

Informing Our Heritage Future(s):

Preserving Our Digital Past(s)

Investigations of data management within
the High Street Heritage Action Zones

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i. Abstract

This thesis, undertaken through an Arts and Humanities Research Council Collaborative Doctoral Partnership with Historic England, investigates the production, governance, and reuse of heritage data within the £200+ million High Street Heritage Action Zone programme (2020–2024), which aimed to revitalise 67 high streets across England. Focusing on case studies in Northallerton, Kirkham and Chester, alongside Historic England’s national coordination, the research examines how heritage data is created, managed, and preserved in large-scale, multi-stakeholder regeneration initiatives.

Using a mixed-methods approach, the study analyses the socio-technical systems shaping heritage data practices from national frameworks to local community projects. Findings reveal major disparities in data management, with below-ground archaeological data benefiting from structured workflows and deposition standards, while above-ground heritage data remains fragmented across planning portals with little systematic preservation.

Although Historic England’s Heritage Information Access Strategy (HIAS) offers guidance, implementation varied widely due to inconsistent governance and the absence of mandatory data management requirements. Priorities were regeneration of infrastructure and facades, community placemaking and creative engagement, with data management given little priority, leading to siloed storage, unclear ownership, and poor long-term access.

The research argues that governance frameworks, rather than technical or financial limitations, most strongly influence data accessibility and longevity. It explores what might reasonably be expected of large-scale heritage projects that generate valuable digital data, suggesting that future initiatives could benefit from aligning with nationally accepted FAIR data standards, and that resourcing and incentivising good data management through specifications, tender processes, training and guidance, in partnership with organisations such as the DPC, ADS and HERs, may offer a more sustainable path forward.

This is the first systematic analysis of data practices within a major UK heritage regeneration programme, demonstrating that sustainable digital legacies require treating heritage data as a strategic public asset demanding active, coordinated stewardship.

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iii. Declaration

I declare that this thesis is a presentation of original work, and I am the sole author.

This work has not previously been presented for an award at this, or any other,

University. All sources are acknowledged as References.

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vii. Glossary

vii.1. Terms

Above-ground – Heritage relating to visible, built, and standing structures (e.g., architecture, public spaces, shopfronts).

AI (Artificial Intelligence) – A branch of computer science that develops systems capable of performing tasks that typically require human intelligence, such as language understanding, pattern recognition, or decision-m

Below-ground – Archaeological and buried heritage beneath the surface, including artefacts, deposits, and sub-surface remains.

Born-digital – Information that originates in a digital form (e.g., digital photographs, Computer Aided Design drawings, databases) rather than being digitised from analogue sources.

CARE – A set of principles for Indigenous data governance: **Collective benefit, Authority to control, Responsibility, and Ethics**, emphasising that data use should serve the communities it derives from.

Data Practices – The ways in which data is collected, stored, shared, and managed, encompassing technical, ethical, and organisational routines.

Data Reuse – The practice of using existing data for new research, policy, or community purposes beyond its original intent, often involving reformatting, reinterpretation, or integration with other datasets.

FAIR – A set of guiding principles for data management: **Findable, Accessible, Interoperable, and Reusable**, ensuring that digital assets can be discovered and used by humans and machines.

HAZ (Heritage Action Zone) – A designation for areas targeted for heritage-led regeneration, often through investment in conservation, planning, and community projects.

HIAS (Heritage Information Access Strategy) – Historic England's strategy to improve access to heritage data by making it more consistent, integrated, and interoperable. For purposes of this thesis, Heritage Information Access Simplified is embedded within the wider Heritage Information Access Strategy.

High Street – The principal shopping and social area in a town or city, often serving as a symbolic and economic centre of community life.

HSHAZ (High Street Heritage Action Zone) – A programme led by Historic England (2020–2024) to regenerate and revitalise historic high streets through investment, community engagement, and cultural initiatives.

Levelling Up – A UK government policy agenda aiming to reduce regional inequalities by investing in local infrastructure, skills, culture, and communities, often linked with heritage regeneration schemes.

MIDAS (Monument Inventory Data Standard) Heritage – A UK data standard that provides a framework for recording information about the historic environment.

NPPF (National Planning Policy Framework) – A UK government framework that sets out planning policies in England, including guidance for protecting and managing heritage assets.

OASIS – An online system for archaeologists to record details of fieldwork and surveys, feeding into HERs and the ADS to ensure consistent documentation and archiving.

SSI (Semi-Structured Interviews) – A qualitative research method combining prepared questions with flexibility for follow-up, widely used in heritage and social research.

TaNC (Towards a National Collection) – An AHRC-funded research programme (2019–2024) exploring ways to link and unify the UK’s gallery, library, archive, and museum collections digitally.

i.1. Organisations & Frameworks

ADS (Archaeology Data Service) – A UK digital archive based at the University of York, specialising in preserving and providing open access to archaeological data.

AMION – A consultancy firm that has provided evaluations and economic impact assessments of heritage programmes, including HSHAZ initiatives.

DCMS (Department for Digital, Culture, Media & Sport) – The UK government department responsible for cultural heritage, the arts, and digital innovation (now restructured under DSIT and DLUHC but still used in heritage contexts).

DPC (Digital Preservation Coalition) – An international membership organisation that supports institutions in the long-term preservation of digital materials.

HE (Historic England) – The public body responsible for protecting and promoting England’s historic environment, including running HSHAZ initiatives.

HEIRNET (Historic Environment Information Resources Network) – A forum that brings together stakeholders in UK heritage information management, aiming to promote data sharing and standards.

HERs (Historic Environment Records) – Databases maintained by local authorities in the UK that document archaeological sites, historic buildings, landscapes, and other heritage assets.

MHCLG (Ministry of Housing, Communities & Local Government) – A former UK government department responsible for housing, planning, and local government (now largely replaced by the Department for Levelling Up, Housing and Communities).

National Galleries Scotland – The national body responsible for Scotland’s national collection of fine art, managing several major galleries in Edinburgh.

National Museums Scotland – The national body responsible for preserving and interpreting Scotland’s material culture, science, and history through collections held in multiple museums.

vii.2. List of Acronyms Used in this thesis

A

ADS - Archaeology Data Service

AHRC - Arts and Humanities Research Council

AI - Artificial Intelligence

AIMS - Asset Information Management System

ALGAO - Association of Local Government Archaeological Officers

API - Application Programming Interface

AR - Augmented Reality

ARK - Archival Resource Key

B

BAA - British Airport Authority

BIM - Building Information Modelling

C

CAD - Computer-Aided Design

CARE - Collective Benefit, Authority to Control, Responsibility, and Ethics

CCTV - Closed-Circuit Television

CDE - Common Data Environment

CDP - Collaborative Doctoral Partnership

CH1 Bid - Chester Business Improvement District

CIC - Community Interest Company

CifA - Chartered Institute for Archaeologists

CPC - Connected Places Catapult

CIDOC-CRM - International Committee for Documentation Conceptual Reference Model.

CSV - Comma-Separated Values

D

DCMS - Department for Digital, Culture, Media and Sport

DMP - Data Management Plan

DOI - Digital Object Identifier

DPC - Digital Preservation Coalition

DPI - Dots Per Inch

E

EoI - Expression of Interest

F

FBC - Fylde Borough Council

FHSF - Future High Streets Fund

FISH - Forum on Information Standards in Heritage

G

GDPR - General Data Protection Regulation

GIS - Geographic Information System

H

HAZ - Heritage Action Zone

HAZPL - HAZ Project Lead

HAZPO - HAZ Project Officer

HBIM - Historic Building Information Modelling

HBSMR - Historic Buildings, Sites & Monuments Record

HDC - Hambleton District Council

HE - Historic England

HER - Historic Environment Record

HES - Historic Environment Scotland

HH&W - Heritage, Health and Wellbeing

HIAS - Heritage Information Access Simplified

HS2 - High Speed 2

I

IP - Intellectual Property

J

JSON - JavaScript Object Notation

K

KPI - Key Performance Indicator

L

LBC - Listed Building Consent

LiDAR - Light Detection and Ranging

LOD - Linked Open Data

LOTS - Living Over the Shop

M

MHCLG - Ministry of Housing, Communities and Local Government

MIDAS - Monument Inventory Data Standard

MOLA - Museum of London Archaeology

MoRPHE - Management of Research Projects in the Historic Environment

N

NHLE - National Heritage List for England

NLHF - National Lottery Heritage Fund

NMS - National Museums of Scotland

NGS - National Galleries of Scotland

NPPF - National Planning Policy Framework

NYCRO - North Yorkshire County Records Office

O

OASIS - Online Access to the Index of Archaeological Investigations

OHS - Oral History Society

ONS - Office for National Statistics

P

PDF - Portable Document Format

PDC - Prior to Determination of Conditions

PID - Persistent Identifier

PSiCA - Partnership Schemes in Conservation Areas

R

RCHME - Royal Commission on the Historical Monuments of England

RICHeS - Research Infrastructure for Conservation and Heritage Science

RQ - Research Question

S

S73 - Section 73 Application

SSL - Secure Sockets Layer

SSI - Semi-Structured Interview

T

TaNC - Towards a National Collection

TIFF - Tagged Image File Format

TSB - Trustee Savings Bank

U

UKRI - UK Research and Innovation

X

XML - Extensible Markup Language

xix

Y

YA - York Archaeology

xx

1. Introduction

This thesis investigates the current data practices within heritage regeneration initiatives, using the High Street Heritage Action Zones (hereafter HSHAZ) as a lens through which to explore ideas of data lifecycles and legacies in current large-scale, multi-stakeholder, decentralised, community-focused national initiatives. The aim is to explore the current challenges and opportunities to preserve our digital past(s) and to inform our heritage future(s).

1.1. Why Heritage Data Matters

In the 21st century, the digitisation of heritage has shifted from a supplementary tool to a fundamental mode of preservation, planning, and public engagement. Digital heritage data is now at the heart of how cultural environments are known, valued, and shaped. It encompasses excavation reports, planning documentation, building records, geospatial data, digital reconstructions, oral histories, and the creative outputs of artists, communities, and conservation professionals (UNESCO 2003). While these datasets have traditionally been treated as adjunct to the more visible outputs of heritage work (e.g., restored buildings, exhibitions, or town plans), there is an increasing recognition that the data itself constitutes a form of cultural heritage and infrastructural asset in its own right (Kansa and Kansa 2018; Huggett 2020).

This growing importance is fuelled by multiple intersecting factors. First, there are pressures from public funders and policymakers for improved transparency, value for money, and measurable outcomes from heritage initiatives (e.g., DCMS 2016, p.58; UNESCO 2022). Second, the rise of data-driven decision-making in planning and regeneration has made digital heritage records crucial to understanding both historical context and development potential (Huggett 2022). Third, technological developments have made knowledge and information instantly consumable, redefining expectations around access and participation in cultural heritage (Perry *et al.* 2015; Terras 2020). In parallel, technical advances in data integration,

automation, and artificial intelligence (hereafter AI) promise new possibilities for reuse, interpretation, and innovation, while also introducing new risks related to data quality, interoperability, consent, and control (Longpre *et al.* 2024).

To navigate these opportunities and challenges, this thesis foregrounds the concept of data practices, the situated, institutional, and often contested ways in which heritage data is created, standardised, stored, shared, interpreted, and governed. Data practices are not neutral or uniform. They are shaped by power dynamics, technical infrastructures, legal regimes, and cultural norms. In the heritage sector, they vary significantly across types of heritage (e.g., above-ground versus below-ground), professional domains (e.g. commercial archaeology versus community heritage), and scales of governance (e.g. local versus national versus international). By centring data practices, this study aligns itself with emerging work in digital humanities, science and technology studies, and critical data studies that treat data not as raw input but as socially constructed, institutionally embedded, and infrastructurally complex, continuing the work of Bowker (2013 p. 168) and Gray *et al.* (2018).

To investigate the different dynamics in data management and reuse within the HSHAZ, key concepts need to be established. These include the following definitions:

Data reuse - the access, processing, sharing and manipulation of pre-existing information. As such, it encompasses both traditional data reuse in using information in a different manner than originally intended, whilst also including aspects of data use.

High Street - the core of an urban environment, sometimes based on a literal High Street, and others based on the area in which the main activities were traditionally based.

As well as these key definitions, it is also important to distinguish between comparatives.

One such comparison is the distinction between **above-ground and below-ground heritage data**. The former often includes architectural surveys, building histories and photographic records. It is typically under local authority or Historic England (hereafter HE) custodianship and may involve partnerships with architectural firms and standing building investigators. Below-ground archaeology, often associated with commercial archaeology, involves excavation records, finds reports, stratigraphy, and environmental data, governed through planning legislation (e.g., the National Planning Policy Framework (hereafter NPPF)) and stored in Historic Environment Records (hereafter HERs), Archaeology Data Service (hereafter ADS) and Historic Environment Scotland (hereafter HES), and often with an associated Online Access to the Index of Archaeological Investigations (hereafter OASIS) record (Chartered Institute for Archaeologists 2020, p. 11; Historic England 2021a).

Although there is encouragement to create OASIS records for above-ground building recording, it is to a lesser degree than below-ground. Policies regarding the deposition and management of above-ground data vary considerably across local authorities. While some Conservation Officers and heritage bodies recommend that building surveys and standing structure analyses should be deposited in HERs, this practice is inconsistently applied across different regions (Creswick and Matthews 2016). HE maintains an archive of historic buildings surveys, providing a centralised repository for such data (Historic England, n.d.a), yet many local HERs do not routinely accept or process above-ground heritage data, creating significant gaps in the accessibility and long-term preservation of this material.

Equally important are the divides between **community-led and developer-/development-led data generation**. Community heritage projects, such as oral history collections, crowd-sourced mapping, or local archives, often operate with limited technical infrastructure and rely on voluntary labour. Commercial archaeological contractors, by contrast, produce vast quantities of technical data as

a by-product of development mitigation, subject to planning law but often fragmented across systems and reports.

A further comparison exists between **planned and unplanned datasets**. Planned data are those which are considered from project inception, or those which have been considered in several different aspects of creation, storage, sharing, or archiving. Conversely, unplanned data are those which are created in a more ad hoc fashion. They are created in order to meet a specific need.

Finally, the governance of heritage data is shaped by tensions between **local and national control**. Local authorities may possess in-depth knowledge of particular sites and contexts, but face resource constraints and competing mandates. National bodies such as HE provide strategic direction, funding, and infrastructure (Historic England 2019f), but may struggle to align with local priorities or adapt to project-specific innovations. This thesis explores these issues in detail, using a bottom-up delivery as a lens to understand this discourse. Bottom-up delivery is the process by which local councils or community groups take the lead in planning, organising, and delivering programmes in response to locally identified needs and priorities (An 2021; Scottish Government 2026). Rather than implementing a centrally designed scheme, local actors exercise meaningful discretion over how programmes are shaped and delivered, drawing on local knowledge and relationships. Accountability in this model runs primarily downward to communities, rather than upward to funders or national bodies. This autonomy is considered a strength of the approach, enabling responsiveness to local context, but it can also produce inconsistency across areas, a tension that becomes particularly acute in hybrid schemes that seek to combine bottom-up delivery with top-down coordination, as is the case in the HSHAZ.

These dynamics set the stage for exploring how heritage data practices are shaped, managed, and contested within nationally coordinated programmes like the HSHAZ initiative.

1.2. Heritage Action Zones

As a precursor to the HSHAZ, the Heritage Action Zones (hereafter HAZs) (Fig. 1) were an initiative launched by HE to harness the economic and social potential of historic environments across England. The Heritage Action Zones were originally proposed by HE in 2015, with support within the 2016 Cultural White Paper (DCMS 2016), as an expansion to the Heritage Lottery Fund's *Townscape Heritage Programme* (Heritage Fund 2015). An original 4 to 5 locations were planned in 2017, (which later developed into 18 then 20; DCMS 2016, p. 60; Historic England 2024d), and were designed to "unlock the potential of the local historic environment to contribute positively to economic growth...[with] bespoke response[s] to the economic, social and environmental needs" (Historic England 2015a). Operating through collaborative partnerships between HE, local authorities, communities, and various stakeholders, Heritage Action Zones targeted areas where historic assets possessed untapped potential for regeneration and sustainable development (DCMS and Historic England 2017). The programme leveraged £15.7 million of investment, with additional private and public sector funding (Historic England 2024d; SQW, n.d.)



Figure 1, the logo of the Heritage Action Zones (Super Culture 2025).

The programme was designed to address challenges such as building deterioration, underutilised historic assets, and declining economic activity by providing targeted support for conservation, adaptive reuse, and community engagement activities.

The programme operated on the principle that heritage-led regeneration can serve as a catalyst for broader economic and social transformation. The Heritage Action Zones worked by "creating conditions for economic growth and improving the

quality of life in villages, towns and cities across England" (Historic England, n.d.c) through strategic interventions that enhanced historic buildings, strengthened local economies, and engaged communities in the stewardship of their built environment. Central to the Heritage Action Zone approach was the recognition that historic environments are not merely preserved spaces but active contributors to contemporary economic and social life (Historic England, n.d.c). This comprehensive approach acknowledged that successful heritage-led regeneration requires both physical improvements to historic buildings and the cultivation of community ownership and pride in local heritage (Historic England, n.d.c).

Unlike one-off heritage grants, HAZs adopted a multi-year, partnership-led model that combined conservation works, planning support, public realm improvements, community-led projects, and skills development. Each scheme was tailored to its local context, supported by HE's regional teams, and often integrated with related initiatives such as Partnership Schemes in Conservation Areas (PSiCA) (Historic England, n.d.c). The programme's early cohorts reflected the diversity of England's historic environments, from urban centres and coastal towns to rural market towns (Historic England, n.d.c).

Academic research on area-based initiatives has highlighted both their potential for achieving concentrated impact and the challenges of ensuring sustainable outcomes beyond funding periods (e.g., Lawless 2011; Rhodes *et al.* 2007).

The programme was underpinned by five core aims:

- Reduce or avoid risk to the historic environment
- Increase understanding of heritage and enhance the National Heritage List for England (hereafter NHLE)
- Engage local communities and authorities
- Build local and regional capacity
- Develop best practice for managing heritage assets (Historic England, n.d.c)

Programme Strengths and Challenges

Evaluation evidence indicates that the HAZ programme delivered strongly against its aims, particularly in capacity building, community engagement, and conservation outputs (SQW 2024).

Physical deliverables included the restoration of 157 historic buildings, conservation grant schemes such as Bishop Auckland's £1.1 million Conservation Area Grant Scheme, public realm improvements, and the removal of heritage assets from the *At Risk Register* (Historic England, n.d.c). Crucially for heritage planning, the programme produced substantial research and digital outputs: Historic Area Assessments for multiple locations (including Sunderland, Bishop Auckland, and Dewsbury), new listings and designation reviews, Urban Archaeological Databases integrated into HERs (such as King's Lynn's Urban Archaeological Database made publicly accessible via the Norfolk Heritage Explorer and Heritage Gateway websites (Borough Council of King's Lynn and West Norfolk, n.d.; Historic England, n.d.c)), virtual heritage tours (notably Bishop Auckland's three digital tours), interactive digital mapping projects, aerial photography assessments, and Geographic Information Systems (hereafter GIS) datasets published on a StoryMap (Historic England 2023e). These digital resources provided essential heritage management tools to inform planning decision-making and support the delivery of housing and growth whilst safeguarding historic environments (Borough Council of King's Lynn and West Norfolk, n.d.). Additional deliverables included skills development programmes in traditional building crafts, heritage publications, and extensive community engagement activities involving heritage festivals, oral history projects, and schools programmes (Historic England, n.d.c).

Within the SQW evaluation, it was revealed that key enabling factors included flexible delivery models, strong local leadership, and ongoing support from HE's central teams (SQW, pp. 43–44). However, the evaluation also identified challenges: variable lead-in times, administrative burdens, staff turnover, and external shocks such as COVID-19 and inflation. Importantly for this study, data management and

legacy planning varied considerably across HAZs. While some schemes embedded robust research strategies and collaborations with archives (e.g., Walworth) (SQW, p. 46), data management is not mentioned within the evaluation, indicating the limited focus on digital asset management within the projects, limiting their long-term accessibility and reuse.

Building upon the success of the broader Heritage Action Zone initiative, the UK government recognised the particular challenges facing historic high streets in the contemporary retail and economic landscape. This recognition led to the development of a specialised programme specifically targeting these crucial community spaces, representing both an evolution of heritage policy and a response to the unique pressures facing town centres across England.

Implications for the HSHAZ

The HSHAZ was developed to mitigate these challenges and to revitalise the high streets and was well placed to build upon the lessons learned from the HAZ initiative (Historic England 2025d). Key lessons learned from the HAZ in terms of data management included:

Early data governance planning: establishing agreed metadata standards, file formats, and repository pathways before delivery began

Consistent monitoring frameworks: using shared indicators to track outputs and outcomes across varied local contexts

Capacity support: training delivery partners in data collection, ethical management, and archiving processes

Legacy planning: ensuring that community-generated outputs, such as oral histories, photographic records, and creative works, were managed in collaboration with the local HERs

The HSHAZ's additional emphasis on cultural programming and community engagement further increased the likelihood of producing diverse, multimedia datasets. This made robust guidance, training, and long-term preservation strategies even more critical to ensuring that the initiative's outputs would have enduring value for research, policy, and public access. As such, the extent to which lessons from the HAZ were embedded into the overall scheme plan and resulting management is investigated within this thesis.

1.3. The High Street Heritage Action Zone Initiative

The HSHAZ programme, launched in 2020 by HE in collaboration with the Department for Digital, Culture, Media and Sport (hereafter DCMS), represents one of the most ambitious efforts to date to revitalise England's town and city centres through heritage-led regeneration. Conceptualised in a House of Commons Debate Pack (2018) for 40-60 locations between 2020-2023, the programme was further developed in the Full Business Case (2019), before ultimately culminating in the launch of the programme with 69 high streets (Fig. 2), and delivered investment across 67 locations, strategically selected for their historic value, local distinctiveness, and potential for renewal (Historic England 2025d).

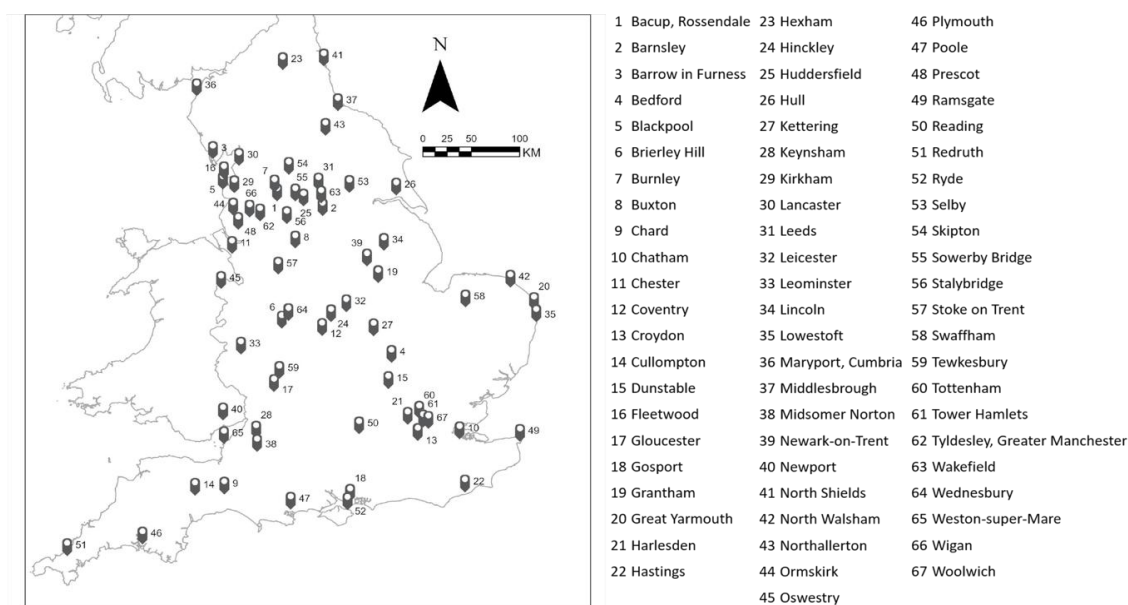


Figure 2, map of the HSHAZ locations (author's own, derived from Historic England 2025d).

The programme was underpinned by significant cross-sector investment: £92 million from DCMS, comprising £40 million from the Heritage High Street Fund and £52 million from the Ministry of Housing, Communities and Local Government (MHCLG) via the Future High Street Fund. This was supplemented by £3 million from the National Lottery Heritage Fund (hereafter NLHF) for cultural activities, £15 million from the Architectural Heritage Fund via its Transforming Places Through Heritage initiative, and over £95 million in match funding from local authorities, third-sector organisations, and private partners (UK Government 2019). In total, the HSHAZ initiative represented a multi-million-pound, multi-stakeholder programme rooted in national policy goals around place-making, sustainable development, and civic renewal.

The overall programme contained multiple schemes (each HSHAZ location), and projects delivered within each scheme (Fig. 3). At its core, the programme aimed to address the long-term decline of many English high streets, marked by rising vacancy rates, poor-quality public realm, the loss of independent retail, and a growing sense of placelessness, by restoring pride of place and enabling local people to engage more meaningfully with their historic environment (Grimsey 2018; Wrigley and Lambiri 2015, p. 92; Historic England 2025d). Unlike previous top-down regeneration schemes, HSHAZ adopted a decentralised, place-based model of delivery, with each scheme locally led by a HAZ Project Lead and supported by a HAZ Project Officer (who oversaw several HSHAZs), embedded within local authorities and working in partnership with HE's regional and national teams (Amion 2025b). These local actors were time-limited posts and coordinated the capital, cultural, and community strands of the programme while also liaising with national teams focused on grants management, listing and designation, evaluation, and strategic planning.



Figure 3, the overall programme structure of the HSHAZ (Amion 2025b).

Each HSHAZ scheme comprised three interlinked strands (Fig. 4):



Figure 4, the strands of the HSHAZ (Amion 2025b).

Capital Works – Focused on the physical revitalisation of the high street, this strand repaired, conserved, and repurposed historic buildings, enhanced shopfronts, and improved public and community spaces. It was essential for tackling long-term neglect and unlocking the potential of underused assets, repairing 723 historic buildings, restoring 462 shopfronts, and bringing many vacant premises back into use (Historic England 2025h).

Cultural Programme (Fig. 5) - Supported by NLHF investment and delivered with local cultural partners, this strand brought communities to high streets through festivals, exhibitions, street performance, digital storytelling, and public art. These activities celebrated local distinctiveness and helped reconnect residents with their heritage, hosting 1,695 public events, 592 school activities, and 336 artworks and installations, attracting new visitors and strengthening local identity (Historic England 2025h).



Figure 5, logo of the Hi! Culture Programme (Historic England, n.d.d).

Community Engagement – Running in parallel, and often overlapping with the cultural strand, this strand built local capacity, promoted inclusion, and increased ‘dwell time’ on the high street. Through youth projects, oral history, volunteering, and local governance forums, it emphasised intangible heritage, pride of place, and inclusive participation. In total, it delivered 634 construction training sessions, 160 volunteer training sessions, and 42,503 volunteer hours dedicated to making high streets more welcoming places to visit (Historic England 2025h).

The programme was guided by a strong theory of change, as articulated in its 2019 business case, which anticipated that heritage-led investment could unlock a cascade of positive outcomes: improved building conditions, increased footfall, enhanced perceptions of safety and identity, strengthened local partnerships, and ultimately, more vibrant and resilient high streets (Historic England 2019e). The relative success of the initiative is discussed in the evaluation section 8.

The governance structure of the initiative was deliberately designed to support both consistency and local autonomy (Fig. 6).

How we work and communicate

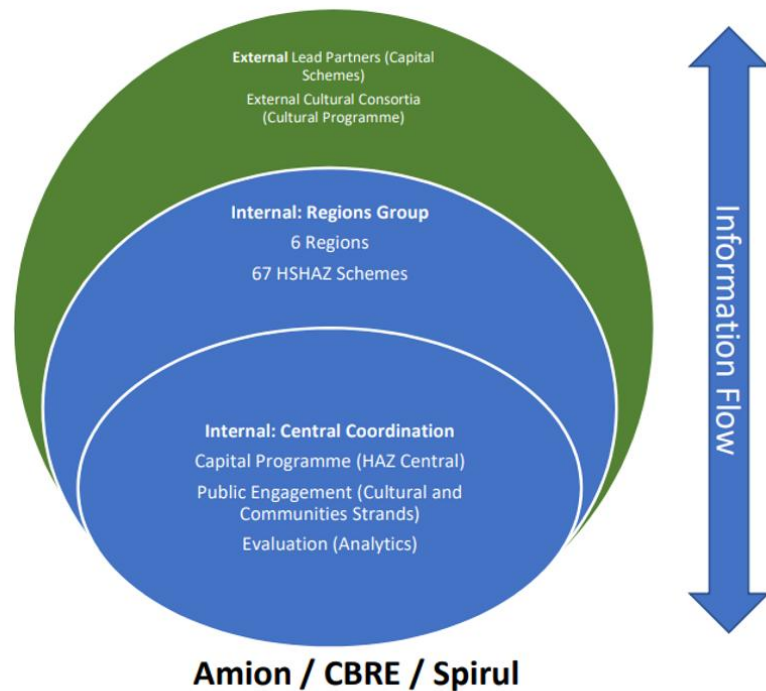


Figure 6, the communication structure set up for the HSHAZ (Johnson 2023).

At the local level, each HSHAZ project team worked closely with community stakeholders and delivery partners. This included HAZ Project Officers (HAZPOs) and HAZ Project Leads (HAZPL - Fig. 7).

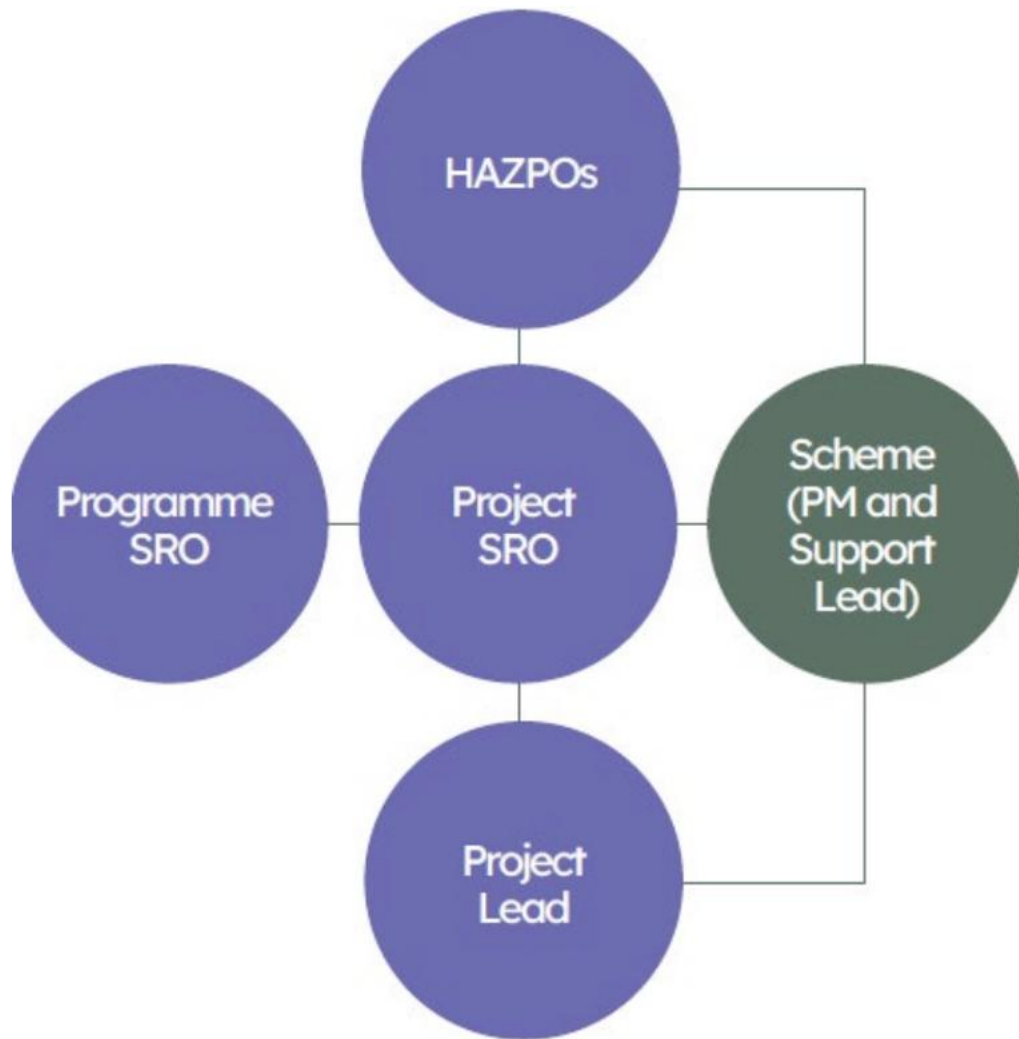
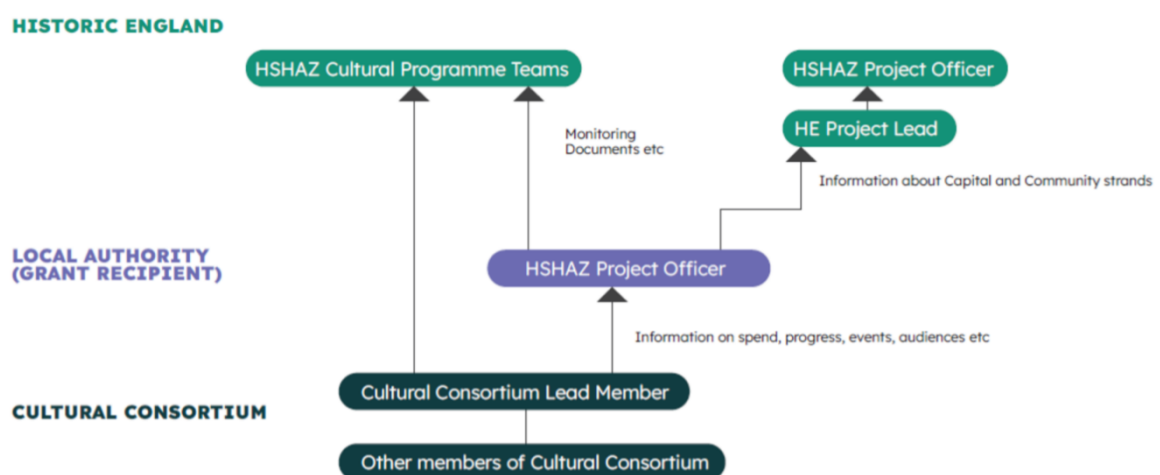


Figure 7, above, organogram for local individual schemes. Figure 8, below, the information flow within the local schemes (AMION 2025).



At the national level, HE's HSHAZ Central team provided strategic oversight, facilitated communication across schemes, and commissioned the programme's

independent evaluation, managed by AMION Consulting. Within HE, there were multiple integrated internal teams (Fig. 9)

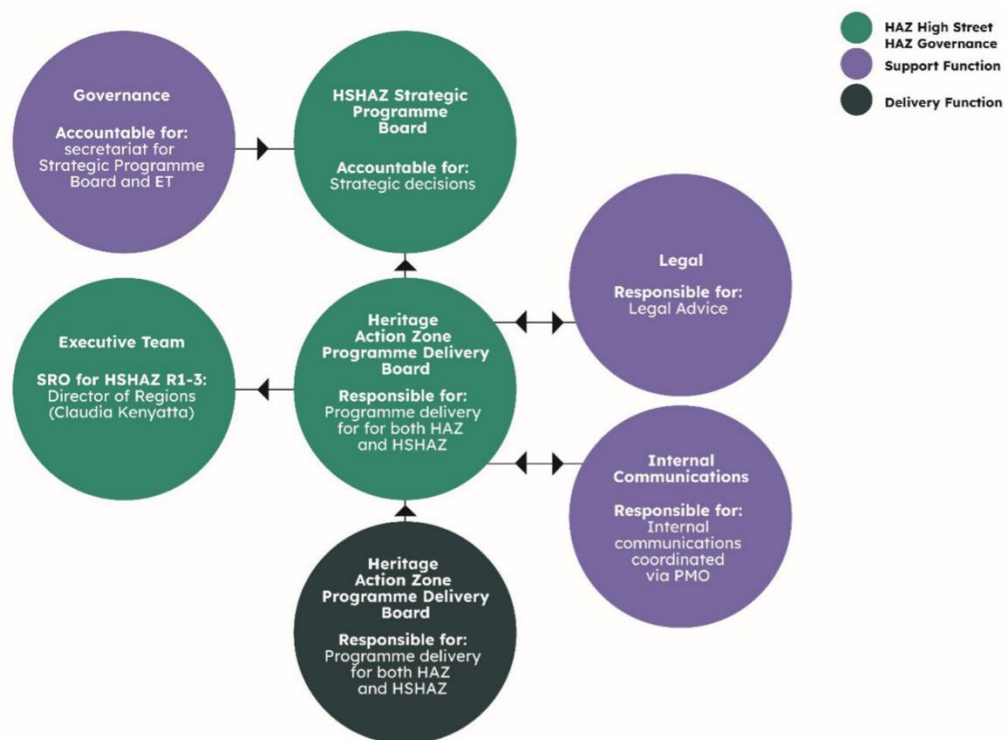


Figure 9, the different internal departments involved in the HSHAZ (Amion 2025b).

Launched just before the outbreak of the COVID-19 pandemic (which had a profound impact on archaeology and heritage (Geser 2021)), the programme had to adapt quickly to the volatile socio-economic context of 2020–2024. Nonetheless, the final evaluation demonstrates considerable impact of the project. The HSHAZ initiative successfully delivered conservation-led regeneration in historic high streets across England, bringing hundreds of heritage assets back into productive use, improving access and interpretation, generating thousands of volunteer hours, and supporting a wide range of cultural and economic activities (see evaluation 8.1 (AMION Consulting 2025a)).

Taken together, the HSHAZ programme offers a powerful model for integrated, heritage-led renewal. It demonstrates how historic character, when combined with cultural engagement and community ownership, can form the foundation for lasting regeneration. As towns and cities continue to adapt to economic uncertainty, digital

transformation, and shifting patterns of consumption, the lessons of HSHAZ are likely to shape the next generation of place-based policy and practice in the UK and beyond.

From a data perspective, the HSHAZ programme presents a rare opportunity to examine how heritage information is produced, managed, and reused across a nationally coordinated yet locally delivered framework. Bringing together HE, local authorities, architects, community organisations, and cultural producers, the programme's multi-level structure offers insight into how heritage values and priorities are interpreted and enacted across policy and practice. This makes HSHAZ particularly valuable for investigating the intersection of governance, responsibility, and data management in heritage regeneration. Its position between local delivery and national coordination exposes key questions around ownership, consistency, and long-term stewardship of heritage data.

By focusing on these governance and organisational dimensions rather than individual datasets, this research situates HSHAZ as an ideal context for exploring how data practices both reflect and shape broader processes of collaboration, accountability, and legacy in heritage management. Examining HSHAZ as a structured case through which national goals intersect with local delivery provides a foundation for analysing heritage data governance in practice.

1.4. FAIR and CARE

Formal evaluation against established data governance models such as FAIR (Findable, Accessible, Interoperable, and Reusable - Fig. 10; Wilkinson *et al.* 2016) or CARE (Collective Benefit, Authority to Control, Responsibility, and Ethics - Fig. 10; Carroll *et al.* 2020) was not part of the original project scope, and it would be unfair to assess the programme against frameworks it was never designed to meet. Nevertheless, reflecting on these principles offers valuable lessons for future heritage regeneration initiatives, and this thesis considers the extent to which current data practices are beginning to engage with these frameworks.



Figure 10, the FAIR and CARE data principles (Global Indigenous Data Alliance, n.d.)

The FAIR framework promotes data that are easy to locate, access, integrate across systems, and reuse for future research. It has become foundational to contemporary data governance across disciplines, emphasising machine-actionability and systematic approaches to data discovery, access, integration, and reuse (e.g., Jacobsen *et al.* 2020; Scheffler *et al.* 2022). Within the heritage sector, FAIR principles are increasingly recognised as essential for creating sustainable and interoperable data ecosystems that support both research and public engagement (Larsson and Bornsäter 2023; Niccolucci and Richards 2013). Complementing this, the CARE framework foregrounds ethical and community-centred approaches to data management, particularly relevant in heritage contexts that involve shared or locally held knowledge. It is important to note and acknowledge that the CARE data principles were developed within indigenous Data Governance contexts, and their full political force is grounded in that specific context. Nonetheless, their underlying logic: that communities should exercise meaningful authority over data derived from their cultural heritage, and that data governance should deliver collective benefit to those communities rather than primarily serving institutional or research interests has broader applicability. In the context of HSHAZ communities, which have historically had limited agency over how their local heritage is documented and

managed, CARE offers a productive framework for thinking about more equitable governance models, provided its application is sensitive to the differences in historical context and political stakes between indigenous sovereignty and community heritage practice in England. When combined with the FAIR data principles, it allows other complexities of data management to emerge, advocating for the need to balance technical oversight and capabilities, whilst being thoroughly founded within the needs and wants of the communities themselves. Together, these frameworks represent an evolving standard for responsible and sustainable data stewardship.

In this light, the thesis considers how HSHAZ projects reflect broader tensions between aspiration and implementation, where the policy ambition for open, interoperable, and ethically managed data increasingly shapes discourse, yet remains only partially realised in everyday heritage practice.

1.5. Aims and Objectives

This thesis aims to critically investigate how heritage data is produced, governed, and reused within the context of nationally coordinated initiatives, using the HSHAZ programme as a central case study. The research is motivated by the recognition that while digital heritage data is increasingly valued for planning, engagement, and preservation, the infrastructures, policies, and practices that shape its lifecycle remain uneven, fragmented, and under-theorised (Dallas 2016; Richards 2017).

The central aim of this study is:

To analyse the production, governance, and reuse of heritage data within the HSHAZ programme, in order to better understand the systemic challenges and opportunities for sustainable and equitable heritage data practices.

This aim is approached through a critical and exploratory lens. The thesis does not seek to provide a single prescriptive model for data governance but instead aims to

surface structural barriers, institutional gaps, and emerging possibilities within current practice. In doing so, it seeks to contribute to wider debates in heritage studies, digital infrastructure, and cultural policy.

To address this aim, the following core objectives underpin the research:

Objective 1. To identify disparities and inconsistencies in how heritage data is created, stored, and reused across different domains within the HSHAZ initiative, with attention to professional boundaries, project types, and data formats.

Objective 2. To examine the strengths and limitations of existing governance frameworks and infrastructures that shape heritage data practices, including national standards such as HIAS (Historic England 2023b), HERs, and local authority planning systems.

Objective 3. To investigate issues of ownership, intellectual property, and ethical stewardship surrounding heritage data, particularly where local communities, artists, or contractors are involved in data creation.

Together, these objectives aim to build a comprehensive understanding of how heritage data practices are structured within a national regeneration scheme and how they might be more effectively aligned with principles of transparency, collaboration, and long-term value creation. It is worth noting, however, what this thesis does not claim to do. This thesis is not an evaluation of regeneration outcomes or of the High Street Heritage Action Zone programme as an initiative in its own right. Rather, it is an evaluation of how data is embedded within regeneration: how digital outputs are governed, documented, and positioned for long-term use.

1.6. Research Questions

Building on the aim and objectives outlined above, this thesis is guided by four interrelated research questions (hereafter RQ) grouped within two themes. These

questions are designed to probe both the practical realities and the structural conditions that shape heritage data practices within the HSHAZ initiative. These research questions are explored in more detail within the methodology (see section 3.1).

1.6.1. Theme one – Production and Governance

RQ 1. How are heritage datasets produced, managed, and deposited in national initiatives such as HSHAZ?

This question seeks to explore the full lifecycle of data within the programme, from initial collection and formatting to documentation, deposit, and access. It considers the workflows, standards, and decision-making processes that underpin data production across the different strands of the initiative. This research question is investigated through the three case studies.

RQ 2. What structural or institutional barriers prevent the creation of a coherent and accessible heritage data ecosystem?

This question aims to identify the systemic challenges, such as policy fragmentation, resource inequalities, or technological misalignments, that hinder integration and sustainability in heritage data governance. This research question is explored by examining the current practices within the case studies and examining these in comparison to wider initiatives as detailed in the literature review.

1.6.2. Theme two – Models for Improvement

RQ 3. How can national strategies better support decentralised, community-driven, and above-ground data initiatives?

