attributes of local tangible and intangible cultural assets, often as a basis to inform government interventions or community initiatives (Duxbury, Garrett-Petts, and MacLennan 2015, 2).

#### data migration

The planned movement of data to new readable and interoperable formats and more recent versions of software (Informing the Future of the Past n.d.).

## data standard

A technical specification that describes how data should be created, stored, or exchanged to enable the consistent collection and interoperability of that data across different systems, sources, and users. A data standard can be composed of multiple components, including data types, identifiers, vocabularies, formats, application programming interfaces (APIs), and schemas defining relationships among different pieces of information (Federal Enterprise Data Resources n.d.).

## heritage impact assessment

A formal assessment of the impact of a proposed development or other change on the cultural significance of a heritage place or places. HIAs are typically required under the legal or policy framework of jurisdictions and usually occur as part of a planning or design process to ensure that the cultural significance of places is taken into consideration and to mitigate adverse impacts upon significant attributes. Many HIA regimes take into account impacts of proposed projects on the setting and views associated with heritage resources.

## heritage inventory

An ongoing record identifying and describing significant and potentially significant heritage resources. Inventories may also contain records of heritage resources that no longer exist, for purposes of posterity or research, and of places determined through evaluation to not meet a minimum threshold of significance. They are established to serve as tools for a range of purposes, including heritage management and protection and public information, engagement, and appreciation. A statutory inventory is recognized by law as the authoritative information source upon which planning decisions regarding heritage are based.

## heritage listing, designation, and registration

Most nations have legal regimes for formally recognizing heritage resources at national, regional, and local levels of jurisdiction. Such recognition is known by differing names in different countries, including listing, designation, and registration. Regimes for recognition typically specify related thresholds, including significance criteria. Formal recognition also confers differing implications depending on the jurisdiction, such as legal protection, required consideration in regulatory processes, and financial incentives. See also **heritage significance assessment or evaluation** and **significance threshold**.

## heritage significance assessment or evaluation

A formal assessment or evaluation of the significance of a heritage place according to local, regional, national, or world heritage assessment criteria, thresholds, and other guidelines.

## heritage survey

An activity over a specific timeframe to identify, describe, and/or assess the significance of potential heritage resources within a defined geographic area—often also determining which places or properties are not significant. Ideally, surveys are designed to feed information into an ongoing heritage inventory, thereby adding new and updating existing inventory information.

## historic context

A term used in heritage practice in the United States and Canada defined as "an organizational format that groups information about related properties based on theme, geographic limits, and chronological period" (National Park Service 1983, 44717). Historic context statements synthesize information about each theme into a written narrative, identify and describe important associated heritage typologies, and establish specific standards and guidelines for making significance assessments. They help ensure consistency in resource identification and can be used to evaluate the significance of heritage resources as part of inventory and survey work, as well as for designation or listing. See also **thematic framework** and **thematic (or theme) study**.

## historical map regression

A process used in research on the history of places that compares maps of an area compiled in different time periods to help determine the current state of and changes to the natural or built environment. In archaeology, map regression can help locate features appearing only on earlier maps and assign building phases. It is frequently part of desk-based assessments before field work (Mapping History n.d.).

## intensive-level survey

A survey type that includes in-depth field inspections and research sufficient to thoroughly document, describe, and evaluate the significance of heritage resources within a geographic area. An intensive survey is generally conducted following the completion of a reconnaissancelevel survey (Derry et al. 1985, 12; National Park Service 1983, 44722). See also **reconnaissance-level survey**.

## interoperability

The ability of an information system to provide data in a way that can be used by another information system or service without the need for additional work, such as rekeying of data (English Heritage 2012).

## legacy data

Information an organization may have invested substantial resources in developing that has retained its value but become difficult to access efficiently. Typically, the technology (software and/or hardware) used to create or store the data has been rendered outmoded or obsolete (EDRM 2016, 175).

## no-strike list

A list established in international law and military rules of engagement used by military forces to identify places or objects protected from military operations, including cultural sites (O'Keefe et al. 2016, 25).

### open-source software

A computer program made available free of charge to the general public. Its source programming code is also open and accessible, which means that its original design may be modified. Any customizations, upgrades, or improvements made to the software by anyone must remain freely available as well.

## reconnaissance-level survey

A survey type that includes cursory field inspections and research sufficient to provide preliminary information about the history and development of a geographic area, the historic themes and time periods represented, and the nature and distribution of associated heritage typologies, sometimes called a *windshield survey*. Reconnaissance surveys are generally completed to help focus research, field survey, and documentation efforts for intensive surveys (Derry et al. 1985, 12; National Park Service 1983, 44722). See also **intensive-level survey**.

## restricted-target list

A restricted target is an otherwise-lawful military objective whose attack is subject to some restriction, often on account of its proximity to protected objects, such as cultural sites. The proximity of cultural property to a military objective can be grounds for placing the objective on a restricted-target list, according to which any attack on the objective must be conducted under stringent conditions, such as employing a specific weapon, to avoid or at least minimize incidental damage to cultural property (O'Keefe et al. 2016, 36–37).

## significance threshold

The minimum level of assessed cultural heritage significance of a place or property to justify its inclusion on relevant local, state, national, or world heritage designation lists. Threshold indicators, which may include factors such as integrity and authenticity, may be used to determine the relative significance of a place. Often these rely on comparison of a place with other similar examples within a defined area or jurisdiction, such as across a locality, state or province, or nation (Australia ICOMOS 2013b, 5).