This question addresses the tension between centralised data policies and the more fluid, localised, or creative forms of heritage work that characterise parts of HSHAZ. It examines the capacity of national frameworks to accommodate bottom-up contributions and non-traditional data sources. This research question is

investigated by comparing current support networks provided by heritage bodies such as HE, through the literature review and investigating their influence in the case studies and wider HE programmes.

RQ 4. What data governance models best support equitable and sustainable access to heritage information?

This final question invites reflection on the normative dimensions of heritage data infrastructure. It draws on principles such as FAIR (Wilkinson *et al.* 2016) and CARE (the combination allowing an understanding of how it is possible to balance both frameworks within a bottom-up delivery initiative such as the HSHAZ (see 1.4); (Carroll *et al.* 2020)), as well as concepts from data justice (Taylor 2017) and participatory archiving (Caswell and Cifor 2016), to consider what governance mechanisms might ensure ethical stewardship, long-term usability, and broad accessibility. This research question further builds upon current data practices but explores what is needed to change to ensure long-term data legacies, both in terms of greater awareness and accessibility to local communities but also through guidance for the longevity of datasets post initiatives.

The final section of this chapter outlines the overall structure of the thesis.

1.7. Structure of the Thesis

This thesis is structured across ten chapters, beginning with a review of current literature and progressing through methodology, empirical case studies, and evaluation with a final discussion and conclusion. Each chapter is designed to build on the previous one, creating a coherent and layered understanding of heritage data governance within the HSHAZ initiative. Within this thesis, all figures are the researchers own, unless otherwise stated, and all abbreviations are included within the List of Acronyms (vii).

Section 1: Background

Chapter 2 – Literature Review Critically reviews academic and grey literature across four main domains: heritage planning and policy; digital infrastructure and data standards; participatory archiving and community data; and data ethics and governance. It identifies conceptual gaps and positions the study within current debates. This includes analyses of the role that HE and national policy instruments have in shaping HSHAZ data expectations, including the influence of HIAS, evaluation frameworks, and associated guidance.

Chapter 3 – Methodology Details the research design, case study selection, data collection methods (including interviews, questionnaires and document analysis), and analytical approach. It also reflects on the researcher's positionality and the limitations of the study.

Section 2: The initiative

Chapter 4 – Historic England HSHAZ programmes and the wider HSHAZ

Drawing on original interviews and focus groups with HE HSHAZ staff, it examines how institutional priorities, internal workflows, and programme structures informed approaches to data creation, management, and reuse. Rather than providing a purely descriptive account, the chapter critically interrogates how HE's own programmes and work packages influenced wider sectoral practices, and how tensions between standardisation and local flexibility reveal broader questions about authority, accountability, and the negotiation of data governance across scales.

Chapters 5-7 – Case Studies Chapters 5–7 present the core original data of this thesis. Each chapter draws on the mixed-methods approach outlined in the methodology, combining interviews, document analysis, and data audits to explore how heritage data is produced, managed, and shared across three contrasting HSHAZ projects. Together, these case studies apply consistent research questions to distinct contexts, enabling comparison across different local governance structures and thematic priorities. By situating theoretical ideas within lived

examples, these chapters demonstrate how national policy intentions translate into everyday data practices, and how those practices in turn shape long-term outcomes for accessibility, collaboration, and digital legacy.

Chapter 5 – Case Study: Northallerton This case study reveals data practices within digital heritage and experienced local partner collaborations, investigating the data integration, public access platforms, and institutional partnerships and the impact this has on data management. The case study considers how digital innovation interacts with data legacies, best practices and knowledge production. It also explores how data is managed within the planning process of the North Yorkshire Council.

Chapter 6 – Case Study: Kirkham This case study provides an example of how heritage can be embedded within social prescribing and wellbeing practices through community and cultural engagement with local datasets. It also explores the role of creative practitioners, public events, and informal data practices and how community-driven outputs are documented and preserved, as well as the data practices of the Fylde Borough Council planning process.

Chapter 7 – Case Study: Chester The Chester case study particularly focuses on the built heritage conservation initiative; investigating the role of existing datasets and their implementation in technical documentation workflows, data flows between consultants and local authorities, and the use of planning systems for heritage recording. Additionally, the More than a Shop, Browns of Chester project, reveals data discourses within an academic collaboration framework. Here, it is possible to see how data was managed when a component of the initiative was collaborative and led by academic partners.

Section 3: Analysis

Chapter 8 – Evaluation of the HSHAZ brings together the various aspects of initiative through analysis of the evaluation. By reviewing the evaluation, it is possible to the subsequent discussion and the contained recommendations in the

strategic priorities of the HSHAZ. Principally, the initiative was never intended as a heritage research or data management initiative, yet through the analysis of the HSHAZ key recommendations for future heritage regeneration projects can be found.

Chapter 9 – Discussion synthesises findings across the case studies to identify common challenges, governance patterns, and gaps. The analysis reflects on the implications for heritage data policy and proposes recommendations to support more equitable, sustainable, and interoperable data practices. Through the discussion, overall successes, missed opportunities, and future possibilities are investigated to illustrate potential future opportunities in heritage regeneration initiatives.

Chapter 10 – Conclusion synthesises key findings and reflects on the data practices observed within the HSHAZ initiative. It revisits the research aims and questions, showing how governance frameworks, institutional priorities, and local practices shape the creation, management, and legacy of heritage data. The chapter acknowledges project limitations, including uneven documentation, restricted access to informal data, and the difficulty of evaluating evolving infrastructures within a fixed timeframe, interpreting these not as weaknesses but as characteristics of the heritage data landscape itself. It concludes with recommendations for improving policy and practice, highlighting the need for stronger national data management requirements, integration of community-generated data, and sustained evaluation of digital legacies. Finally, it situates these insights within the wider policy context, linking them to the UK government’s renewed investment in high street regeneration through initiatives such as Communities to Seize Control Over High Streets and Restore Pride (Ministry of Housing, Communities and Local Government 2025), underscoring the continuing relevance of this research for future heritage programmes.

2. Literature Review

This review integrates both academic literature and policy documentation, reflecting the applied nature of heritage-led regeneration programmes and the reality that much critical material exists in grey literature produced by practitioners and policymakers. Recent policy-led doctoral research in heritage studies has demonstrated the necessity of this dual approach, as policy documents, evaluation reports, and programme guidance often contain the most current and contextually relevant information about practice and implementation (Smith 2023). Academic scholarship provides theoretical frameworks and critical analysis, while policy literature offers empirical data, programme outcomes, and practical insights that have not yet been synthesised into peer-reviewed publications. The combined approach enables both critical theoretical engagement and evidence-based analysis of contemporary heritage practice.

As digital tools and data-driven approaches become increasingly embedded in heritage practice, the governance of heritage information is undergoing a significant transformation. No longer confined to static documentation or institutional archives, heritage data now functions as an infrastructural layer in planning systems, civic decision-making, academic innovation, and public engagement (Foroughi *et al.* 2023). This shift in data consideration has prompted the reconceptualisation of heritage data through reconfiguring policy frameworks and sparking scholarly debates (Münster *et al.* 2021). Data is now not merely considered an output of cultural activity, but a dynamic, strategic resource shaped by technical design, governance models, and ethical considerations. The devolving landscape around the HSHAZ initiative offers a lens through which to explore these transformations. With its diverse institutional ecosystem, from national bodies like HE to local authorities such as HERs and community-led initiatives, the UK exemplifies the challenges and opportunities of integrating heritage data into broader infrastructural systems. Recent initiatives, such as the HIAS and Towards a National Collection

(hereafter TaNC), demonstrate evolving approaches to heritage data governance across scales and contexts.

2.1. Research Questions

Rather than restating the overarching research questions outlined in Section 1.5, this literature review explores the bodies of scholarship and policy frameworks that inform them. It examines how existing research has addressed the governance and management of heritage data, and where key gaps or tensions remain.

Specifically, the review is organised around five intersecting areas of enquiry that underpin the thesis:

- How do technical and governance infrastructures for heritage data translate from policy frameworks to local implementation in the HSHAZ context?
- What tensions emerge between institutional requirements for standardisation and community-driven approaches to heritage data in place-based initiatives?
- How do power dynamics shape participation in heritage data governance, particularly within the Heritage Action Zones (precursor to HSHAZ) and community archiving projects?
- What conditions enable sustainable, equitable heritage data infrastructures across institutional and community boundaries in the heritage sector?
- How do national policies like the NPPF and the Levelling Up agenda influence heritage data governance at local levels?

Through this structure, the literature review identifies how these themes converge in the context of initiatives like HSHAZ, setting the conceptual foundation from which the thesis research questions arise. These questions reflect the need to understand heritage data governance not as a purely technical challenge but as a socio-technical system embedded in specific institutional and cultural contexts. They also recognise the distinctive character of the English heritage sector, with its layered institutional landscape and evolving policy frameworks. Given the nature of the

HSHAZ and its English-centric focus, the literature review primarily examines English initiatives and policies.

2.2. Structure of the Review

This literature review is structured thematically to consider the latest developments and shifting landscapes across five key domains relevant to the HSHAZ initiative. It aims to provide a comprehensive and critical overview of each domain to situate the current research within broader debates about heritage data governance, planning integration, and the role of digital infrastructures.

Planning and Policy: This section explores how heritage is situated within national and local planning systems, examining statutory frameworks, the evolving role of HERs), and the influence of the NPPF on decision-making processes related to high street regeneration. It also considers the implications of planning reform, funding structures, and strategic priorities for the management and reuse of heritage data.

Infrastructure: Here, the focus is on the role of large-scale infrastructure projects (such as High Speed 2) and digital infrastructure initiatives in shaping the treatment of heritage information. The section addresses how these projects produce new heritage datasets, raise questions of long-term accessibility and stewardship, and highlight tensions between short-term project cycles and long-term data curation.

HE Frameworks: This part evaluates the frameworks and strategies produced by HE, including HIAS, the NHLE, and digital principles related to interoperability and governance. It considers how these frameworks attempt to standardise practice, promote data sharing, and reconcile centralised oversight with the diversity of local practice. The section also explores the recent developments in heritage and wellbeing programs led by HE, as well as projects to include community voices through Missing Pieces.

Community and Participatory Projects: This section examines bottom-up initiatives that foreground co-curation, community archiving, and local knowledge

production. Projects such as *Know Your Place* and broader movements around digital inclusion, resource inequality, and data justice are explored to understand how participatory models challenge or complement institutional approaches.

Academic Research and Innovation: The final thematic area surveys current scholarly research in heritage studies, digital humanities, and data science. It highlights how academic projects contribute to methodological innovation, critically interrogate governance structures, and advocate for the ethical handling of cultural heritage data through frameworks such as CARE (Collective benefit, Authority to control, Responsibility, and Ethics).

Through the review of these five domains, the chapter establishes the conceptual and practical terrain within which the HSHAZ initiative operates. It identifies areas of friction, alignment, and innovation that help contextualise the data practices, stakeholder dynamics, and governance models underpinning the HSHAZ programme.

2.3. Planning and Policy Integration

The relationship between heritage and planning systems has long shaped the management of historic environments in Britain (England, Scotland and Wales) (e.g., Historic England 2015d; ALGAO 2018). Increasingly, this relationship is being reconfigured by integrating digital platforms and data-sharing mechanisms that allow heritage values to inform urban decision-making in real-time, as noted by Patrick (2021, p. 174). Planning systems, in turn, generate heritage data through development-led investigations, spatial mapping, and statutory assessments, creating opportunities for cyclical data flows between planning and heritage domains as argued necessary by Perry and Beale (2015).

The NPPF provides a critical policy context for heritage data governance in England (Clark 2019). The 2021 revision of the NPPF strengthens requirements for evidence-based heritage assessment and emphasises the role of HERs in decision-making

(Ministry of Housing, Communities & Local Government 2021). HERs represent one of Britain's most integral heritage data infrastructures, forming a distributed network of local authority-maintained databases documenting archaeological sites, historic buildings, and landscapes (Historic England 2015d).

2.3.1. Historic Environment Records (HERs)

HERs are the primary source of information for planning, development-control work, and land management, and as such, it is important to investigate their role within these contexts. HERs form the backbone of local historic environment data in England. Maintained by local authorities, these datasets document archaeological sites, listed buildings, historic landscapes, and conservation areas, offering dynamic, regularly updated information often linked to GIS (Historic England 2015d). They underpin decision-making in planning, conservation, and development management, and provide infrastructure for integrating data from community-led projects, research, and regeneration initiatives (Historic England 2019g).

The NPPF shapes heritage data governance in several ways. Firstly, it establishes HERs as infrastructure essential to sustainable development, requiring that “a relevant authority must maintain an historic environment record for its area” (Ministry of Housing, Communities & Local Government 2023; Paragraph 230). This statutory recognition creates institutional imperatives for the maintenance, standardisation, and accessibility of heritage information. Secondly, the NPPF emphasises proportionality in heritage assessment, requiring that “the level of detail [to] be proportionate to the assets’ importance and no more than is sufficient to understand the potential impact of the proposal on their significance” (Ministry of Housing, Communities & Local Government 2019). This principle shapes data requirements for planning applications, influencing what heritage data is collected, how it is structured, and how it is integrated into decision-making processes. Lastly, the framework promotes public benefit from heritage, encouraging development that “sustain[s] and enhance[s] the significance of heritage assets and [puts] them to

viable uses consistent with their conservation” (Ministry of Housing, Communities & Local Government 2021; Paragraph 203d). This creates opportunities to leverage planning-generated heritage data for wider public engagement and knowledge creation.

Despite these provisions, the Chartered Institute for Archaeologists’ (hereafter ClfA) research reveals significant implementation gaps. Budget constraints, inconsistent data standards, and institutional silos continue to limit the effective integration of heritage data into planning workflows (Wills 2018, p. 5; ClfA 2020a). Moreover, the emphasis on development management often overshadows the broader potential for heritage data to inform strategic planning and public engagement (European Commission 2014). The relationship between data governance and local plans deserves particular attention. While the NPPF requires local plans to "set out a positive strategy for the conservation and enjoyment of the historic environment" (Ministry of Housing, Communities & Local Government 2021; Paragraph 203), the heritage data necessary to support such strategies is often fragmented or inaccessible. While ClfA guidance requires digital archives to be deposited with Core Trust Seal accredited repositories like the ADS, and to follow established standards for data management throughout project lifecycles (ClfA 2020b; DigVentures *et al.* 2019), implementation remains inconsistent across the sector, particularly for data generated by regeneration programmes. The ADS has noted that despite clear pathways for deposition, resource allocation for comprehensive data management remains inadequate, limiting the sector's ability to create integrated, accessible heritage data infrastructures that can effectively support planning processes (Evans 2023; Richards 2002a). This creates a circular problem: effective strategic planning requires comprehensive heritage data, but resource allocation for data improvement often depends on strategic priorities. This thesis considers the landscapes of the planning process and the impact this has on data accessibility and legacy, particularly emphasising the trends in Chester (7.3), whilst also examining comparative issues in Northallerton (5.4), and Kirkham (6.4), and the issues of data accessibility during a project in the HE chapter (4.3). The case studies

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will investigate current data storage and accessibility challenges and the issues caused by challenges in strategic priorities.

2.3.2. Levelling Up and Heritage Data

The UK government's Levelling Up agenda represents a significant policy context for heritage data governance. The Levelling Up White Paper identifies heritage as a key component of place-based identity and economic development, creating new imperatives for accessible, integrated heritage data to support regeneration initiatives (UK Government 2022). Research by the Royal Town Planning Institute (RTPI) and the Connected Places Catapult (CPC) highlights the potential for heritage data to contribute to levelling objectives through enhanced place-making and identity-building (RTPI and CPC 2019). The CPC 2020 report, *Transforming the Digital Architecture of Planning*, emphasises how integrated heritage data can enhance decision-making in regeneration contexts but notes significant barriers to its implementation (Connected Places Catapult 2020).

These barriers include:

- fragmented data ownership across multiple stakeholders
- incompatible systems and standards between heritage and planning sectors
- limited data literacy among decision-makers and communities
- resource constraints preventing sustained data maintenance

The Levelling Up context creates both opportunities and challenges for heritage data governance. On the one hand, it elevates the strategic importance of heritage data for achieving policy objectives, potentially unlocking new resources and attention. On the other hand, it raises questions about whose heritage is documented, how it is represented in data systems, and who controls its use in development contexts.

An area which is less explored is how heritage data is used within regeneration planning, following on from the levelling up agenda. To fully understand the

importance of data within regeneration planning, it is essential to understand what datasets are being used to inform decision-making. Within this thesis, the case studies will illuminate the challenges and data reuse within three separate local councils. Using these case studies, it becomes possible to understand the general challenges facing data set use to ensure informed decision-making.

A further challenge lies in the way planning policy often prioritises short-term development pressures and immediate challenges over the systematic use of heritage data to inform decision-making. This thesis examines how such policy reframing influences data practices specifically, whether heritage information is used proactively to guide sustainable planning or reactively to meet regulatory requirements. While these tensions are evident across the heritage sector, this study explores them within the specific context of the HSHAZ initiative and its case studies. In doing so, it assesses whether local and national actors tend to focus on resolving present challenges rather than developing long-term strategies for managing and preserving heritage data, while also identifying potential pathways to improve data-driven decision-making in future policy frameworks.

2.3.3. ALGAO and HERs

Within the planning discourse, supporting bodies exist to embed archaeology and heritage within planning decisions. These are HERs and the Association of Local Government Archaeological Officers (hereafter ALGAO). ALGAO supports this network, advocating for consistent standards while acknowledging local variation (ALGAO 2018).

HERs operate at the intersection of multiple systems. As highlighted in A Guide to HERs in England (Historic England 2019a), HERs are expected to function as regulatory tools for planning decisions, research resources for academics, and public heritage assets for communities. This multifaceted role presents both opportunities and challenges for data governance. The distributed nature of HER governance, with over 80 separate HER records in England alone maintained by

different local authorities, results in significant variation in data structures, access policies, and technical capabilities (Historic England 2015d). The HER network's data management approach replicates the decentralised view of the HSHAZ initiative. Whilst ALGAO promotes the use of common standards, implementation remains uneven due to resource constraints and varying institutional priorities (Rocks-Macqueen and Lewis 2019). Technological developments are transforming HER capabilities but also creating governance challenges. Standardisation using systems such as Arches and Historic Buildings, Sites & Monuments Record (hereafter HBSMR) offers enhanced functionality and integration of datasets (Aitchison 2022; exegesis 2025; Arches Project 2025).

The relationship between HERs and planning authorities is particularly significant. While the NPPF requires planning authorities to consult HERs, implementation varies substantially. In some authorities, HER data is fully integrated into planning workflows through GIS and development management systems; in others, consultation remains largely manual and ad hoc (Aitchison 2022). This inconsistency reflects broader challenges in embedding heritage data within planning infrastructures (Historic England 2019f).

Furthermore, although consultation is intended to be bi-directional, communication primarily remains a one-way process flowing from HERs to data consumers such as planners and architects. This imbalance is less pronounced for below-ground archaeology, where established mechanisms such as the Portable Antiquities Scheme (PAS) facilitate more consistent data exchange between fieldwork, HERs, and national repositories (Portable Antiquities Scheme 2024). By contrast, built heritage and planning data often lack similar structured pathways for integration, resulting in uneven visibility of information across local and national systems.

These disparities also extend to public engagement. While HERs are mandated as public records, opportunities for communities to contribute to or meaningfully interact with these datasets remain limited. While HERs increasingly incorporate community-generated content through projects like *Know Your Place* (discussed in

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2.5.6), tensions persist around data validation, authority, and representation. An important distinction emerges when examining HER uptake against local council archives: HERs benefit from established support networks through the ADS and Historic England, resources that local archives typically lack. This infrastructural advantage shapes not only data quality and accessibility, but also questions of expertise and inclusion in heritage governance.

This thesis will investigate the differing use and reliance on existing HER structure, consider localised data integration within the local authorities and consider the above- and below-ground governance deriving from different enactments of the planning policies and guidance. From here, it becomes possible to understand how planning policies include or exclude the data that helps inform their own decisions and practices. HERs and planning authorities play a pivotal role in enabling evidence-based decision-making for heritage management and development control. They operate at the intersection of data infrastructure and spatial planning, facilitating the flow of information between national policy frameworks, local authorities, and project-level implementation. Given their function in coordinating data exchange, monitoring assets, and supporting heritage-led regeneration, HERs can themselves be understood as part of a wider heritage data infrastructure.

2.3.4. Realities of enacting OASIS

The uneven integration of data practices within the HER network reflects a broader pattern of slow adoption illustrated by OASIS history. Developed in 1999, when ADS, English Heritage, and the Research Support Libraries Programme launched an 18-month pilot project (ADS 2024), OASIS enjoyed broad professional support but faced slow, uneven adoption for over a decade. Early barriers included unclear responsibility for submission, confusion about relationships between OASIS records and planning conditions, variable awareness among building specialists and conservation officers compared to excavation contractors, and crucially, an absence of enforcement mechanisms to make non-compliance consequential.

This disparity across the sector is instructive. The HERALD project survey (2015) found that only 7 per cent of conservation officers had heard of OASIS and understood its function, whilst over 60 per cent had never heard of it, despite fifteen years of operation (Gilham 2015b). In sharp contrast, near-universal adoption (approximately 93 per cent) occurred among commercial excavation contractors (Gilham 2015a). This striking difference reflected not technical literacy but regulatory environment: where submission was embedded as a contractual obligation in planning conditions, adoption happened reliably; where it remained advisory or recommended, it did not (Gilham 2015a). The contrast reveals that the extended rollout period resulted from OASIS being voluntary rather than technically difficult. Adoption accelerated only where planning authorities embedded OASIS submission into formal planning conditions, transforming it from advisory guidance into an enforceable requirement.

Even among adopting contractors, secondary adoption barriers persisted. Records frequently became stalled in HER validation backlogs, with contractors reporting frustration: "I cannot get our local HER to validate our entries, despite frequent reminders. Only about 4 or 5 have been done and we have some 50 records waiting to be approved. It seems EXTREMELY pointless to keep doing this if we can't get around the HER officer's delays" (Gilham 2015a). Post-excavation delays compounded this problem; completion of OASIS records was typically deferred until project conclusion, by which time teams had moved to new work, creating bottlenecks where "it is difficult to close and make public an OASIS record because it has to be signed off by curator, consultant etc., meaning there are delays in getting from intervention to dissemination" (Historic England 2014, p. 6). Resource constraints at HER level meant that "lack of resources for an HER to validate as quickly as they'd like" was identified as a primary cause of delays, with some HERs "not actively validating OASIS records, and did not want to" (Archaeology Data Service, n.d.b).

This trajectory has direct implications for heritage data governance reform. If a straightforward reporting system with genuine professional consensus required fifteen or more years to achieve consistent adoption, and then only through regulatory enforcement rather than exhortation, the ambition of embedding comprehensive data management plans, open licensing requirements, and archiving parity across a resource-constrained sector demands realistic expectations about timescales and the mechanisms through which change will actually occur. Technical solutions and guidance documents are necessary but insufficient. Rather, durable change in heritage data practice follows from embedding requirements in planning conditions, funding agreements, and professional standards. Future programmes seeking to improve heritage data governance would benefit from designing change management strategies with this precedent in mind, including phased implementation, targeted training, and clear compliance pathways that reduce the administrative burden of good practice rather than adding to it.

2.3.5. Infrastructure Projects and Embedded Data Governance

Building on this perspective, the HSHAZ initiative can also be conceptualised as an infrastructure project, one that embeds data governance within its operational and evaluative frameworks. The programme's scale, complexity, and cross-sector coordination align it with other infrastructure initiatives, such as High Speed 2, the Local Authority HER integration pilots, and the TaNC programme.

Understanding the HSHAZ in this way allows for a more comparative exploration of how data is embedded, managed, and mobilised within multi-actor systems. Like these other initiatives, the HSHAZ required the negotiation of standards, interoperability, and ownership across multiple institutions, revealing how governance frameworks shape both the production and long-term legacy of heritage data.

Large-scale infrastructure projects offer instructive models for embedding heritage data into long-term planning and development workflows. In England, major national initiatives have created opportunities to develop integrated approaches to heritage data governance that align archaeological practice, planning requirements, and public engagement.

2.3.6. Framework Archaeology and Heathrow

Terminal 5

The Heathrow Terminal 5 project (1996–2007) represented an important precedent for integrated data collection in infrastructure archaeology. Delivered through Framework Archaeology (a joint venture of Oxford Archaeology and Wessex Archaeology) for the British Airports Authority, excavations across three phases covered Perry Oaks and the Terminal 5 construction footprint (Framework Archaeology 2011). The works were published through a monograph series beginning with *Landscape Evolution in the Middle Thames Valley* (Framework Archaeology 2006).

What distinguished the T5 programme was not only its scale but the interpretive philosophy embedded within its recording practice. Framework Archaeology developed a bespoke recording system that placed great emphasis on interpretation in addition to recording, with the aim of developing a historical narrative as the site was excavated (Andrews *et al.* 2000). This approach was academically driven but undertaken within a commercial environment, with the archaeological policy adopted at board level by BAA (*ibid*).

In terms of data legacy, the project developed a Framework Free Viewer and a Web GIS interface, allowing users to investigate and browse the archaeological documentation deposited at the ADS (Framework Archaeology 2014). The full excavation archive was subsequently deposited with the ADS and assigned a persistent DOI, providing a formally citable and openly accessible research resource (Framework Archaeology 2011).

However, the published literature focuses predominantly on archaeological interpretation rather than data governance infrastructure. Questions of standards alignment, interoperability, and long-term stewardship are not addressed systematically in the monographs or data paper, which reflects the state of the discipline at the time. In this respect, T5 represents a transitional moment: more integrated and archive-conscious than CTRL/HS1, but predating the FAIR-aligned, open-access frameworks that will characterise the other infrastructure projects within this literature review. Its significance for this thesis lies in its demonstration that interpretation-led, archive-first principles could be embedded within a commercial infrastructure programme, establishing a precedent that later projects would develop further.

2.3.7. A14 & Crossrail

The Crossrail project (now the Elizabeth Line) and the A14 Cambridge to Huntingdon Improvement Scheme represent two of the UK's most ambitious infrastructure undertakings in recent history. Both have contributed significantly to the understanding of archaeological data practices at scale, yet they offer contrasting approaches to digital heritage data management, shaped by differing priorities, stakeholder involvement, timelines, and contexts (central London deep urban archaeology versus semi-rural road upgrade). Crossrail operated through a complex governance model involving Crossrail Ltd, a subsidiary of Transport for London and the Department for Transport, supported by delivery partners such as Bechtel and Museum of London Archaeology (hereafter MOLA), alongside statutory oversight from HE and local HERs. This distributed structure ensured comprehensive mitigation but also resulted in fragmented data governance, as archaeological and historic building records were produced and archived through multiple contractors and repositories. By contrast, the A14 project adopted a more integrated data management approach, coordinated through a single archaeological framework and a consolidated digital archive hosted by the ADS. Together, these projects provide valuable lessons in the governance, preservation, and reuse of archaeological

information, highlighting the relationship between organisational structure and long-term data legacy.

Crossrail extended over 100 km through central London, resulting in the excavation of more than 40 archaeological sites, from Roman roads to Tudor buildings and the Bedlam burial ground (Crossrail 2021). With multiple archaeological contractors and consultants engaged over several years, the Crossrail programme produced an unprecedented volume of material, but without a fully unified digital data management strategy in place at the outset. While many on-site teams used GIS systems, relational databases, and digital recording tools, there was no overarching platform to coordinate data across teams. Much of the early data was stored in proprietary formats, and archaeological outputs were frequently siloed within contractors' systems (Matsumoto 2018). This fragmentation presented challenges in terms of consistency, accessibility, and long-term stewardship. Reports were generated to a high standard, and a considerable amount of interpretive work led to publications (available at the ADS, Fig. 11) and public engagement outputs, but the underlying data remained patchy in terms of standardisation and discoverability.

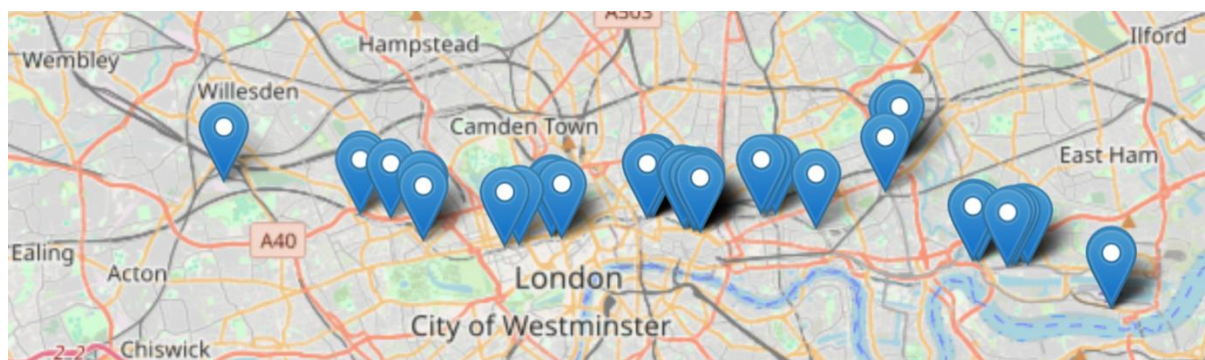


Figure 11, the map of available grey literature at the ADS (Crossrail Ltd 2021).

The Crossrail Learning Legacy Portal attempted to address this by creating a central repository for the project's knowledge outputs, including archaeological monographs, educational materials, and technical reports (Matsumoto 2018; Crossrail 2021). However, this platform was primarily intended for engineering and project management knowledge sharing, and only partially addressed the long-term accessibility of heritage data (*ibid*). In more recent years, retrospective efforts have

been made to align archaeological datasets with national HERs and to deposit materials with trusted digital archives such as the ADS (Museum of London Archaeology, n.d.).

Crossrail's case highlights a recurrent issue in infrastructure archaeology: while compliance and reporting were strong during the project lifecycle, the absence of an integrated data governance plan from the outset limited post-project data reuse, particularly for researchers, local authorities, and community groups (Huggett 2020). The organisational structure of Crossrail placed archaeological and historic building recording within the Environmental Minimum Requirements, coordinated by the project archaeologist embedded in the client's management framework. As Carver (2010) details, this model sought to integrate heritage considerations into engineering design, using both generic and site-specific Written Schemes of Investigation (WSIs) to ensure consistent mitigation standards. Within this structure, historic buildings recording was managed through specialist subcontractors working in tandem with archaeological teams, documenting built heritage affected by demolition or alteration before construction progressed.

However, Carver (2010) also notes that this coordination was often challenged by sequencing conflicts, contractor turnover, and access restrictions, which occasionally led to reactive rather than proactive recording. While the project achieved exemplary compliance and produced a rich corpus of archaeological and building data, the outputs were fragmented across multiple contractors and archives, including the Museum of London and the ADS, without a unified digital framework to integrate built and buried heritage. This dispersion underscores a key tension in infrastructure heritage governance: the balance between procedural compliance and long-term curation. As with CTRL and HS1, the dissolution of the parent organisation after project completion further disrupted continuity, leaving questions around custodianship, interoperability, and access unresolved.

In this sense, Crossrail illustrates how even projects operating under robust mitigation frameworks can struggle to embed sustainable data governance. The

lessons are directly relevant to initiatives such as the HSHAZ, where the governance of data across built and buried heritage likewise depends on early integration, stable custodianship, and consistent archiving standards.

In contrast, the A14 Cambridge to Huntingdon Improvement Scheme (Fig. 12), delivered by National Highways, was a landmark in embedding digital-first data management across all phases of archaeological work (West *et al.* 2024). The archaeological consortium MOLA Headland Infrastructure adopted a unified digital system that included Intrasis for spatial and context recording, as well as structured reporting workflows aligned with OASIS, Monument Inventory Data Standard (hereafter MIDAS), and HEIRNET standards (OASIS, n.d.; English Heritage / FISH 2012; HEIRNET, n.d.; MOLA Headland Infrastructure 2025; Historic England 2021a). Crucially, this system encompassed both below-ground archaeology and historic building recording, ensuring that all forms of heritage documentation were captured within the same interoperable framework. Furthermore, the physical archive was linked to the physical archive (held by Cambridgeshire Historic Environment Team (CHET) in Cambridgeshire County Council's publicly accessible, accredited storage facility), meaning that the whole of the collection could be examined together. Decisions around inclusion were guided by the principle of preservation by record, with the digital archive acting as the primary long-term conservation mechanism for impacted assets.

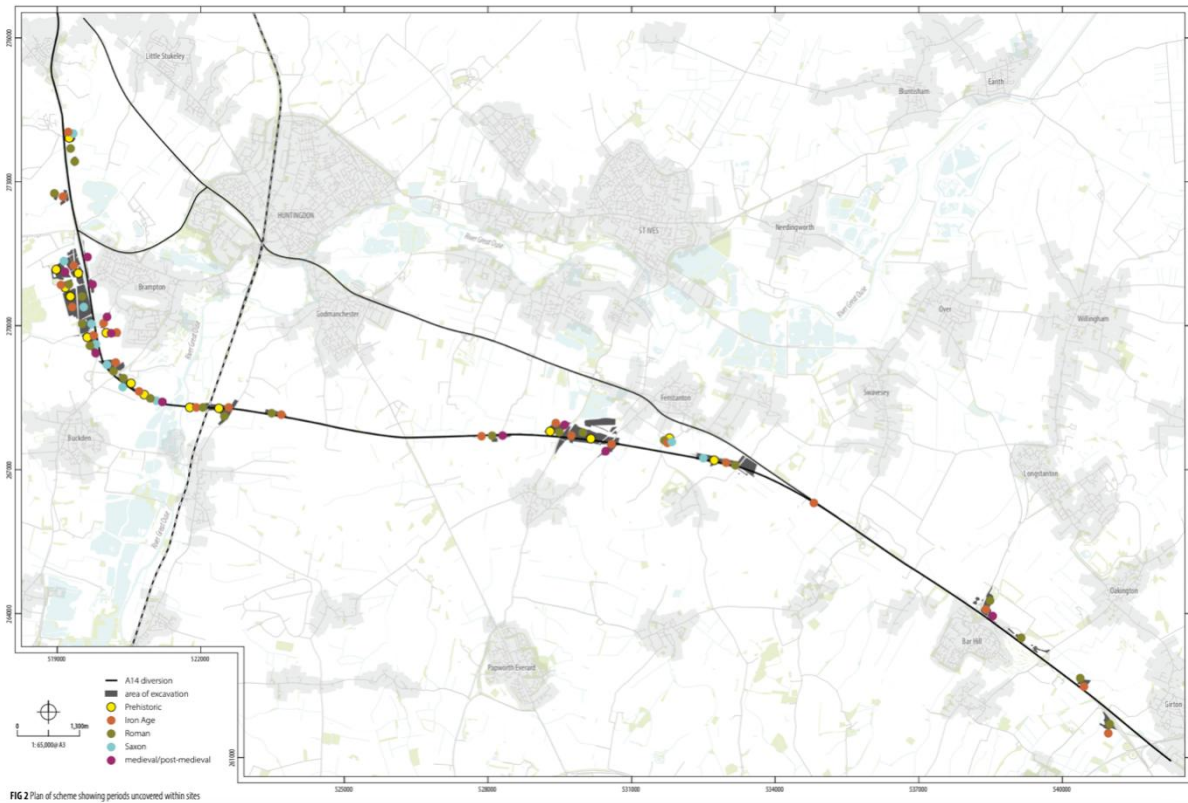


Figure 12, map of sites along the A14 improvement works (Smith and West 2020, p. 427).

From the start, the A14 team worked closely with Historic England and the ADS to ensure that metadata and datasets met FAIR principles (Findable, Accessible, Interoperable, and Reusable) (Wilkinson *et al.* 2016). Over 40 sites were investigated, generating more than 300,000 artefacts and a wide range of environmental, spatial, architectural, and contextual datasets. The entire corpus of fieldwork, including reports, context records, and building surveys, was uploaded to the ADS, creating a fully open-access research archive that linked directly to HER records and spatial data (MOLA Headland Infrastructure 2025). Unlike Crossrail, the A14's workflows were designed to be interoperable from day one, reducing the need for retrospective alignment. The resulting digital infrastructure demonstrated how heritage data governance could be embedded within project design itself, integrating both above- and below-ground heritage within a single, cohesive archival ecosystem. The outputs also included linked open data (hereafter LOD) models, allowing researchers and the public to access, interrogate, and combine datasets through web services (May *et al.* 2023).

Comparing the two projects reveals a significant evolution in archaeological data governance. Crossrail, although ground-breaking in its scale and findings, reflected earlier models of infrastructure archaeology such as the Channel Tunnel Rail Link (CTRL/HS1) and airport expansion schemes, where compliance and mitigation were prioritised over long-term data integration. These projects demonstrated technical excellence in fieldwork and reporting but often struggled with fragmented data practices and the loss of organisational continuity once delivery bodies were dissolved. By contrast, the A14 exemplifies a shift toward embedding data governance from the outset, underpinned by enduring institutional partnerships between National Highways, MOLA Headland, HE, and the ADS. Together, these cases illustrate how infrastructure-led archaeology has moved from compliance-driven recording to a model of proactive digital curation, where legacy planning, interoperability, and public accessibility are designed into the project lifecycle, strongly tying to research questions within this thesis on how to combine research data lifecycles with community engagement.

Key lessons emerging from these cases, and most relevant to this study, include:

- **The importance of early and consistent data governance planning**, ensuring that digital curation is embedded within project lifecycles rather than addressed retrospectively.
- **The benefits of using open standards and interoperable formats**, which enable data to be linked, compared, and reused across platforms and projects.
- **The necessity of collaboration between field teams, digital archives, and heritage curators**, demonstrating how effective partnerships can sustain data quality and accessibility beyond the life of the project.
- **The long-term value of digital infrastructure that supports public access and research reuse**, ensuring that the information generated through development-led archaeology continues to inform heritage understanding and decision-making.

These lessons highlight an evolution from compliance-driven recording to proactive digital stewardship. For this thesis, they provide a framework for analysing how comparable principles might be applied to heritage initiatives such as the HSHAZ, where issues of interoperability, collaboration, and legacy are similarly at stake. These insights also feed directly into wider policy discussions around HE's HIAS (Historic England 2023b), and the growing emphasis on data legacy and public value in heritage management. Following from the A14 project, High Speed 2 used these models to ensure that archaeological data are treated not just as compliance outputs, but as enduring public assets.

2.3.8. High Speed 2 (HS2)

The UK's High Speed 2 (hereafter HS2) programme represents one of the most significant heritage data governance case studies within major infrastructure development (Fig. 13). With a projected cost exceeding £66 billion and a route traversing diverse archaeological landscapes, HS2 has and will generate unprecedented volumes of heritage data requiring sophisticated governance approaches.

HS2's Historic Environment Research and Delivery Strategy establishes a comprehensive framework for heritage data management across the project lifecycle (HS2 Ltd 2022). This framework includes:

- standardised data collection protocols across multiple contractors
- local autonomy digital archiving systems for primary field data
- GIS and Building Information Modelling (hereafter BIM) platforms
- provisions for public access and academic research use
- long-term preservation arrangements with the ADS (Aryankhesal 2024).

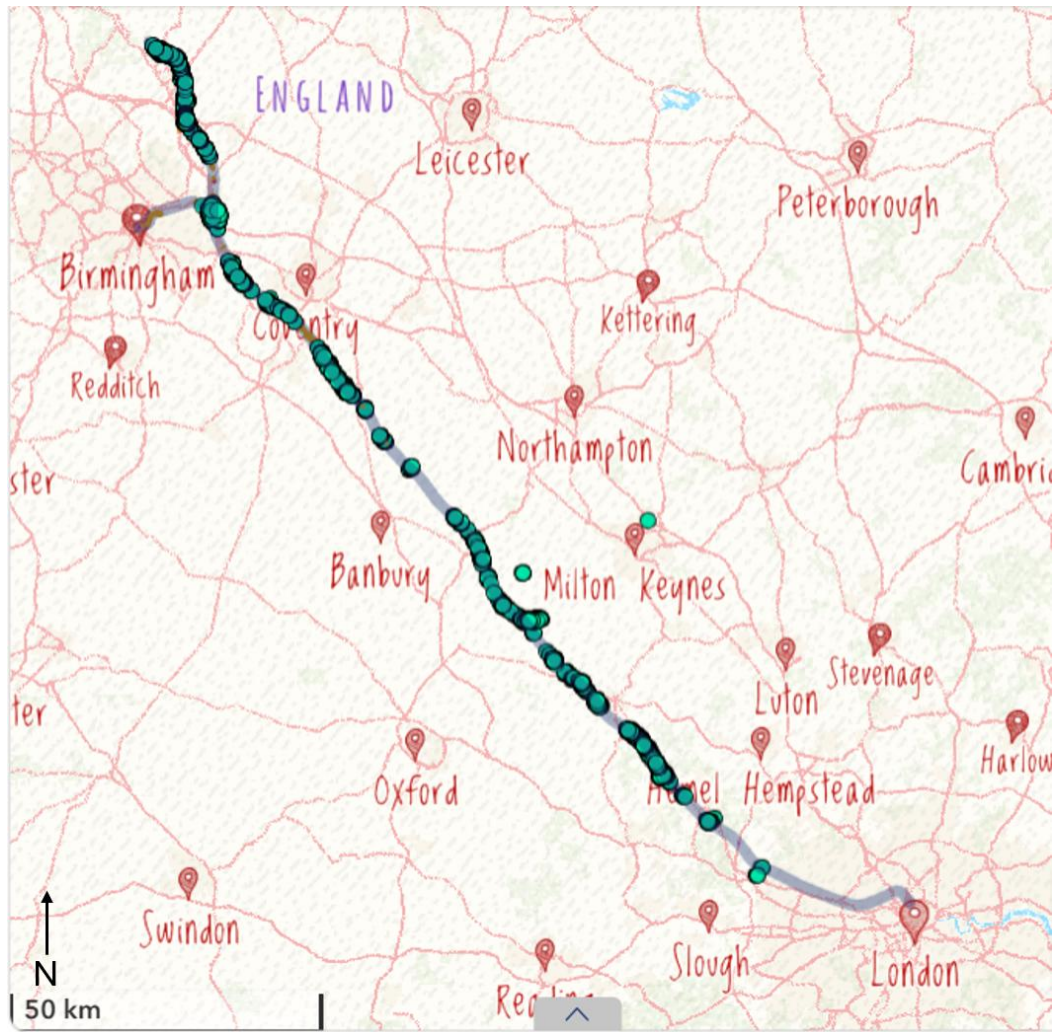


Figure 13, map of the HS2 works deposited within the ADS, upon a map layer of the HS2 route (High Speed Two Ltd. 2021).

Unlike smaller-scale development projects, where heritage data often exists in isolation from broader project information, HS2 embeds heritage data within an integrated project information environment, continuing approaches used on the A14. HS2's approach allows archaeological findings to directly inform engineering decisions, environmental mitigation, and community engagement, exemplifying the infrastructural role of heritage data. The scale of HS2 (Fig. 14) enabled the development of bespoke data governance arrangements that might be unachievable elsewhere. Custom data management systems, dedicated digital specialists, and project-specific standards created a data ecosystem transcending traditional divisions between commercial archaeology, academic research, and public engagement (Halsted 2024). This approach demonstrates the potential of embedded

data governance but raises questions about scalability and transferability. This example of data management in heritage initiatives will likely have limited transferability to smaller infrastructure projects due to resource constraints and different governance contexts. Furthermore, the project's temporal dimension is particularly significant. With construction spanning an extended timeframe, HS2's heritage data governance must balance immediate operational needs with long-term research value and public benefit.

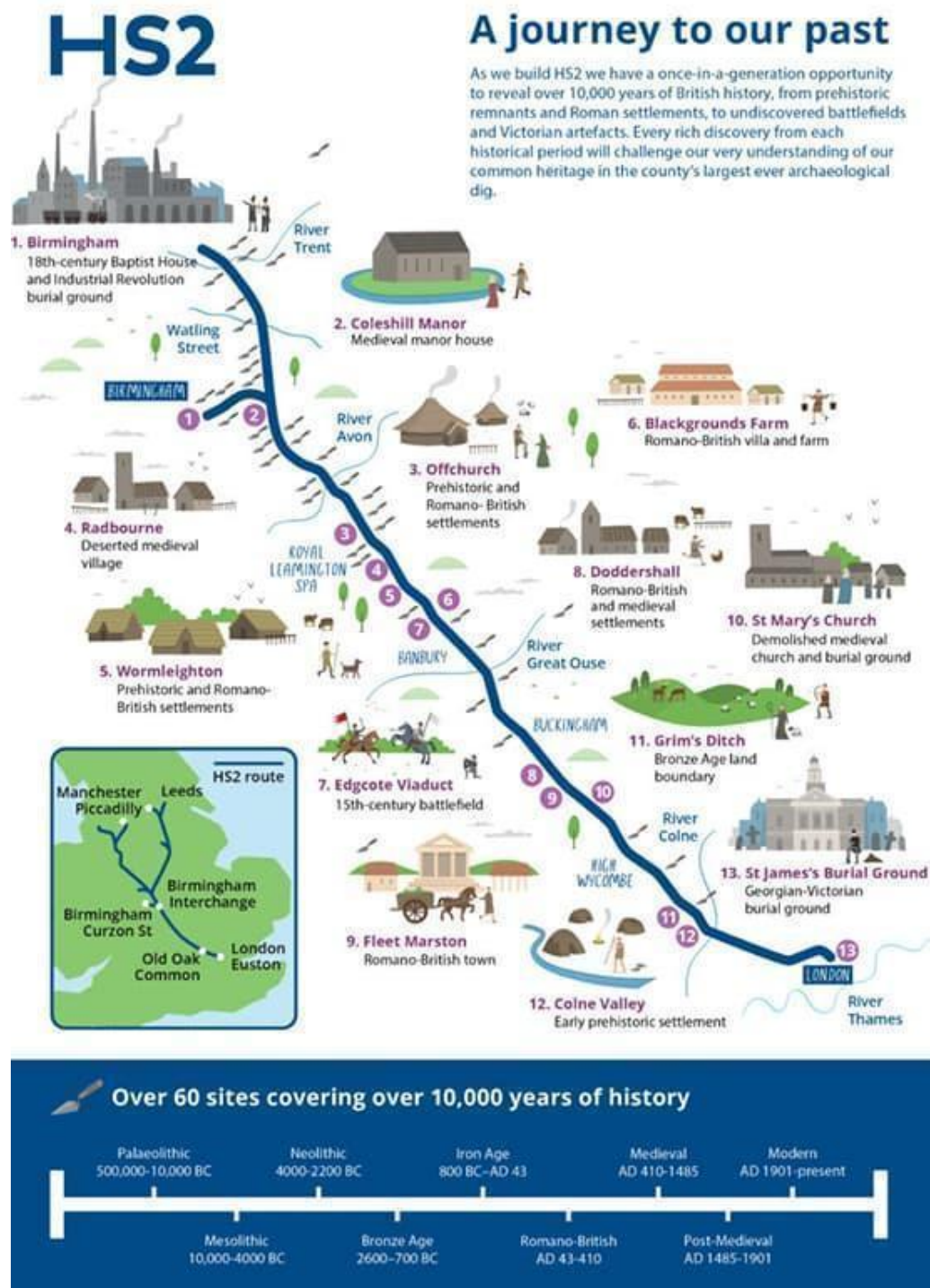


Figure 14, an infographic of key archaeological sites along HS2 (The B1M 2021).

The HS2 archaeological programme exemplifies these challenges. Its digital documentation includes traditional excavation datasets alongside emerging formats such as photogrammetry models, point clouds, and immersive visualisations. However, HS2 also generated a substantial body of above-ground archaeological

data through historic building and landscape recording. These outputs, often produced through collaboration between contractors, HE, and local authorities, extend the project's scope beyond excavation to encompass the documentation of architectural heritage, infrastructure, and industrial sites affected by the route. Preserving this diversity of formats required technical solutions and governance frameworks that evolved alongside technological change (HS2 Ltd 2022).

Despite these frameworks, significant challenges remain in preserving complex digital objects such as interactive visualisations, web-based interfaces, and computational models that depend on specific software environments. These challenges highlight limitations in preservation approaches that focus primarily on static data formats rather than dynamic digital experiences.

Across recent infrastructure projects, both above- and below-ground data creation and deposition have become increasingly diverse, ranging from excavation archives and environmental datasets to historic building recording, photogrammetry, and immersive outputs. Together, these trends reveal how large-scale developments are reshaping expectations of what constitutes archaeological and architectural evidence, as well as how it is curated.

These recent infrastructure projects provide the most direct and relevant parallels for HSHAZ investments. The next section of this literature review sets these specific projects in the wider context of approaches to digital data, particularly within the UK's commercial and academic heritage sectors.

2.3.9. Digital Preservation and Sustainability

The UK heritage sector has developed several frameworks to address digital preservation challenges through both independent and national initiatives. The Digital Preservation Coalition's (hereafter DPC; DPC 2023) Rapid Assessment Model offers a structured framework for evaluating and improving preservation capabilities, providing a shared language for benchmarking institutional maturity. This model has

been adopted by national heritage bodies such as HE, HES, and the Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW) to support the management of born-digital and digitised heritage assets. HES was accredited by the Core Trust Seal (as of 12th October 2021 to 9th August 2024), reflecting adherence to international preservation standards, while HE maintains its own *Historic England Archive Collections Development Policy* to ensure the long-term sustainability of data generated through funded projects (HE, n.d.g).

Complementary, domain-specific guidance such as the ADS's (ADS, n.d.a) *Preservation Policy* provides detailed technical and procedural recommendations for managing archaeological datasets in line with the FAIR principles (Findable, Accessible, Interoperable, and Reusable). These institutional approaches typically emphasise technical strategies such as:

- format migration to maintain accessibility as technologies evolve
- emulation to recreate original software environments when necessary
- redundant storage across multiple physical locations
- regular fixity checking to verify data integrity
- comprehensive metadata to maintain context and provenance.

While these frameworks are well established within national institutions, implementation across the wider heritage sector remains uneven (DPC 2023). This disparity reflects both resource limitations and differing levels of awareness, particularly among local authorities, museums, and community archives that lack dedicated infrastructure or digital preservation expertise. In England, HE's *Archaeological Digital Archiving Protocol (ADAPt) Project 6896* (Tsang and Corley 2014) sets out clear procedures for long-term curation of digital outputs from projects, whereas no equivalent national framework exists in Wales or Northern Ireland to support smaller organisations. Although HES achieved Core Trust Seal recognition, the adoption of similar preservation standards across local and contract archaeology sectors remains limited. Indeed, HES' accreditation lapsed on 9th August 2024).

Smaller organisations often prioritise short-term access and project delivery over sustainable preservation, resulting in what Conway (2010) describes as “preservation deferrals”, i.e. postponements that accumulate significant future risks, also seen as technical debt. These asymmetries in digital preservation practice provide an important context for understanding the High Street Heritage Action Zone (HAZ) initiative. A data audit conducted across three case studies and within HE’s own programmes assessed the extent to which data created through the initiative retains long-term value and legacy potential. This process highlights opportunities to strengthen the continued accessibility and reuse of HSHAZ-related datasets by local authorities, heritage bodies, researchers, and communities.

Given HE’s central role in shaping digital infrastructure across the heritage sector, the following section examines its frameworks and policies in greater detail, situating them within this uneven national landscape of digital preservation practice.

2.4. Community and Participatory Projects

This section explores the technical and ethical considerations of how and why community heritage should become more participatory, particularly in digital contexts. As heritage engagement increasingly takes place through online platforms, mapping tools, and data-sharing infrastructures, questions of access, representation, and digital literacy become central to participatory heritage governance. These digital dimensions raise urgent questions about structural barriers to inclusion. As Flinn and Sexton (2019, p. 626) highlight, engagement often reflects existing inequalities: those with more time, resources, or institutional familiarity are more likely to participate. Without explicit efforts to address these imbalances, both physical and digital participatory processes risk reproducing social exclusions rather than remedying them.

2.4.1. Digital Inclusion

Digital literacy constitutes a particularly significant barrier to participation in heritage data governance. Community engagement with platforms like *Know Your Place* (Bristol City Council 2023) requires basic digital skills and an understanding of GIS, metadata principles, and cultural heritage concepts that may be unfamiliar to many potential contributors, as Giglito *et al.*, argue (2019). This digital exclusion correlates strongly with other forms of social marginalisation, creating compound exclusion where digital barriers reinforce existing inequalities in heritage representation. Heritage organisations have developed various approaches to address these barriers. The Heritage Fund's *Digital Skills for Heritage* programme provides training and resources for community heritage groups (Heritage Fund 2023). Furthermore, as part of the TaNC initiative, the project “Our Heritage, Our Stories” examined approaches to include community-derived datasets within national collections, developing toolkits and investigating current barriers, as well as covering topics such as post-custodial models of preservation and whether these are viable in the context of community generated digital content (Hughes *et al.* 2023). However, this initiative often focuses on individual skill development rather than addressing structural barriers or reimagining technical systems. Truly inclusive digital heritage requires training people to use existing systems and designing systems that accommodate diverse capabilities, knowledge frameworks, and participation styles (Hutson and Hutson 2023). In this thesis, this topic is explored lightly in the case studies to see the extent to which this is currently being embedded into community heritage initiatives. Whilst these topics are not explored to their full potential, and techniques are not developed to achieve this end, the extent to which digital capacity building was embedded in the initiative will be investigated. Secondly, stakeholders were asked about the availability and reuse of datasets throughout the case studies, to understand barriers to access, and the resulting digital inclusion or exclusion.

2.4.2. Resource Inequality and Data Justice

A further aspect integral to the framing of the study is the resource inequality and data justice between community resources and national infrastructures, as well as between different communities, given the rise of Levelling Up funding and focus on deprived areas. Beyond digital literacy, participation in heritage data governance requires significant resources: time, funding, technical infrastructure, and institutional support. These requirements create participation gaps that restrict who can meaningfully engage in heritage documentation and governance (Forbes and Colella 2019). These gaps are particularly evident in place-based initiatives like Heritage Action Zones, where community participation relied predominantly on voluntary labour and personal resources as argued by Zhang *et al.* (2022). While professional stakeholders participate in paid positions with institutional support, community members typically contribute voluntary, unpaid time without comparable institutional backing. This creates fundamental power imbalances in collaborative governance arrangements.

Resource inequalities also manifest in technical capacities for data creation and management. While institutions maintain sophisticated digital asset management systems, community groups often rely on consumer platforms (social media, cloud storage) that offer limited control and questionable long-term sustainability (Hodges and Watson 2000). This infrastructural inequality, where differential access to technical infrastructure shapes *whose* heritage knowledge persists, is critically examined by Rieger, Schonfeld, and Sweeney (2022).

Addressing these inequalities requires what Dencik *et al.* (2019) term "data justice" approaches (or data sovereignty): frameworks that recognise how resource distribution shapes participation in data creation and governance. Such approaches go beyond technical access to address broader resource allocation, recognition, and procedural fairness questions in heritage data systems. These balances between professional and voluntary actors are a key factor that shall be analysed in the thesis, as well as how this impacts the legacy of heritage datasets.

2.4.3. Funding Models and Long-term Maintenance

The funding model of prioritising new data creation over long-term sustainability creates heritage resources that face obsolescence or loss when project funding ends (Fig. 15). This pattern particularly affects legacy data from past projects, which lack dedicated maintenance funding despite their continued value for heritage planning and research. The DPC's (2023) Bit List identifies several high-risk categories particularly relevant to UK heritage data (DPC 2025b; 2023):



at severe risk due to major technical issues and no responsible or capable caretakers



at high risk from technical issues or unclear responsibility, with poorly equipped caretakers



at moderate risk with minor technical issues and unclear or unmet preservation responsibilities

Community-generated Content in Arts and Heritage
Correspondence and Informal Records of Research
Digital Archives of Community Groups
Family or Personal Records
Grey Literature
Legacy Research Web Collections
Records of Local Government
Smartphone Apps
Unpublished Research Data
Web Domains with No Legal Deposit
Exhibition Content
Consumer Social Media Free at the Point of Use (e.g., Facebook)

3D Digital Engineering Drawings
Born Digital Photographs and Video shared via Social Media Platforms or Uploaded to Cloud Services
Contractual Documents and Related Records
Oral Histories (now under Research Materials and Outputs in Museums and Galleries as of 2025)
Semi-Published Research Data
Virtual Reality Materials and Experiences
Legacy Video Files
Content Published on the Web Which Cannot Easily Be Captured Through Conventional Web Archiving Practices (e.g., 3D models)
Orphaned Works (e.g., Photographs, music recordings, literature)
Custom Online Databases (e.g., databases created project websites for research or citizen science)

Cloud Storage
Local Network Storage
PDF
Published Research Papers
Research Data
Published through Repositories

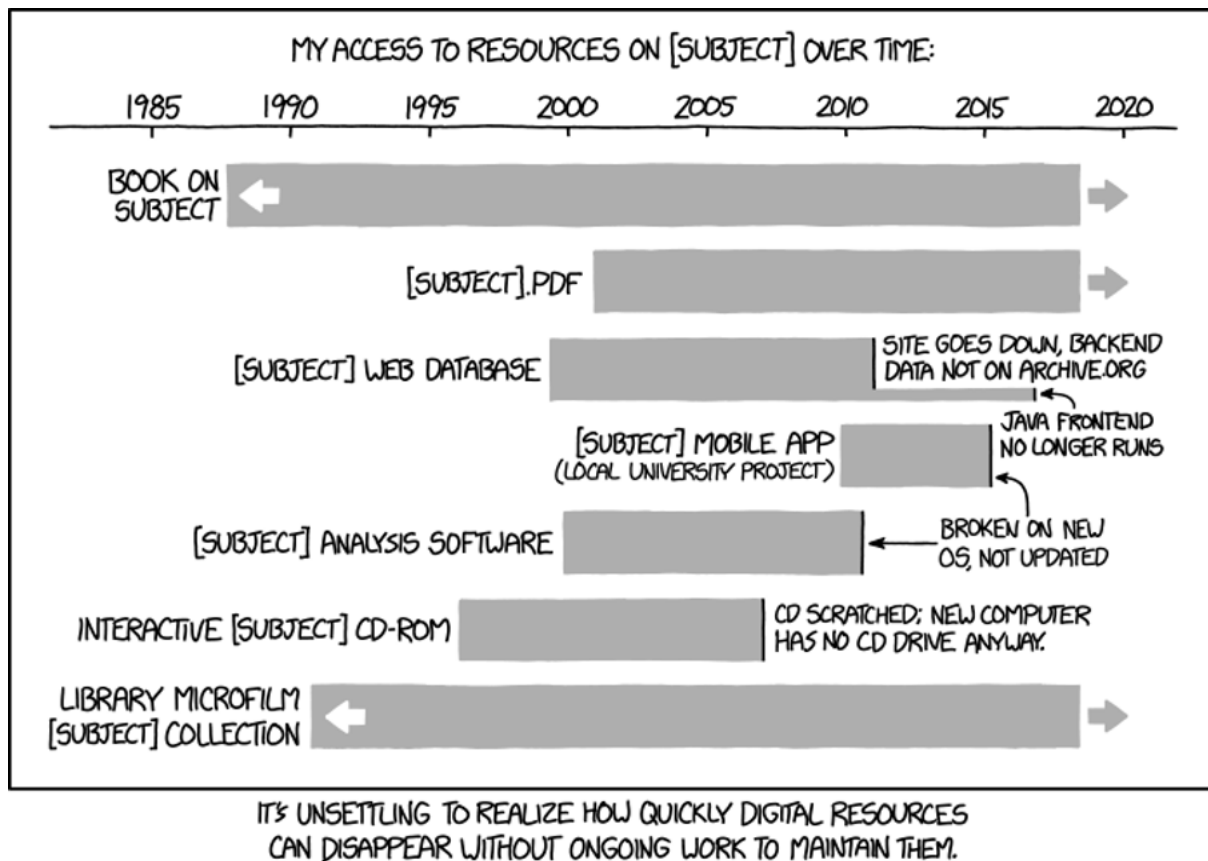


Figure 15, a comic indicating the bit life of digital datasets (Trognitz et al. 2024 after Randall Munroe).

The ADS represents one institutional response to these data preservation challenges (Richards 1997; 2016, p. 173). As a national repository for archaeological data, ADS provides long-term preservation infrastructure that outlasts individual project timelines. Its charging model, requiring depositors to pay one-time archiving fees, creates sustainable funding for ongoing digital preservation (ADS, n.d.a). However, this model works primarily for formal archaeological investigations (with grey or published literature), particularly those with commercial or research funding. However, the funding model provides less support for community-generated heritage data or outputs from small-scale projects without dedicated archiving budgets. The DPC (2023, p.36) notes this “digital divide” between well-resourced institutional data and more precarious community documentation. Alternative approaches are emerging through collaborative models. The Heritage Fund's digital capacity-building programmes encourage heritage organisations to develop shared

technical infrastructure and expertise, creating economies of scale that improve sustainability prospects (Heritage Fund 2019, p. 40), and expands upon the Government's *Culture is Digital* policy report (DCMS 2018). Similarly, community repository networks like the Community Archives and Heritage Group tackle issues of inequality by promoting democracy in data ownership, promote knowledge sharing and mutual support that can extend resource capabilities (Community Archives and Heritage Group, n.d.). When combined with CARE, this further encourages data democracies.

2.4.4. CARE and Ethics

The ethical dimensions of heritage data governance have received increasing attention in UK contexts through scholarly research and institutional frameworks (e.g., Gooch *et al.* 2025). HE's Strategy for Inclusion, Diversity and Equality identifies ethical data use as a priority research area, noting tensions between open data imperatives and ethical concerns around sensitive heritage information (Historic England 2020c). Similarly, the CifA's "Codes, Regulations and Standards, and Guidance" includes ethical considerations for digital archives, addressing questions of consent, attribution, and appropriate re-use of heritage data (CifA 2020a). As evaluated by Mauthner and Parry, these frameworks recognise the ethical afterlife of heritage data and its ongoing implications beyond initial collection contexts (2013).

Ethical challenges are particularly acute for certain types of heritage data:

- Oral Histories where the narrators' consent may not have been anticipated for digital distribution
- documentation of culturally sensitive sites or practices
- images or records containing personal information about living individuals
- heritage data related to contested histories or traumatic events
- documentation of Indigenous or diaspora heritage with specific cultural protocols.

Addressing these challenges requires moving beyond one-time consent models towards ongoing community engagement about data use and governance throughout the data's lifecycle. This approach recognises that ethical considerations evolve alongside technological capabilities and social contexts, and it is best to embed principles that centre on Collective Benefit, Authority to Control, Responsibility, and Ethics (CARE). Carroll *et al.* introduced these CARE Principles for Indigenous Data Governance to ensure that data use upholds community rights, responsibilities, and relationships throughout the data lifecycle (2020). Rather than treating consent as a static transaction, CARE recognises the need for ongoing, relational engagement between data holders, users, and the communities to which the data pertains. In heritage contexts, CARE-centred approaches shift governance away from extractive or purely technical models towards ones that foreground community agency, ethical responsibility, and collective outcomes, as Rainie *et al.* (2017) argued.

Applied to heritage data, this approach entails:

- Collective Benefit: data should be used in ways that tangibly benefit the communities it relates to.
- Authority to Control: communities should have meaningful power over how data is accessed, interpreted, and reused, including the right to say no.
- Responsibility: researchers and institutions must act with cultural awareness and ensure data practices reflect community values and protocols.
- Ethics: ethical obligations persist over time, including the need for consultation, transparency, and care in how data is shared and maintained (Rainie *et al.* 2017; Carroll *et al.* 2020).

In practice, this may include:

- extended attribution that recognises multiple and diverse contributions to data creation
- contextual documentation that preserves relationships between data, place, and community

- explicit acknowledgement of power dynamics in data collection and analysis
- ongoing consultation about appropriate uses and representations
- responsible approaches to data lifecycles, including ethical deaccessioning where appropriate (Rainie *et al.* 2017; Carroll *et al.* 2020).

These frameworks emphasise that data governance must be grounded in trust and sustained dialogue, recognising that ethical considerations evolve alongside technological capacities and cultural norms.

Recent work in the heritage sector has explored how CARE principles might align with community-led archiving, digital repatriation, and participatory mapping practices (e.g., Lien-Talks 2024b). These examples illustrate how heritage data governance can move beyond compliance-driven frameworks to ones rooted in mutual responsibility and shared stewardship (Carroll *et al.* 2021). CARE-based frameworks challenge dominant paradigms that treat heritage data as assets or commodities by centering care, community control, and ethical responsibility (Carroll *et al.* 2020). They offer a model for more just and sustainable data futures, grounded in ongoing relationships between data, people, and institutions (*ibid*). Given the collaborative nature of the HSHAZ, the extent to which the CARE frameworks have been used within a UK context shall be investigated within this thesis.

2.4.5. Community Archives

Beyond institutional frameworks, independent community archives represent alternative models of heritage data governance. In the UK context, groups like the Community Archives and Heritage Group (CAHG, n.d.) support networks of independent archives that document heritage that is often marginalised in official records, as Sheffield (2017) illustrated.

These initiatives demonstrate distinctive governance approaches:

- community control over collection policies and documentation priorities

- flexible metadata standards that reflect community terminology and values
- variable access protocols that respect community norms and sensitivities
- governance structures, accountable to documented communities.

Flinn's (2007) research on UK community archives demonstrates how these governance models enable documentation of histories, often absent from institutional records, particularly those of marginalised groups, political movements, and local communities. These archives create counter-heritage narratives that challenge dominant representations and expand heritage understanding (Flinn 2007). Technical approaches in community archives differ significantly from institutional systems. While professional heritage organisations typically use standardised database systems with controlled vocabularies, Daga *et al.* argue that community archives frequently employ flexible tools ranging from social media platforms to custom-built community websites (2022). This technical flexibility enables adaptation to community needs but can create challenges for long-term sustainability and cross-archive discovery. The digital trend in community archiving creates opportunities and challenges for independent heritage data governance. Digital tools enable broader participation and distribution but often introduce dependencies on commercial platforms with questionable long-term stability. DPC argue that many UK community archives face a condition of platform precarity, relying on commercial digital platforms whose terms of service may change unpredictably, become prohibitively expensive, or disappear entirely, posing serious risks to long-term preservation and access, especially in areas in which they lack technical capacities to ensure long-term data legacies (2024).

These challenges highlight tensions between independence and sustainability in community heritage data governance. While independent governance enables community control, it often lacks long-term digital preservation and technical maintenance resources. This tension has prompted the exploration of hybrid models that maintain community authority while leveraging institutional resources for technical sustainability. These challenges will be investigated in the Northallerton

(5.2) and Kirkham (6.2) case studies, particularly the ways in which the community practices developed during HSHAZ, with an emphasis on evaluating their longer-term sustainability and legacy.

2.4.6. Know Your Place

Initially developed by Bristol City Council and later expanded to other regions (e.g., West of England (Boyle 2022, p. 297) and recent PlanYourPlace (Hunter *et al.* 2012)), the *Know Your Place* (Bristol City Council 2023) platform represents a significant experiment combining institutional and community heritage data governance (Insole and Piccini 2013, pp. 53-69). The platform allows community users to explore historic maps alongside heritage records and to contribute images, memories, and documentation through a "Community Layer" (Bristol City Council 2023). This approach creates a hybrid governance model where institutional data (from HERs and archives) exists alongside community contributions within a unified technical framework (Insole 2013, p. 54). This hybridity addresses a common challenge in heritage data governance: maintaining professional standards while enabling broader participation and representation. The *Know Your Place* (Bristol City Council 2023) project enabled heritage documentation often absent from official records, challenging dominant narratives (Insole 2013, p. 53). However, it highlighted technical and governance challenges in representing complex cultural histories within platforms designed primarily for spatially defined heritage.

These challenges included:

- tensions between standardised metadata requirements and community documentation practices
- questions about the verification and validation of community contributions
- technical limitations in representing intangible heritage or contested interpretations
- sustainability challenges when community documentation relies on time-limited project funding.

Know Your Place demonstrated evolution in heritage data governance, moving from purely institutional models to more participatory approaches. However, it also revealed persistent questions about authority, representation, and sustainability that require ongoing attention as these models develop. These key challenges of balance are also critical to the HSHAZ and are explored within this thesis. Furthermore, given the temporal and spatial nature of the HSHAZ initiative, the potential strategies of data sharing are investigated in this thesis.

2.4.7. Politics of Data Ownership and Institutional Power

As well as considering aspects of engaging and embedding community within initiatives, it is important to consider the politics involved in data ownership. The governance of heritage data is fundamentally shaped by questions of power, authority, and control that extend far beyond technical considerations of format or storage. As Kitchin (2014, p. 24) and Zuboff (2019) demonstrate, data ownership represents a form of institutional power that determines not only who can access information, but who has the authority to interpret, contextualise, and deploy it in decision-making processes. In heritage contexts, these dynamics are particularly complex because they intersect with competing claims to cultural authority between professional experts, local communities, and commercial actors.

The privatisation of heritage knowledge through commercial data retention reflects broader trends toward what Srnicek (2017, p. 58) terms "platform capitalism," where information becomes a commodity controlled by those with the technical and legal capacity to extract and retain it. This dynamic is particularly problematic in heritage contexts where public funding often subsidises the creation of datasets that subsequently become private assets, effectively transferring public resources into commercial control. As Caswell and Cifor (2016) argue, such arrangements perpetuate what Taylor (2017) characterises as "data colonialism," where knowledge

about communities becomes controlled by external institutions rather than remaining accessible to those it represents.

The politics of heritage data ownership also intersect with longstanding tensions between expert and community knowledge systems. While initiatives like HE's Missing Pieces project attempt to democratise heritage data creation, the technical and institutional requirements for formal data preservation often reproduce existing power imbalances. The OAIS (Open Archival Information System) reference model, embedded within ADS, MIDAS and CIDOC-CRM practices, while presenting itself as a neutral framework, institutionalises this hierarchy through its concept of the "designated community", those authorised to interpret and make meaning from preserved information (Consultative Committee for Space Data Systems. 2024, p. 1-11). By reifying authority among those permitted to define what constitutes valid heritage knowledge, OAIS locks preservation decisions into path-dependent trajectories where initial choices about metadata standards, classification systems, and institutional workflows constrain all subsequent interpretations. Community-generated content must conform to professional metadata standards and institutional workflows, effectively requiring local knowledge to be translated into expert frameworks rather than enabling institutions to accommodate diverse knowledge systems (Smith 2006, p. 276; Harrison 2013, p. 56). These dynamics highlight how seemingly neutral technical decisions about data governance can reinforce existing hierarchies of cultural authority and limit the potential for truly participatory heritage practice.

2.4.8. Realities of enacting principle changes into policies

The challenges inherent in implementing participatory, ethical, and sustainable heritage data governance have notable parallels in the research sector, where research councils have invested significant effort in mandating FAIR (Findable, Accessible, Interoperable, and Reusable) principles and open access policies. These

experiences offer instructive insights into the timescales and change management effort required to reshape institutional data practices, suggesting that heritage data governance reform will require sustained commitment and resources beyond initial project funding cycles.

The Research Councils UK (RCUK) began introducing open access mandates in the early 2010s, with the initial RCUK policy framework released in 2005 (Research Councils UK 2013) requiring publications resulting from council-funded research to be made openly available. However, widespread implementation revealed significant challenges. A decade later, RCUK formal guidance on managing research data (Research Councils UK 2015) demonstrated that despite policy mandates, institutional adoption remained uneven, particularly amongst smaller research institutions and community-engaged projects without dedicated data management infrastructure. As Whyte and Tedds (2011) note, the gap between policy aspiration and institutional practice required sustained investment in training, infrastructure, and critically, institutional culture change.

The implementation of FAIR principles in research data management provides a particularly useful comparator. Whilst the FAIR principles were formally articulated in 2016 (Wilkinson *et al.* 2016), systematic adoption across UK research institutions has extended over subsequent years, with ongoing challenges circa 2024. This prolonged implementation timeline reflects several interdependent obstacles: the need for technical infrastructure upgrades; training for researchers and data stewards in metadata standards and repository systems; institutional policy development; and negotiation of disciplinary differences in data practices (Lien-Talks 2024a). As Petrunovska (2025) documents, even well-resourced research institutions require 3–5 years to meaningfully embed FAIR data practices, and many continue to face challenges in achieving sustainable adoption.

Several factors contributed to extended implementation timescales in research contexts that are directly transferable to heritage data governance:

Institutional Culture Shift. Moving from individual researcher autonomy to standardised, documented data practices required reframing data management as a core institutional value rather than a compliance burden (Higman *et al.* 2019). In heritage contexts, achieving equivalent culture change (where data governance becomes embedded in community and institutional identities rather than perceived as external imposition) will similarly require extended engagement and incentive structures beyond mandate alone.

Technical Infrastructure Requirements. Research councils' open access mandates necessitated institutional investment in repository infrastructure, metadata systems, and technical support roles. The costs were substantial: establishing institutional repositories, training, and ongoing maintenance required dedicated funding lines (Beagrie and Houghton 2014). Heritage data governance reform will require equivalent investment in systems that accommodate diverse community practices whilst maintaining long-term sustainability, a challenge heightened by heritage's geographic distribution and institutional fragmentation compared to research sector concentration.

Disciplinary Heterogeneity. FAIR implementation revealed that different research disciplines required different interpretations of principles and diverse technical approaches (Mons *et al.* 2017). Similarly, heritage practices (from archaeology to oral history to material culture documentation) embody distinct knowledge frameworks and community norms that cannot be accommodated through singular technical or governance solutions. Adapting models across this heterogeneity requires iterative engagement and willingness to accommodate local variation, extending implementation timescales.

Incentive Misalignment. Research data practices became embedded when institutions aligned incentives through funder requirements, career progression metrics, and institutional recognition with open data principles (Nosek *et al.* 2015). Heritage data governance lacks equivalent incentive structures; community heritage work remains chronically underfunded and undervalued in institutional recognition

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systems. Without fundamental shifts in how heritage work is valued and resourced, technical governance frameworks alone will fail to drive sustainable behaviour change.

Given these parallels, heritage data governance reform should anticipate extended implementation timescales. If research councils' FAIR mandates (operating with more concentrated institutional bases and established funding mechanisms) required a decade or more for meaningful systematic adoption, heritage data governance reform involving more dispersed communities, voluntary labour, and precarious funding should plan accordingly. As Piwowar *et al.* (2019) note of open access in research contexts, policy mandates without sustained resource allocation and culture change efforts achieve only superficial compliance rather than deep institutional transformation.

This suggests that genuine progress in heritage data governance (establishing participatory, ethical, and sustainable systems) requires commitment beyond single funding cycles. It necessitates iterative development partnerships, realistic timescale expectations, ongoing investment in technical infrastructure, institutional incentive alignment, and recognition of the labour (professional and community) required for meaningful change. The experiences from research council policy implementation indicate that heritage sector leadership and funders should plan for 5–10 year trajectories for embedding new governance models, rather than expecting transformation within the timeframes of typical heritage project funding. Addressing this expectation gap (between aspiration for rapid systemic change and the realistic effort required) is critical for moving beyond rhetoric to sustainable heritage data governance practice.

2.5. Large-scale data focused research council initiatives

Academic institutions are pivotal in developing heritage data infrastructures, contributing methodological innovation, theoretical insight, and access to experimental funding streams (Lian and Xie 2024). The UK academic sector has been particularly active in heritage data innovation, developing approaches that complement and challenge institutional frameworks (Wollentz *et al.* 2023).

2.5.1. Towards a National Collection (TaNC)

The United Kingdom Research and Innovation (hereafter UKRI)-funded Towards a National Collection (TaNC) programme represented one of the UK's most ambitious academic-led heritage data initiatives (Bailey *et al.* 2024, p.9). With £18.9 million in funding through the Strategic Priorities Fund, TaNC aimed to create a unified virtual "national collection" by connecting digital collections across the UK's galleries, libraries, archives and museums (UKRI 2022).

TaNC exemplifies a distributed approach to heritage data infrastructure, pursuing interconnection rather than centralisation. Its foundational principles include:

- LOD and semantic web technologies to connect distributed collections
- user-centred design, prioritising diverse research and public access needs
- cross-domain standards that bridge disciplinary and institutional boundaries
- sustainable technical approaches that outlive initial project funding (*ibid*).

The programme's five Discovery Projects and Foundation Projects comprised a federated governance model where individual institutions maintain autonomy while contributing to shared infrastructure (Bailey *et al.* 2024, p.8). This approach addressed tensions between institutional requirements and cross-sector integration, challenging previous initiatives (Imperiale 2024; and other related fields (Ordonez-Ponce 2021)). TaNC's "Heritage Connector" project, led by the Science Museum

Group, exemplified the cross-sector integration approach. Rather than creating new centralised databases, it developed computational methods to identify connections between existing collection records, enriching a dataset's context without disrupting institutional data sovereignty (Dutia and Stack 2021). Similarly, the "Congruence Engine" project demonstrated how object-centred approaches can bridge institutional silos (Graham and Rees 2022). Focusing on material connections between industrial heritage collections creates thematic pathways across organisational boundaries while respecting institutional data governance (Boon *et al.* 2022).

These approaches reflect evolving thinking about heritage data governance, moving from centralised models towards connections emerging through documented relationships rather than enforced standardisation. This shift acknowledges the value of institutional expertise and the limitations of top-down approaches to heritage data integration, shown in UKRI (2022), a trend replicated in the HSHAZ. It is also important to consider the extent to which decentralised data management is considered within the HSHAZ and explored within the case studies.

2.5.2. Mapping Medieval Chester

Smaller-scale academic projects contribute significantly to heritage data infrastructure through methodological innovation and critical perspectives. For example, the Mapping Medieval Chester project exemplified this contribution by developing approaches to spatial heritage data that utilise and challenge institutional frameworks. Led by researchers at Swansea University and the University of Southampton, Mapping Medieval Chester created a digital map-based interface for exploring the medieval city's literary, archaeological, and historical dimensions (Mapping Medieval Chester, n.d.). Its methodological approach, combining GIS and textual analysis, demonstrated how academic innovation can expand what counts as heritage data beyond traditional categorisations (Clarke 2011).

The project's governance model highlights both possibilities and tensions in academic-community collaboration. While developed within academic institutions, the project engaged local heritage organisations, archives, and community groups in co-creating content and determining access provisions (Clarke 2011). This approach exemplifies what Taylor and Gibson (2016) term "collaborative digitisation", where academic expertise complements rather than supersedes community knowledge. Methodologically, Mapping Medieval Chester demonstrated how digital humanities approaches can expand conceptual frameworks for heritage data. By treating literary texts as spatial data and integrating them with archaeological records, the project challenged conventional separations between tangible and intangible heritage that often structure institutional databases (Clarke 2011; e.g., Lien-Talks 2024b). The mapping approach raises important questions about heritage data governance: how do academic innovations translate to institutional practice, what happens when project funding ends and who maintains experimental digital resources? These questions highlight the need for governance frameworks to bridge academic innovation and institutional sustainability. The collaborative challenge for institutions, although partially engaged with by UKRI's Open Research policy through the effective use of DMPs (UKRI 2023b), remains inadequately addressed within the literature, especially in how to audit the following of DMPs, and constitutes a research question for this thesis.

2.6. Historic England's Frameworks and Professional Governance

2.6.1. The Heritage Information Access Strategy (HIAS)

The most substantial data governance model for heritage data governance in England is HE's (2023b) Heritage Information Access Strategy (hereafter HIAS). Formally launched in response to the UK Government's Culture White Paper (DCMS

2016, p.39) and continuing through multiple phases, HIAS aimed to create an integrated and accessible heritage information environment through standardised systems, vocabularies, and protocols, providing long-term stewardship of heritage data.

HIAS exemplifies an institutional approach to heritage data governance, prioritising standardisation and interoperability through the following initiatives:

- **OASIS** (Online Access to the Index of Archaeological Investigations), which streamlines the reporting of archaeological fieldwork (OASIS, n.d.)
- the **Heritage Gateway**, providing unified search access across multiple heritage datasets (Heritage Gateway, n.d.)
- **FISH** (Forum on Information Standards in Heritage – n.d.) vocabularies, establishing standard terminologies for heritage documentation
- **Heritage Data**, a LOD service publishing controlled vocabularies as semantic web resources (Heritage Data, n.d.; DCMS 2016).

These initiatives align with HE's HIAS programme, which prioritises interoperability, standardisation and consistent metadata to improve data flows and cross-searching between national and local systems, thereby enhancing discovery across institutional boundaries and embeds the FAIR data principles (Historic England 2023b; Historic England 2023c; Historic England 2021a; Historic England 2021b; Historic England 2021c). It sets out clear expectations for projects that produce or rely on heritage data, promoting the use of Data Management Plans (hereafter DMPs), in the HIAS context termed Data Management Statements (DMS), early-stage planning for data legacy, and integration between datasets, repositories, and digital infrastructures (Historic England 2023b).

However, HIAS's institutional foundations also create tensions with community-based approaches to heritage data. Archaeologists must reconsider their perceptions of public engagement and expertise to foster a critical understanding of how archaeology can be both "open" and ethical (Fredheim 2020). Standardised

vocabularies and data structures, such as the Monument Types Thesaurus used in HIAS, often reflect professional epistemologies that may not align with community understandings or priorities. For instance, the thesaurus embodies archaeological categorisations that might not correspond to local or indigenous ways of understanding place and materiality (and possibly the use of WikiData listings might help democratise and decentralise the process suggested by Harrison (2015)). These tensions manifest in practical challenges for projects like *Know Your Place* (discussed in 2.5.6), which attempt to integrate institutional and community data together. While standardised formats enable technical integration, they often require community contributors to adapt their knowledge to institutional frameworks rather than allowing institutions to accommodate diverse knowledge systems (Baines and Brophy 2011). HIAS's governance structure also reflects these tensions. While stakeholder consultation includes representatives from local authorities, commercial practice and academic institutions, community representation remains limited (Historic England 2021b). This creates an environment that privileges professional expertise over community knowledge in shaping data standards and protocols (Waterton and Smith 2010, p. 5). Despite these limitations, HIAS represents a significant advancement in creating technical infrastructure for heritage data sharing. Its emphasis on open standards and accessible platforms provides foundations that community initiatives can build upon, even as they challenge some of its underlying assumptions about heritage categorisation and value.

This thesis investigates the extent to which HIAS was applied to, and applicable for, the HSHAZ to understand how existing guidelines and structures can assist in the management and preservation of complex datasets made from diverse stakeholders.

2.6.2. Interoperability

HIAS represents the most significant attempt to address interoperability challenges in UK heritage data. Building upon initiatives like MIDAS Heritage (the UK historic

environment data standard) (English Heritage / FISH 2012), HIAS aims to create an integrated information environment using common standards, protocols, and services (Historic England 2023b). These components exemplify different aspects of "semantic interoperability": the ability of systems to exchange data with unambiguous, shared meaning (Moyano *et al.* 2023). Significant challenges persist despite introducing these interoperability components within the heritage sector. Resource constraints, legacy systems, and institutional priorities lead to different degrees of interoperability rather than the adoption of universal standards (as revealed by Brunet *et al.* 2022, p.4). Moreover, interoperability between institutional systems and community-generated content remains particularly taxing. While platforms like *Know Your Place* (discussed in 2.5.6) enable community contributions to be made, the platform's design reflects both possibilities and tensions in this hybrid approach. While community contributions appear alongside institutional records, they remain visually and structurally distinct and contained within a separate layer that preserves boundaries between "official" and "community" heritage. This separation maintains what Zagzebski (2012, p. 60) terms "epistemic authority" for institutional data while creating space for alternative perspectives. This separation reflects technical challenges and more profound questions about validation, authority, and governance. This distinction between community and professional dialogues requires more investigation and is discussed in 2.5 and the discussion 9.4.2.

One approach in which the interoperability of datasets can be managed is by using GIS. Spatial technologies are vital in heritage data integration, providing common reference frameworks that can connect diverse datasets through geographic location. GIS has become increasingly central to heritage documentation, analysis, and presentation in the UK context (Spiridon *et al.* 2016). Initiatives like the Heritage Gateway demonstrate the potential of spatial integration, using location as a unifying factor to connect records from diverse sources, including HERs, the NHLE, and the HE Archive (Carlisle and Lee 2016). This geospatial approach enables what Tsai and Garnier (2018) term "spatial mediation", using geography as a bridge between

otherwise disconnected information systems. However, spatial integration also presents significant technical and conceptual challenges. Different heritage systems use varying approaches to geographic representation, from precise coordinates to imprecise place names and from polygon boundaries to linear features (Illsley 2019). Reconciling these spatial representations requires technical transformation and conceptual mapping between different understandings of space and place. Moreover, as Kelly (2023) argues, GIS approaches often privilege certain types of spatial knowledge while marginalising others. Precise coordinate systems and bounded polygons reflect particular ways of understanding space that may not align with community perceptions or indigenous knowledge systems. This creates tensions between technical standardisation and diverse spatial epistemologies that remain inadequately addressed in most heritage data systems.

A different approach to the increasing interoperability of datasets is the following of domain guides of best practice.

2.6.3. Historic England Guidance

HE has produced an extensive body of guidance to support best practice across heritage activities (Historic England 2025a). This includes technical standards for listing and building recording, such as *Understanding Historic Buildings: A Guide to Good Recording Practice*, which offers methodologies for investigation, surveying, photography, and report writing, and in-depth frameworks like *BIM for Heritage – Developing the Asset Information Model* and *Geospatial Survey Specifications for Cultural Heritage* which provides direction for digital documentation and asset information modelling (Historic England 2016b; Historic England 2019; Historic England 2024b). The organisation also offers comprehensive Advice and Grants and an A–Z catalogue of current guidance covering topics like conservation, digital recording, information management, and community practice (Historic England 2025a). These resources are grounded in principles of inclusivity, transparency, and long-term public benefit, and are designed to support both heritage professionals

and community groups in delivering high-quality, ethically aware outcomes (Historic England 2025a; Historic England 2016a).

The significance of standardised guidance in heritage practice has been emphasised in academic literature on heritage management, which notes the critical role of consistent methodologies in ensuring data quality, comparability, and long-term value (e.g., Dallas 2015; Denard 2012, p. 58). Research on digital heritage workflows has particularly highlighted the importance of early-stage planning and standardisation in preventing data loss and ensuring interoperability (e.g., Kilbride 2009; Ross 2012).

One such guidance is the HE's *3D Laser Scanning for Heritage*. This guidance addresses the challenges of technical standardisation and diverse spatial epistemologies by establishing workflows for creating preservation-ready 3D documentation (Historic England 2018a). HE's approach emphasises comprehensive metadata documentation to ensure future interpretability of heritage survey data, specifying minimum metadata requirements including raw data file names, project references, scanning system specifications, point density, capture dates, and site identifiers (Historic England 2018, p. 103). The guidance mandates that metadata should form an integral component of information submitted to trusted digital repositories such as the ADS, with survey reports documenting each aspect of the data capture process (control networks, scanning, photography, modelling) to ensure long-term accessibility and usability (*ibid*). This archiving strategy aligns with ADS's *Archiving Laser Scan Data* guidance (ADS/Digital Antiquity 2009; later updated in Payne and Niven, n.d.), establishing clear pathways for preserving 3D heritage data alongside planning for format migration, documenting creation methodologies as well as creating preservation derivatives alongside working files, principles that apply across evolving data types. A particular interest in the case studies of this thesis is therefore the methods used by local community groups to represent the geospatial heritage of their localities.

2.6.4. Open Data Policies

HE has consistently championed the principles of open data, aligning not only with government transparency frameworks but also with broader research and innovation funder expectations, particularly those emerging from UKRI (UKRI 2025a; UKRI 2024). UKRI underscores that publicly funded research data should be "made as open as possible, in a timely and responsible manner" and managed according to FAIR principles (UKRI 2025a; UKRI 2024). This policy framework has been further developed through UKRI's comprehensive review process, culminating in a new integrated research data policy expected to be implemented in 2026 (UKRI 2025b).

In the heritage context, such openness aims to empower local communities, practitioners, and researchers by ensuring that data underpinning planning, conservation, and cultural activity is accessible, reusable, and clearly licenced (Historic England 2023b; d). The principles of open government data have evolved significantly since the 2013 G8 Open Data Charter, with increasing emphasis on proactive publication, machine-readable formats, and clear licensing frameworks (Open Data Institute 2021; Zuiderwijk and Janssen 2014).

Within the HSHAZ initiative, this commitment implies a clear expectation that data produced through publicly-funded activity, such as evaluation reports, oral-history interviews, photographic documentation, and artistic outputs, would be made available in open, machine-readable formats (e.g., .csv, .json, .tiff), accompanied by clear metadata and licensing statements, aligning with UKRI-style expectations (Historic England 2023c; UKRI 2025a).

Open data is not merely technical but also cultural and procedural. Embedding these practices requires early planning, format decisions, metadata standards, and repository choices, all of which are emphasised in UKRI's evolving data policy framework (UKRI 2025a; UKRI 2024). In the HSHAZ, such considerations ideally would have been integrated from the outset to ensure long-term stewardship and public engagement through transparent, accessible outputs.

While the extent to which these expectations were realised will be explored later in this evaluation, HE's policy baseline, reinforced by funders like UKRI, makes it clear that open data principles are essential, especially in multi-partner settings where inconsistent capacity and practice can otherwise hinder transparency and accessibility (Historic England 2023c).