## thematic framework

An organizing structure that broadly identifies themes relating to important trends, topics, and patterns in prehistory and history that are represented through a diverse range of heritage places. Thematic frameworks help ensure that heritage identification, designation or listing, and interpretation represent a full range of deliberately articulated themes. See also **historic context** and **thematic (or theme) study**.

## thematic (or theme) study

A narrative document that presents in-depth research or a synthesis of existing research on a specific theme or themes, often those identified through a thematic framework. Thematic studies help justify the significance of themes and associated heritage typologies and are used to support evaluation of the significance of heritage resources, including for resource identification in inventories and through surveys, and for resource designation or listing. See also **historic context** and **thematic framework**.

## thesaurus

A **controlled vocabulary** arranged in a specific order and characterized by three relationships: equivalence, hierarchical, and associative. Thesauri may be monolingual or multilingual. Their purposes are to promote consistency in the indexing of content and to facilitate searching and browsing (Harpring 2010, 236).

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# Contributors

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David Myers is a senior project specialist at the Getty Conservation Institute. He manages the GCI's Inventories for Heritage Management project, and is a member of the GCI's Arches project team, having worked on building the Arches open-source community and on the implementation of the Arches Heritage Data Management Platform with the City of Los Angeles and with national and local government authorities in England. He also managed the GCI's Heritage Values, Stakeholders, and Consensus Building project. Other past contributions include work on the GCI's Los Angeles Historic Resource Survey project, on a project to develop and implement the Middle Eastern Geodatabase for Antiquities (MEGA) – Jordan, and on GCI projects in Egypt, in Southern Africa, in Myanmar, and for Iraq. He also previously served as a legislative assistant to a member of the U.S. House of Representatives.

## Janet Hansen

Janet Hansen has more than thirty years of experience in the field of heritage preservation, with particular expertise in developing and implementing heritage surveys to inform preservation policy and practice in local government environments. As the deputy manager of the Los Angeles Office of Historic Resources, she managed the precedent-setting SurveyLA project from inception to completion. Janet has served as an advisor to other municipalities planning heritage surveys, has lectured on the topic at conferences and universities throughout the United States and in Canada, and has published numerous papers and articles on various aspects of SurveyLA.

#### \* \* \*

## Lauren Weiss Bricker

Lauren Weiss Bricker recently retired as a professor of architecture at California State Polytechnic University, Pomona, where she co-coordinated the historic preservation program and was director of the ENV Archives-Special Collections. She served as a chair of the National Council for Preservation Education and chair of California's State Historical Resources Commission. Lauren was the Clarkson Chair in Urban Planning for 2019, University at Buffalo. She writes on American architecture and historic preservation and has curated several architectural exhibitions. She is the author of the *Mediterranean House in America* (2008) and is currently completing the book *Designing the Modern American House*.

## Sara Delgadillo

Sara Delgadillo is an associate city planner for Los Angeles City Planning's Office of Historic Resources. As staff for the City's municipal historic preservation programs, she supports the development and administration of HistoricPlacesLA, Los Angeles's historic resource inventory system, a customization of the Arches open-source data management platform, and ancillary projects that feature historic places reflective of the ethnic and cultural diversity of Los Angeles. Sara is a founding member of Latinos in Heritage Conservation, a national organization building a movement that affirms Latinx heritage through education, conservation, and leadership development.

## **Annabel Lee Enriquez**

Annabel Lee Enriquez is a project specialist at the Getty Conservation Institute (GCI), where she has specialized in cultural heritage data, documentation, and technology projects since 2013. In particular, she works to enable effective conservation and research through the Arches project, an open-source semantic software platform for cultural heritage data management, focusing her efforts on data modeling and strategy, knowledge organization, and project implementation for heritage inventories and science. Prior to her work at the GCI, her research interests revolved around geospatial survey techniques and 3D documentation of monuments and sites. Annabel received a BS in urban and regional studies from Cornell University, and an MS in geographic information science and technology and a graduate certificate in heritage conservation from the University of Southern California.

## **Katie Horak**

Katie Horak is an architectural historian and principal at Architectural Resources Group (ARG), a nationally acclaimed heritage architecture and planning firm. A recognized expert in historic resource documentation, treatment, and management, Katie was the project lead for all of ARG's work on SurveyLA, from the pilot phase to project completion. Before joining ARG in 2008, Katie conducted heritage surveys throughout the city of New York while on staff at the Landmarks Preservation Commission. Katie is an adjunct assistant professor at the University of Southern California, where she teaches graduate-level heritage conservation courses in the School of Architecture.

## Alastair MacIntosh

Alastair MacIntosh is the city archaeologist for Lincoln, England. His role is to advise the city's council on the impacts of new buildings and to maintain its Arches-powered heritage inventory, Arcade. Alastair started his career working as a field archaeologist on projects throughout the English Midlands, before taking on a four-year government-funded project to analyze the historic landscapes of Lincolnshire. Alastair subsequently cofounded a small heritage consultancy and went on to undertake further research projects into the management of historic church buildings, the reuse of historic farm complexes, and the ways in which local communities use heritage information to manage their local environment. As Lincoln's city archaeologist, Alastair has worked to develop ways of enabling sustainable economic development in archaeologically sensitive areas, especially by means of more appropriate construction methods.

## **Nicholas Yeo**

Nicholas Yeo is currently the senior manager of the Heritage Policy and Research department of the National Heritage Board, Singapore. He is involved in developing programs, content, and campaigns to raise awareness of Singapore's intangible cultural heritage, alongside initiatives to support the sustainability of heritage businesses. Nicholas has more than twelve years of experience in the cultural heritage sector and has worked in various fields, including marketing and communications and digital engagement. He also enjoys documenting both the built heritage and food heritage of Singapore through photos.