2.6.5. Missing Pieces

The Missing Pieces Project, initiated by HE, represents a significant departure from traditional top-down heritage documentation (Historic England 2023d). It encourages members of the public to contribute local knowledge, personal stories, photographs, and insights to enrich the NHLE (*ibid*). As a form of crowd-sourced heritage documentation, Missing Pieces exemplifies a participatory, ethical, and inclusive model of data creation, valuing lived experience and community memory not as supplementary, but as capable of shaping the national heritage narrative (*ibid*). Before investigating further, it is important to consider the wider NHLE.

2.6.6. National Heritage List for England

One of the HE research strands within the HSHAZ was enhancing the List. The NHLE represents HE's most structured and formalised heritage dataset. It serves as the central register of all nationally designated heritage assets, including listed buildings, scheduled monuments, registered parks and gardens, protected wreck sites, and battlefields, operating with a high degree of rigour in both its processes and outputs (Historic England 2025e). Listing is underpinned by defined criteria, expert assessments, and detailed documentation, with resulting data published openly via HE's digital portal in standardised metadata formats for long-term discoverability and access (Historic England 2025e).

The NHLE exemplifies best practice in heritage data management, incorporating structured workflows, controlled vocabularies, and persistent identifiers (hereafter PIDs) that align with international standards for cultural heritage information e.g.

CIDOC-CRM conceptual reference model (ISO 21127 an event-centric ontology, that allows heterogeneous cultural heritage datasets to be semantically integrated by mapping local records onto a shared set of classes and properties (International Organization for Standardization 2023), and SPECTRUM (maintained by the Collections Trust, governs museum collections management practice through 21 defined procedures and is a formal requirement of UK museum Accreditation (Collections Trust 2024; Carlisle and Lee 2016; Doerr 2003)), as well as UK sector data exchange standards including MIDAS Heritage (the UK's content standard specifically for historic environment records, and is deliberately designed to work alongside both, referencing SPECTRUM for artefacts and CIDOC-CRM for conceptual relationships; Historic England 2025d). Within the context of the HSHAZ initiative, NHLE updates provide a key opportunity to model best practice in heritage data creation. Where projects involved new listings, amendments, or enhancements to existing records, these activities are expected to adhere to the most robust data governance protocols within the sector including conducting accurate research, procuring high-quality photography, maintaining versioned documentation, and ensuring compliance with these standards through the use of persistent, resolvable URIs and controlled vocabularies aligned with Historic England's linked data conventions (Historic England 2025d; Doerr 2003).

The Missing Pieces project reflects broader trends towards participatory heritage practices and citizen science initiatives that seek to democratise knowledge production and challenge traditional expert-led approaches, as argued necessary by Smith (2021). Oomen and Aroyo's (2011) and Ridge's (2014) research on crowdsourcing in heritage contexts has highlighted both the opportunities for enriching official records with community knowledge and the challenges of maintaining data quality and coherence across diverse contributions.

Strategically, Missing Pieces embodies principles central to HE's wider agenda: community collaboration, open data, ethical contribution, and public empowerment

through access and authorship (Historic England 2023d; The Guardian 2024). It positions heritage as co-created, rather than institutionally dictated.

The question of whose heritage is documented and *how*, lies at the heart of heritage data governance. In England, initiatives like HE's inclusion, diversity and equality strategy and the Heritage Fund's inclusion, access, and participation focus demonstrate growing institutional recognition of representation gaps in heritage data (Historic England 2020c; Heritage Fund 2019, p. 28). These initiatives acknowledge the systematic exclusion or marginalisation of specific communities, histories, and cultural practices within official heritage documentation, as argued by Alivizatou (2011, p. 38). Addressing these erasures requires expanding the content of heritage databases and reconsidering their underlying structures, categories, and governance arrangements. Research by the National Museums of Scotland (NMS) and the National Galleries of Scotland (NGS) highlights how curator-assigned metadata often misaligns with user search behaviours, indicating that seemingly neutral technical choices in heritage data systems can inadvertently reproduce exclusions. Classification systems, metadata standards, and access protocols embed assumptions about what constitutes heritage and whose perspectives matter (Gibson *et al.* 2024). The research by NMS and NGS underscores the importance of user-centred approaches in designing cultural heritage metadata frameworks to ensure inclusivity and relevance. These technical choices interact with resource inequalities and institutional practices to create digital heritage divides. Addressing these divides requires approaches beyond simply adding content to existing systems. The Missing Pieces project, for example, demonstrates how meaningful inclusion often requires adapting data structures, governance processes, and technological interfaces to accommodate different forms of heritage knowledge and documentation practice.

2.6.7. Wellbeing

HE's research strategy increasingly recognises the role of heritage in promoting individual and community wellbeing. Rather than focusing solely on data accessibility, recent initiatives have sought to understand how engagement with heritage can foster social connection, belonging, and healthier communities. In places like Kirkham, where Health and Wellbeing form a key focus of the HSHAZ, this aligns with HE's wider commitment to integrating wellbeing within its research and policy frameworks.

HE's research on heritage and wellbeing demonstrates how institutional approaches to heritage data are evolving to capture not only material and historical significance but also the social value of heritage. Through initiatives such as the Heritage and Wellbeing programme, HE has developed frameworks for documenting and evaluating how engagement with heritage contributes to individual and community wellbeing (Historic England 2022a, p. 7; 2022c, p. 14). These efforts address a key gap in heritage data governance: how to measure and represent the social and psychological benefits of heritage participation alongside physical conservation outcomes. By integrating wellbeing indicators into heritage datasets, the programme expands what counts as heritage data to include emotional, social, and cognitive dimensions of value; domains often underrepresented in formal heritage records (*ibid.*). This shift reflects HE's broader research strategy to embed wellbeing within heritage policy and to use data more effectively to evidence the contribution of heritage to healthier, more connected communities.

However, wellbeing research also reveals tensions between institutional and community approaches to heritage valuation. While institutional frameworks often seek standardised measures that enable comparison across contexts, community understandings of wellbeing may be more contextual, relational, and resistant to standardisation (as argued in Power and Smyth 2016). These tensions highlight broader questions about who determines what defines heritage impact and how it should be documented, and seemingly neutral methodological choices about

wellbeing measurement reflect value systems and theoretical perspectives that may privilege specific outcomes over others (e.g., Scott and Lewis 2015). Despite these tensions, HE's wellbeing research demonstrates an evolution in institutional approaches to heritage data, moving beyond documentation of the physical fabric toward a more holistic understanding of heritage value and impact. This shift recognises heritage data's role within communities, where local knowledge and lived experience contribute to placemaking, social cohesion, and personal wellbeing. An increased awareness of how heritage data can represent these relational dimensions highlights the importance of understanding, preserving, and maintaining access to the data that communities themselves create, share, and value. These perspectives create new opportunities for inclusive data governance, recognising diverse forms of heritage knowledge and value systems. The role of such governance in supporting community wellbeing is explored further in the Kirkham case study 6.2.

2.7. Historic England Background and the Likely Impact on Data Management in the HSHAZ

HE's frameworks establish a clear expectation that data reuse, structured archiving, community collaboration, and interoperability would underpin the HSHAZ. At this stage, it remains an open question as to how consistently these principles were embedded across the programme. It is possible that some projects may have demonstrated strong alignment with these frameworks, while others may have faced challenges, whether due to limited capacity, gaps in guidance, or differing local priorities. The complexity of delivery structures, operating across multiple tiers of governance, may also have influenced the extent and manner of engagement with established HE data infrastructures.

Exploring the relationship between policy aspiration and delivery practice offers an opportunity to consider whether strong frameworks alone are sufficient, or whether they require additional support, through resourcing, training, shared accountability, and integrated planning, to translate effectively into action. The HSHAZ therefore

provides valuable insights into how heritage-led regeneration can better align digital and data ambitions with the practical realities of local delivery.

2.8. Conclusion

This review has examined the complex landscape of heritage data governance in England, identifying key tensions between standardisation and local relevance, institutional requirements and community priorities, and innovation and sustainability. It has also highlighted emerging models that attempt to balance these competing demands through adaptive governance, co-creation, and ethical data stewardship.

Several key themes emerge from this analysis, that map up to the research questions in the introduction 1.6:

2.8.1. Heritage data functions as infrastructure

Beyond mere documentation, heritage data increasingly serves as a foundational layer in planning, research, and community engagement across the UK. This infrastructural role requires governance approaches that treat data as a strategic asset requiring ongoing maintenance and evolution. Initiatives like HIAS, TaNC, and HS2's heritage data systems demonstrate this infrastructural conceptualisation but raise questions about sustainability and integration across different scales and contexts. Research Question 1 addresses this directly by examining how heritage datasets are produced, managed, and deposited in HSHAZ, exploring whether the programme's practices align with the requirements of heritage data as infrastructure, and Research Question 2 investigates the structural barriers that prevent the creation of coherent data ecosystems capable of sustaining this infrastructural function.

2.8.2. Power dynamics shape data governance

Technical standards, metadata schemas, and governance structures reflect particular epistemologies and power relations. The contrasting approaches of institutional frameworks like HIAS and community initiatives, like independent archives, highlight how governance arrangements distribute authority in ways that privilege specific knowledge and expertise. Addressing these dynamics requires deliberate efforts to redistribute authority and recognise diverse expertise, as exemplified by the more participatory approach in *Know Your Place*. Objective 3 investigates how ownership, intellectual property, and ethical stewardship are negotiated within HSHAZ, particularly examining whose voices and contributions are recognised in data creation, while Research Question 4 explores what governance models can support more equitable access and authority distribution across diverse stakeholders.

2.8.3. Context matters

The diverse approaches evident across British heritage data initiatives, from national infrastructure projects to local community archives, demonstrate that effective governance models must adapt to specific institutional landscapes, resource constraints, and community priorities rather than following universal templates. The success of place-based governance arrangements, like Local Heritage Forums, illustrates the importance of contextual fit in sustainable data governance. Research Question 3 directly engages with this tension by examining how national strategies can better accommodate the decentralised, community-driven approaches that characterise parts of HSHAZ, exploring how standardised frameworks can maintain flexibility for local contexts, while Objective 1 maps the disparities and inconsistencies that arise when diverse contexts and professional boundaries intersect within a single programme.

2.8.4. Sustainability requires integration

Long-term data sustainability depends on integrating broader infrastructures, collaborative governance, and stable funding models. The challenges faced by time-limited projects like Heritage Action Zones highlight tensions between innovation funding and infrastructure maintenance that require new approaches to resource allocation and institutional commitment. Research Question 2 investigates the structural and institutional barriers that prevent sustainable integration, examining policy fragmentation and resource inequalities, while Research Question 4 explores what governance models can maintain heritage data beyond initial project funding cycles, drawing on principles of long-term stewardship from FAIR and CARE frameworks.

As such, this thesis shall examine how different governance models perform across contexts, with particular attention to:

- equity of participation across different socioeconomic and cultural groups
- long-term sustainability beyond initial project funding
- integration between institutional and community-led approaches
- adaptability to evolving technical capabilities and social contexts
- balance between standardisation for interoperability and flexibility for local relevance.

By addressing these questions, through contextually sensitive research within this thesis, it is possible to develop effective approaches to heritage data governance that balance multiple values: preservation and access, standardisation and local relevance, and professional expertise and community knowledge. Such approaches are essential for realising the potential of heritage data as infrastructure for sustainable development, community wellbeing, and cultural resilience.

3. Methodology

This chapter outlines the methodological framework developed to investigate how heritage data is produced, managed, and reused within the HSHAZ programme.

The research explores both the technical and cultural dimensions of heritage data, asking what kinds of information are generated in heritage-led regeneration projects, how they are shared and stored, and how different actors (from planning consultants to community groups) understand their value and potential legacy. At the heart of the study is a concern with data justice and the politics of memory: Who creates heritage data, and for *whom*? What stories are retained, and which are excluded? What happens to heritage data when funding cycles end or platforms shift?

To answer these questions, the research adopts a multi-method, qualitative approach. It combines three interlocking methods: (1) semi-structured interviews with key stakeholders, (2) a structured questionnaire distributed across multiple case study sites, and (3) a data audit of planning applications, repositories, and digital archives. Each method was designed to investigate different layers of the heritage data ecosystem, from intention and perception to structure and output. These methodologies were chosen to interact and inform the others, in order to capture the full complexity of data management within the High Street HAZ (see 3.8).

3.1. Research Questions

As shown in the literature review, critical debates in digital heritage, archival science, and data governance inform the research questions in this study. These disciplines highlight not only the technical dimensions of data creation and preservation but also the ethical, political, and social frameworks that shape how data is valued, used, and maintained. Building on the research questions above and the literature

reviews, the research questions are embedded into the questionnaire (Appendix A) and semi-structured interview guide (Appendix B).

3.2. Case study selection

The selection of Northallerton, Kirkham, and Chester as case studies was driven by the need to capture diverse approaches to heritage data management within the HSHAZ programme while maintaining analytical coherence. These three sites were chosen to represent different geographic regions (Yorkshire, Lancashire, and Cheshire), varying scales of urban context (market town, small town, and historic city), and distinct project emphases (digital innovation, community wellbeing, and built heritage conservation respectively). This variation enabled examination of how local capacity, institutional partnerships, and project priorities shaped data governance outcomes across different contexts.

However, it is crucial to acknowledge that these three English case studies cannot support universal claims about heritage data governance. The findings are necessarily situated within the specific policy frameworks, institutional cultures, and regulatory environment of England's heritage sector circa 2020-2024. The insights derived from this research reflect the particular dynamics of the HSHAZ programme rather than inherent characteristics of heritage data management more broadly. While the patterns identified, such as fragmentation between above- and below-ground data practices, may resonate in other contexts, their transferability requires empirical verification rather than assumption. This limitation does not diminish the value of the research but rather defines its scope: offering grounded insights into contemporary English heritage data practices that can inform, but not prescribe, approaches in other jurisdictions or programme contexts.

3.3. Positionality

This research was conducted within an applied partnership context, funded by the Arts and Humanities Research Council through the Collaborative Doctoral Partnership (CDP) scheme with HE. That institutional relationship shaped the research in ways that warrant explicit acknowledgement. HE provided access to staff, internal documentation, project monitoring tools, and programme governance materials that would not routinely be available to an independent researcher. Although document access was facilitated through FOI requests, this access was invaluable and enabled a depth of analysis that would otherwise have been impossible; it also created a dependency that must be recognised honestly. The researcher was embedded within an organisation that is simultaneously the subject of scrutiny in parts of this thesis, particularly in the analysis of how HE's own frameworks and programme decisions shaped data governance outcomes across the High Street Heritage Action Zone (HSHAZ) initiative.

Several potential sources of bias or reputational sensitivity flow from this position. First, there is the risk of institutional deference: where HE staff generously shared time and materials, the researcher was aware of an obligation not to produce findings that might embarrass or damage the funder. This risk was managed principally by maintaining a clear distinction between evaluating systemic conditions and attributing individual responsibility. The thesis analyses the programme structures, governance arrangements, and policy frameworks; it does not seek to attribute fault to named individuals, and any quotations from HE staff are used to illuminate institutional dynamics rather than to expose personal judgements. Second, the CDP model by definition produces research that is developed in dialogue with a non-academic partner. Periodic project meetings, advisory input from HE supervisors, and access dependent on ongoing institutional relationships all created informal channels through which the priorities of the partner organisation could influence the framing of research questions or the emphasis of findings. To

mitigate this, the analytical framework was developed primarily in dialogue with the academic supervisory team at the University of York, and the research questions were fixed before fieldwork began rather than being revised in response to partner feedback.

The researcher also brings a professional background in digital heritage and data management, including prior experience at the ADS, the DPC, and several university-based digital humanities projects. This expertise is both an asset and a source of potential bias. It facilitated analytical engagement with technical data management practices that a generalist researcher might have found opaque, and it informed the evaluative criteria applied to digital outputs in section 3.7.4. It also means, however, that the researcher is not a neutral observer of the field: there are pre-existing views about what constitutes good data governance, which standards are worth advocating for, and which institutional arrangements are more or less likely to produce sustainable outcomes. These views are articulated in the Discussion chapter as reasoned arguments rather than assumed as background, but they inevitably shaped what the research attended to and what it treated as significant.

A further dimension of positionality concerns the relationship between the researcher and the communities studied. The case study sites, Northallerton, Kirkham, and Chester, are places the researcher visited but did not inhabit. Interviews and site visits were conducted as an outsider, and the researcher had no prior personal connections to the communities involved. This limits the depth of community-level insight available to the research but also reduces some of the risks associated with over-familiarity, such as the tendency to naturalise local assumptions or to interpret community practices through a lens of personal affection rather than analytical distance.

These positional factors are addressed throughout the thesis through a commitment to triangulation across methods, sources, and informant types. Interview accounts

are cross-referenced with documentary evidence and data audit findings; claims about programme-level dynamics are supported by evidence from multiple case study sites; and where findings rest on a single source or a limited number of interviews, this is noted explicitly. The goal is not to eliminate the researcher's position, which would be neither achievable nor intellectually honest, but to make it legible, so that the reader can assess how the research was produced and what weight to give its conclusions.

3.4. Participant selection

Participants were selected based on their role in the HSHAZ initiative and were grouped into three categories: (1) data producers, such as planning consultants or digital asset creators; (2) evaluators, both internal and external to HE; and (3) managers, including HSHAZ Project Officers, Project Leads, and regional coordinators. A balance was sought across types of organisations, from local authorities and heritage institutions to community groups, within each of the three case studies. This approach draws on Affleck and Kvan's (2008) and Ridge's (2014) participatory research methodologies that recognise the importance of including diverse voices in heritage practice.

3.5. Questionnaire

To support the development of the interview guide and to capture broader patterns in stakeholder perceptions, a preliminary questionnaire was created on Qualtrics and distributed via email (following Finstad 2010, p. 104 (See Appendix A)). The purpose of the questionnaire was twofold: first, to introduce a structured comparative element to complement the qualitative emphasis of the research, and second, to inform the subsequent interview design with grounded insights into participant experiences and data practices. The ethics for this methodology are detailed in 3.9.

The structure of the questionnaire is seen in Appendix A, and uses approximately 40 questions, 7-point Likert scale items, open-ended text boxes, and multiple-choice tick boxes.

The Likert scale was selected for its ability to capture nuance in participant opinion while avoiding some of the ambiguity associated with 5-point or 10-point scales (Finstad 2010; Dawes 2008). A 7-point scale was specifically chosen as it can capture information about particular phenomena while minimising issues related to skewing that can occur with 10-point scales, whilst still being broad enough to reduce interpolated results where respondents attempt to choose responses between "two discrete values presented" (Finstad 2010, pp. 104-107). Furthermore, using a 7-point Likert scale provides a more accurate evaluation of participant opinions and is more suitable for electronically distributed questionnaires (Finstad 2010, p. 104).

3.5.1. Questionnaire Design and Structure

As shown in Appendix A, question types were grouped thematically into sections covering participant background, data overview, data creation, data input, data processing, data sharing, data archiving, data legacy, and concluding reflections. Where appropriate, skip logic was used to ensure that participants only encountered relevant questions based on their roles and experience.

The questionnaire combined closed and open-ended items. Likert scale items (7-point) captured nuanced responses to statements on data sharing, archiving practices, and legacy planning. Quantitative items allowed the collection of numeric data to describe variables and phenomena (Gay *et al.* 2009, p. 5). A 7-point scale was selected following Finstad (2010) as offering sufficient granularity to capture participant opinion whilst minimising the interpolation issues associated with 5-point scales and the skewing effects of 10-point scales, particularly in electronically

distributed questionnaires. Multiple-choice and yes/no items identified data types, tools, and repository use.

Open-ended text fields invited respondents to explain their reasoning, describe specific examples, or raise concerns that the closed items had not captured. These qualitative responses allowed for nuanced accounts of practice and decision-making; qualitative data can deduce measurables and separate facts from feelings (Fraenkel *et al.* 2012, p. 7), and qualitative datasets can objectively describe current situations and establish relationships between variables despite potential researcher bias (Mertler 2016, p. 108; Creswell 2005, p. 10). These open-ended prompts also served a practical function: they flagged emerging themes and specific examples that subsequently informed the interview guide design (see 3.5.3 and 3.6).

3.5.2. Questionnaire Dissemination

A pilot version of the questionnaire was tested with a control group in Northallerton, where the researcher had already established rapport. Feedback from this group helped refine the flow and clarify transitions between sections, but no major structural changes were made. A particular challenge arose with questions on particular digital archiving information, such as those relating to the FAIR data principles (Wilkinson *et al.* 2016), which were retained in the final version but often proved too technical for some respondents. This insight helped shape how FAIR was later discussed in interviews.

Distribution strategies varied by case study and stakeholder type. The questionnaire was sent via email directly to participants, either individually or using mail merge tools for groups larger than five. It was also disseminated via the HSHAZ national mailing list and shared with all HSHAZ Project Leads to encourage wider engagement. While the questionnaire was sent to planned interviewees, it also served as a mechanism to recruit new participants by including an invitation to take part in follow-up interviews.

Within the wider HSHAZ initiative, the questionnaire was distributed to the HAZ Project Officers (HAZPOs) and Project Leads (HAZPLs) between October 2023 and June 2024. The survey gathered responses from 28 HAZPLs (41.2%) and 12 HAZPOs covering all regions except London and North East and Yorkshire (HAZPO participation numbers varied across the programme (meaning it is not beneficial to state what percentage this covered, but rather the geographic and scheme areas covered to state what per)), with individual questions receiving between 4 and 28 responses due to skip logic.

For the case studies, the questionnaire was used within the built heritage strand and distributed to the key stakeholders alongside all who had submitted Planning Applications since 2015. In Kirkham the questionnaire gathered results from five key architectural stakeholders (NWDC Studio - Architects, Blackett-Ord Conservation Engineering, The Paul Hogarth Company, T&S Design Services Ltd, Red and Racz Ltd), who created 19 planning applications 6 pre- and 13 post-2020 (one organisation has not made an application since 2020). These companies accounted for 18% of total applications.

3.5.3. Data Analysis

Analysis was conducted using a combination of Excel and Python, with responses examined descriptively to identify patterns and prompt questions for further exploration. While responses were not grouped by role (e.g., manager versus community group), different versions of the questionnaire had been created for different respondent types (e.g., commercial versus community respondent), ensuring contextual relevance across sectors. General trends were identified (e.g., attitudes toward data sharing or legacy planning), and illustrative quotes or examples were used directly to inform the structure and language of the interview guides.

3.6. Semi-Structured Interviews

Semi-structured interviews (hereafter SSI) formed the foundation of the primary data collection strategy (see Appendix B). They were selected for their capacity to generate rich, exploratory insights into stakeholders' experiences with digital heritage data. SSIs allow for open-ended responses (Mason 2002, p. 73; Kvale and Brinkmann 2015, p. 24), which are particularly useful when exploring under-theorised or context-specific phenomena such as data reuse or community archiving. SSI utilises qualitative analysis to provide more complex responses than obtainable through quantitative methods, with qualitative results likely to be unanticipated (Gibbs *et al.* 2007; Kitto *et al.* 2008). The ethics for this methodology is detailed in 3.9.

This research draws on two methodological frameworks. The first, from Denzin and Lincoln (2011), outlines five reflective and conceptual stages of qualitative inquiry: (1) researcher reflexivity; (2) identification of a research paradigm; (3) development of a research strategy; (4) design of methods; and (5) interpretation of results. The second, from Kallio *et al.* (2016), offers a pragmatic model for designing SSIs: (1) clarifying the aim; (2) reviewing prior knowledge; (3) constructing a guide; (4) pilot testing; and (5) finalising the tool. The combination of these models ensures both philosophical rigour and practical usability. The collection procedures contribute most to the results' impact, quality and trustworthiness as these determine the results gathered (Gibbs *et al.* 2007; Kitto *et al.* 2008). The reflexive component was particularly important in a heritage context, where the researcher's positionality can shape access, interpretation, and engagement (Smith 2006, p. 59; Harrison 2013, p. 33).

3.6.1. Interview Design and Structure

Interview guides were structured thematically around core research questions rather than as simple question lists, following Whiting (2008); Krauss *et al.* (2009) and

Cridland *et al.* (2015). This approach ensured guides were logical, addressed main themes sequentially, and enabled both follow-up probing and space for participants to articulate their own priorities and experiences.

Individual questions were designed to be open-ended, participant-oriented, clearly worded, and single-faceted, utilising the five w's (what, who, where, when, how, and occasional why) as recommended by Chenail (2011) and Turner (2010). This framing encouraged exploratory rather than leading responses.

The guides followed a conversational arc: lighter introductory questions to establish rapport and ease respondents into the research context, progressing to more detailed or emotionally complex topics, before returning to lighter questions at the close (Cridland *et al.* 2015; Baumbusch 2010; Mason 2002, p. 73). The guides were designed to anchor conversation to the research topic whilst remaining familiar and relevant to participants' professional contexts (Whiting 2008).*et al.et al.et al.*

3.6.2. Participant selection

Within the wider HSHAZ initiative SSIs were conducted with a range of key stakeholders to gain deeper insights into individual and team-level experiences (as recommended by Bryman 2016, p. 10). Interviewees included HAZPOs in the Northeast and Northwest regions, Jayne Rimmer (Historic England's Listings team), Jonathon Guest (Amion Consulting), Thomas Kanchanatheera and Kimberly Jenkins (Historic England's Evaluation team), Suzanne St Claire and Ciara Leeming (Photographers in Residence), and Simon Taylor (Historic England's Architectural Investigations Team).

Within the case studies, this involved the key stakeholders as identified in the organograms identified at the beginning of the chapters. For Northallerton, interviews took place between 2021-2024, Kirkham 2022-2024 and Chester 2023-2024.

3.6.3. Data Analysis and Coding

Interview transcripts were produced from audio recordings as full or selective verbatim records depending on the richness and relevance of the material. Rather than conducting systematic line-by-line coding, interview analysis involved thematic exact selection: identifying passages in which participants articulated insights into data governance, workflow, perceived barriers, or institutional dynamics that were particularly illuminating or representative.

Extracts were selected using four overlapping criteria:

Predefined relevance: Passages addressing themes established in the questionnaire and interview guide; for example, data sharing practices, archiving decisions, or perceived legacy planning.

Emergent themes: Unanticipated insights or contradictions that arose during interview conversation; for instance, discrepancies between stated data management practice and reported workflow, or participants introducing concerns not anticipated in advance.

Representativeness: Extracts that captured patterns evident across multiple participants or case studies, distinguishing individual experience from broader structural patterns.

Illustrative clarity: Quotations in which participants articulated a concept or problem with particular vividness or economy of language, making them suitable for thesis integration.

Extract selection was necessarily interpretive: the researcher identified passages that seemed significant in relation to the research questions. To maintain analytical transparency, extracted quotations were recorded alongside brief contextual notes indicating which criteria prompted their selection. Extracts were then organised thematically to align with the research questions (data production, governance and

ownership, fragmentation, community data and legacy, above-ground/below-ground dynamics) and by case study to structure the case study chapters.

Triangulation and verification: Interview findings were cross-referenced against questionnaire data and documentary evidence from the data audit to distinguish individual accounts from broader patterns. Where interview accounts described data management outcomes that the audit suggested had not been realised (e.g., data described as "archived" but held on shared drives), this discrepancy was treated as analytically significant and explored as evidence of the gap between intended and actual governance.

Member-checking was conducted informally: draft case study sections were shared with relevant participants to verify accuracy and ensure quotations were used in a manner consistent with participant intent. Several participants provided minor corrections of factual detail; no participant requested removal of material.

Transcript access: Full interview transcripts are not deposited in open repositories due to participant consent constraints. A small number of participants declined permission for transcript sharing, and this restriction was respected to protect both participant confidentiality and professional relationships. However, anonymised illustrative extracts are embedded throughout the case study chapters, and the analytical process is documented here to enable readers to assess how quotations were selected and contextualised.

3.7. Data Analysis

The third methodological strand of this research involved a structured analysis of heritage datasets associated with the three case study areas. This approach complemented the interview and questionnaire components by focusing on the documentary materials generated and managed throughout the HSHAZ initiative. The goal was to better understand the kinds of digital information being produced

and the systems in which they were stored and circulated. The focus was on "born-digital" datasets, those originally created using digital tools, rather than digitised records. Heritage information was broadly defined to include content relevant to planning decisions, the documentation of historic environments, public engagement efforts, and resources designed to enhance wellbeing, tourism, or community identity. This approach draws on digital preservation scholarship (e.g., Lynch 2017) and critical platform studies (e.g., Plantin *et al.* 2018) to understand how digital infrastructures shape heritage knowledge. One caveat to this approach is that it is not possible to select datasets for analysis which are no longer available, as such using this approach alone can lead to survivor bias. This is mitigated through the triangulation of using questionnaires and interviews to surface datasets which would have otherwise been skipped using this approach independently.

3.7.1. Scope and Dataset Selection

To determine the extent to which data created within the HSHAZ demonstrates characteristics of good data management and accessibility, an analysis was conducted of existing data from these historic landscapes. A subset of datasets about each case study was compared to established data management principles and accessibility criteria. These were then examined to understand how these datasets were used by the local initiatives to investigate current limitations on data availability. This was particularly the case for the Chester case study (see 7.2).

The first consideration was determining the number of datasets needed for analysis. The sample needed to be representative of the whole population of datasets, yet simultaneously concise to enable in-depth analysis. As it was unlikely to create an estimate of the total population of datasets, statistical modelling was not possible. Instead, consideration focused on the different types of datasets that could be generated from each case study. Questions were designed to understand available data types and repositories containing these. Once dataset diversity was identified,

it became possible to understand where these were held and create a list of areas to analyse.

Datasets were identified from four principal sources:

- Planning portal documents, including heritage statements, design and access statements, architectural plans, and consultation materials
- Project-generated content, such as spreadsheets, community-facing outputs, internal reporting, and web-based interpretive resources
- Institutional records, including submissions to the HERs, the ADS, and the OASIS grey literature platform
- Monitoring and evaluation materials, including documents accessed through Freedom of Information requests and internal tools used by HE for project tracking.

As the project lead for the HSHAZ initiative, HE datasets formed part of this analysis through reviewing available guidance materials, monitoring templates, and project evaluations provided by HE. This audit assessed whether principles such as those advocated in HIAS were effectively embedded into HSHAZ processes, and whether there was consistency between intended and actual data management practices. As many archaeological datasets are likely housed in local HERs, the ADS, and local archives, these were also investigated. Furthermore, some datasets were housed by local interest groups or individuals, which were also considered.

Each case study included a defined temporal scope (primarily 2020–2024) corresponding to the HSHAZ programme timeline. Supplementary data from earlier years was consulted in some instances to contextualise activity before and after the initiative (2015–2024, see Kirkham 6.4). By adding additional applications from 2015–2020, it allowed an understanding of the wider impacts of the HSHAZ on planning data management to be understood.

All sources were revisited in September 2025 to determine their ongoing accessibility.

3.7.2. Workflow and Tools

A master spreadsheet was developed to log planning applications and associated data features. Each entry represented a single planning application, with fields for metadata (e.g., application number, address, submission date), relevance to HSHAZ aims (e.g., shopfront changes, repurposing), and the types of supporting data included.

Key data types were recorded using a checklist that identified whether applications featured elements such as photographs, maps, plans, heritage assessments, and responses from HE. The spreadsheet was maintained in Excel, and Python scripts were used to assist in summarising, filtering, and organising entries. Once data repositories were identified, the total number of records housed within these repositories was identified using a systematic process with Boolean operators and inclusion and exclusion criteria.

For other repository types (e.g., ADS, HER), data was logged at a broader level without reproducing the spreadsheet structure. These entries were integrated into a qualitative framework that allowed for consistency across different data sources without introducing unnecessary duplication or weighting.

3.7.3. Comparative and Descriptive Framework

The checklist approach was employed to ensure methodological consistency across the three case studies. It did not include scoring or weighting but instead focused on recording the presence or absence of content types. Where datasets appeared across multiple platforms, their duplication was logged and explored further in later chapters. This approach enabled comparison without drawing conclusions about quality or completeness within this methodological section.

Metadata and Discoverability

Building on the metadata frameworks and recording approaches discussed in sections 2.6 and 2.7, metadata structures were evaluated with attention to key elements including naming conventions, inclusion of dates and author details, and presence of descriptive summaries. This assessment focused on how well the established principles were applied in practice, with particular attention to instances where discoverability and clarity were notably strong or could be improved.

3.7.4. Evaluative Criteria for Digital Outputs

Across the three case studies, digital outputs and data practices are evaluated against a consistent set of criteria derived from the research questions and the governance frameworks discussed in the literature review. Making these criteria explicit here avoids the need to restate them in full at each point of application and allows findings about data governance to be distinguished clearly from limitations of research access.

A digital output is treated as having a sustainable legacy where four conditions are met:

- it has been deposited in a repository or archive with a recognised preservation mandate
- it is described with sufficient metadata to be discoverable by users beyond the original project team
- it is held under licensing arrangements, and in a file format, that permit future reuse
- and custodianship responsibilities are formally assigned to an institution rather than resting with an individual or a commercial organisation.

Where all four conditions are met, the output is described as having a secure legacy. Where some but not all conditions are met, it is described as partial or precarious, with the specific gap identified.

Success in data management is understood not as the volume of content produced but as the degree to which outputs meet these conditions. A small, well-governed dataset that is deposited, described, and licensed is treated as a more successful outcome than a large, rich dataset that remains on a contractor's server or a commercial platform without preservation arrangements.

Where outputs are absent from public repositories or inaccessible through standard discovery routes, this is treated as a governance finding rather than a limitation of research access unless there is specific evidence that the material exists but could not be located for reasons unrelated to governance. The distinction matters because inaccessibility arising from the absence of deposit requirements, the commercial retention of intellectual property, or the closure of project websites reflects decisions and structures that are amenable to policy intervention, whereas inaccessibility arising from the inherent constraints of a research project is of a different character. Throughout the case study chapters, where materials are described as lost, at risk, or unavailable, the intent is to characterise the governance conditions that produced that outcome rather than to document the limits of what this study could find, or to blame individuals or local practices.

3.8. Integration of Methods

The three methods outlined in this chapter, questionnaire, semi-structured interview, and data audit, were not designed as discrete or sequential instruments but as components of an iterative, reflexive research process (see Fig. 16 and Table 1), following Denzin and Lincoln (2011) and Cannella and Lincoln (2011). Each method was designed to address a distinct layer of the research problem while also informing and directing the others. This section makes that integration explicit, describing how the methods interacted in practice and how contradictions or discrepancies between sources were handled analytically.

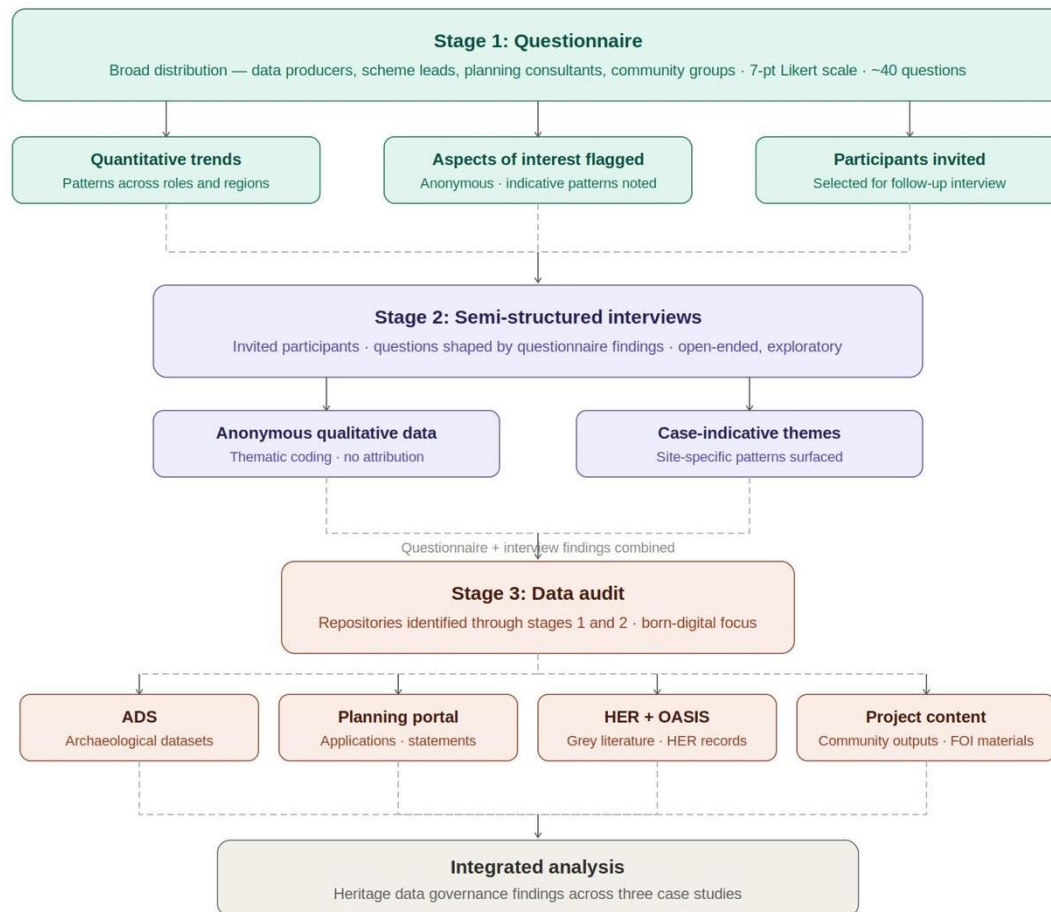


Figure 16. the relationships between the different methodologies.

Note: Fig. 16, above, and table 1, below, summarises the principal vectors of interaction between methods. In practice the process was iterative across all stages rather than strictly sequential: early audit findings prompted additional interview requests, and interview insights led to targeted re-examination of specific planning portal records.

Table 1. The connection and flow of information between the different methodologies.

Evidence source	Informed questionnaire design	Informed interview questions	Informed data audit scope
Questionnaire (HAZPLs / HAZPOs / built heritage)	—	identified which topics to investigate in more detail	Confirmed which repository types (ADS, local HER, planning portals) warranted systematic audit, also which locally stored datasets to request
Semi-structured interviews	Pilot interviews (Northallerton control group) refined question wording and section transitions	—	Flagged specific datasets (e.g. drone survey, condition report, 3D models) as requiring audit; confirmed which planning applications were HSHAZ-linked
Data audit (planning portals, ADS, HER, FOI)	Audit findings on file format prevalence shaped questionnaire items on format use	Audit evidence of missing or inaccessible datasets framed follow-up questions on data retention and custodianship	—
Documentary analysis (programme guidance, evaluation reports)	HE programme documentation informed item framing on governance expectations	identified individuals involved within the initiative to interview	Aided understanding of which archives to search for data

3.8.1. Sequential and Iterative Logic

The questionnaire was deployed first as a broad-spectrum mapping instrument, distributed to stakeholders across all case study sites and to HAZ Project Leads and Project Officers programme-wide. Its purpose was twofold: to identify patterns in attitudes, practices, and experiences relating to heritage data management, and to flag themes or sites warranting more detailed investigation. Quantitative outputs (principally Likert-scale responses on questions relating to data sharing, archiving, and legacy) were analysed descriptively to identify tendencies across the sample. Qualitative responses (open-text fields) were read thematically and used to identify specific issues.

Interview participants were drawn in part from questionnaire respondents who had indicated willingness to be contacted for follow-up. The interview stage then provided the qualitative depth that the questionnaire could not supply: participants explained their reasoning, described their practice in context, and often introduced considerations that had not been anticipated at the questionnaire design stage. Interview findings were analysed alongside questionnaire data rather than in isolation, enabling the researcher to distinguish between individual accounts and broader patterns.

Both stages of stakeholder engagement then informed the scope and emphasis of the data audit. Insights from interviews identified which categories of documentary material would be most revealing; for example, the extent to which planning applications contained embedded photographic evidence, or whether OASIS records existed for community excavations; and directed the audit towards those categories. The audit in turn provided material evidence that could be compared with stakeholder accounts: where interview participants described data management practices that the audit suggested had not produced lasting, accessible records, this discrepancy was treated as analytically significant and explored further.

3.8.2. Handling Contradictions Between Sources

In several instances, evidence from different methods pointed in divergent directions. The most common form of discrepancy was between stakeholder accounts of data management practice and the documentary evidence produced by that practice. Interview participants frequently described data as having been “deposited” or “archived” in terms that, when followed up through the audit, proved to refer to storage on a shared drive or a project website rather than to formal deposit in a recognised repository with a preservation mandate. These discrepancies were not treated as evidence that participants were being misleading; they reflect the terminological ambiguity discussed in section 4.2.2, where many practitioners did not draw a sharp distinction between project storage and institutional preservation. They were treated analytically as evidence of the gap between intended and actual data governance outcomes, and are discussed as such in the case study and discussion chapters.

A smaller number of discrepancies arose between questionnaire responses and interview accounts from the same individual or organisation, typically because the questionnaire was completed at an earlier stage in the research relationship when participants were more likely to give normalised or aspirational responses, and interviews conducted after a longer period of engagement elicited more candid accounts. Where such discrepancies were identified, they were noted and the richer, contextualised interview account was generally given greater analytical weight, while the questionnaire response was used to contextualise the wider distribution of practice across the sample.

Discrepancies between case study sites were treated as analytically productive rather than as methodological problems. These contrasts provided the comparative leverage through which the structural determinants of data governance outcomes could be identified.

Throughout the analysis, the researcher maintained a reflexive audit trail in the form of fieldwork notes and analytical memos, recording decisions about source weighting, interpretive choices, and emergent themes. This trail was reviewed periodically against the initial research questions to check that the analysis remained grounded in the empirical material rather than drifting towards theoretical preoccupation. Selected fieldwork notes were shared with the academic supervisory team as part of the ongoing supervision process.

3.9. Ethical Considerations

This research received full ethical approval from the University of York's Ethics Committee prior to fieldwork. The approved protocol covered the use of semi-structured interviews, questionnaires, Freedom of Information requests, and documentary analysis across the three case study sites and the wider High Street Heritage Action Zone programme context. A copy of the ethics documentation is included at Appendix C, and the participant information sheet and consent form used throughout the study are included at Appendix E and F.

All participants were provided with a written information sheet before taking part in interviews or questionnaires. The information sheet explained the purpose of the research, the nature of their involvement, how their data would be used and stored, and their right to withdraw at any point without penalty. Informed consent was obtained in writing prior to participation. For interviews, verbal consent was also recorded at the start of each session. Participants were informed that they could request to see the sections of the thesis in which their contributions appeared before submission, and several took up this offer.

The default approach was to anonymise participants unless named attribution was explicitly requested or agreed. Identifying information was anonymised during analysis and in the written thesis unless participants gave explicit consent to be named. In a number of cases, named attribution was requested or agreed by

participants whose professional roles made their contributions easily identifiable regardless of anonymisation. Named participants include, among others, Virginia Arrowsmith at the Northallerton Heritage Hub, Helen Shearn of Helen Shearn Associates, Jonathon Guest from AMION Consulting, and several Historic England staff members who consented to attribution. When named participants are quoted in the thesis, they were given the opportunity to review their quotations and the context in which they appear.

A small number of participants expressed a preference to remain unquoted or unidentifiable due to the sensitivity of their roles or the nature of their comments on institutional processes. In these cases, material from those interviews informed the analysis but was paraphrased, de-identified, or omitted from the public record. The thesis does not attribute sensitive institutional critique to individuals whose positions would make attribution professionally damaging.

For the questionnaire, consent was reaffirmed at the start of the form, with respondents required to acknowledge their understanding before proceeding. Because some questions touched on sensitive issues, particularly around data sharing responsibilities, institutional processes, and perceived failures, participants had the option to skip questions without penalty. Responses were anonymised upon collection and analysed only in aggregate unless participants agreed to further contact or follow-up interviews.

Internal documents, datasets, monitoring tools, and reporting materials accessed through Historic England or local project partners were reviewed with explicit permission from the relevant project leads, data owners, or Historic England representatives. This included, where relevant, team drives, monitoring documents, datasets, and PowerBI dashboards. Documents were reviewed in situ or downloaded only with permission, and no proprietary, commercial, or legally restricted materials were retained or circulated without authorisation. Confidential

materials were handled with care, and potentially identifying details were redacted or generalised in the final write-up.

To aid ethical treatment of datasets, and to ensure confidentiality, a Freedom of Information request approach was used when requesting access to programme documentation from local authorities and HE. These requests were made transparently, identifying the research context and purpose, and were processed through the standard FOI mechanism without unusual conditions being applied. And as such, personal details were removed.

All audio recordings, transcripts, questionnaire responses, and research notes were stored securely on encrypted, access-restricted drives in accordance with General Data Protection Regulation requirements. Data were accessed only by the researcher and, where necessary, supervisory staff. Personal or identifying information was separated from analytical notes wherever possible, and data were retained only for the period permitted under the approved ethics protocol.

These ethical considerations were particularly important because the study engages with institutional critique and systemic challenges within heritage data governance. While the thesis discusses limitations, inconsistencies, and missed opportunities within the HSHAZ programme, every effort was made to ensure that individual participants were not exposed to unnecessary reputational risk. This included anonymising sensitive contributions, paraphrasing potentially identifiable comments, omitting material where necessary, and giving participants the opportunity to review how their contributions were represented.

3.10. Conclusion

This chapter has detailed the methodological foundations of a study that critically examines the lifecycle of digital heritage data within the HSHAZ initiative. By combining interviews, a structured questionnaire, and dataset analysis across three

case studies, the research moves beyond descriptive accounts of data practices to ask how knowledge about the historic environment is shaped, circulated, and preserved through institutional systems, community networks, and technological tools.

Each method contributed a distinct but overlapping perspective on the research problem. Interviews enabled participants to narrate their experiences and priorities in their own terms, revealing the values and assumptions that underpin decision-making around data creation, access, and archiving. The questionnaire introduced a more structured and comparative layer, helping to map differences and commonalities across roles and regions. The data audit provided a material counterpoint, revealing not only what data existed, but also how it was organised, what formats were used, and how discoverable or durable it was across different platforms.

The iterative use of these methods allowed for triangulation while respecting the specificity of each data source. Together, they offered a way of navigating the tension between systemic abstraction (e.g., Open Access policies, digital infrastructure standards) and situated practice (e.g., the act of uploading a photo to a team drive or choosing which file formats to use for a planning application). Rather than assuming coherence, the methods were designed to surface disjuncture, misalignments, and creative workarounds that characterise heritage data work in practice.

Throughout, reflexivity was treated not as an add-on but as a core methodological principle. The researcher's background, assumptions, and institutional affiliations were critically examined, both to mitigate bias and to acknowledge the embedded nature of all knowledge production. The choice of case study locations, the tone of the interviews, and the transparency of analytical processes were all shaped by this commitment to reflexivity.

Having outlined the Methodological approach, this thesis now turns to analysis of the data practices within the initiative.

4. Historic England HSHAZ programmes and the wider HSHAZ

The HSHAZ initiative sought to revitalise 67 historic high streets across England through conservation, cultural programming, and community engagement (Historic England 2024d; Lloyd-James 2019). While it was not therefore explicitly framed as a digital or data-focused intervention, it generated substantial volumes of heritage data, from planning documents, photographic surveys, and oral histories to evaluation reports, artistic outputs, and updated entries in the NHLE (Historic England 2025d). The diversity of these outputs, coupled with the national scale and multi-stakeholder structure of the initiative, created a unique opportunity to operationalise HE's strategic data frameworks at scale.

As shown in the literature review 2.7, HE entered the programme with a well-defined suite of policies and guidance, including HIAS 2.6.1, open data commitments 2.6.4, HER integration 2.3.1, and the participatory ethos exemplified by the Missing Pieces project 2.6.5 (Historic England 2023b; Historic England 2023d). Together, these frameworks established clear expectations for the creation, management, and preservation of heritage data. In principle, the HSHAZ could have embedded these standards into all phases of delivery, ensuring structured data capture, interoperability, and long-term accessibility.

This chapter provides a high-level evaluation of the HSHAZ programme as a whole, examining it through the lens of HE's own data governance policies and initiatives. It assesses how different strands (national projects, local schemes, the Cultural Programme, evaluation activities, NHLE updates, and photography) approached the creation, reuse, sharing, and preservation of heritage data. By establishing the strategic expectations set by HE's frameworks and comparing them to observed practices, the chapter identifies both examples of innovation and systemic barriers to sustainable data stewardship. The detailed case studies that follow in subsequent

chapters then explore how these programme-wide patterns manifested in specific local contexts - Northallerton, Kirkham, and Chester - allowing for comparison between the broader trends identified here and the granular realities of individual schemes.

4.1. Cultural Programme

One of the main components of the wider HSHAZ initiative, outside of the HSHAZ individual schemes, was the Cultural Programme. The Programme was developed to embed community engagement activities within the individual schemes as well as nationally, engaging communities outside of the HSHAZ locations. The Cultural Programme included seven strands of work, running between 2020 and 2024:

- High Street Tales (2021): seven short stories exploring local identity.
- Future of the High Street (2021): ten films envisioning possible futures.
- Twin Towns (2021): art twinning six cities to uncover commonalities.
- High Street Sound Walks (2021): immersive audio tours in six high streets.
- Hi! Street Fest (2023): large-scale events with a giant fox puppet and local companions (Fig. 17 and 18).
- 'Round Here (2022): youth-led musical collaborations.
- Picturing High Streets (2020–23): nine photography projects combining professional residencies with community contributions (Historic England 2024c).

These projects represented a deliberate move beyond traditional heritage outreach, using multiple media formats to engage audiences at a challenging moment during the COVID-19 pandemic. Many relied on digital-first delivery, shaping both accessibility and the types of data produced



Figure 17, above, photograph of the Wigan Hi! Street Fest (Historic England, n.d. d). Figure 18, below, promotional material about the Hi! Street Fest (credit Historic England)



4.1.1. Data:

Table 2, the data involved in HE's Cultural Programme.

Data	Created/ reused	File type	Legacy
Photographs	Reused	Paper	Reinterpreted
Written works	Created	.html and paper	Archived at HE
Films	Created	.mp4 and .html	Archived at HE
Sound recording	Created	.mp3	Archived at HE
Visual art and performance	Created	-	Archived at HE
Photographs	Created	.tiff/.jpeg/printed	Archived at HE

4.1.2. Data Reused

Table 2 highlights the limited reuse of existing heritage datasets across the Cultural Programme, a key lesson for future initiatives. Although HE's HIAS framework emphasises "maximising the reuse of historic environment information" (Historic England 2019d, p. 12), most programme strands created new content rather than drawing upon existing archives or HER data. This represents a missed opportunity to connect contemporary creativity with established heritage evidence. HE's own research demonstrates that interaction with the historic environment supports individual and community wellbeing through increased confidence, social connectivity, and life satisfaction (Historic England 2022a). Their Wellbeing and Heritage Strategy explicitly advocates for creative and participatory engagement with heritage as a mechanism for these benefits. Yet Cultural Programme activities rarely drew upon this evidence base or the datasets that could have grounded creative outputs in local heritage narratives.

Projects such as *Hi! Street Fest* developed performances largely independently of heritage sources (Guest, 29 January 2025, pers. comms), generating strong public engagement but without considering archival integration. Research suggests that using archival material can enhance both authenticity and social value of community outreach activities (Flinn and Sexton 2019, p. 628). The scale of delivery, spanning 67 high streets, favoured consistency over local distinctiveness, while the programme's coordination by the Business Team rather than the Research Team limited HIAS-aligned data reuse.

However, *Photography in Residence* shows that reuse was possible when locally embedded: photographers drew directly on archives to inspire new interpretations (Leeming, 29 April 2024, pers. comms.). This approach proved effective because it connected contemporary creative practice to documented local heritage, enabling photographers to produce work that resonated with community memory while

introducing historical narratives to new audiences. The integration of archival evidence gave creative outputs an authenticity and local specificity that purely contemporary commissions lack, supporting HE's wider research demonstrating that heritage engagement strengthens relationships between people and places. This reflects HIAS principles that evidence enhances creative practice (Historic England 2020a) and provides a model for future initiatives to integrate datasets from HERs and national archives to reinforce cultural value. This difference in data management and reuse indicates a key aspect that will be explored through the Case Studies – to what extent the reuse of data can lead to more informed decisions.

4.1.3. Data Created

The Cultural Programme produced rich creative outputs, films, performances, soundscapes, and photography (Historic England 2024c), that captured community perspectives but were rarely structured as reusable datasets. While this creativity generated valuable cultural artefacts, it fell short of HIAS goals to “support the creation and sharing of new historic environment information” (Historic England 2019d, p. 15).

Had the programme been designed with HER integration in mind, new entries could have been generated alongside artistic work, embedding community narratives into formal heritage records. *Photography in Residence* again illustrates good practice, where documentation aligned with heritage approaches valuing everyday life (Harrison 2013, p. 106). The extent to which HER integration could have been beneficial within the HSHAZ is explored in detail within the Discussion chapter (see 9.5.7).

4.1.4. Data Sharing

Hybrid delivery made data sharing one of the programme's notable strengths, combining digital and in-person engagement (providing further evidence to Waterton and Smith 2010). Different strands targeted specific audiences: *High Street Tales* and *Future of the High Street* for adults, and *'Round Here* for young people (Kanchanatheera, 10 April 2025, pers. comms.). These practices parallel the *Missing Pieces* project, which tailored engagement by demographic.

However, opportunities to capture unplanned data, social media interactions, press coverage, and user-generated content, were largely missed. Unlike *Missing Pieces*, the Cultural Programme did not systematically archive such data, despite being possible to do so suggesting a limited understanding and response to the social milieu of data creation, limiting its contribution to HIAS ambitions for participatory and digital innovation (Historic England 2019d, p. 19). This indicates another key component of the case studies: how different sharing models shaped inclusivity, data capture, and the visibility of heritage information across online and physical spaces.

4.1.5. Data Legacy

Data legacies were uneven. Formal reports and evaluations were archived by HE and fed into resources like the *Heritage-Led Regeneration Toolkit* (Historic England 2025c). The *Photography in Residence* archive, preserving both professional and community contributions, stands out as a sustainable heritage record (Historic England 2025f; 2025g).

Despite HIAS identifying HERs as "fundamental" to a joined-up information ecosystem (Historic England 2019d, p. 7), integration between HSHAZ activities and HERs was limited in both directions. HER data was rarely drawn upon to inform Cultural Programme activities, missing opportunities to ground creative and

community projects in documented local heritage - particularly given that HERs should function as the first point of call for information on listed buildings and conservation areas, precisely the assets at the heart of high street regeneration. Equally, knowledge generated through these activities was not systematically fed back into heritage information systems.

However, it is important to distinguish between the roles of HERs and archival repositories such as County Record Offices. HERs are not archives; they are curated indexes that signpost users to primary sources held elsewhere. The appropriate destination for Cultural Programme outputs (e.g., oral histories, photographic surveys, community research) would typically be local record offices or recognised digital repositories, with HERs updated to reference this material. As shown in 2.3.3, combining HERs and local archives also allows potential to work with the wider support networks, such as the ADS, to handle the ever increasingly complicated and large scale datasets. This two-stage process requires coordination that was not built into programme governance. Neither the archival deposition nor the HER signposting occurred systematically, leaving community-generated knowledge outside formal heritage information systems entirely.

This disconnect also raises questions about internal coherence within HE's frameworks. HIAS, the HER system, and HSHAZ are all HE initiatives or areas of responsibility, yet programme design did not operationalise the data infrastructure principles that HIAS advocates. HERs were positioned in policy as fundamental, but HSHAZ operated largely outside of them with limited data conversations. This suggests that strategic aspirations for joined-up heritage data have not yet translated into operational requirements - a gap between policy intent and implementation that future initiatives would need to address structurally, not just rhetorically.

4.2. Individual HSHAZ

Whilst the introduction detailed extensively the HSHAZ initiative, it is essential to question how the framing of the initiative and the wider context impacted the HSHAZ data management and governance, especially given its cross-regional basis (Fig. 19).

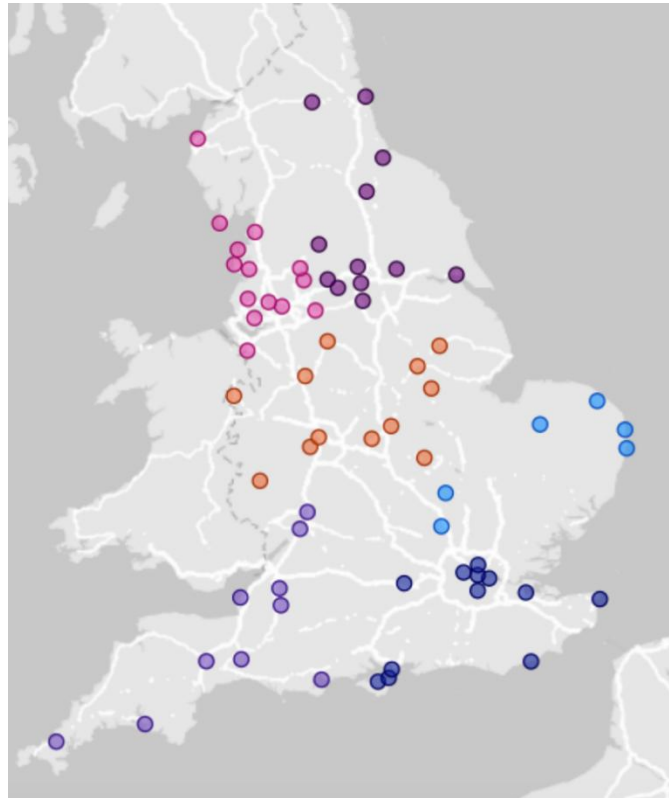


Figure 19, the geographic spread of the local initiatives, grouped by area. North West, North East and Yorkshire, Midlands, East of England, London and the South East and South West (Historic England 2025).

In terms of the governance of the initiative and its funding, HE administered competitive Expression of Interests (hereafter Eols) offering grants of £250k–£2m for four-year schemes (Apr 2020–Mar 2024), typically on a ~50% match basis and aligned with a complementary Cultural Programme (NLHF/ Arts Council England) (Historic England 2019f, p. 3). Awards followed a two-stage process:

- Stage One (competitive Eols)
- Stage Two (non-competitive Programme Design) (Historic England 2019f, pp. 6–8).

Eols were first screened against four Essential Criteria:

1. the area is a Conservation Area;
2. delivery in partnership including the local authority;
3. clear community support;
4. deliverable in four years

These were then scored on supporting evidence around place significance/need, vision and impacts, partnership strength, deliverability and value for money, community engagement, and capacity to support the Cultural Programme; HE also applied a balancing exercise for national spread (Historic England 2019f, pp. 4–7). Once awarded, HE, the lead partner (usually the local authority) and other engaged parties entered a partnership agreement; the lead partner managed day-to-day delivery, appointed a dedicated Full Time Equivalent Project Officer (eligible cost), and could employ specialist staff and consultants. The lead partner also offered sub-grants, verified works and invoices, and followed competitive procurement rules; HE monitored quarterly and annually and conducted a programme evaluation (Historic England 2019f, pp. 3–5). Throughout, schemes were expected to demonstrate meaningful community engagement and link into the Cultural Programme (Historic England 2019f, pp. 13–14).

This governance led to a multi-tiered structure. Local Project Leads (HAZPLs) managed daily activities and liaised with stakeholders, reporting to regional Project Officers (HAZPOs) who oversaw multiple sites. A central HSHAZ team within HE coordinated activity, set policy direction, and reported to the Department for Digital, Culture, Media and Sport (hereafter DCMS). While this structure ensured accountability, it created a long communication chain between funders and local data producers (Fig. 20). By tracing how information flowed between HE, local authorities, and data producers, this analysis reveals where responsibility for data management was assigned, and where it fell through the gaps. These

communication dynamics shaped governance outcomes, a theme explored in depth through the case studies and drawn together in the discussion.

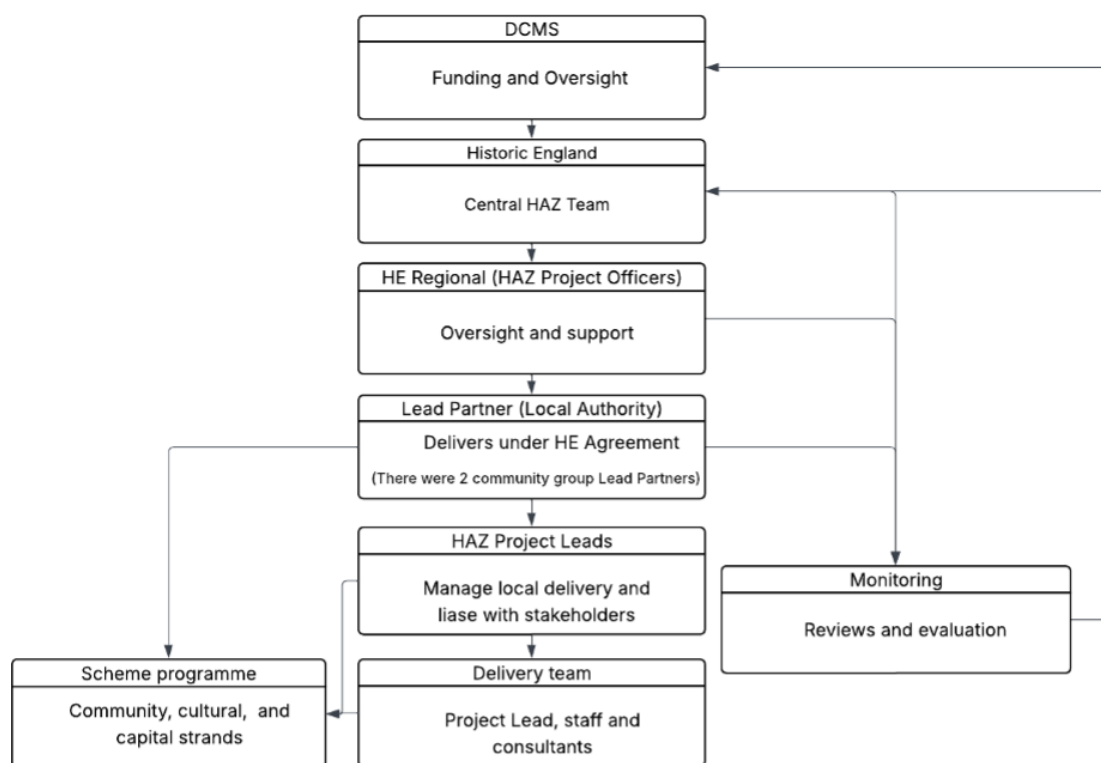


Figure 20, the governance structure of the HSHAZ Scheme Programme (adapted from Historic England 2019f, pp. 13–14).

The results for this section come from a questionnaire sent to the Heritage Action Zone Project Leads and Heritage Action Zone Project Officers, and the results are contained within Appendix D.

4.2.1. Data:

Table 3, the data involved in the individual HSHAZ schemes.

Data	Created/ reused	File type	Legacy
Scheme applications	Created	.pdf	HE Archive
Close down reports	Created	.xlsx	HE Archive
Local Archive	Reused	Mixture	
HE Archival materials	Reused	Mixture digital	
Planning applications	Created	.pdf	Planning portals
Oral History	Created	.wav and .mp3	Local archives
Information Boards	Created	Physical	
Visual	Created	.tiff and .jpeg	Project folders
Archaeological reports	Created	.pdf	HERs/ Local archives
Geophysics	Created	PDF reports	HERs/ Local archives
3D models	Created	.pdf and .jpeg	Project folders
Spreadsheets	Created	.xlsx	Project folders
Audio	Created	.wav and .mp4	Project folders

4.2.2. Data Reused

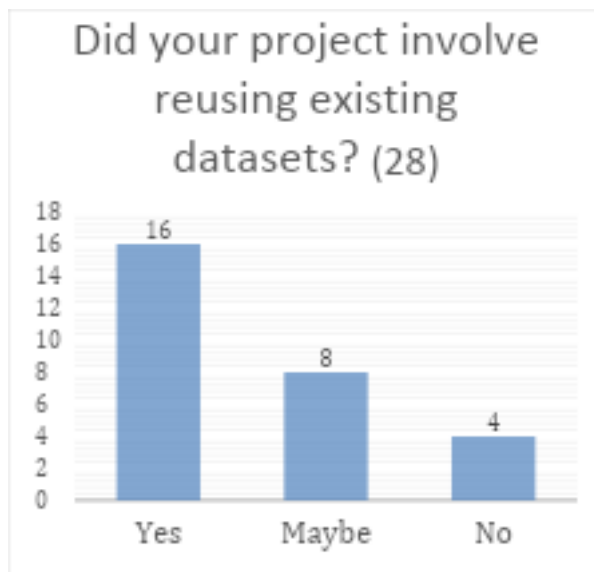


Figure 21, did the project involve reusing of existing data?

Data reuse was a significant strength of the HSHAZ initiative, with 57% of respondents reporting repurposing existing datasets (Fig. 21). This aligns with HIAS's call to "maximise the reuse of historic environment information" (Historic England 2019d, p. 12) and demonstrates the practical value of existing heritage data in regeneration contexts. The sources of this information were varied and within this section

percentages of reported reuse included positioning sources of where information was used by the HAZPLs within the HSHAZ.

Local repositories were the most frequently reused resource (83.33%), highlighting their centrality to regeneration and validating HE's investment in local heritage infrastructure. Community groups (62.5%) and planning portals (54.17%) also featured prominently, underlining the role of non-professional and community-generated data. Despite not being intentionally designed to enrich the heritage record, the emphasis of promoting local pride resulted in data reuse from the local community, mirroring the ethos of *Missing Pieces* (Historic England 2023b), which recognises the importance of overlooked community narratives in enriching heritage records. As Fredheim (2020) notes, such contributions often capture heritage significance missed in professional assessments, which tend to privilege architectural, archaeological, or art-historical criteria over the social and emotional meanings communities attach to places. Professional frameworks may overlook, for instance, how a shopfront figures in local memory or why a particular building

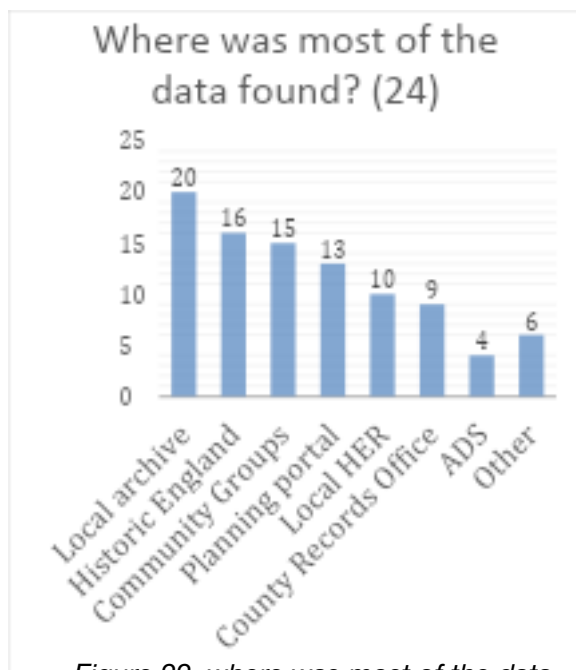


Figure 22, where was most of the data found?

matters to specific groups—precisely the kinds of significance that community narratives can surface.

HE datasets were also used widely (66.67%), showing the benefits of accessible national platforms such as Heritage Gateway and the NHLE (Fig. 22). However, only 41.67% reported using HERs, despite HE promoting them as "the primary source of information about the historic environment of a local area" (Historic England 2023b, p. 3). This underutilisation is striking given that

HERs hold precisely the kind of localised, granular data that high street regeneration projects require records of individual buildings, past investigations, historic land use, and archaeological potential that national datasets cannot capture at the same resolution. For schemes seeking to understand the heritage character of specific streetscapes or identify buildings with potential for adaptive reuse, HER data could have informed both strategic decision-making and individual property assessments. The underuse was likely shaped by several factors: HERs are maintained by local authorities rather than HE, meaning access arrangements, data formats, and licensing conditions vary, potentially creating friction for project teams unfamiliar with local systems. Unlike the NHLE or Heritage Gateway, which offer centralised web interfaces, accessing HER data often requires direct contact with council officers or formal data requests. Project officers from regeneration or community development backgrounds may also have been less familiar with HERs as a resource than those trained in heritage management, and tight delivery timescales may have discouraged the additional effort required when more readily available sources sufficed. This disconnect between HSHAZ schemes and available localised data structures reflects the absence of guidance on data reuse within the initiative.

By contrast, Missing Pieces and HIAS explicitly seek to strengthen links with HERs, suggesting that future initiatives should embed HER engagement more firmly at the project design stage.

Other professional datasets such as County Record Offices (37.5%) and the ADS (16.67%), saw limited use relative to their potential relevance. While 37.5% might appear substantial, County Record Offices hold extensive collections directly pertinent to high street heritage - historic photographs, maps, and local records that could ground regeneration activities in documented community history. The relatively low figure suggests these resources were underutilised given their scope and local specificity.

The ADS presents a different challenge. At 16.67%, usage was notably low despite the ADS holding localised archaeological records that could situate engagement activities within deeper histories of place and support promotion of local heritage. Barriers to ADS use likely include limited awareness among non-archaeological practitioners, the perception that its holdings are specialist or technical, and the absence of clear pathways connecting grey literature to built heritage or regeneration contexts. Yet the potential is considerable: archaeological evidence for market sites, medieval street patterns, or earlier phases of historic buildings could enrich interpretation and community engagement.

Addressing this would require active signposting and advocacy; embedding ADS and County Record Office consultation into programme guidance and ensuring that data-backed initiatives are encouraged from the outset rather than left to individual practitioner knowledge. Future programmes could include induction resources that introduce project teams to relevant national and local repositories, framing them not as specialist archives but as accessible sources for place-based storytelling.

A further challenge was the siloed nature of reused datasets. Local archives and planning portals were critical sources of datasets (shown by their use within >50%

of local schemes) but rarely connected to national infrastructures. This fragmentation undermines HIAS's ambition for a "joined-up historic environment information ecosystem" (Historic England 2019d, p. 5). Future initiatives could therefore prioritise mechanisms for linking local and national data, building on the groundwork of HIAS and TaNC but ensuring these frameworks are more effectively communicated to local practitioners.

Finally, the uncertainty expressed by 29% of respondents about whether they had reused data at all reveals a conceptual gap rather than a skills deficit. Interview evidence suggests that many practitioners were in fact reusing heritage information — drawing on HER records, historic maps, or archival sources - but did not recognise these activities as "data reuse." This terminological disconnect has practical implications: if practitioners cannot articulate their data practices, they are less likely to document them, share methods with colleagues, or advocate for improved data access. It suggests a need for clearer definitions and structured guidance on data discovery that meets practitioners where they are, framing data reuse in terms of familiar activities rather than technical vocabulary. Providing such advice would not only maximise the impact of existing resources but also encourage reflection on how new data should be considered, managed and preserved.

4.2.3. Data Created

The structure of programme monitoring reinforced this emphasis on quantifiable deliverables. HSHAZ funding was tied to specific KPIs that projects were required to meet, with progress tracked through an integrated PowerBI dashboard managed by HE. The use of a PowerBI dashboard enabled effective overview of the datasets created to monitor the initiative through the clear display of Key Performance Indicators (hereafter KPIs). These KPIs prioritised measurable outputs: numbers of buildings improved, square metres of shopfronts restored, grants distributed, and match funding secured (Fig. 23). Projects reported against these metrics regularly,

and continued funding release was contingent on demonstrating progress toward agreed targets. While this approach ensured accountability and enabled programme-wide comparison, it necessarily directed attention toward what was being counted. Data quality, knowledge preservation, and community engagement outcomes - harder to quantify and absent from the dashboard - received correspondingly less focus in project planning and delivery. The metrics framework shaped behaviour: what was measured was managed, and what was not measured risked being overlooked.

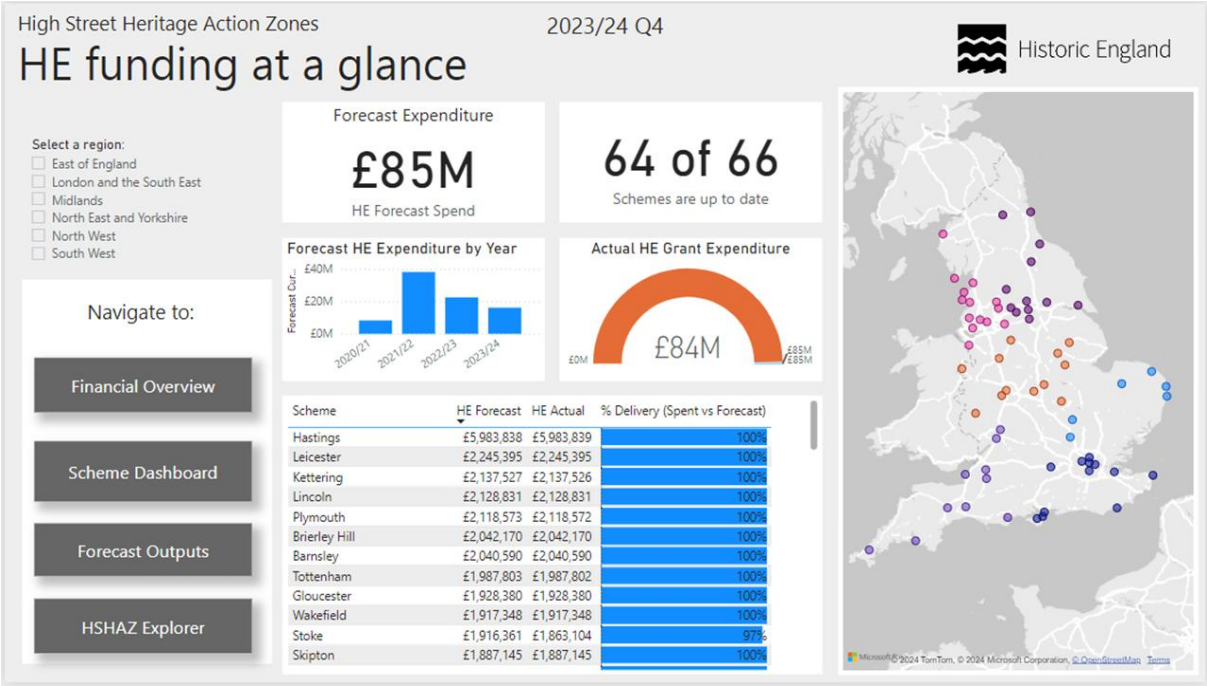


Figure 23, a screenshot of the PowerBI interface (Historic England 2025).

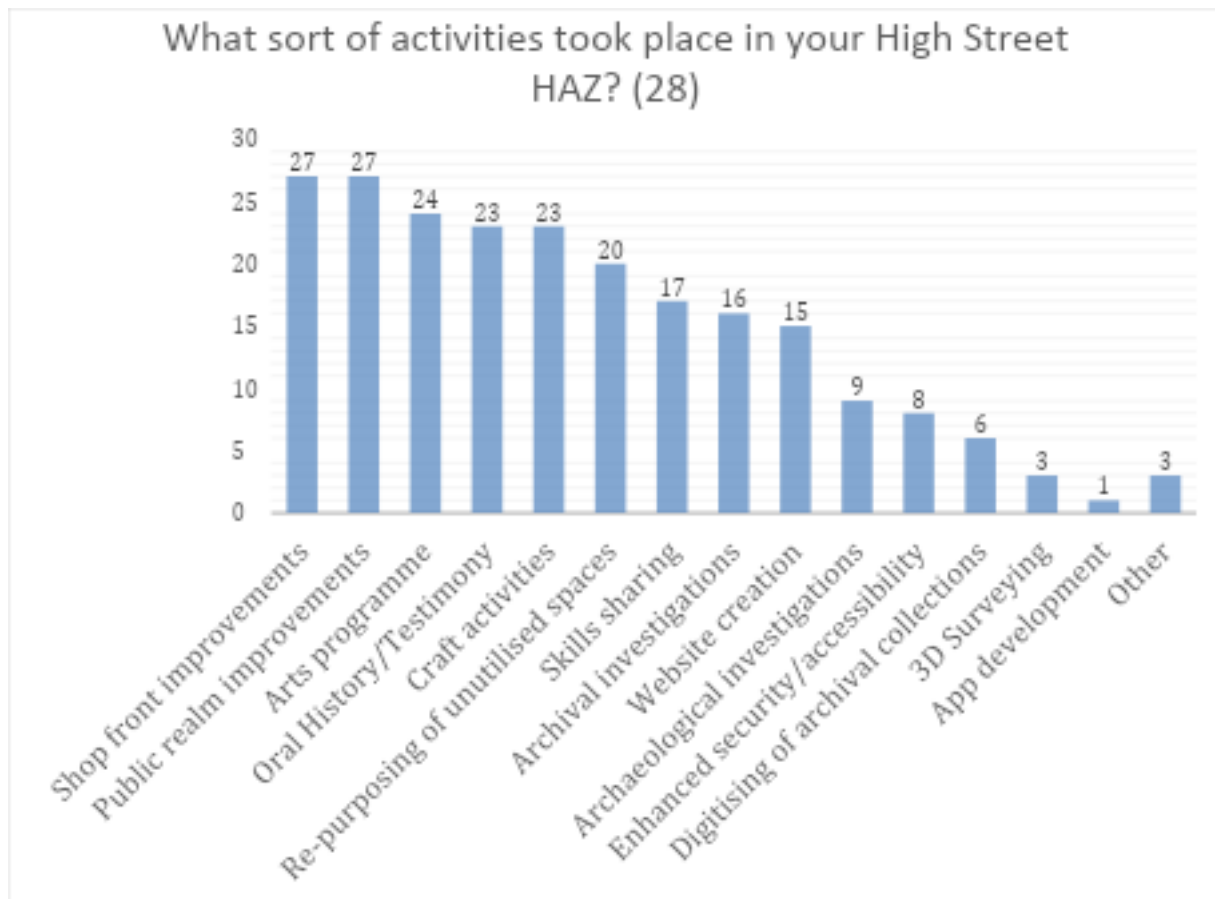


Figure 24, the different types of activities carried out during the HSHAZ.

In terms of what the individual schemes created, these were diverse datasets (Fig. 24), though with a strong emphasis on physical interventions. Shopfront renovations and public realm improvements (96.43%) dominated, reflecting traditional conservation approaches (Fig. 25). These created valuable planning and architectural documentation but were primarily regulatory outputs rather than structured heritage datasets. These datasets merit further research and are discussed in the case studies (see 5.4, 6.4 and 7.3).

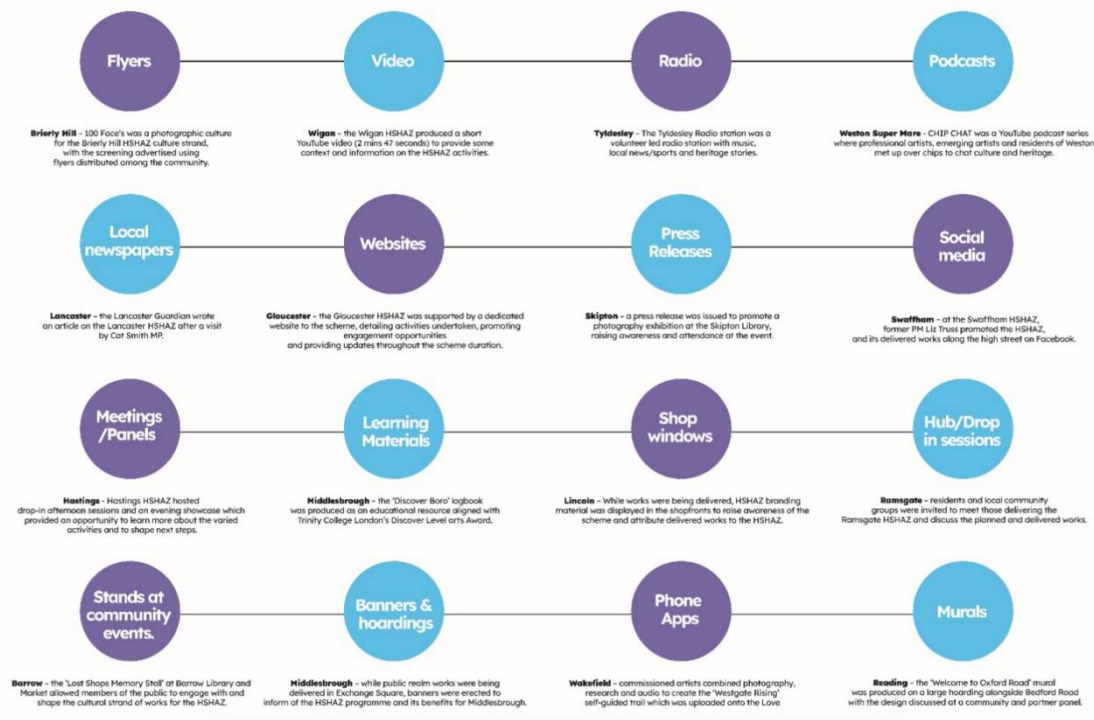


Figure 25, the many communication methods utilised within the HSHAZ (Amion 2025b).

Arts (85.71%) and craft (82.14%) programmes were also common, providing creative avenues for community engagement. However, they were not primarily designed for systematic heritage knowledge production. By contrast, oral history projects (82.14%) provide an example of data creation practices within the initiative. These captured lived experience and intangible heritage, echoing HE's growing recognition of social value and aligning with the CARE principles of community authority and collective benefit (Carroll *et al.* 2020). Oral histories, when preserved, offer rich longitudinal records of how high streets are understood by communities

themselves. These newly created datasets are examined in more detail with the case studies here (see 5.2.4, 6.3.3 and 7.4.7).

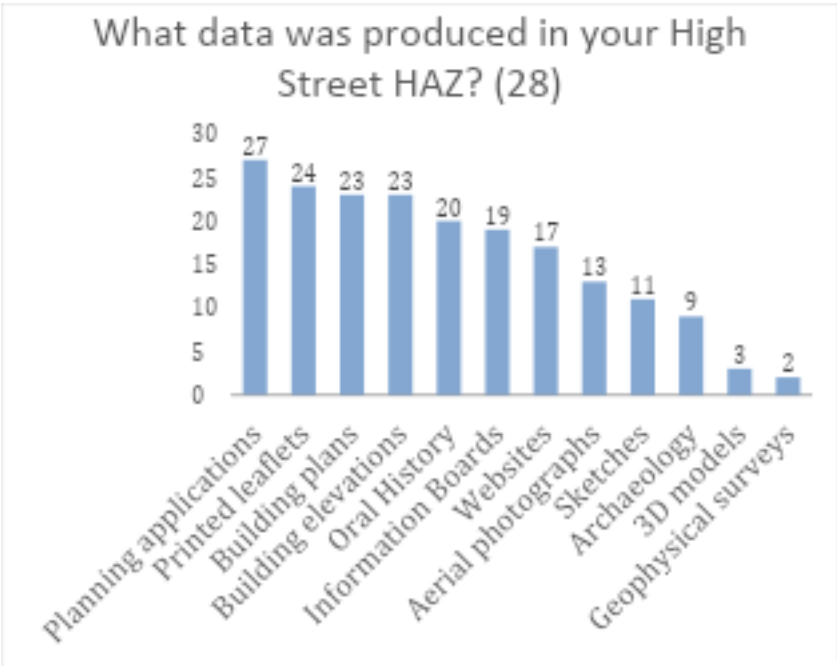


Figure 26, the types of data created in the High Street HAZ.

More technical research outputs were less common. Only 32.14% of projects produced archaeological investigations, 21.43% archive digitisation, 10.71% 3D models, and 7.14% geophysical surveys (Fig. 26). Uptake of app development (3.57%)

was minimal. From these figures, it is clear that heritage research and dissemination are not the core of the initiative. More significantly, data production itself was not a key component of the programme. The limited proportions of schemes generating these technical datasets (with only around one-third producing archaeological investigations, one-fifth undertaking archive digitisation, and less than one-tenth creating 3D models or geophysics) demonstrates that systematic data generation was not prioritised within the HSHAZ framework. This limited uptake of data-producing activities raises important questions about the initiative's approach to creating lasting digital legacies. The evolving data management of the data when produced, and the rationale and perceptions behind these low rates of data production, are explored within the case studies.

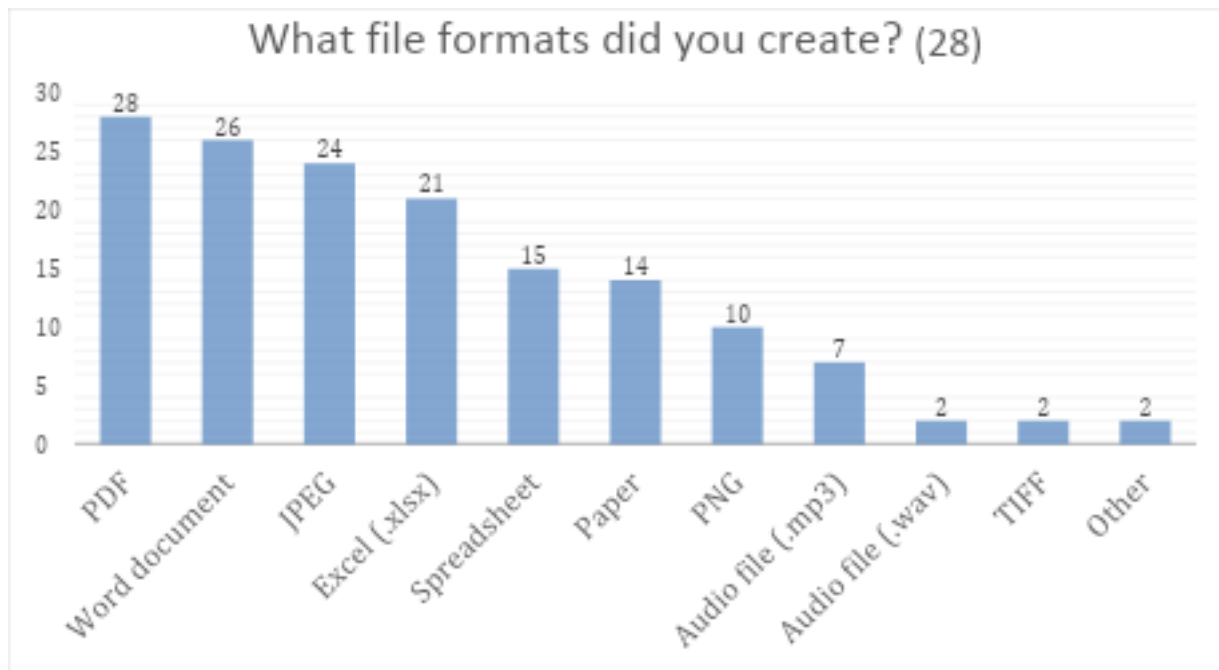


Figure 27, the file formats created in the HSHAZ.

File formats also revealed limitations; .pdfs were universal (100%) and .jpegs common (85.71%), but archival formats such as .tiff (7.14%) and .wav (7.14%) were rare (Fig. 27). While .pdfs and .jpegs are accessible, they are not optimal for long-term reusability (as discussed in Northallerton 5.4.4). However, since data production was not a primary objective of HSHAZ, these format choices may have been appropriate for the programme's dissemination-focused aims. The more pressing question is what lies behind these outputs: when schemes produced reports and promotional materials, underlying datasets (e.g., survey records, GIS files, raw images, building assessments) may have informed them but not been captured in the final outputs. If this source data was not retained or deposited, the programme's evidential legacy may be significantly poorer than its published outputs suggest. The case studies and discussion explore this further, examining whether data underlying these outputs was preserved or lost (see 5.3.4, 6.4.3, 6.4.5, 7.3.3, 7.3.5, 7.4.9, 9.4.3 and 9.5.6).

4.2.4. Data Sharing



Figure 28, the locations in which data was stored during the HSHAZ.

Data sharing practices often limited who could access the datasets beyond the project teams. Most data were stored on internal online drives (75%) or council systems (17.86%), ensuring security but reducing wider availability (Fig. 28). While restrictions are sometimes necessary for GDPR or commercial reasons (Information Commissioner's Office 2025), the default towards restricted access meant even data intended for public use was not always shared openly. The extent to which the datasets were shared, and the manner in which they were shared, is explored within the case studies (see 4.1.4, 4.2.4, 4.3.4, 4.4.4, 5.2.5, 5.3.3, 6.3.4, 6.4.4, 7.3.4, and 7.4.8).

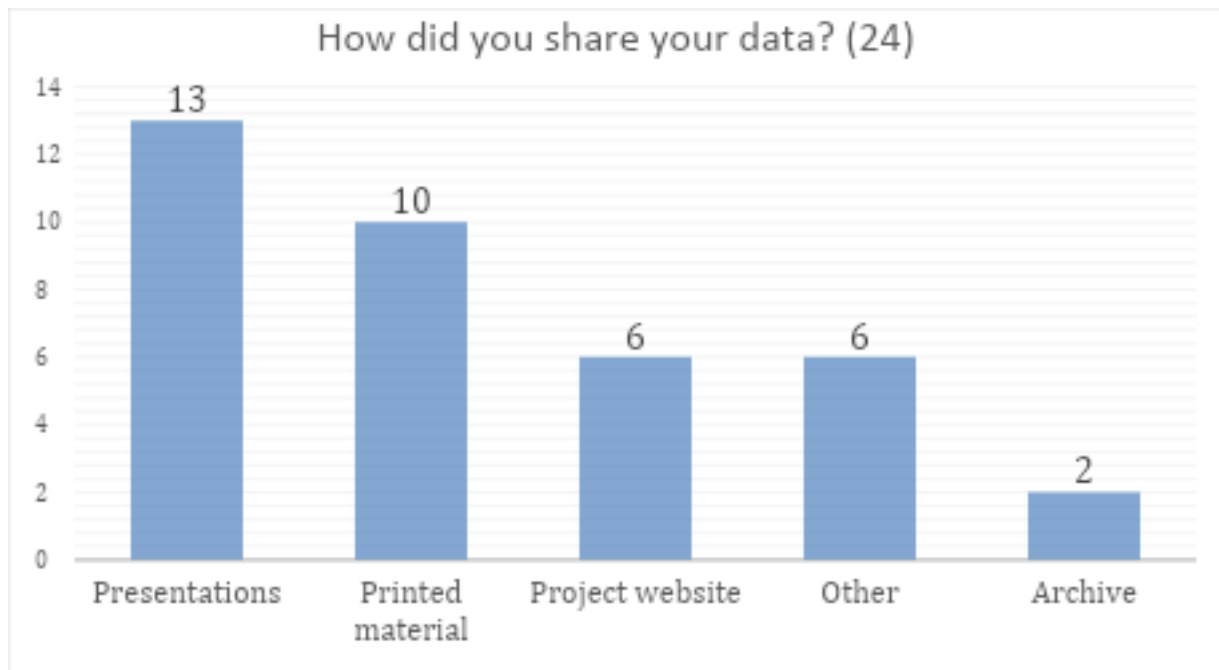


Figure 29, how data was shared during the HSHAZ.

Methods of dissemination further highlight this challenge. Presentations (54.17%) and printed materials (41.67%) were common, reflecting traditional outreach but limiting reusability. By contrast, project websites (25%) and formal archival deposits (8.33%) were infrequently used, restricting long-term access (Fig. 29). As Ludwig and Macnaghten (2020) warn, project-specific dissemination methods often lead to effective data loss once funding ends. It is from this warning that the extent of the legacy of these datasets is examined within the case studies (see 4.1.5, 4.2.5, 4.3.5, 4.4.5, 5.2.6, 5.3.4, 5.4.5, 6.2.4, 6.3.5, 6.4.5, 7.3.5 and 7.4.9).

Communication gaps also played a role. HAZ Project Officers reported receiving more guidance on data management (63.64% (7 of 11)) than Project Leads (14.29% (4 of 28)). This disparity is particularly notable given that data management received no mention in the programme's call for submissions, evaluation criteria, tender specifications, or award guidance, reflecting that it was not a programme focus, a pivotal point for this thesis. Given this absence, the limited guidance received by Project Leads was unsurprising and arguably expected. What was more unexpected was that any guidance reached Project Officers at all. This suggests that data

management advice may have been disseminated through informal channels or determined by individual officers rather than embedded within the programme structure itself. The case studies explore the extent to which data management practices were shaped by individual initiative versus systematic programme design, examining how advice filtered through to some delivery levels but not others. Future initiatives would benefit from clearer responsibilities and knowledge transfer mechanisms, ensuring all delivery levels are supported through formal programme structures rather than ad-hoc individual efforts.

4.2.5. Data Legacy

Legacy outcomes were inconsistent. DMPs were not required in the programme's call for submissions, tender specifications, evaluation criteria, or award conditions, reflecting the initiative's focus on physical regeneration rather than digital legacy. Despite HE's broader leadership in promoting best practice through HIAS, this expertise was not systematically embedded into the HSHAZ programme structure. Against this backdrop, only one scheme (Maryport) produced a DMP, despite their standard use in research contexts. Awareness of DMPs among HAZPLs was correspondingly low: 35.71% had heard of them (10 of 28), 17.86% had used them (5 of 28), and only 7.14% (2 of 28) applied them to HSHAZ work. This absence represents a missed opportunity to embed DMPs across local government heritage practice, particularly given that local authorities would have been well-positioned to adopt such tools if supported through programme requirements. Archival deposition was also rare: 83.33% (20 of 24) of respondents did not deposit data in a formal archive. The case studies explore how individual schemes navigated data management in the absence of formal requirements, examining whether good practice emerged through individual initiative or whether the lack of structural support proved insurmountable.

Engagement with HERs was similarly limited, despite HE’s statutory role in supporting them and their identification as “fundamental” resources (Historic England 2023b). Systematic collaborations with HERs could have strengthened the legacy of archaeological reports, geophysical data, and other specialist outputs. Without it, much of the data risks fragmentation, contradicting HIAS’s vision of integration.

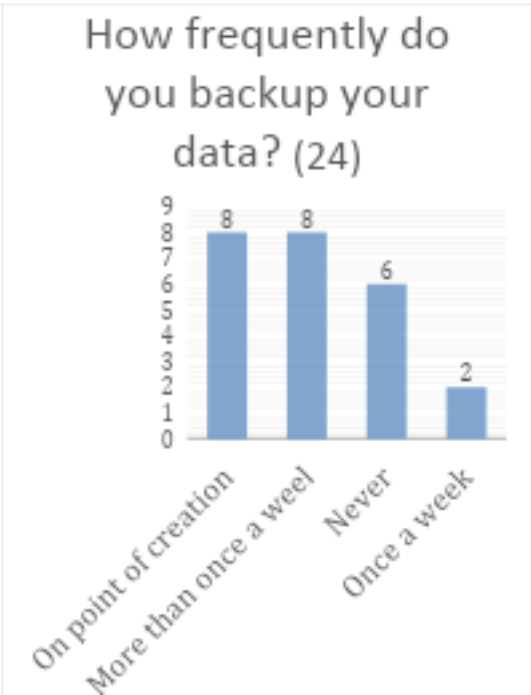


Figure 30, how frequently data was backed up during the HSHAZ.

Nevertheless, some positive practices emerged. Oral histories, where deposited locally, provide valuable intangible heritage records. The use of PowerBI showed the potential of structured digital monitoring. Basic backup practices (weekly or more frequent in 66.66% of cases) indicate an awareness of data security (Fig. 30). These examples highlight building blocks that could be scaled up in future initiatives.

Beyond the individual schemes, broader programme strands were delivered across multiple HSHAZ locations, including

enhancements to the NHLE and the photography strand.

4.3. National Heritage List for England

The NHLE is a cornerstone of heritage management, serving as the official register of all nationally protected historic buildings and sites (Historic England 2025e). Managed by DCMS and maintained by HE, it provides authoritative information on designated assets. Within the HSHAZ initiative, HE’s Listing team investigated existing listed buildings and new recommendations in order to update the list. This also included investigations into at risk heritage assets to assess the state of entries

in the heritage at risk catalogue. During this work, HE updated the NHLE in collaboration with local councils and communities (Historic England 2025d). This collaboration demonstrated the dynamic character of heritage documentation: existing records were revised, and new sites added through systematic research, collaboration, and assessment. The link between HSHAZ delivery and NHLE updates illustrates how targeted initiatives can catalyse improvements in national data infrastructure, with reciprocal benefits for both project-specific outcomes and long-term heritage management. The listing process provides a formalised, well-structured model of data creation and governance, in contrast to the more ad hoc practices evident in other HSHAZ strands. Its clear ownership, standardised procedures, and established dissemination pathways highlight potential lessons for improving future heritage regeneration programmes. An example listing is included in Appendix C.

4.3.1. Data:

Table 4, the data involved in updating the National Heritage List for England.

Data	Created / Reused	File type	Legacy
Existing listings	Reused	.html	Live, updated
Local lists	Reused	Mixed digital	Incorporated
Local archival material	Reused	Mixture	Incorporated
Historic maps	Reused	Mixed digital	Incorporated
Reports	Created	.html	Archived, accessible
Photographs	Created	.tiff	Archived, accessible

4.3.2. Data Reused

The NHLE updating process demonstrates exemplary reuse of heritage datasets (Table 4), closely aligned with HIAS's principle of "maximising the reuse of historic environment information" (Historic England 2019d, p. 12). It is worth distinguishing between reuse and updating here: reuse involves repurposing existing data for new applications, while updating involves enhancing or correcting records in situ. The HSHAZ listing work encompassed both processes, drawing on legacy listing descriptions as a foundation while substantially enhancing them with new research.

Existing listings themselves form a core dataset, with earlier descriptions reused and enhanced (Rymmer, 29 February 2024, pers. comms.). The process began with a scoping exercise for each HSHAZ, where listing advisors reviewed all listed buildings within the area and determined what level of work each required. At the most basic level, this involved reading through older list entries - many written in note form rather than proper prose - to ensure factual accuracy and improve readability. More substantial work involved "major enhancements," a category piloted specifically for HSHAZs, which examined existing listings, verified mapping accuracy (ensuring "the little triangle was in the right place" (*ibid*)), and substantially revised descriptions. The most intensive intervention was a "full assessment," requiring site visits, photography, and comprehensive reporting, used both for buildings proposed for new listing and for existing entries requiring significant revision (Rymmer, 29 February 2024, pers. comms.). Advisors worked primarily from published NHLE data, supplemented by desk-based research using HE's own historic map holdings, National Library of Scotland digitised maps, and tithe maps accessed through a subscription to The Genealogist. Local archive material was consulted on a case-by-case basis where specific documentation, such as building plans, might help identify significant features, though advisors generally relied on desk-based sources unless circumstances warranted archive visits (*ibid*).

Crucially, the scoping process was not conducted in isolation. Once HE's internal assessment identified potential priorities, advisors consulted with local authority partners and internal research teams. As Rymmer explained, "we sort of did a scoping, but then there was that joint conversation... with the project partners to say, this is what we're planning. Do you have any thoughts? Do you want to add anything to it?" (29 February 2024, pers. comms.). In practice, this meant councils could flag buildings of local importance for assessment consideration. Notably, listing assessments could not be conducted while building works were ongoing, they had to occur before or after physical interventions, which may have limited the direct feedback loop between enhanced listings and HSHAZ-funded works (*ibid*).

Local lists and community inventories were also incorporated into consideration, through discussions with local councils about possible new listings and priorities for updating existing entries (Rymmer, 29 February 2024, pers. comms.). Rymmer was careful to distinguish between national listing - HE's remit, focused on buildings of special interest at a national level, and local lists, which capture significance at regional or local scales (*ibid*). Their inclusion nonetheless provided a mechanism for local voices to shape national heritage records, balancing professional assessment with community perspectives. This practice resonates with Missing Pieces (formerly Enriching the List), which foregrounds community contributions to the national record (Historic England 2023d; see 2.6.5). Missing Pieces allows members of the public to add photographs, historical information, and personal knowledge beneath the statutory listing text, contributions that some HSHAZ consultants also made where they had gathered additional information beyond what was required for the formal listing (Rymmer, 29 February 2024, pers. comms.). However, Rymmer was uncertain whether Missing Pieces contributions are deposited in the HE Archive, noting "that is a very good question. I don't know" (Rymmer, 29 February 2024, pers. comms.). This uncertainty about the archival fate of community-contributed data highlights a potential gap in data governance: while the statutory listing process has clear documentation pathways, the parallel streams of community

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knowledge appear less systematically preserved. For future initiatives, this integration offers a model for embedding inclusivity in heritage data governance, while also highlighting the need to ensure all contributed knowledge, not just statutory outputs, remains accessible for future research and conservation practice.

Historic map regressions produced as part of the HSHAZ research provided essential contextual data for understanding building evolution, with the ability to trace a particular building's footprint through OS maps from 1856, 1892, 1912 and modern day to identify phases of extension or alteration (with an excellent example being shown in Northallerton - see 5.3.2). As Rymmer noted, "at the very least it would be looking at some historic maps to see how that building and site might have changed over time" (Rymmer, 29 February 2024, pers. comms.). This cartographic analysis enables researchers to date architectural features and understand development patterns that informed listing enhancements.

Finally, where necessary, archival research by Architectural Investigation teams provided detailed context on tangible and intangible heritage (Taylor, 7 December 2023, pers. comms.).

4.3.3. Data Created

The NHLE updating process also generated significant new datasets.

As shown by Appendix C, reports form the core outputs, offering concise and authoritative descriptions for each listed asset (Rimmer, 29 February 2024, pers. comms.). These provide consistent technical detail, but their specialist language may limit accessibility for non-specialist audiences (Fredheim 2020). Taking an example from the Chester Rows (5, 7 and 9 Northgate Street), the challenges of language become clear, with descriptions such as "The building was designed by their owner and architect, John Douglas, in the Vernacular Revival style. Douglas (1830-1911) was prolific across the region and known for his 'Old English' style of

half-timbered domestic work,” and “The street level has an arcade of six bays, raised two steps above the level of the pavement, with moulded timber posts on shaped sandstone plinths and three-centred timber arches with richly-carved spandrels and central keys” (Historic England 1972), contain architectural specialist terminology jargon which can alienate potential reusers. Future initiatives might adopt layered or parallel descriptions, as seen in *Missing Pieces* (Historic England 2023d), where community narratives sit alongside technical accounts. A combined dissemination model, akin to *Know Your Place* (Bristol City Council 2023), could allow multiple perspectives to coexist, bridging professional rigour and community accessibility. Localised approaches to embedding intangible heritage and voices are explored within the individual case studies.

Architectural Investigation reports added further data, documenting both visible and hidden aspects of built fabric across multiple HSHAZs. In Wigan, the team investigated 22-24 King Street (Grime's Arcade), a flagship HSHAZ restoration priority, producing an unpublished report that directly supported the listing enhancement process; they also advised on 54-58 King Street, though no written report was ultimately requested (Taylor, 19 December 2025, pers. comms.). In Maryport, work included both site-specific investigation of 79-81 Senhouse Street (the former Dixon's Jewellery shop) for list enhancement and a broader Historic Area Assessment of old Maryport to contextualise the Senhouse Street HSHAZ, the latter being written up and published in HE's Research Report Series. An unpublished report was also produced for the former Working Men's Club and Institute on Abbey Road in Barrow-in-Furness, adjacent to the Duke Street HSHAZ (*ibid*). This enriched understanding of conservation areas, providing high-quality documentation that promoted local distinctiveness and informed both listing enhancements and regional advisory work.

However, the archival fate of this research raises significant data governance concerns. While the Research Report Series publication for Maryport entered the

public domain with work logged on OASIS, the unpublished reports, written for internal guidance purposes, lack a systematic long-term home. As Taylor noted, "since the end of the HSHAZ programme I don't suppose anyone except me has kept them" (Taylor, 19 December 2025, pers. comms.). This ad hoc preservation is compounded by staff turnover: a piece written by the late Elain Harwood about Burnley Empire theatre in support of Burnley's HSHAZ was passed directly to the North West regional team but is now unfindable, with Taylor observing that "it's no longer findable on the NW SharePoint and no one knows where it is since the Burnley Project Officer has moved on" (Taylor, 19 December 2025, pers. comms.). This pattern, where valuable specialist research is produced but not systematically archived, exemplifies the data governance gaps identified throughout this thesis, demonstrating how institutional knowledge can be lost even within organisations nominally committed to heritage preservation.

Photographs were another critical dataset, establishing visual baselines for condition and recognition (e.g., Appendix C. - Historic England 1972). Yet coverage remains uneven: some publicly available listings lack images, while many have only a single photograph if any (e.g., Little Abbey Gateway - Historic England 1955). This contrasts with HE's own best practice guidance on photographic recording (Historic England 2015b), which advocates comprehensive visual documentation. Nonetheless, initiatives such as Missing Pieces are greatly enhancing this record (e.g., Little Abbey Gateway, which had no official photography - Historic England 1955). Whilst these photographs are not professionally curated, it provides opportunities for more community driven cultural heritage documentation as well as curation. These aspects of community engagement and the resulting enhancement for the understanding of the nationally and locally significant heritage assets is a key component of this thesis and is explored throughout the case studies and discussion.

These outputs exemplify the benefits of systematic governance: they are standardised, sustainable, and broadly aligned with FAIR principles. The NHLE thus provides a strong model for how heritage data creation can combine consistency, longevity, and public value.

4.3.4. Data Shared

The NHLE exemplifies a heritage dataset explicitly created for sharing with multiple stakeholders and audiences, demonstrating effective practice in making heritage information publicly accessible while maintaining quality and authority.

The sharing process follows a structured pathway, beginning with creation by HE and proceeding to DCMS for approval (Rimmer 2024, personal communication, 29 February). This formal approval process gives the dataset its official status, though it can sometimes delay making updated information publicly available, leading to missed opportunities for timely community engagement or planning decisions. Once approved, the primary sharing mechanism is through the online NHLE portal, which makes listing information freely available to the public, researchers, planning authorities, and other stakeholders. This online platform demonstrates the potential of creating easily accessible yet securely archived datasets with a stable, long-term future, aligning with HIAS's commitment to "improving access to and use of historic environment information" (Historic England 2019, p. 4).

The structured approach to data sharing exemplified by the NHLE contrasts markedly with some of the more ad hoc sharing practices observed elsewhere in the HSHAZ programme. This difference highlights how embedded institutional processes and clear ownership can facilitate more systematic approaches to heritage data dissemination. Well-established data sharing pathways are crucial for ensuring heritage documentation's long-term impact and utility. The NHLE thus represents an example of planned data management resulting in an enduring and widely accessible heritage resource. However, while the final listing entries are

shared publicly, many supporting materials, such as full research files, contextual photographs, or detailed site reports, are not routinely deposited or made publicly available. This narrows the scope of what can be accessed and reused by external users, limiting opportunities for deeper engagement or community-led reinterpretation. This selective sharing contradicts the more expansive vision of heritage data accessibility promoted through HIAS and initiatives like Missing Pieces, which advocate for sharing fuller datasets to support participatory heritage practice.

Moreover, datasets are generally shared only at the conclusion of the listing process, meaning they cannot be drawn upon by other strands of the HSHAZ programme during delivery. This contrasts with more integrative approaches that promote sharing in-progress datasets to support adaptive planning and cross-programme learning. Future initiatives could benefit from more dynamic sharing models that make emerging findings available to support ongoing work while maintaining appropriate quality control.

4.3.5. Data Legacy

The NHLE demonstrates exemplary characteristics of effective long-term data management, providing an instructive model of sustainable heritage documentation that aligns with HE's strategic objectives for heritage information infrastructure.

As a statutorily required and centrally maintained dataset with clear institutional responsibility, the NHLE has built-in mechanisms to ensure its continued maintenance and accessibility. The online platform provides a stable, long-term home for heritage designation data, making it securely archived yet readily accessible to diverse users. This balance between preservation and access represents best practice in heritage data management, as advocated by Huggett (2020) and reflected in HE's own data management principles. The consistent structure and format of listing entries facilitate their ongoing utility and potential

integration with other datasets, supporting the HIAS vision of interoperable heritage information systems.

The NHLE benefits from institutional continuity and statutory protection that transcends individual project timeframes and funding cycles. Entries made in ‘the list’ will remain live and accessible for as long as the List is maintained, providing a durable public record of buildings and sites deemed significant. This ensures that outputs will continue to inform heritage management, planning decisions, and public understanding for years to come, creating lasting value from the investment in documentation.

4.4. Photography

The photography project within the HSHAZ initiative represented one of the more systematic documentation efforts, designed to capture the physical appearance of high streets at both the beginning and end of the programme (Rimmer, pers. comms., 29 February 2024). Its structured approach aimed to provide a before-and-after visual comparison of conservation areas, creating a tangible record of physical change. These documentation efforts are replicated in Historic England’s (2016) guidance on *Understanding Historic Buildings*, and HE (2015c) *Managing Significance in Decision-Taking in the Historic Environment*, in which they mandate extensive photographic records. Alongside this standardised documentation was a series of *Photography in Residence* programs (see Chester 7.4.7 and HE initiatives 4.1.3 and 4.1.5.). The two combined initiatives offer important insights into the strengths of photography as a heritage dataset and highlights opportunities for future initiatives to maximise its value.

4.4.1. Data

Table 5, the data involved in HE's photography programme.

Data	Created/reused	File type	Legacy
Photographs	Created	.tiff	Archived in HE

4.4.2. Data Reused

As shown in Table 5, the project focused explicitly on new documentation rather than the reuse of existing photography (Rimmer, pers. comms., 29 February 2024). This ensured consistency across 67 sites but also limited the interpretive richness that archival imagery might have added (contrasting with *Photography in Residence*, see Chester 7.4.7, to avoid repetition this point is covered there).

4.4.3. Data Created

The project generated an extensive visual archive, systematically photographing shopfronts within designated conservation zones (Rimmer, pers. comms., 29 February 2024). This produced a rare, comprehensive snapshot of high street character at a particular moment, enabling detailed evaluation of regeneration outcomes. As Stylianidis (2020) notes, systematic visual documentation can reveal subtle patterns of change. Here, photographs captured not only architectural details but also evidence of condition, signage, and urban use. This provides heritage bodies with robust baseline data and researchers with material for longitudinal analysis.

The use of .tiff format demonstrated strong alignment with HE's digital image standards (Historic England 2015b), contrasting with the variable quality seen elsewhere in the programme. This good practice illustrates how planned, place-based photography can produce datasets of enduring heritage value, serving professionals, researchers, and communities alike.

As detailed in the HE's (2016) guidance on *Understanding Historic Buildings*, and HE (2015c) *Managing Significance in Decision-Taking in the Historic Environment*, there is strong value in treating photography as layered information that can be integrated iteratively into planning, evaluation, and public engagement. The photographs could have served as real-time indicators of change, community activity, or emerging themes, but were instead treated primarily as retrospective outputs. Future projects might benefit from establishing mechanisms for progressive sharing of such documentation, possibly through online galleries or interactive platforms that could be updated throughout the project lifecycle, aligning with HE's digital innovation objectives.

4.4.4. Data Sharing

Despite the richness of the dataset, sharing was limited during the active phase of the HSHAZ initiative. Photographs were only made widely accessible once projects concluded (Rimmer, pers. comms., 29 February 2024). With the photographs of shopfronts at the beginning of the initiative, these could have added further evidence to the works carried out and the overall successes of the initiative. This restricted their potential to support evidence bases for the overall HSHAZ as well as the potential for further funding through evidenced works.

This retrospective model contrasts with HIAS's emphasis on dynamic data sharing and innovation in digital dissemination (Historic England 2019d, p. 18). It also differs from more iterative approaches seen in initiatives such as Historic Landscape Characterisation, where outputs are used throughout planning processes.

Future initiatives could increase impact by adopting progressive sharing strategies, such as online galleries or interactive platforms updated during the project lifecycle. This would allow photographs to serve as living datasets, informing community conversations, supporting interim evaluations, and celebrating ongoing

achievements. Such iterative sharing would bring photographic practice closer to HE's vision of participatory and accessible heritage information.

4.4.5. Data Legacy

The visual legacy of the photography project represents one of its most enduring contributions to heritage documentation, though its long-term value depends crucially on the robustness of preservation and access strategies. The formal archiving of photographs within HE's archive ensures that this comprehensive visual record will remain valuable for future research, management, and evaluation (Rimmer 2024, personal communication, 29 February). This preservation within stable institutional frameworks ensures continued accessibility and contextualisation, aligning with best practice in digital preservation and HE's commitment to maintaining accessible heritage information resources, the resourcing needed to maintain this is a topic explored in the discussion (see 9.5.1). The use of archival quality .tiff formats further enhances the long-term preservation potential of these images. The preservation of this systematic photographic record creates multiple potential legacy values that will likely increase over time. For heritage management professionals, it provides detailed baseline documentation of conservation areas at a specific historical moment. For researchers, it offers potential for longitudinal studies examining the impacts of heritage-led regeneration and patterns of urban change. For local communities, it preserves a visual record of their high streets that may acquire increasing historical significance as these areas continue to evolve. Such systematic archives of visual heritage documentation can appreciate in value over time, particularly when maintained within stable institutional frameworks. However, without dedicated metadata, contextual documentation, and clear access mechanisms, the full research and community value of these images may not be realised. The strength of this legacy depends not just on preservation but on discoverability, usability, and contextual richness. Future initiatives should invest in the preservation and integration of photographic outputs as core heritage

datasets, embedding them into formal repositories and linking them to broader narratives through captions, oral histories, or archival cross-references. This would support the HIAS vision of connected heritage information that can be discovered and used by diverse audiences for multiple purposes.

4.5. Conclusion

The preceding analysis of the HSHAZ programme has revealed a complex landscape of data practices across multiple strands: the Cultural Programme's creative outputs with limited archival integration, the individual schemes' variable approaches to data management, the NHLE's exemplary governance structures, and the photography project's systematic yet retrospectively shared documentation. These strands demonstrate recurring tensions between programme delivery priorities and sustainable data stewardship, between local autonomy and national standardisation, and between creative engagement and formal heritage recording. While HE's strategic frameworks, particularly HIAS, established clear expectations for heritage data management, their operationalisation across the HSHAZ was inconsistent, shaped by funding structures that prioritised physical regeneration over digital legacy, governance arrangements that created long communication chains, and the absence of formal data management requirements at the project design stage. To understand how these structural conditions manifested in practice, and to identify both barriers and opportunities for improving heritage data governance in future regeneration initiatives, the following chapters examine three case studies that represent different approaches to data creation, sharing, and preservation within the programme: Northallerton, where heritage investigation generated specialist datasets; Kirkham, where community engagement created diverse heritage outputs; and Chester, where built heritage datasets and *Photography in Residence* combined professional and participatory documentation. These cases illuminate how local contexts, stakeholder relationships, and individual initiative shaped data outcomes in the absence of systematic programme-level requirements, offering insights into both the challenges of embedding sustainable

data practices and the conditions under which good practice emerged despite structural constraints.

The four strands examined in this chapter, the Cultural Programme, the individual HSHAZ schemes, the NHLE updating work, and the photography programme, were each administered by different internal teams within HE, under different funding arrangements, and with different levels of pre-existing governance infrastructure. These structural differences produced markedly different data outcomes, independent of the quality or ambition of the work itself. Table 6 draws together the key dimensions of each strand to make these relationships explicit.

The most striking pattern is the correlation between institutional anchoring and legacy security. The two strands with the most secure data legacies, the NHLE updates and the photography programme, are both governed by long-standing HE institutional processes: the NHLE is a statutory register maintained in perpetuity, and the photography archive is managed within HE's own archive infrastructure. Neither strand was reliant on project-specific custodianship decisions. The two strands with the weakest legacy outcomes, the Cultural Programme and the individual HSHAZ schemes, were both delivered through time-limited partnerships with external organisations that lacked the institutional capacity or mandate to maintain archives beyond project completion.

A secondary pattern concerns the distinction between pre-existing and HSHAZ-generated datasets. The NHLE strand was almost entirely built on pre-existing designation records, which it updated and enhanced: the data governance infrastructure was already in place and the strand inserted itself into it. The Cultural Programme, by contrast, generated almost entirely new content, for which no comparable preservation infrastructure existed. This asymmetry, between strands that improved existing datasets and strands that created new ones without equivalent archiving provision, is a recurring theme across the case studies examined in Chapters 5 to 7.

4.6. Chapter 4 synthesis: data governance across the wider HSHAZ initiative

Table 6, Synthesis of programme structure, dataset characteristics, and legacy outcomes across HE's HSHAZ strands

Strand	Governing team / structure	Pre-existing datasets drawn on	HSHAZ-generated outputs	Custodian at close	Legacy outcome
Cultural Programme	Business team; external cultural partners	Limited. Archival photographs in Photography in Residence only	Films, soundscapes, performance records, social media, community photography	HE archive (photography); project folders / no deposit (most outputs)	Partial. Photography secured; most other outputs at risk
Individual HSHAZ schemes	Local authority Project Leads; HE Project Officers	Local repositories (83%), HE datasets (67%), HERs (42%)	Planning applications, oral histories, 3D models, spreadsheets, websites	Planning portals; individual project drives; no systematic deposit	At risk. No DMP requirement; 83% did not deposit in formal archive
NHLE updating	HE Listings team; DCMS approval pathway	Existing list entries, HE map holdings, tithe maps, local archival material	Enhanced listing descriptions, site photographs (.tiff), architectural investigation reports	HE / DCMS (statutory register). Unpublished Architectural Investigation reports held informally by individual staff	Secure for published entries. Unpublished research reports at risk
Photography programme	HE internal; Photography in Residence via external commissioners	Archival photographs (Photography in Residence).	Systematic shopfront survey (.tiff, 67 sites); Photography in Residence community outputs	HE archive (.tiff survey); HE archive (community photography)	Secure. Archival-quality .tiff format; institutional custody confirmed

This chapter has examined the HSHAZ programme at a national level, drawing on evaluation data, HE interviews, and scheme surveys to identify patterns in data governance across the initiative. The following chapters turn to three case studies (Northallerton, Kirkham, and Chester) to explore how these programme-wide dynamics played out in specific local contexts, and what additional challenges and opportunities emerged at the scheme level.

5. Northallerton (North Yorkshire)

The Northallerton case study explores data management within a heritage research-based HSHAZ in the North Yorkshire market town of Northallerton, demonstrating what emerges as an unusually successful and sustainable community heritage programme. The Northallerton HSHAZ comprises three interconnected components: the Heritage Hub at 90 High Street, which served as a physical community space for heritage engagement; an Augmented Reality (hereafter AR) Heritage Trail featuring 2D and 3D visualisations that brought the High Street's hidden history to life; and a programme of shopfront renovations and repurposing of heritage assets to create commercially viable spaces. Together, these elements represent a comprehensive approach to heritage-led regeneration that balances community engagement, digital innovation, and physical conservation.

The case study makes several distinctive contributions to understanding heritage data management within the HSHAZ programme. First, it showcases exemplary practices in community heritage data governance, particularly through the Heritage Hub's systematic approach to capturing, curating, and archiving community-generated content including oral histories, personal collections, and volunteer-led research. The sustained collaboration between Hambleton District Council (hereafter HDC), the North Yorkshire County Records Office (hereafter NYCRO), and community stakeholders resulted in robust data management workflows that ensured long-term preservation and accessibility of these materials. Second, the AR Heritage Trail demonstrates extensive and effective reuse of archaeological and historical datasets, drawing on diverse archival sources and combining them with newly created 3D models and soundscapes to create an immersive heritage experience. This component illustrates how heritage data can be creatively repurposed across multiple formats and platforms while maintaining scholarly rigour and community relevance. Third, the shopfront improvement projects provide the thesis's first detailed examination of built heritage works within the HSHAZ

programme, revealing significant disparities in data management practices between designated heritage assets (listed buildings) and non-designated assets. This analysis exposes how the potential for generating valuable heritage data from shopfront projects, including building surveys, materials analysis, and documentation of traditional craft techniques, remains largely unrealised across the HSHAZ initiative.

The chapter explores how data has been reused, created, shared and archived within this diversity of projects, examining the distinctive approaches taken by multiple stakeholders whilst also highlighting missed opportunities, particularly within the commercial conservation component. Geographically, the High Street is located within a designated Conservation Area (Fig. 31), which extends beyond the High Street and encompasses much of the town centre, including 64 listed buildings and the scheduled monument of the Bishop Rufus' Palace (Monument no. 1020719; Hambleton District Council, n.d.b).

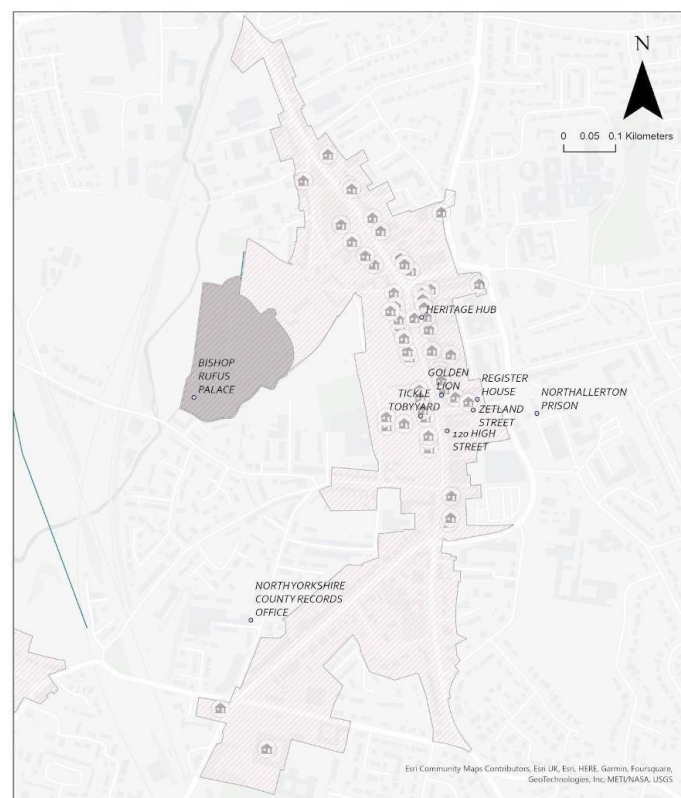


Figure 31, Northallerton Historic High Street Action Zone © Crown Copyright and database right 2020. All rights reserved. Ordnance Survey Licence number 100024900.

Northallerton High Street is a traditional market town high street with a linear layout based on medieval burgrave plots, Georgian buildings, and ginnels (Saywell, 1885; Newman 2005). As the county town of North Yorkshire, Northallerton has an extensive history of historical significance primarily due to its geography, which was a key route northwards from the Roman era onwards. This rich heritage and centuries of antiquarian, archaeological and historical study of it have led to the creation of extensive heritage datasets (Hambleton District Council, n.d.a p. 1). Northallerton was an important point within the Georgian coaching network, with many coaching inns, and in the advent of rail, with the East Coast Mainline running through the town. Commercially, it has had twice-weekly street markets, weekly livestock auctions and an annual May Fair, meaning it has been a central hub of meeting for generations (Newman 2005). Yet, the High Street has deteriorated in recent years, with increased vacancy rates, and is emblematic of the "dying" High Street phenomenon caused by the long-term rise of online shopping and the effects of COVID-19 (*ibid.*, p. 2-3).

In 2019, HDC applied for funding under the HSHAZ, and the successful Northallerton HSHAZ focused on three main aspects:

- Physical community space of the Heritage Hub at 90 High Street.
- Heritage Trail(s) with 2D and 3D visualisations, and an AR Heritage experience using community feedback and engagement.
- Renovating and repurposing shops and shopfronts.

5.1. Stakeholders

The projects involved diverse stakeholders, each with a distinctive approach to collecting, curating, and depositing such data (Fig. 32).

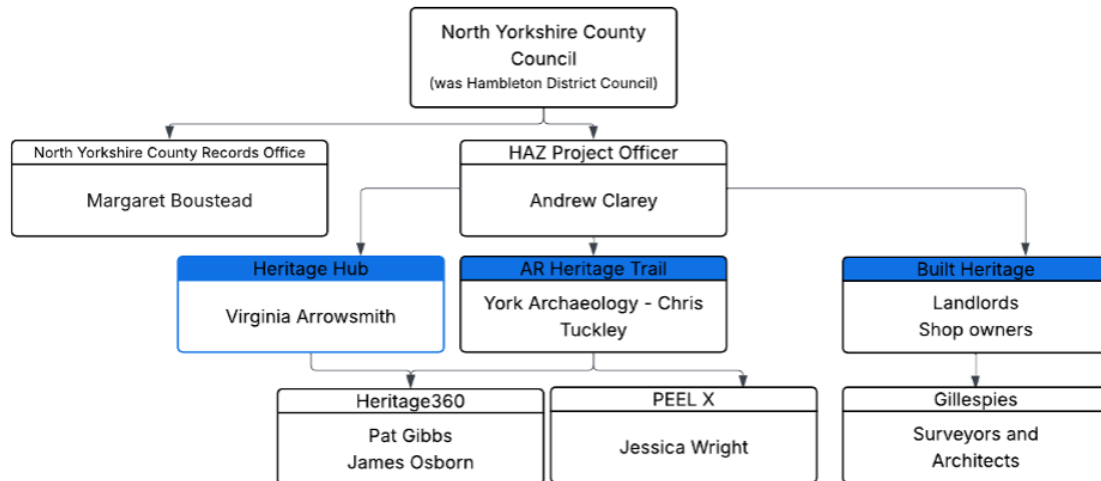


Figure 32, organogram of Northallerton Projects and associated Stakeholders.

This chapter defines stakeholders as those with a long-term investment in the success of the Northallerton HSHAZ, while contributors refer to those invested until the initiative's end of funding. The term *engaged entities* will be used where there are both stakeholders and contributors. There are different interactions with data in the project, categorised as follows:

5.1.1. Overarching stakeholders:

He was the custodian of the UK government funds in the HSHAZ. As shown earlier in this thesis (1.3 and 4.2), HE themselves are not direct data users or creators within the individual HSHAZ programmes, rather, they advise and monitor the project and are committed to best data management and deposition practices.

HDC were responsible for the procurement and project management of the Northallerton HSHAZ programme. During the HSHAZ, Northallerton underwent governance changes from HDC to the conglomerated North Yorkshire Council in April 2023. As such, the management of data has been subjected to different governance approaches, and the impacts of this alteration are examined within this chapter.

5.1.2. Project-Specific Stakeholders:

Heritage Hub

The Heritage Hub stakeholders brought varied skills and knowledge to the project, including Virginia Arrowsmith, HDC, the NYCRO, Cultural Consortia, Northallerton Town Council, North Yorkshire Council, York Archaeological Trust, and Heritage360.

As project lead, HDC financed and sourced space for the Heritage Hub, employed staff, and ensured all HSHAZ funding requirements were met. HDC also aimed to address significant community challenges such as isolation, loneliness, and engagement with the High Street.

Virginia Arrowsmith served as the Community Liaison Officer for the project, bringing years of experience in oral history and testimony from her work with HDC (see Morton 2017 and Fox 2019). She applied these best practices in capturing the Oral Testimony and the paradata of personal collections (see 5.2.4). Her work also involved training volunteers (providing 331 volunteer hours) and hosting community events to further engage the community with the area's local history. Through her collaboration with local partners and the community, it was possible to capture diverse stories and datasets and ensure they were archived.

NYCRO's role was to archive the dataset collated, both digital and physical, within the Heritage Hub to ensure the data's legacy. They were particularly interested in gathering and collating new material that could complement NYCRO's existing archive, potentially filling gaps within its records.

Heritage360, a research unit at the University of York, was responsible for creating 3D models, the website, and the website's touchscreen within the Heritage Hub (Fig. 33 (Northallerton Heritage Hub, n.d.)).



WORKSHOPS AND EVENTS



Magic Lanterns & Moving Pictures

Fri, 24 Mar 2023 (5 - 7pm)
Heritage Hub

Come and join us for a fun-filled exploration of cinema past and present in Northallerton, from the first moving pictures in 1913 to the opening of the new Everyman in 2023. Popcorn will be provided!

[View all events and activities](#)

Visit us at Northallerton's Heritage Hub!

Join us at the Heritage Hub in Northallerton - we are located 90 High Street, next to Halifax Bank. Here you'll find exhibitions and objects relating to the town's past. The Hub is staffed and someone will be available to show you around.

We are open Wednesday to Friday and alternate Saturdays, 10am - 4pm.

[Read more...](#)



Figure 33, a screenshot of the website on 22nd March 2023 (Northallerton Heritage Hub, n.d.).

AR Trail

Several stakeholders from the Heritage Hub continued their involvement in the AR Trail, alongside new contributors who brought specialist AR expertise.

HDC's role within the AR Trail was similar to their Heritage Hub responsibilities, with the additional aims of engaging new audiences, increasing footfall, and revealing the depth of the High Street's history. Beyond financing the project, HDC indicated sites of interest for the trail, supported by heritage research (North Yorkshire Council 2024a).

York Archaeology (hereafter YA) used the Northallerton HSHAZ to engage a broader community and educate them about the importance of the county town's hidden history. YA sourced material from various local archives and community groups, sharing these with Heritage360 and PEEL X to create the AR materials. They also created Oral History transcripts to be implemented as part of the AR heritage trail's soundscape. YA tendered out the creation of 3D models to specialist heritage reconstruction experts Heritage360, and AR materials to PEELX, allowing the project to be completed on a tighter schedule and meet deadlines set by HDC.

Building on their Heritage Hub work, Heritage360 leveraged their experience in creating 3D models and collaborating with YA to develop 3D models of key sites using material shared by YA alongside their own research (Fig. 34). They also created Foley sound effects to enhance the immersive AR experience. Their expertise in public dissemination ensured they understood user needs and could select the most appropriate platforms for user experience and legacy.

PEEL X are experienced in creating AR models to aid interpretation and engage new audiences. Since the pandemic, they have worked on multiple projects designed to return people to the High Street within the HSHAZ initiative as well as separately (Wright, 23 March 2023, pers. comms.). Within the Northallerton HSHAZ, PEEL X's role was to interpret the existing material collated by Heritage360 and YA. Due to

their experience in AR modelling (e.g., Fig. 35), they brought their knowledge of user requirements and ensured the material was engaging for a broad audience, and promoted the app to this diverse potential customer base (see Fig. 36-40).

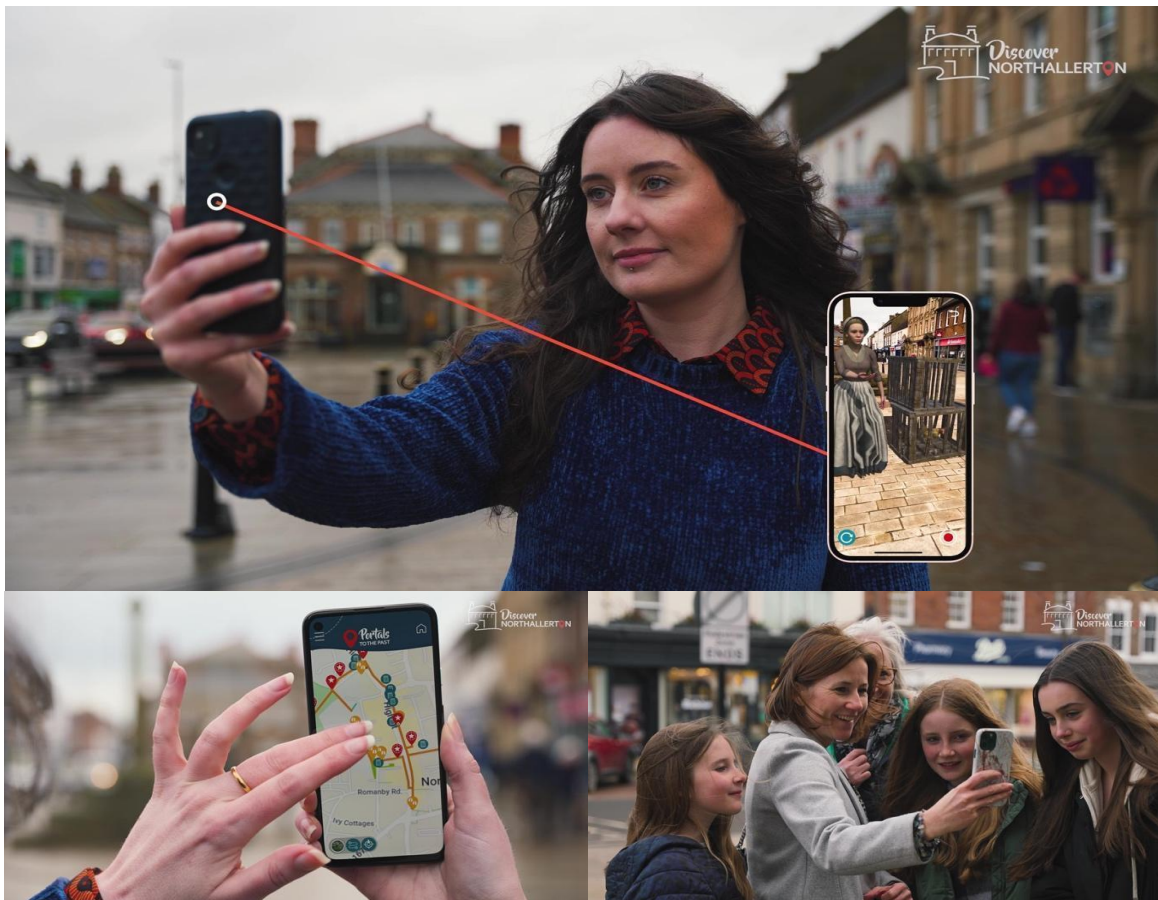


Figure 34, above, a 3D model made by Heritage360 of the Bishop's Palace (credit Heritage360). Figure 35, below, a 3D model of the Golden Lion Pub (credit PEEL X).





Figures 36 and 37, above, promotional images of the app in use, Figure 38, 39 and 40, below, promotional images of people using the app in situ (credits PEELX).



Built heritage

Architects: Architects and architectural firms were responsible for creating designs and planning applications that met the client's requirements while adhering to the constraints of the conservation zone.

Builders (e.g., Gillespies): Builders executed designs from architects and town planners while ensuring projects stayed within budget and met specifications on time.

The case study evaluates practices used within the Northallerton HSHAZ work packages, in order of the Heritage Hub, AR Heritage Trail then built heritage works including shopfronts, regarding the datasets' reuse, sharing, and legacy, analysing each project critically, and suggests recommendations to increase the accessibility and reusability of these datasets.

5.2. Heritage Hub

The Heritage Hub (Fig. 41) was not an original aspect of the Northallerton HSHAZ. Rather, it was created in consultation with HDC and HE as a public-facing community resource established as part of the cultural programme, providing a space for the community to engage with and share the town's history and intangible cultural heritage and to promote the wider scheme (Hambleton District Council, n.d.a, p. 9 & 17; North Yorkshire Council 2024a). The Heritage Hub opened on 18th May 2022 and received £15,000 from HSHAZ funding and £105,000 from the local council. The Heritage Hub provides a forward-facing community space with displays, information boards (Fig 33-35), and interactive activities for the community to share their knowledge and stories of Northallerton's history (North Yorkshire Council 2024c), disseminating heritage data.



Figure 41, above, the Heritage Hub promotional material (Northallerton Heritage Hub, n.d.). Figures 42 and 43, below, internal photographs of the Heritage Hub showing the various displays.



The Heritage Hub was designed and run in order to engage a diverse community with the heritage of Northallerton, with a particular emphasis on the local community in an "inclu[sive] and open" environment (Arrowsmith, 2 September 2022, pers. comms.). The most engaged demographic was the older population, often with 10 to 20 at each event,

“Many of the attendees were regular visitors to the Hub, which very much met the needs of the older members of the community in terms of providing an opportunity for social connectivity, somewhere to keep warm and share conversation with a friendly face”. (Arrowsmith, 25 November 2025, pers. comms)

Other events were specifically scheduled to take place in school holidays to encourage engagement with family communities, as well as collaborations with local schools. These collaborations with schools were successful, with schools gaining a “huge amount” from the Heritage Hub team in terms of local understandings and perceptions, and in return the schools provided a voice and new perspective on the intangible heritage of Northallerton, enhancing the collated datasets (Arrowsmith, 2 September 2022, pers. comms.; North Yorkshire Council 2024c).

5.2.1. Timeframe

Initially proposed as a pop-up in February 2022, the Heritage Hub opened in May 2022, with a six-month lease, due to end in October 2022. Nonetheless, due to the interest in the Heritage Hub, it was renewed for a further six months, until April 2023 (North Yorkshire Council 2024d). With the instigation of the local council's governing structure, it was uncertain whether funding would still be accessible to enable the Heritage Hub's work to continue until the end of the HSHAZ initiative. It has, however, been repeatedly funded since then, and is open as of December 2025 (now with a permanent home at Northallerton Library); a testament to the local connections, trust and success of its project lead, freelance social history curator

and community engagement specialist, Virginia Arrowsmith. A former English Heritage curator and archivist, Arrowsmith brought a strong understanding of the value of reusing and archiving diverse forms of heritage data to the project. Her approach introduced critical thinking around data management and long-term preservation into the council's cultural strategy, which may have contributed to the Heritage Hub's sustained investment and continued success.

The Heritage Hub project has generated a significant amount of data (Table 7). In the following sections the data shall be analysed in greater detail, exploring how it was collected, created, shared and the extent to which the data has a legacy.

5.2.2. Data

Table 7, the data involved within the Heritage Hub strand.

Data	From	How	Process	Output	File format	End location	Legacy
Photographs	Community	Physical item	Digitised File Digital file conversion	Digitised copies	.jpeg	NYCRO	Archived
Ephemera (inc. newspaper, deeds and receipts)	Community	Physical item	Digitised	Digitised copies	.jpeg	NYCRO	Archived
Artefacts	Community	Physical item	Displayed & two 3D models	Physical items & two 3D models	Physical .obj, .stl, .ply, .wrl	Heritage Hub Sketchfab	HH dependent -
Oral History	-	-	Recorded	Transcripts & recordings	uncompressed .wav format	NYCRO	Archived
Dissemination of collated information, stories and topics	-	-	-	Information boards & touchscreen Website	Physical .html .html	Heritage Hub Heritage Hub Online	HH dependent HH dependent Five years

5.2.3. Data Reused

Photographs and ephemera

A clear indication of the Hub's collaborations with the local community was the amount of material that was brought to the Heritage Hub. Members of the local community brought in most of the photographs that were reused within the Hub. The format of the files varied from physical documents to USB (universal serial bus) drives, and individuals brought these records in a mixture of containers, including biscuit tins, showing their willingness to participate to their ability (Arrowsmith, 2 September 2022, pers. comms.). The ephemera consisted of items such as "diaries, letters, bills/invoices (Fig. 44), digital sound files, newspaper clippings and many many more" (Arrowsmith, 10 March 2023, pers. comms.).



Figure 44, 19th century bills relating to George Inn given by Suzie Valentine, who runs a local business (credit Virginia Arrowsmith).

The Heritage Hub gathered and digitised these private collections in-house (e.g., Fig. 45). Whilst this could be argued to be data creation rather than data reuse, thematically it is better to integrate how the community materials were digitised here in order to ensure clarity of argument. Without the Heritage Hub, the majority of this data would have remained in personal collections, rendering it inaccessible and unusable for research. The digitisation of the material made it possible to access data from a grassroots approach, giving a community voice to their local heritage and increasing the reusability of this extensive dataset. Once digitised, the material was returned to the original owner, meaning individuals' property was acknowledged and respected, while also being able to retain a collated, archived, digitised copy of the dataset (Arrowsmith, 2 September 2022, pers. comms.).



Figure 45, one of the digitised photographs brought in by the community (Northallerton Heritage Hub, n.d.).

During digitisation, the Heritage Hub team asked the owner for details of the picture's focus (e.g., who/ what) and where and when the photograph was captured (Arrowsmith, 2 September 2022, pers. comms.). This allowed for the documentation of metadata and paradata of the photographs, increasing the level of depth of the

data captured. The dots per inch (hereafter DPI) were used to digitise the photographic archives depending on the intended use (Arrowsmith, 2 September 2022, pers. comms.). Initially, a DPI of 600 to 1,200 was used to ensure a high resolution, which was especially important if smaller items were to be displayed on the large interactive screen within the Heritage Hub. However, further into the initiative, the DPI was reduced to 300-600 due to the sheer amount of data brought in by the community (Arrowsmith, 20 January 2023, pers. comms.). As such, it could be argued that the Heritage Hub was too successful. “One gentleman [provided] a massive archive of the town, which is phenomenal, and we’re deeply grateful to him, but it’s taken me weeks and weeks and weeks” (Arrowsmith, 9 September 2022, pers. comms.). Due to more material being brought to the Heritage Hub than was anticipated, the material was digitised at a lower resolution to save time and as .jpegs to save space. The curatorial decision to reduce the DPI and use .jpegs clearly indicated the depth of experience of the individuals within the Heritage Hub. As such, despite the tight timeframe provided by the initiative leading to a reduction in archival quality, the extent and variety of material captured shows further evidence to support the value of combining local communities and digitisation projects that should be recommended in future community engagement projects. However, this also highlights the lack of clear guidance and procedural frameworks for community-led digitisation within heritage initiatives. The absence of defined criteria for selection, metadata standards, or archival consistency raises questions about how such projects balance inclusivity and representativeness with sustainability and preservation quality, an area that future programmes should address through clearer governance and training mechanisms.

The digital copies of the photographs and ephemera were deposited in the North Yorkshire County Record Office (NYCRO), alongside some physical material donated by the community (Arrowsmith, 2 September 2022, pers. comms.). This collaboration of data providers, creators, and archivists shows the value of clear communications before project initialisation and thus illustrative of good practices

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which should be applied to whole community heritage projects as it is clear that the future of these documents has been considered, ensuring that the wealth of material gathered within the Heritage Hub will be preserved for the future. The legacy is explored in further detail here 5.2.6.

5.2.4. Data Created

Oral History

The Heritage Hub project also successfully generated new datasets in the form of oral testimony. The dataset collected by the Heritage Hub filled gaps in the historic record, enriched with intangible heritage, gave a voice to the community, and recorded the changing and enduring culture around the Northallerton historic High Street.

When creating Oral Histories, Arrowsmith followed the best practice guidance of the British Library, National Sound Archive, and Oral History Society (hereafter OHS) (Arrowsmith, 2 September 2022, pers. comms.). Due to the inherently personal nature of the Oral Histories and Testimony, the extent to which they can and/or should be shared must be carefully considered to comply with data protection and GDPR (Bryson 2021). To ensure that the oral testimonies would be captured and preserved, the audio was captured in an uncompressed .wav format, as OHS recommended (Oral History Society 2023; Arrowsmith, 2 September 2022, pers. comms.). Sections of the oral history and testimony were transcribed, and these, alongside the .wav files, were deposited in the NYCRO by Arrowsmith. The data was collected ethically, and ethics documents were created to consider the rationale behind the capturing, data capture, how the data will be used, and what the longer-term archiving will entail.

DMPs are needed in all projects, not only as administrative requirements, but as practical tools that define responsibilities, audiences, and long-term value. While

often viewed as time-consuming or superfluous, particularly in locally led initiatives where tacit knowledge guides practice, DMPs perform an essential coordinating function. They clarify who the data is for, whether for community access, institutional archiving, or future research, and how it should be managed to ensure ethical stewardship, interoperability, and FAIR compliance.

Nonetheless, in the case of the Heritage Hub, it is thus clear that the Oral History datasets were collected to a high standard, followed best practices, and will be preserved for future reuse. This careful consideration clearly illustrates the need to plan datasets to ensure fair and ethical reusability and accessibility of these datasets.

What challenges are there in reusing community datasets with the Heritage Hub?

The Heritage Hub illustrated and identified three more potential challenges when reusing community datasets. While HE provides general data standards through HIAS and MIDAS Heritage, there is currently no specific guidance addressing the particular challenges of community-generated dataset reuse within Heritage Hub or similar programme contexts. These challenges are explored further in the Discussion chapter 9.4.2, where recommendations for addressing these gaps are presented.

Issue 1: Copyright

Copyright is a complicated, yet necessary consideration in data archiving and ownership. These challenges were particularly highlighted in the ephemera, such as newspapers brought in by the community, which often belonged to third-party copyright holders (Arrowsmith, 2 September 2022, pers. comms.). Further challenges in data ownership and copyright are expanded by the complexities of Oral Histories, where the voice and story belong to the interviewee, but the recording belongs to the interviewer. As Arrowsmith notes:

“Copyright is a huge area, and I would say it's one of the biggest challenges for curators, archivists, heritage professionals... recorded speech is separate to sound. There's a lot of complexity in copyright and that's one of the challenges professionally.” (Arrowsmith, 2 September 2022, pers. comms.)

This raises ethical and legal questions: who truly “owns” a voice, and what happens if creators wish to share or remix Oral Histories? Creative Commons can offer standardised licences, but applicability to Oral History remains debatable. Clear guidance is provided by the OHS (Oral History Society, n.d.). For any dataset shared between stakeholders, copyright and Intellectual Property details must be explicitly addressed so that future reusers know the terms under which material can be used.

Issue 2: Data Reliability

Another key concern in archiving is the reliability, given that much of it comes from personal memories. This reliance on individual recollection underscores a broader heritage dilemma: data may exist only in people's minds. While intangible knowledge enriches metadata, e.g., naming family members or personal stories, it can be difficult to verify. Heritage stakeholders in the Northallerton HSHAZ variously emphasised either the need for factual precision or the value of emotional, narrative-driven insights. Critically, how much weight should be given to personal memories and affective storytelling when formal reliability cannot be guaranteed? Practitioners must navigate this balance, recognising the intrinsic cultural value of subjective accounts while seeking methods to confirm key details wherever possible.

Issue 3: Unplanned Datasets

A final challenge concerns the “unplanned but valuable data” contributed by the community. Besides documents, individuals brought physical artefacts (Fig. 46). The prison bell and a cell door were scanned at a 0.5 mm resolution using Artec Leo and converted into 3D models (OBJ, STL, PLY, WRL) by Heritage360 (Arrowsmith, 9

September 2022, pers. comms). These digitised versions were uploaded to Sketchfab (not a formal archive and subject to alterations (McKenzie 2024)), while the originals remain at the Heritage Hub. However, the Hub's long-term stability is unclear, and there is no local museum to take custody. Critically, for this thesis, further questions are raised about the 3D models created in the scanning of the artefacts raising questions about the sustainability of both physical and digital datasets, where they should reside, who will maintain them, and how can their integrity be assured after current project funding ends? Establishing robust, future-proof storage and documentation strategies is crucial to preserving the legacy of these community-contributed materials.



Figure 46, an example of the artefacts being displayed at the Heritage Hub (Northallerton Heritage Hub, n.d.).

While HE offers a range of digital data guidance under the HIAS framework, there is little that specifically addresses the reuse of community-generated datasets. Existing guidance tends to assume formally commissioned or professionally managed outputs, leaving questions of ownership, reliability, and long-term stewardship unresolved for volunteer- or community-created material. As the

Heritage Hub illustrates, challenges such as copyright ambiguity, variable data reliability, and the sustainability of “unplanned” digital assets expose gaps in national frameworks that could otherwise ensure the FAIR and ethical reuse of locally held heritage data.

5.2.5. Data Sharing

In addition to gathering and creating new datasets, the Heritage Hub allowed information to be shared. Topics or stories were collated together and made available in various ways in order to engage a diversity of audiences. The first was through a series of talks (Fig. 47) and outreach events enabling targeted sharing of the heritage information. When giving talks, Arrowsmith accessed additional datasets from the NYCRO. The NYCRO shall be explored in greater depth within the AR Heritage Trail section 5.3.1, as there was more reuse of archival data sets within this strand of the Northallerton HSHAZ.



Figure 47, a photo of one of the public talks (credit Virginia Arrowsmith).

LOCAL INDUSTRIES

Tanning (converting animal skins to leather) and linen weaving were important cottage industries in Northallerton in the 18th and 19th centuries, before Brompton's purpose-built mills became the local focus for linen production. In the middle years of the 19th century, Northallerton was briefly a centre for carpet weaving, apparently by a community who had migrated from Barnard Castle, where the trade was already established.

The production of floor-coverings continued in Northallerton at the Alverton Works linoleum factory, first established alongside the railway to make tarpaulins and sail cloth in the 1860s. In the 1920s the factory employed 320 people, and it continued in business until 1938; subsequently the site was used for the production of mattress springs.

Although all of these industries have since ceased or relocated, Northallerton's flourishing retail sector is one sign of the town's ongoing prosperity. A number of local shops have their roots in the 19th century, including Barkers department store (first established as Oxendale's drapery shop in 1875) and the Lewis and Cooper fine food and wine store (established 1899). The presence of a number of other distinctive outlets, combined with the elegant Georgian architecture of the high street, makes Northallerton a very attractive destination for shopping and tourism.



Figure 48, an information board displayed in the Northallerton Heritage Hub (Northallerton Heritage Hub, n.d.).

A further method of data sharing was the creation of information boards covering topics such as the historical development of Northallerton, medieval Northallerton, the county town, farming, railways, coaching, hospitals and local industries (Fig. 48). These boards contained general information and were easily readable, thus accessible to all visitors of the Heritage Hub. The second method of dissemination was the website (Northallerton Heritage Hub, n.d.). This method was effective in disseminating out to those unable to access the Heritage Hub, further broadening the engaged audiences. Nonetheless, websites on their own can be restrictive to some community members. To mitigate challenges of accessibility, the website was also available through the Heritage Hub via iPads, with help available, broadening the possible audience (Clarey, 9 September 2022, pers. comms.).

Further to disseminating information with the community, the Heritage Hub also shared a variety of datasets with the AR Heritage Trail. The Heritage Hub material aided the creation of the AR Heritage Trail substantially and, as a result, it showed that data sharing is essential in initiatives such as the Northallerton HSHAZ, and such data collaborations should be encouraged in future initiatives. The sharing of data shall be explored in more detail within the AR Heritage Trail section (see 5.3.3).

5.2.6. Data Legacy

The legacy of the data generated within the Heritage Hub has been considered by Arrowsmith. The clearest example of this is the comment:

“From the outset, we have had in mind, that the digital archive that we are creating through our work at the Hub, would be a key legacy of the project; in its current form, a large proportion of the archive material is on the Northallerton heritage website, and hosting of this is secured for the next two years. We are also talking to Margaret Boustead at the County Record Office on an ongoing basis about what happens both to the physical and digital outputs of the project beyond the funded

period. We have always been mindful of the fact that the town has no museum which would naturally serve as a repository for the physical ephemera of town life, and we are mindful that NYCRO remit extends county-wide.

I would say that although there are no easy answers we have always identified that the long-term preservation of the data we capture needs to be addressed and the digital archive has been agreed to be the most practical means of doing this in the medium term” (Arrowsmith, 10 March 2023, pers. comms.).

The comment demonstrates careful consideration of data preservation and legacy planning. By establishing consent frameworks and collaborating with NYCRO and the Heritage Hub, Arrowsmith ensured datasets would remain accessible beyond the project's lifespan. This approach illustrates how decentralised projects can succeed when local stakeholders recognise dataset value and actively plan for long-term access.

However, the quote also reveals significant sustainability challenges. The website's limited timeframe of five years (Arrowsmith, 2 September 2022, pers. comms.), or two years as stated in the quote, highlights a critical vulnerability: websites require ongoing domain payments and maintenance, making them unsuitable as permanent archives (see Kirkham 6.3.4 and 6.3.5). Without sustained funding mechanisms, valuable community-driven datasets risk disappearing despite their heritage significance. This reveals a fundamental weakness of decentralised projects: the absence of standardised approaches to digital preservation means each initiative must independently solve archival challenges. Unlike centralised programmes with institutional backing, decentralised projects often lack the resources or frameworks to ensure data longevity.

Nonetheless, in the case of the Northallerton HSHAZ, these challenges were mitigated by the successful collaboration of Arrowsmith and the NYCRO, and as such, the majority of the dataset has been deposited with them (Arrowsmith, 15 May 2024, pers. comms.). This case demonstrates that proactive engagement with data repositories is essential for ensuring dataset legacies in decentralised heritage initiatives. It also highlights the value of institutional partnerships in bridging the gap between community-generated heritage data and sustainable archival infrastructure.

Despite the increase in digitisation, there is still scope for physical records. Physical datasets are a reliable and stable method of data preservation (Faniel *et al.* 2018, p. 105). As a result, as well as considering the legacy of the digital data, it is crucial to consider the legacy of the physical dataset. The comment supports this statement: “when we think about the legacy...to just talk digitally...would be a shame...given the demographic that we’re working with within this community” (Arrowsmith, 9 September 2022, pers. comms). As a result, this comment suggests that there is a need to ensure that the legacy of datasets still ensures access to the physical documents. It also illustrates the need to consider local needs and accessibility when planning data management within community initiatives (as expanded in Kirkham 6.2.2).

A further current issue regarding legacy is the tenure of the Heritage Hub space. Expectations and hopes of the community’s expectations have been undermined in the past, and as a result, the longevity of the Heritage Hub is likely to be of significant importance to the community. It was suggested that part of the building work in the old prison site would create a heritage centre and/or museum where individuals could share and discover the history of Northallerton, which did not happen (Clarey, 13 October 2022, pers. comms.).

Despite these issues, the legacy of the Heritage Hub is broader than the physical space. As part of the ongoing work of the Heritage Hub, Heritage Toolkits and training of local volunteers were provided in conjunction with the NYCRO (*ibid*). “We

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are also building a kind of a toolkit that can be taken out to or borrowed by different groups within the community” (Arrowsmith, 2 September 2022, pers. comms.). Consequently, despite the uncertainty of the Heritage Hub itself, more data shall be captured. These toolkits guide researchers on how best to look after and capture data, providing community groups with the guidance and support they require to continue documenting and capturing the intangible heritage of Northallerton to a good standard. Consequently, more data will be collected and gathered in the future and will likely be deposited with the County Records Office.

Furthermore, skills sessions on preserving personal collections were provided (Fig. 49), enabling the community to learn how best to manage their own heritage datasets and contributing additional elements to heritage legacies.



Figure 49, a workshop about looking after collections (Heritage Hub 2023).

Measured against the criteria established in section 3.7.4, the Heritage Hub represents one of the strongest examples of sustainable data practice observed across the HSHAZ programme. Deposit agreements were established with NYCRO before project completion, oral histories were captured in preservation-grade formats, metadata was recorded at point of collection, and community contributors retained legal ownership of their materials. These conditions, rather than the volume of content generated, are what distinguish the Heritage Hub's data legacy from that of other HSHAZ strands examined in this study. These datasets are significant in ensuring that the story of Northallerton also has a grassroot, community, and intangible element that significantly enhances the heritage of this area. The data also has an inbuilt legacy, which is not tied to the Northallerton HSHAZ initiative but to the community itself. Consequently, in terms of the cultural programme, the Heritage Hub was a very successful project, and as a result, similar initiatives should take place again in the future.

5.2.7. Synthesis: Heritage Hub

The Heritage Hub strand represents the strongest example of sustainable data governance observed across the HSHAZ programme. Its success is attributable to three reinforcing conditions: the early involvement of a practitioner with professional archival expertise (Virginia Arrowsmith); a formal deposit agreement with NYCRO established before project completion; and a clear conceptual distinction, maintained throughout, between the Heritage Hub as a temporary community space and the digitised archive as the lasting legacy. The strand illustrates how decentralised data governance can produce secure outcomes when the three conditions are met, but also how fragile that model is: the outcome depended on one individual's initiative rather than on programme-level requirements.

The key distinction within this strand is between pre-existing community materials, photographs, ephemera, and personal artefacts brought in by residents, and the oral

histories and digitised copies created through Hub activity. The former would have remained entirely inaccessible without the Hub's digitisation programme; the latter were created specifically as a heritage record. Both categories achieved secure custody through the NYCRO deposit, but the oral histories, captured in preservation-grade .wav format with OHS-compliant metadata, represent the stronger archival outcome, as the provenance and consent documentation are complete. The digitised community photographs, captured at variable DPI in .jpeg format, are accessible but fall short of best-practice archival standards.

5.3. Augmented Reality Heritage Trail

The Augmented Reality (hereafter AR) Heritage Trail project was launched to provide an "exciting" and informative method of disseminating the hidden heritage of the area (North Yorkshire Council 2024a; Hambleton District Council, n.d.a, p. 11). The project aimed to increase footfall and flow to the High Street as part of a "sustainable" trail (*ibid*, pp. 1 & 8), while "reignit[ing] enthusiasm for the history of the town" among a diverse audience (*ibid*, p. 25). Following the initial stage, it was expanded to include research and public engagement, developing into "more than just an app, but... a meaningful and tangible research project" (North Yorkshire Council 2024a). The trail comprised 25 sites, including ginnels, Northallerton prison, the Bishop's Palace, and coaching inns at Tickle Toby Yard and the Golden Lion (Clarey, 9 September 2022, pers. comms.). "Fun trails and elements" were incorporated to entertain children, while the content remained intellectually engaging for adults (North Yorkshire Council 2024c; Wright, 23 March 2023, pers. comms.). The project also included the physical refurbishment of the ginnels; as the data created during this restoration was managed in the same way as the built heritage strand, analysis of these datasets is discussed here (5.4). The app allowed local businesses to advertise, increasing local tourism and expenditure, and expanded dwell time with the average session lasting 135 minutes (North Yorkshire Council 2024a; c). As Wright expressed, one of the project's greatest successes was

providing "access to otherwise hidden histories" and opportunities for "heritage and cultural preservation for future generations" (18 November 2025, pers. comms.).

Overall, the project was successful with 62 minutes average use time (with estimated increased dwell time of 135 minutes) and 2,000 people accessing it (as of 18 November 2025), leading to additional trails being added (and a rebranding to 'Discover North Yorkshire' - Wright, 18 November 2025, pers. comms.).

5.3.1. Data

Data reuse

Table 8, the data collated and shared in the AR Heritage Trail strand (YA = York Archaeology).

Data type	Source	Sourced by	Shared with	File format
Photographs	Heritage Hub	Heritage360	-	.jpeg
	Alamy	Heritage360	-	Various
	Northallerton and District Local History Society	YA	Heritage360	.jpeg
LiDAR	Digimap	Heritage360	-	.asc
Maps	Digimap	Heritage360	-	.tiff
	NYCRO	YA	Heritage360	Physical Shared as .jpeg and .tiff
Sanitation document	York Minster Library	YA	Heritage360	.pdf
Community reports	Northallerton and District Local History Society	YA	Heritage360	.pdf
Archaeological investigations	YA	YA	Heritage360	word documents, models
Newspaper	Local archives	YA	Heritage360	Physical, .jpeg
Postcards	Local archives	YA	Heritage360	Physical, .jpeg
Architectural plans	Local archives	YA	Heritage360	Physical, .jpeg
Historic Environment Watching Brief	YA	YA	Heritage360	.pdf

Data created

Table 9, the data created in the AR Heritage Trail Strand.

Data	Producer	Output	File format	End location	Legacy
AR APP	PEEL X	Application	.xml, .json and .AssetBundles	App stores	until 2027
Oral History	YA	Transcripts & recordings	.mp3	Locally stored/ Google Drive	None
			.mp3	Locally stored/ Google Drive	None
Soundscape	Heritage360	Soundtracks	.mp3	Locally stored/ Google Drive	None
	PEEL X	Audio for AR trail	Mp4 and .h264	Locally stored/ Google Drive	None
Photographs	Heritage360	Photographs	.jpg	Locally stored/ Google Drive	None
	PEEL X	Images for AR trail	.jpg and .png (when transparency needed)	Locally stored/ Google Drive	None
AR models	PEEL X	AR model	.fbx	Locally stored/ Google Drive	None
3D models	Heritage360	Geometry	.obj	Deposited	Deposited
		Material	.mtl	Locally stored/ Google Drive	None
		2D&3D Vector Graphics	.dwg	Locally stored/ Google Drive	None

Data	Producer	Output	File format	End location	Legacy
		3D Vector Graphics	.3ds	Locally stored/ Google Drive	None
		images, textures, and 3D models	.dae	Locally stored/ Google Drive	None
		ASCII	.fbx	Locally stored/ Google Drive	None
		3D object geometry	.m3d	Locally stored/ Google Drive	None

5.3.2. Data Reused

Throughout the AR Heritage Trail, a range of datasets (see Table 8) were collected from various locations, including projects within (i.e., the Heritage Hub - of which data sharing is explored here 5.2.5) and external to the Northallerton HSHAZ. The use of material from within the project argues the need for effective data sharing within constituent parts of an initiative, as well as providing an opportunity to see the barriers to sharing in a decentralised project. This section summarises the associated potential and challenges of sharing and reusing datasets, providing an understanding of data reuse's challenges within the Northallerton HSHAZ and the Heritage sector in general.

Costs and copyright

One issue relating to data reuse is that high licensing costs significantly impede the reuse of some datasets, particularly historical images. As Gibbs observes:

“Issues [of] copyright and money involved ... [they’ll] be held by Alamy or Getty...and it’s expensive.” (Heritage360, pers. comms. 21 November 2022)

Although Alamy offers an extensive repository of images and videos, its pay-per-image model and restrictive licensing terms make it cost-prohibitive for budget-constrained projects, such as the Northallerton HSHAZ, thereby limiting the scale and scope of data reuse.

To overcome these challenges, initiatives such as the HSHAZ have an important role in increasing the amount of material able to be reused to reduce their project costs. By reducing the demand for platforms such as Alamy, stakeholders can negotiate more accessible licensing agreements for datasets, increasing the accountability of archives and reducing the monopoly effect. For example, if the North Yorkshire

County Record Office (NYCRO) had more digitised photographs, researchers would go to NYCRO as it is free, reducing the demand for commercial alternatives.

Licensing

Licensing constraints also limit access to critical datasets like Light Detection and Ranging (hereafter LiDAR) and maps from Digimap. Although Digimap offers extensive resources, its non-commercial, education-only licence hinders broader reuse. Nevertheless, such data are vital for heritage projects, illustrated by figure 50, which reveals the Golden Lion pub's structure, and was only accessible here (Gibbs (Heritage360), pers. comms. 21 November 2022). Greater accessibility would enhance public engagement and community involvement in these initiatives. If there were freely accessible open-access datasets that were signposted, it would streamline the resource-gathering stage of initiatives. This would save time, money and effort, which could be directed to other aspects of the initiative.



Figure 50, a screenshot of the Golden Lion Pub location and interior walls from Digimap (Ordnance Survey 2025).

Reliability

A further challenge derived from inaccessible datasets is using alternative, less reliable datasets. Heritage360 identified concerns with the reliability of a community report generated using map dowsing. This approach involves holding a pendulum over areas of a map to locate missing persons or concealed archaeological artefacts. 'ask[ing]' whether the ... object is to be found there...to locate missing persons or concealed archeological artefacts" (Jenkins 2017). "It cannot be reliable" (Gibbs (Heritage360), pers. comms. 21 November 2022). It is a controversial approach to understanding the history of an area as it lacks support from other sources and relies on the dowser's intangible feelings. As such, ensuring access to datasets derived from heritage research through the HSHAZ can also increase the reliability of information used in public outreach.

5.3.3. Data Sharing

Another significant aspect of understanding current data practices within community engagement strategies is the way in which data is shared. Within Northallerton, there were substantial collaborations and data sharing. The comment: "We are different organisations working in different ways, gathering different amounts of information, styles of information, in different ways", clearly shows the diversity of practices of the individuals involved (Arrowsmith, 20 January 2023, pers. comms.). The comment also alludes to the collaboration of data between the organisations. Clear examples of collaboration include Heritage Hub and the AR stakeholders, between AR stakeholders (i.e., YA, Heritage360 and Peel X), and dissemination to the community. Wright identified "working in collaboration with multiple stakeholders" and "community engagement and reach" as the project's greatest successes, reinforcing the effectiveness of the collaborative approach adopted throughout the programme (Wright, 18 November 2025, pers. comms.).

The data-sharing method was Google Drive. Heritage360 established a Google Drive to share datasets, offering all stakeholders direct access to most data used within the HSHAZ (Gibbs (Heritage360), pers. comms. 21 November 2022). Google Drive offers several advantages for internal document exchange and sharing between stakeholders. Nonetheless, Heritage360 initiated the suggestion of the Google Drive sharing approach after the project started. This delay in data sharing could have limited the ability to share data before the folder set-up and suggest a lack of consideration of how to share datasets. Further issues arose from creating two Google Drive folders at one project stage, leading to confusion and potential data loss (Arrowsmith, 2 September 2022, pers. comms.). This challenge in data sharing illustrates a potential missed opportunity for HE and DCMS to champion data best practices by stipulating approaches that encourage the sharing of data with internal and external stakeholders. The lack of guidance shows that information sharing was not fully considered, and solutions were only found when necessary, indicating the challenges of decentralised data management within multi-authority heritage initiatives.

The HSHAZ also had the potential to increase the quantity of material accessible to the public through the digitisation of materials. Within the Northallerton HSHAZ, YA digitised physical cartographic data, such as historic maps sourced from the NYCRO, to make them more accessible for the other stakeholders (Chris Tuckley, 6 September 2022, pers. comms. - Fig. 51).

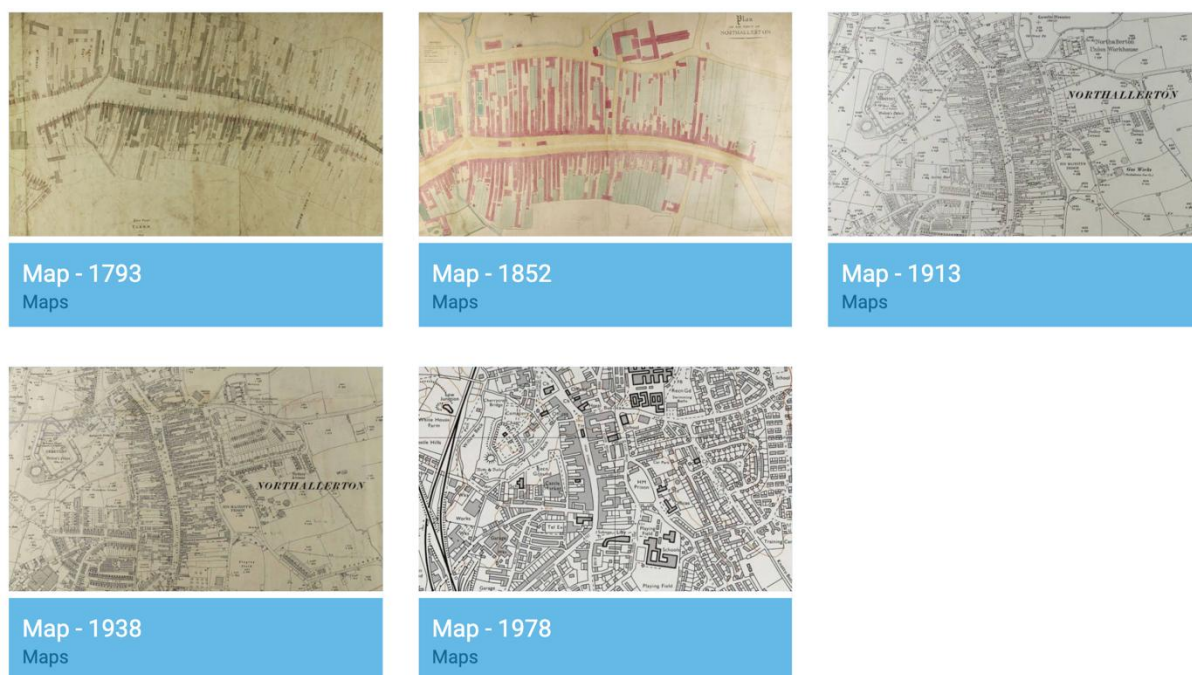


Figure 51, a screenshot of the maps stored on the Heritage Hub Website (Northallerton Heritage Hub, n.d.).

Given the challenges raised in reusing materials within the AR heritage trail, if the digitisation of the material was to a good standard, they could have been shared with the NYCRO, fostering further dissemination of the materials. Nonetheless, the quality of the scans was limited (Fig. 52). The quality of the scan illustrates the missed opportunity of the HSHAZ to increase the quantity of material for community use through encouraging digitisation programmes (which could have assisted social prescribing see Kirkham 6.2). If one of the KPIs created at the beginning of the initiative included aspects of increasing heritage data dataset accessibility with targeted metrics for the encouragement of this aim, these resources created in the AR Heritage Trail may have been made accessible to other reusers of the datasets. As such, future initiatives need to consider heritage data capacity building, alongside inventive use of the materials.



Figure 52, a digitised image of a 1913 map from the County Record Office (Northallerton Heritage Hub, n.d.).

A further challenge raised here is the potential for data degradation over time (Fig. 53), where a longer delay between creation and sharing/archiving leads to loss of information. This issue is exacerbated when considering the short-term nature of initiatives such as the HSHAZ, where individual stakeholders will only work on the project and the data associated during the project's timespan. Stakeholders will then progress to a new project, meaning that time for the work to be in the "mental storage" stage is reduced, resulting in some information being lost as they have new priorities. These trends are expanded further with the turnover of Project Officers within the initiative (Amion 2025b). It would be recommended that data created within projects be shared/deposited whilst the project develops to reduce the loss of information, especially in instances of staff turnover (see 9.4.3). The frequency and technique with which data is shared should be stipulated at the beginning of the project to set expectations for both the data creator and overarching stakeholders.

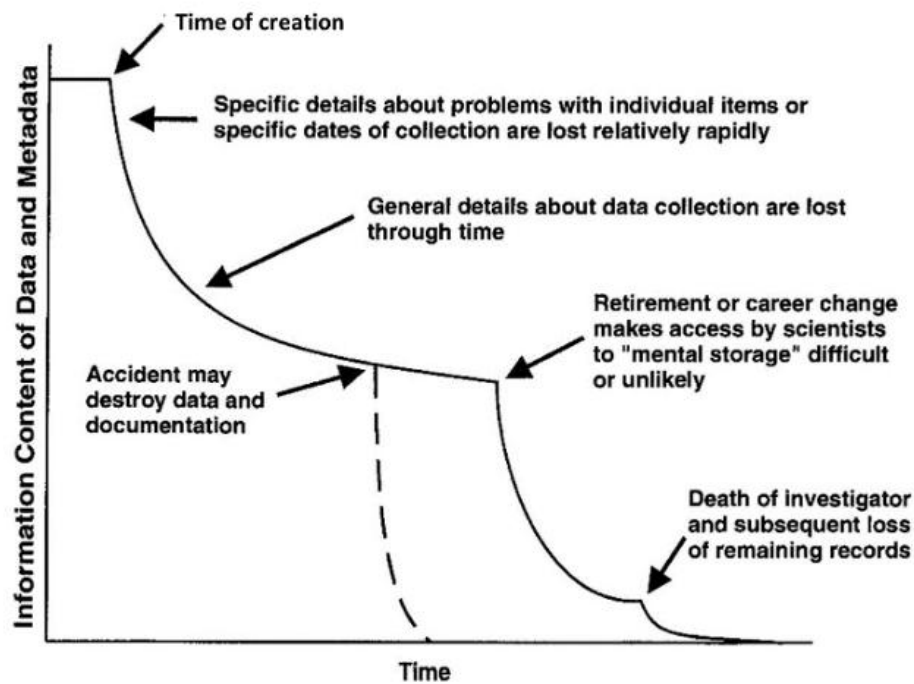


Figure 53, the loss of information through time (adapted from Michener et al.,1997).

5.3.4. Data Legacy

Digital assets and projects such as AR Heritage Trails have varied legacies due to the complexity of the datasets contained within them. In some ways, the AR Heritage Trail has a legacy. Applying the criteria set out in section 3.7.4, however, that legacy is partial rather than secure. The app is funded until 2027 but has no confirmed preservation pathway beyond that date, the 3D geometry was deposited but the full models were not, and the soundscape and oral history recordings remain on Google Drive without institutional custodianship. The existence of the app is not itself a governance finding; the absence of deposit arrangements for the underlying assets is, reflecting decisions made during project design rather than limitations of this research's access. Furthermore, the platform and design of the app impacts the legacy of the project. Within the Northallerton HSHAZ, HDC initially wanted native apps to host the AR Heritage Trail (Hambleton District Council, n.d.a, p. 11). However, from experience, Heritage360 encouraged the use of web applications due to their numerous advantages (Gibbs and Osborn (Heritage360), pers. comms.

16 December 2022), such as greater stability (leading to increased legacy of datasets), reduced update requirements and easier maintenance. The communication and alteration of the practices suggest differing experiences and knowledge of managing highly specialised datasets. This localised knowledge illustrates the potential of using decentralised data management governance, as it is likely that Heritage360 has more experience in AR than the centralised HSHAZ team. Given the decentralised approach, Heritage360 could use its knowledge and experience to advocate how best to provide the datasets to provide a lasting legacy; as such, it shows how local knowledge can be applied to increase the legacy of datasets. Nonetheless, it also shows the importance of enabling communication between initiatives, where Heritage360's knowledge in enhancing AR Heritage application legacy could have been shared to other HSHAZ locations providing the opportunity for widespread data legacies.

Beyond preservation, the AR Heritage Trail also raises productive questions about creative reuse and the compounding of benefits over time. The trail's web application format, chosen partly for its greater stability and lower maintenance burden, also makes it more readily extensible than a native app would have been. This extensibility opens possibilities that the original project scope did not anticipate. Seasonal overlays, for instance, could allow the trail to be refreshed for Halloween with content drawing on the town's prison history and the folklore of the ginnels, or for Christmas with material from the Heritage Hub's digitised collections relating to historic market trading and coaching inn culture. Such seasonal iterations would not require rebuilding the underlying platform but would draw on the datasets already created and archived through the Heritage Hub and AR Trail strands, demonstrating precisely the kind of data reuse that HIAS advocates and that the Northallerton project was well positioned to enable. The compounding effect is significant: each reuse of the existing dataset extends the trail's public reach, reinforces community engagement with local heritage, and generates new reasons to visit the high street without requiring equivalent new investment. This model of

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iterative, seasonally refreshed digital heritage engagement would maintain footfall benefits beyond the initial novelty of the trail, address the challenge of sustaining impact after funding ends, and provide a practical demonstration that well-governed heritage data, made accessible and licensed for reuse, generates returns that single-use project outputs cannot. The Northallerton experience suggests that future AR heritage projects would benefit from designing for reuse from the outset, specifying data formats, licensing arrangements, and platform architectures that make creative extension straightforward rather than requiring new commissioning cycles each time the content is refreshed.

Nonetheless, some guidelines, guidance and data archiving funding would have been beneficial. HE has expertise in 3D scanning and modelling and has developed guidelines for best practice (Historic England 2018a), and as such, their knowledge could have led to baseline requirements for data archiving. For example, in the Northallerton's HSHAZ, Heritage360 opted to deposit only the geometry of the 3D models rather than the complete models, a decision driven by cost and practical constraints, suggesting a wider failure to recognise these outputs from the outset and to plan accordingly (Jeffrey 2012; Gibbs and Osborn (Heritage360), pers. comms. 16 December 2022). Conversely, PEEL X provided all materials to North Yorkshire Council due to their company policies encouraging all derived datasets to be provided to the project funder. Consequently, there are discrepancies in the data management procedures that could result in missing heritage information, as omitting full texture and rendering details can hinder the accurate understanding of historical contexts. For example, critical historical interpretations, such as the observation that "carrots were purple in the Medieval Period" (Tuckley, 6 September 2022, pers. comms.; Wright, 23 March 2023, pers. comms.), highlight the importance of detailed visual information for scholarly analysis.

Beyond the immediate challenges of data archiving infrastructure, there are broader questions about the long-term ownership and accessibility of datasets created

through collaborative heritage programmes. While Google Drive provided a practical solution for stakeholder collaboration during the Northallerton project, reliance on commercial platforms raises questions about ongoing access rights, particularly for community contributors and future researchers. The Google Drive folder structure was effective for internal project management, but its visibility to external researchers and community members beyond the project team remained limited. This highlights a tension inherent in many heritage initiatives: the need for accessible platforms that facilitate collaboration during active project phases must be balanced against requirements for long-term public accessibility and clear ownership frameworks that extend beyond project timescales. Without guidance addressing these considerations, datasets risk becoming siloed within project-specific platforms, limiting their potential for wider reuse and undermining the broader goal of creating publicly accessible heritage knowledge. These issues of data governance, determining who holds custodianship, who can access datasets, and how visibility can be maintained beyond project completion, represent critical considerations for heritage programmes seeking to create sustainable data legacies.

Drawing on the Northallerton case study, several critical considerations emerge for heritage data guidance that extend beyond existing best practice documentation:

The Northallerton project's experience with 3D documentation revealed how generic industry standards from HE, the DPC, and the ADS must be adapted to accommodate the realities of multi-stakeholder heritage programmes. While these bodies provide essential baseline requirements - metadata standards, processing levels, file formats, and repository recommendations - the project illustrated specific challenges in applying these standards within community-engaged contexts.

The project's handling of 3D models demonstrated that comprehensive metadata and paradata requirements take on particular significance in collaborative environments. HE (2018) emphasises that information on data processing is crucial for enabling reuse, but the Northallerton experience showed that paradata must

capture not only technical processing steps but also the decision-making contexts and stakeholder contributions that shaped data collection. When 3D models were created by multiple parties (commercial contractors, local authority staff, and community volunteers), the absence of consistent paradata documentation about who captured what, using which methods, and for which purposes created barriers to understanding data provenance and assessing fitness for reuse.

The question of processing levels proved more nuanced than existing guidance addresses. While raw data theoretically offers maximum flexibility for end users and fully processed models provide ready-to-use outputs (Katsianis *et al.* 2021; Cohen *et al.* 2023), the Northallerton project revealed practical tensions: community stakeholders often lacked the technical capacity to work with raw point cloud data, yet researchers required access to unprocessed datasets for analysis. This suggested that a dual approach offering both raw and processed datasets, while ideal, requires clear communication about which version serves which user community and careful consideration of storage and sustainability implications when both versions must be maintained long-term.

File format standardisation revealed similar implementation challenges. Open formats (.obj for 3D models, .e57 for laser scans, .jpg for textures) are widely endorsed by HE (2018) and the ADS (2023), but the project showed that proprietary formats often offered advantages for specific stakeholder workflows. The guidance gap lies not in identifying preferred formats but in providing decision-making frameworks for when deviation from standards is justifiable and how to document those decisions.

Perhaps most significantly, the Northallerton experience highlighted the repository challenge that existing guidance does not adequately address for community-engaged projects. While platforms such as Sketchfab offered cost-effective temporary access to processed models for public engagement, questions arose about long-term preservation responsibility. Wright (PEELX) noted the need for "a

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permanent, centralised repository for heritage data" particularly for Listed Buildings (23 March 2023, pers. comms.), yet the project revealed uncertainty about which institution should serve this function for datasets co-created by multiple stakeholders with varying expectations about access rights and custodianship. The ADS provides archiving for research outputs, but community contributions that don't fit traditional research frameworks may fall outside its remit.

These insights from Northallerton demonstrate that guidance for community-engaged heritage projects requires more than signposting to existing best practice standards. It must address how to implement these standards within collaborative governance structures, how to balance competing stakeholder needs around data processing and accessibility, and crucially, how to establish clear long-term custodianship arrangements that recognise community contributions while ensuring professional preservation standards.

5.3.5. Synthesis: AR Heritage Trail

The AR Heritage Trail strand illustrates a structural tension that recurs across the HSHAZ programme: the gap between the sophistication of data creation and the adequacy of data preservation. The trail drew on a rich and diverse set of pre-existing datasets, LiDAR from Digimap, historic maps from NYCRO, photographs from local history societies, and archaeological investigation reports from York Archaeology, all of which were assembled into a shared Google Drive during delivery. The 3D models and AR assets created through the project represent technically advanced heritage outputs. Yet the long-term custody of these assets is weak: the majority remain on project drives without institutional deposit, the 3D model geometry alone was deposited (without textures or full model files), and the app's viability beyond 2027 is unconfirmed.

The contrast with the Heritage Hub is instructive. Both strands drew on community and archival sources; both produced new digital assets. The Heritage Hub's legacy

is more secure not because the assets are more valuable but because custodianship was planned before creation. The AR Trail's legacy is partial because custodianship was addressed only partially, and after the fact.

5.4. Built Heritage

The built heritage strand focused on shopfront restoration and ginnel refurbishment, enhancing the town's historic character (North Yorkshire Council 2025a; d). The project resulted in the restoration of five shopfronts, creation of four residential units, 225m² of public space improvements, and the reoccupation of 112m² of previously vacant commercial floor space (*ibid*). Each intervention required detailed planning applications, following NPPF guidance and to meet HE's Conservation credentials, generating diverse datasets including design and access statements, architectural plans, and a shopfront improvement scheme (North Yorkshire Council 2025d).

5.4.1. Key Projects

Shop Front Improvement Scheme

This scheme aimed to restore historic shopfronts, ensuring designs were sympathetic to Northallerton's Conservation Area Design Guide (2010) as well as the creation of a shopfront improvement scheme (North Yorkshire Council 2025d – Figs. 54 and 55). £200,000 in grants supported property owners in reinstating traditional materials, appropriate colour schemes, and period-accurate signage which constituted up to 75% of the cost of the works (North Yorkshire Council 2025a). The project generated heritage assessments, planning records, and photographic documentation, providing a reference for future conservation work.



Historic England

Hi!

Hi! NORTHALLERTON SHOP FRONTS IMPROVEMENT SCHEME



Business owners along Northallerton's historic high street are being encouraged to improve their shop fronts with grant funding from Historic England, Hambleton District Council and Northallerton BID.

Northallerton is one of 69 towns across the UK to be selected as a High Street Heritage Action Zone (HSHAZ) by Historic England.

The shop front improvement scheme is one of the key initiatives of this work offering grants for eligible businesses.

The grants available can be up to 75% of total project costs, with a maximum grant of £25,000.



Shops in Bedale before reinstatement



Shops in Bedale after the newly reinstated shop front

TO APPLY: www.hambleton.gov.uk/shopfrontimprovements

Figures 54, frontside of a leaflet for the Shop Front Improvement Scheme (credit North Yorkshire Council).

WHAT CAN THE GRANT BE USED FOR?

The grants are available to repair the fabric of the front of your building/s.

WHAT WORK IS ELIGIBLE?

The design and materials should be informed by the vernacular of the historical townscape, and architectural period/vernacular of the property.

This could include:

- Window replacement
- Facades
- Signage

WHO CAN APPLY?

You must own or lease the property. If you lease the property, it must have at least 3 years still to run.

If you don't own or lease the property, the application must be made jointly with the owner or leaseholder. A lease with a break clause in it will not be acceptable.

You may be one of a cluster of properties that could benefit from some improvements.

We can help you work with your business neighbours and landlords to take this forward.

Buildings of historical and townscape value will be prioritised.

You may need to work with a conservation accredited architect or surveyor and some improvements may be subject to planning or listed building consent.



Shops in Derby before reinstatement



Shops in Derby after the newly reinstated shop front



Historic England



Figures 55, backside of a leaflet for the Shop Front Improvement Scheme (credit North Yorkshire Council).

Ginnels and Yards Refurbishment

Northallerton's ginnels (historic passageways linking the high street to surrounding areas) were restored and enhanced to improve accessibility and reinforce their heritage significance (North Yorkshire Council 2025a). Work included new paving, lighting, refurbished fascias, and heritage signage, led by Gillespies with tendered out contractors. Etched stone entranceways highlighted their historic value.

Whilst not a HSHAZ initiative, the Living Over the Shop (LOTS) Feasibility Study, funded through the Future High Streets Fund (hereafter FHSF), overlaps significantly with the HSHAZ built heritage projects, temporally, geographically and dataset wise. This study examined the adaptive reuse of vacant upper floors for residential purposes. £37,600 was allocated for assessing eight properties, with surveyors and architects evaluating structural integrity, financial viability, and regulatory constraints (*ibid*). The study encouraged investment in heritage housing, addressing housing shortages and high street decline.

Data and the Built Heritage Strand

The built heritage strand of the Northallerton HSHAZ generated a wide range of datasets (Table 10). These data records provide insight into best practices for heritage regeneration, ensuring future projects can effectively balance preservation with modern adaptation.

The data gathered for this research is contained within Appendix D.

5.4.2. Data

Table 10, data involved in Northallerton's built heritage strand.

Input/output	Frequency	Data	Process	File format
Input	6	Historic photographs	Used to illustrate the shop front as part of the planning application	.pdf
Input	23	Historic maps	Includes map regression analysis to assess heritage value	.pdf
Input	32	Listings data	Provides context for the heritage value of the site	.pdf
Input	21	Aerial photograph	Provides context, often for site location or aesthetic evaluation	.pdf
Input	29	Other applications	Demonstrates the impact of previous or concurrent applications	.pdf
Output	90	Photos	Figure used to show the condition prior to any works	.pdf
Output	121	Text – inc. heritage statements, archaeological reports, and appraisals	Written reports compiled to inform the application process	.pdf
Output	61	Plans – existing	Figure used to illustrate changes before and after works	.pdf
	70	Plans - proposed		
Output	78	Elevations – existing	Figure used to indicate what existed prior to and following development	.pdf
	82	Elevations - proposed		
Output	113	Map	Used to confirm the precise location of the site	.pdf
Output	121	Planning application metadata	Supports the planning process and review system	.pdf

5.4.3. Data Reused

Listings and Statutory Designations

Listings datasets appeared in 26% of the planning applications relating to Northallerton's High Street between 2000-2024, exclusively within heritage statements. Their presence demonstrates the foundational role of statutory designations in heritage-led planning decisions, suggesting that HE's previous research is used for modern conservation efforts, supporting Baker and Chitty (2002, p.4). The presence of listings in multiple applications underscores the importance of curated, publicly accessible research datasets and the fact that open heritage data strengthens connections between national listings and local conservation strategies.

However, this relatively modest usage rate (just over a quarter) raises questions about compliance with NPPF requirements for thorough heritage assessment (MHCLG 2024). The issue derives from undesignated heritage assets with no listings, yet they contribute to the wider historic character of the Northallerton High Street. As Pendlebury (2012) notes, the mere inclusion of listing data without critical engagement represents a procedural rather than substantive approach to heritage consideration. Authentic heritage data integration requires moving beyond "copy-and-paste compliance", towards meaningful engagement with the values and significance embedded in these designations. The format in which listing data appears is typically "copy-and-paste" rather than being referred to and used within the applications. As such, within Northallerton, the data reuse could be characterised as a testimonial approach to heritage evidence - stating heritage significance without understanding its contextual nature or embedding these historic characters into plans. This led to official designations being invoked to legitimise arguments rather than being critically analysed (Waterton and Smith 2010).

Previous Planning Applications

Datasets concerning other planning applications were incorporated into 24% (29 of 121) of the heritage statements. Given the level of overlap between applications, the modest level of reuse suggests challenges in reusing datasets within the planning portal, possibly caused by the siloed nature of planning documentation, where previous applications exist in isolation rather than as an interconnected evidential corpus. The limited engagement with prior application content, focusing on metadata rather than substantive findings, further reflects the challenges shown with the Listings datasets, and a potential for limited contextualisation of the data's use (May 2020). The value of planning application dataset reuse derives from the potential to demonstrate incremental change that might otherwise go undetected. The need to see the incremental change is a requirement of the NPPF, and as such, it illustrates the need to encourage dataset reuse within the planning process. This is particularly relevant in conservation areas like Northallerton's High Street (Pendlebury and Strange 2011). The limited nature of application reuse also suggests that some data creators (particularly repeat applicants or established consultancies) retain control of the original datasets, rather than sharing them with external stakeholders, and that data sharing is not commonplace within the built heritage sector.

Historic Maps and Visual Sources

Historic map datasets appeared in 19% (23 of 121) of applications. Historic Maps are advocated within HE's guidance of Heritage Significance (2015) to illustrate map regression and historic character landscape around the site. As such, whilst valuable in informing planning consent, their inclusion is limited to those applications which require heritage access statements.

Conversely, the minimal use of historic photographs (5% (6 of 121) represents a missed opportunity and absence which could have further informed the planning

decision process. Historic photographs provide irreplaceable evidence of past appearance and character that textual descriptions cannot capture. The low usage of historic photographs can be attributed to multiple causes such as the lack of easily consumable historic datasets, the need to expedite the process for planning application creation, or the lack of awareness of these materials. Nonetheless, this underrepresentation could also be argued to be a gap within the heritage record, and as such, would be recommended to be encouraged further in future initiatives.

Modern aerial photography featured in 17% (21 of 121) of applications and was used to show the landscape and context of the site. The disparities between different visual data types raise important questions about how heritage datasets are valued and how these patterns reflect broader evidence hierarchies. The current trend of use of modern photography rather than historic photographs might suggest that the historic value of the heritage asset is of less importance than the need to meet current demands, or the lack of availability as raised above. The extent to which these impacts newly created datasets need to be examined.

5.4.4. Data Created

File formats

When considering data management, it is important to consider file formats. To foster reusability, datasets must be in file formats that are “open, international [and] standardised” (Wright and Richards 2020, p. 7). There are numerous guidelines on file formats, but general best practices to follow are the DPC’s Handbook (2025), the ADS’ Help and Guidance (2025), or more specialised ones such as HE’s Guidance and Advice (2025).

Throughout the Northallerton Scheme, .pdfs were the most frequently used file format (Table 11). Consequently, the impact of the use of .pdfs will be evaluated to see its long-term impact on data reusability. Planning applications exacerbate this

issue as they were universally submitted in .pdf format (100%), which creates a significant challenge for digital heritage.

Table 11, the different file types found in the Northallerton HSHAZ.

Stakeholders who found useful information in different data types(n=9)		
File format	Count	Percentage
.pdf	7	77.78%
.jpeg	6	66.67%
Word document (e.g., .doc/.docx)	4	44.44%
.png	2	22.22%
.tiff	1	11.11%
Excel (e.g., .xlsx)	1	11.11%
Other?	2	22.22%

PDFs are widely used to present information in a structured manner, making them a practical format for sharing and disseminating information. When shared through the planning portal or community heritage platforms (e.g., Northallerton and District Local History Society use of Dropbox (Sanders, 9 November 2022, pers. comms.)), PDFs are lightweight, universally operable and have consistent layouts ensuring that information is conveyed clearly, making PDFs excellent for data dissemination.

Whilst discussing PDFs, it is important to distinguish between the different types of PDF. Among archival formats, PDF/A variants merit attention. PDF/A-1b, the format used within planning portal submissions across the three case studies, was designed for long-term archival preservation, but in practice these were produced as rasterised, non-searchable outputs with compressed imagery and corrupted metadata (see 5.4.4, 6.4.3, 7.3.3). The more recent PDF/A-3 standard permits embedding of machine-readable source files within the PDF container, which in principle could allow a planning submission to carry an embedded CAD file, shapefile, or structured dataset alongside its human-readable representation, addressing precisely the tension between accessibility and analytical reusability identified throughout the built heritage strands (International Organization for Standardization 2012; Dappert *et al.* 2014). Another variation, PDF/E, was designed specifically for engineering and technical documentation including architectural

drawings, similarly offers richer support for vector geometry and interactive features than standard PDF (International Organization for Standardization 2008; Library of Congress, n.d.).

As such, although there are other formats of PDFs which could enable greater reuse potential of datasets, the format in which they were presented severely limits computational analysis and data reuse. Textual documents must be read individually to determine their usefulness, which can be time-consuming and inefficient, leading to project delays (although they are effective in presenting varied outcomes and outputs within a single source). Furthermore, the use of this PDF format reduces the discoverability of datasets, especially when not deposited alongside effective metadata and open formats. This creates a digital accessibility paradox in which content appears accessible but cannot be effectively analysed or repurposed without extensive extraction. The limitation of PDFs comes from the embedding of diverse data types within formats in which it was not designed. As such, many PDF documents contain fully processed data, in the format of thumbnails which are inaccessible otherwise, including raw data.

This practice contrasts sharply with emerging digital heritage data management standards, such as the FAIR data principles, which encourage machine-readable formats and semantic interoperability (Wilkinson 2016). This discrepancy between current practices and theoretical frameworks illustrates an interesting aspect which is investigated within the discussion 9.5. The reliance on PDFs creates tension between democratic access and analytical potential, where information cannot be easily extracted or combined with other datasets to reveal new patterns across multiple applications (Huggett 2018). Funding bodies should consider developing dual-format submission requirements: accessible PDFs for public consumption alongside structured data formats (.xml, .json, .csv) for analytical purposes and long-term preservation.

The challenges of PDFs are made clear within Northallerton Built Heritage planning applications, whilst they offer inalterability ensuring applicants and reviewers work with identical documents, unintended complications can occur. When materials are converted to PDF, quality degradation often occurs. Characters become corrupted, metadata gets lost, and images are compressed. In a paper by Suri and El-Saad (2018) the research found that in a batch conversion of 213 files to PDF/A-1b, 11 % showed “reproducibility errors”, such as unreadable characters, missing text, corrupted vector graphics, corrupted metadata (e.g., updated timestamps and file paths), and image issues, highlighting that information loss during PDF conversion is a widespread concern. For example, the document Photographsandphotomontages_included_in_Designandaccesstatement within the Northallerton Planning Portal the field “This document is covered in” (the location of image archive) is truncated through file conversion (see Figs. 56 and 57). This loss in information undermined the material’s evidential value and complicates any attempt to trace or verify the original datasets.

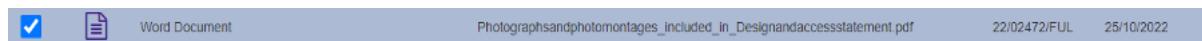


Figure 56, above, a .pdf file called a word document (Hodson 2022). Figure 57, below, the implications of the data format change (Hodson 2022).

Supporting Document Covered In Another Document

Proposal Number:	PP-11644744
Version Number:	1
Document Type:	Photographs and photomontages
This document is covered in:	Design and access statement - R22017 heritage statement-171f
Document Description:	

To address these issues, a system of PIDs could significantly improve the traceability, integrity, and long-term reuse of planning data. Assigning unique identifiers (such as Digital Object Identifiers (hereafter DOIs)) not only to the whole planning application but to each individual component record (e.g., individual

photographs, maps, heritage statements, or technical drawings) would enable more reliable retrieval, citation, and integration across research and policy platforms. This approach could be modelled on systems such as the Dewey Decimal Classification or the DOI infrastructure already used in archaeological repositories like the ADS, where datasets are treated as independent, citable research objects (Archaeology Data Service 2025).

However, implementing PIDs within community heritage initiatives must be considered within the broader DOI infrastructure framework. DOI creation requires registration with accredited agencies (such as DataCite or Crossref), which entails institutional membership and associated fees or subscriptions. This creates a barrier for decentralised, community-led projects that may lack the financial resources or institutional affiliations necessary to access DOI registries. Whilst repositories like the ADS provide DOI assignment for deposited datasets (Archaeology Data Service 2025), this model still requires projects to engage with centralised infrastructure. Alternative PID systems, such as Archival Resource Keys (ARKs) or Handle Systems, may offer more accessible pathways for smaller initiatives, though they lack the widespread recognition and interoperability of DOIs. This tension highlights a fundamental challenge: ensuring data permanence and citability for community heritage projects within a system designed primarily for institutional research outputs.

Other dataset quality issues became particularly evident when examining the Northallerton Planning Portal. In several instances, errors were introduced such as the inclusion of nonsensical characters (e.g., “mmm” see Fig. 58). These anomalies raise broader concerns about the reliability and integrity of planning documentation as a research and decision-making resource. Future heritage initiatives should implement quality control processes to verify that data integrity is maintained during format conversions, alongside general data quality checks of the materials deposited, particularly for materials with significant heritage value.



Figure 58, the blurriness and data loss when embedding photos in .pdf format in the Planning Portal, also raises questions of data quality due to the letters “mmm” before the photo (Hambleton District Council 2022).

Maps and Spatial Data Recommendations

Maps were included in 93% (113 of 121) of planning applications submitted through the Northallerton HSHAZ, reflecting their essential role in site identification and contextualisation. The high proportion of map use shows the significance of the location of the proposal to understanding and appraising applications. However, in the majority of cases, these maps were presented either embedded within reports or as standalone static PDFs, rather than in interactive or GIS-compatible formats. While this approach enables archiving and dissemination of the data, it limits functionality. Spatial analysis, particularly across multiple applications or within a conservation area, requires the manual translation of location data into the North Yorkshire Planning Portal or separate GIS platforms, limiting opportunities for spatially aware heritage management, where broader impacts could otherwise be

assessed. Furthermore, despite the geographic data being uploaded to the local council's GIS, there is not a standardised framework for integrating mapping data across multiple councils, leading to the siloing of spatial datasets. This lack of interoperability constrains cross-boundary analyses and weakens the potential for holistic planning strategies (an aspect expanded upon within the discussion 9.4.2).

Future initiatives should encourage the use of universal mapping software alongside traditional static maps to support integration with wider spatial data infrastructures. The continued use of embedded images of maps within planning processes reflects a persistent reliance on representational cartography, an approach that views maps primarily as neutral illustrations rather than analytical tools capable of revealing spatial dynamics (Del Casino and Hanna 2006). As a result, opportunities to interpret historic environments as complex, layered, and relational systems are often missed. This disjunction between current digital mapping capabilities and planning submission requirements illustrates a form of procedural inertia, where outdated technical standards are maintained despite technological advancements (Carlson and Anderson 2007). If planning authorities are to fully realise the potential of spatial heritage data, collaboration with heritage bodies is needed to modernise mapping requirements and align them with current geospatial standards and digital heritage practices (for example the MAGIC Map (Multi-Agency Geographic Information for the Countryside) provides an exemplar by integrating HE's heritage designations alongside environmental and planning constraints within a single GIS interface (DEFRA 2024). This system enables planning authorities to overlay listed buildings, scheduled monuments, and conservation areas with development proposals, though it operates under Open Government Licence which restricts commercial reuse). Furthermore, spatial heritage data presents complex legal and ethical challenges regarding copyright, ownership, and licensing. Ordnance Survey base mapping, for instance, operates under restrictive licensing that prohibits open redistribution, whilst heritage overlay data (such as HERs or listed building locations) may be subject to Crown Copyright or institutional data policies. Community-

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generated spatial data adds further complexity: establishing clear ownership and usage rights requires explicit agreements between volunteers, project organisers, and data repositories before collection begins. Adopting open licences, such as Creative Commons or Open Data Commons, can facilitate reuse whilst protecting contributor rights, but requires careful consideration of which licence types are appropriate for heritage data containing sensitive site locations or personal information. These legal frameworks must be navigated alongside technical modernisation to ensure spatial heritage datasets are both legally compliant and genuinely accessible.

Visual Documentation Recommendations

Photographs were included in 74% (90 of 121) of the planning applications reviewed, underscoring their importance in documenting the current state of heritage assets. However, these images were predominantly embedded within larger .pdf documents, such as heritage statements or design and access statements, rather than submitted as standalone files accompanied by comprehensive metadata (an aspect expanded further within Kirkham - see 9.5.4). This practice often results in diminished image quality and the loss of critical contextual information, thereby limiting their utility for future conservation efforts and historical research. To enhance the evidential value of photographic documentation, it is recommended that future heritage initiatives establish clear guidelines mandating the submission of high-resolution images as separate files, complete with standardised metadata detailing location and date. Adopting such standards would align with best practices in heritage documentation, ensuring that photographs serve as reliable visual testimony of conditions at specific moments, thereby supporting immediate decision-making and long-term conservation planning. By implementing these recommendations, planning authorities and heritage bodies can significantly improve the quality and utility of photographic documentation, ensuring that it

serves as a robust component of the archival record and a valuable resource for future generations.

Changing photographic documentation practice requires intervention at multiple levels. At the policy level, national heritage bodies such as HE could mandate minimum standards for image submission within planning guidance, specifying file formats (e.g., .tiff or high-resolution .jpeg), minimum resolution thresholds (e.g., 300 dpi), and required metadata fields (location coordinates, date, photographer attribution, copyright status). Implementing mandatory standards across England would require collaboration between HE, local planning authorities, and professional organisations such as ClfA to embed requirements within validation checklists for planning applications. Without such systemic change, photographic documentation will continue to vary in quality and usability, undermining its long-term research and evidential value.

Text and metadata

All planning applications examined contain a wealth of textual information and structured metadata, much of which holds significant value for planning analysis, policy development and heritage research. Heritage statements, in particular, often include detailed historical research, contextual analysis, and assessments of significance, content that could be of use well beyond the confines of a single application. As illustrated in the HE case study, heritage research such as those created for the NHLE could benefit from the sharing of datasets between commercial practitioners and heritage bodies, as they produce similar datasets (detailed reports and heritage access statements) through heritage research corresponding to the same building. Nonetheless, due to the current challenges in copyright, ownership and governance, the reuse of such material is currently highly restricted. In most cases, the content is locked within .pdfs, and any heritage research is typically produced by (and for) individual consultancies, limiting access and broader reuse.

This underutilised dataset represents a missed opportunity. If made accessible in a structured, machine-readable format, the information could contribute to large-scale analyses of heritage impact, development trends in conservation areas, or regional disparities in planning outcomes. Much of the required information is already freely available, for instance, reference numbers (e.g., Planning Portal Reference, Application Reference), alongside consistent fields such as application type, ward, conservation area status, and agent details, presenting a ready-made metadata schema (see Table 12). As such, if LOD frameworks were established, the datasets could be harnessed to link applications across time and space, building a more coherent and searchable planning archive.

Table 12, metadata schema of North Yorkshire’s Planning Portal.

Reference numbers	Application Details	Status of application
Application Reference	Description Keyword	Decision
Planning Portal Reference	Applicant Name	Appeal Status
Alternative Reference	Application Type	Appeal Decision
	Ward	Development Type
	Parish	Address
	Conservation Area	Dates
	Agent	

Proposed and existing plans and elevations

A consistent pattern emerged across the Northallerton HSHAZ planning applications: documentation related to proposed changes is more frequently and thoroughly provided than documentation of existing conditions. This trend was evident in the treatment of elevation drawings and internal plans. Proposed elevations were included in 68% (82 of 121) of applications, while existing elevations appeared in only 64% (78 of 121). Capturing an ‘as is’ record is not a requirement of non-listed planning permission processes, yet it offers an opportunity to illustrate the impact on the heritage significance and ensures the built heritage information is

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not lost through works on the built fabric. The gap was even more pronounced for internal plans with 58% (70 of 121) of applications included proposed plans, whereas only 50% (61 of 121) included existing ones. Though these percentages may appear close, they reflect a planning culture more invested in articulating future developments than capturing an 'as is' record before change occurs of non-designated heritage assets (Fairclough 2013).

This imbalance is not simply a technical oversight. It raises substantive concerns about the completeness of the heritage record at the point of intervention. Elevations and plans are essential for understanding both the external and internal character of a building. Existing elevations help assess how proposed changes impact heritage aspects or community aesthetics, while existing floorplans provide crucial insights into spatial layout and surviving historic features that may not be visible externally (Orbaşlı 2017). Their absence in a proportion of applications compromises the ability to make informed decisions about heritage impact. Moreover, without comprehensive and consistent documentation of existing conditions, there is no reliable baseline against which to measure future change. Over time, this makes it difficult to track the cumulative effect of successive alterations. Even individually minor changes, if not properly recorded, can collectively result in a significant erosion of heritage value, a process which has been described in conservation literature as a gradual loss of significance through inadequate recording (Stovel 2007; Worthing and Bond 2008, p. 8). The findings from the Northallerton HSHAZ suggest a need to reframe the role of planning documentation within heritage contexts, not just as a means of project justification, but as part of a living archive that informs ongoing stewardship. Ensuring a balance between proposed and existing materials would strengthen the evidential basis of planning decisions, improve data reuse, and safeguard the historic character of high streets.

5.4.5. Data Legacy

The planning applications submitted through the Northallerton HSHAZ initiative offer a fragmented but potentially valuable data legacy. Across the dataset, there is clear evidence of heritage data reuse; listings appeared in 26% (32 of 121) of applications and other planning applications in 24% (29 of 121), typically incorporated into heritage statements. This shows that applicants are engaging with available sources to support their proposals. However, this reuse is often superficial, limited to reference numbers and brief summaries. Substantive content, such as previous assessments, elevations, or detailed historical reports, were rarely integrated. Similarly, other key sources like historic maps (19% (23 of 121)), aerial photographs (17% (21 of 121)), and especially historic photographs (5% (6 of 121)) were inconsistently reused, indicating a missed opportunity to build a more connected and cumulative evidence base for heritage planning.

Despite these constraints, planning applications contain a wealth of metadata and textual content. Key fields such as ward, conservation area status, and application type are commonly included, and heritage statements often offer substantial contextual and historical analysis (as recommended by HE (2015b; d). However, much of this material is locked within non-machine-readable formats. Without standardisation, or integration into linked data structures or APIs (hereafter Application Programming Interface), this information cannot be effectively reused, cross-referenced, or scaled up for broader heritage analysis.

These patterns point to a broader issue: the structural fragility of the planning data legacy. Following the distinction established in section 3.7.4, the absence of raw photographic files, CAD drawings, and heritage assessment data from public repositories means that the digital output does not have a sustainable legacy, as although the data has been deposited in a repository and has sufficient metadata, the data itself is not reusable, due to file format constraints and the raw data remains with the commercial organisation. Furthermore, valuable information exists,

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but its fragmented structure and lack of interoperability create a form of data precarity, where records are technically preserved but difficult to find, interpret, or use in meaningful ways (Kitchin 2014, p. 208; Raley 2013, p. 122). The absence of PIDs, such as DOIs, compounds this issue, contributing to the digital ephemerality of planning documentation and increasing the risk that records become inaccessible over time.

Future heritage initiatives must address these challenges from the outset. Planning documentation should be treated as part of the historical record, not merely as a regulatory artefact. Establishing clear archiving protocols, integrating with institutional repositories, and implementing PID systems would help ensure the long-term sustainability and discoverability of heritage data. These measures would enable planning applications to serve as more than just snapshots of regulatory processes, they could become enduring resources for heritage assessment, research, and public engagement.

5.4.6. Synthesis: Built Heritage

The built heritage strand produced the largest volume of structured documentary data within the Northallerton HSHAZ, but almost entirely in formats and locations that limit its long-term research value. Planning applications on the North Yorkshire portal are technically preserved in perpetuity, but the universal use of .pdf format, the embedding of photographs and plans as compressed figures rather than standalone files, and the absence of persistent identifiers mean that the data is findable but not reusable in any meaningful analytical sense. Pre-existing datasets, listings, historic maps, and aerial photographs, were reused within heritage statements but typically as copy-pasted text or low-resolution embedded images rather than as linked, citable sources.

No data from the built heritage strand was deposited in a formal heritage repository. This is not primarily a consequence of inadequate resources or awareness among

consultants: it reflects the absence of any requirement to deposit, and a planning system whose validation criteria treat regulatory compliance rather than data quality as the threshold for acceptance. The built heritage strand demonstrates that the planning system can generate extensive heritage documentation while simultaneously failing to produce a reusable heritage data record.

5.5. Conclusion

The Northallerton case study provides compelling evidence on the transformative power of heritage data management, offering valuable lessons for HE. By effectively gathering, sharing, and reusing diverse datasets, the initiative has demonstrated that heritage data is not merely archival information but a strategic asset that drives economic regeneration, strengthens cultural identity, and informs critical planning and conservation decisions.

From an economic standpoint, the initiative underscores that well-curated heritage data can serve as a catalyst for local revitalisation. The AR Heritage Trail in Northallerton, for example, showcased how digital engagement with historical assets can attract tourism, stimulate investment, and support creative industries. This digital engagement not only boosted local economic activity but also illustrated how heritage data can become a vital component of economic planning, emphasising the need for robust data management frameworks that facilitate such growth.

Culturally, the project highlights the intrinsic value of preserving local narratives and community identity. By integrating oral histories, community collections, and other forms of grassroots data, the initiative has helped to capture and sustain the rich, intangible heritage of Northallerton. These efforts not only reinforce social cohesion but also validate the cultural significance of community-driven heritage projects. Such examples serve as a powerful reminder for HE of the importance of investing in initiatives that celebrate and preserve local stories and traditions.

In terms of planning and conservation, the case study reveals how effective data use can inform development decisions and heritage preservation strategies. The detailed datasets produced through the initiative offer critical insights that can guide conservation efforts and urban planning. However, whilst these extensive conservation data exist, they are hampered by accessibility issues, highlighting the pressing need for more integrated and heritage supportive data management solutions.

The Heritage Hub's success rests on three elements with different replicability profiles. Mandatory archival expertise at project level, formal deposit agreements established before completion, and standardised metadata capture are governance choices that other schemes could implement immediately. The technical standards for oral history, preservation-grade .wav format, OHS-compliant metadata, are likewise transferable.

Conversely, Virginia Arrowsmith's sustained involvement, NYCRO's archival capacity, and the relational stability within Northallerton's heritage network are locally contingent assets that cannot be replicated by policy alone. The Heritage Hub demonstrates what is achievable when such conditions align; scaling that success requires HE to mandate the replicable governance elements programme-wide whilst supporting regional development of archival capacity and heritage data expertise in areas where such infrastructure is weak.

In summary, the insights drawn from the Northallerton case study offer HE a robust evidence base for refining its heritage data management practices. The project illustrates the substantial economic, cultural, and planning benefits of effectively managed heritage data, while also pinpointing the need for enhanced governance, integration, and standardisation. These lessons are crucial for ensuring that heritage data not only preserves the past but also actively contributes to the sustainable regeneration and conservation of communities across the country.

5.6. Chapter 5 synthesis: data governance across Northallerton's HSHAZ strands

Table 13, Northallerton: programme structure, dataset provenance, custodianship, and legacy outcomes by strand

Strand	Delivery model	Pre-existing datasets used	HSHAZ-generated outputs	Custodian at close	Legacy outcome
Heritage Hub	HDC-funded; community liaison officer; NYCRO partnership	Community photographs, ephemera, personal collections (digitised in-Hub)	Oral histories (.wav), digitised photographs (.jpeg), 3D artefact scans	NYCRO (formal deposit agreement). Artefacts remain at Hub	Secure (oral histories, digitised collections). 3D scans on Sketchfab – partial
AR Heritage Trail	HDC; York Archaeology; Heritage360; PEEL X – multi-contractor	LiDAR (Digimap), historic maps (NYCRO), local history society photographs, YA reports	AR app, 3D models (.obj and derivatives), oral history transcripts (.mp3), soundscape	Google Drive (stakeholder-held). 3D geometry only deposited. App funded to 2027	Partial. Geometry 3D deposited; full models, audio, app at risk post-2027
Built Heritage (shopfronts)	HDC grants; private architects and builders; planning portal submission	Listings (26% of applications), previous planning applications (24%), historic maps (19%)	Planning applications, heritage statements, photographs, plans, elevations (all .pdf)	North Yorkshire planning portal. No repository deposit	At risk. Accessible but not reusable; no deposit; no PIDs

6. Kirkham (Lancashire)

This case study explores data management within a community wellbeing-focused HSHAZ in the Lancashire market town of Kirkham, demonstrating how heritage data practices intersect with social regeneration objectives. The Kirkham HSHAZ comprises multiple interconnected elements: a programme of community engagement activities including exhibitions, workshops, and oral history projects designed to address social isolation and build community cohesion; heritage interpretation and digital initiatives aimed at making local history accessible to diverse audiences; and shopfront improvement works aimed at enhancing the visual appeal and commercial viability of the High Street. Unlike many HSHAZ programmes that prioritise either heritage research or built conservation, Kirkham's distinctive approach positioned heritage engagement as a mechanism for community wellbeing, with data management practices shaped by this overarching social agenda.

The case study makes several important contributions to understanding heritage data governance within socially oriented regeneration programmes. First, it offers an opportunity to examine how data management priorities and resources are allocated when heritage projects are explicitly framed as community wellbeing interventions rather than purely conservation or research initiatives. This reveals tensions between the imperative to engage diverse communities through accessible, participatory activities and the requirements for systematic data documentation, preservation, and reuse. The Kirkham case demonstrates how wellbeing-focused objectives can shape, and sometimes constrain, heritage data practices, with implications for the long-term scholarly and public value of the datasets generated. Second, the case study provides insight into data management within time-limited community projects where volunteer capacity, funding cycles, and community priorities influence what gets documented, how it is curated, and whether it achieves sustainable legacy outcomes. The absence of a dedicated physical heritage space and the project's

distributed nature offer instructive lessons about the challenges of ensuring data longevity and coherence when projects lack centralised coordination or long-term institutional anchoring. Third, Kirkham presents a second example of shopfront improvement projects, allowing comparative analysis with Northallerton's built heritage component and reinforcing findings about the limited generation and capture of heritage data from these substantial conservation investments.

Kirkham, Lancashire is located within the remit of Fylde Borough Council (hereafter FBC) (Fylde Borough Council 2019, 1). Originating in the Roman period, at its heart is a medieval marketplace surrounded by a relict burgage plot layout (Chatterjee and Shearn 2022). Kirkham has undergone several name changes, from its original appellation of Amounderness to Chicheham by the time of Domesday, with the more familiar spelling of 'Kirkham' gradually emerging over the subsequent centuries (*ibid*; Kirkham Treasures, n.d. d). In the industrial period, Kirkham was pivotal as a central hub in Lancashire's thriving textile industry (*ibid*). The town's traditions remain deeply rooted, exemplified by the annual observance of "Club Day," during which a solemn procession featuring a cross traverses the bustling High Street (Kirkham Treasures, n.d.e).

The Conservation Area was designated in 1975 and covers Church Street and the confluence of Poulton, Preston and Freckleton Street (FBC 2019, 1 – Fig. 59). The area includes the Market Square and 20 listed buildings such as St Michael's Church, Hillside, Fishstones and 52-64 Poulton Street (Old Girl School and Trustee Savings Bank (hereafter TSB) building) (Historic England 2025e). It is this area that was defined as Kirkham's *High Street* for the HSHAZ.



Figure 59, the HSHAZ outlined on a street plan of Kirkham © Crown Copyright and database right 2020. All rights reserved. Ordnance Survey Licence number 100024900.

Despite its conservation status, Kirkham's High Street faces the same issues as many other historic towns; "issues of social integration, social inclusion, community cohesion" (FBC 2019, 29). Furthermore, as Kirkham is only classified at level 2 under Levelling Up (2022), Kirkham could not draw on some of the governmental funds for rejuvenation in accordance with HM Government (2022). Recognising the significance of these challenges, FBC has sought support from various sources, including HE HSHAZ and the Future High Street Fund (FHSF - Thorpe, 31 May 2023, pers. comms.).

The selection of Kirkham as a HSHAZ by HE was driven by several critical factors. Firstly, the area has witnessed a decline in visitors and the closure of banks, cinemas and shops, which has had a detrimental impact on the community's economic vitality (Chatterjee and Shearn 2022). Additionally, it faced pressing health challenges stemming from both an ageing population and a fragmented community,

which has given rise to issues such as deprivation, inequalities, mental health concerns, and heightened levels of isolation and loneliness (Chatterjee and Shearn 2022). Moreover, the prevalence of unsympathetic shopfronts, redevelopments and the subsequent proliferation of vacant properties since 1990 accentuated the urgency of intervention (FBC 2019, 1).

The Kirkham HSHAZ's multifaceted aims encompassed boosting foot traffic, repurposing vacant spaces, emphasising and advocating the town's historical significance, enhancing the physical environment, and fostering robust community engagement and wellbeing (Fylde Borough Council 2024a; Thorpe, 31 May 2023, pers. comms.; FBC 2019, 3). The project sought to harness the richness of local heritage to evoke a sense of ownership and pride within the community, empowering them to actively participate in revitalising their town centre (*ibid*). The project enhanced the public perception of the town's heritage (*ibid*) and attempted to rekindle community pride and identity (with varied success (Fylde Borough Council 2024a)). The Kirkham HSHAZ initiative (2020-2024) had three separate strands: the Built Heritage, the Heritage, Health and Wellbeing (hereafter HH&W) Programme, and the Cultural Consortium. This case study delves into these projects, the role data has played in achieving success, and the successes of data management.

The lessons from HSHAZ have informed subsequent policy development, including the 2025 Pride in Place Strategy, which continues the government's commitment to place-based regeneration and community empowerment (DLUHC 2025). This policy continuity underscores the timeliness of examining data governance within such initiatives, as the challenges and opportunities identified in this research will remain relevant for future heritage-led regeneration programmes.

6.1. Stakeholders

A range of stakeholders were involved in the Kirkham HSHAZ (Fig. 60).

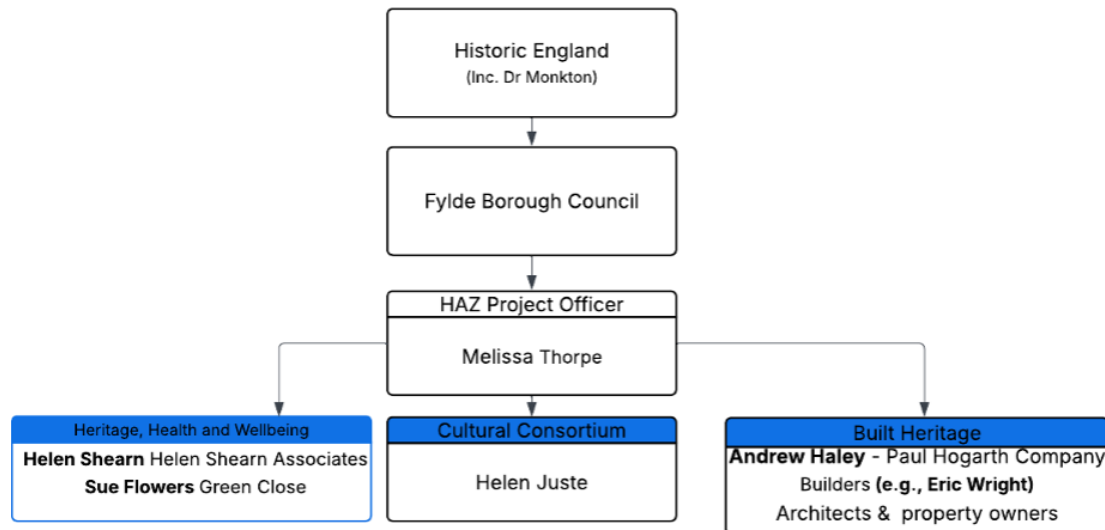


Figure 60, an organogram showing the key stakeholders.

HE: interested in preservation and restoration of the historic character of Kirkham's buildings and streetscape and increased heritage promotion in the local area. Furthermore, they wanted to explore the potential of combining Social Prescribing with their broader heritage initiatives. In the context of Kirkham HSHAZ, social prescribing is a healthcare approach where individuals are referred to community-based resources and activities by healthcare professionals to improve their overall wellbeing and address social, emotional, or practical needs. This social prescribing approach acknowledges the importance of non-medical factors in health and wellbeing (Fig. 61). It aimed to connect residents with local services and programs to enhance their quality of life.

A whole system approach would ensure that people using the services are not only valued, respected and listened to, but this would also ensure a quality delivery of service.

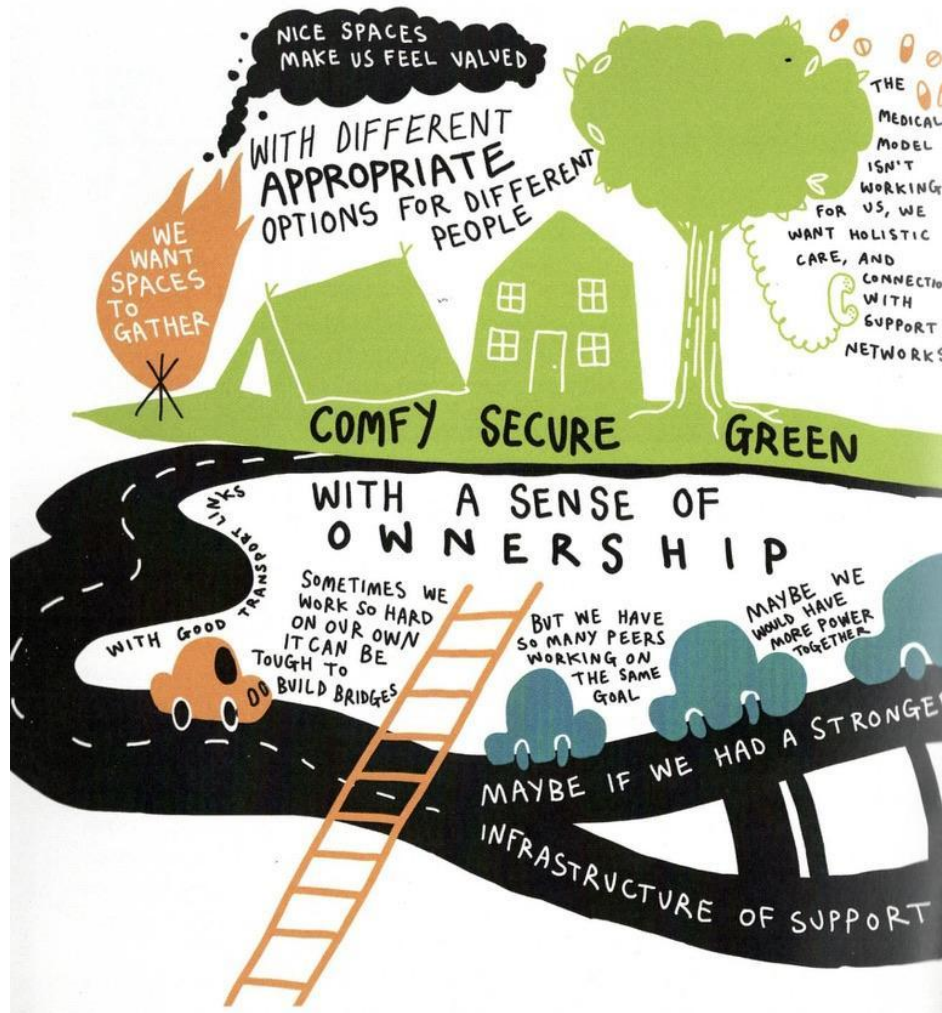


Figure 61, the prescribing approach (credit Phoenix Rising).

Fylde Borough Council (FBC, Melissa Thorpe - HAZPO): recognised the need to address Kirkham's existing infrastructure and economic and social challenges, in which the HSHAZ funding provided an opportunity to tackle these longstanding issues (Fylde Borough Council 2024a). FBC played a pivotal role in overseeing the designs for the public realm, HH&W Programme and Cultural Consortium; engaging property owners and local community; tendering works required; and approving Planning Applications (Thorpe, 31 May 2023, pers. comms.; FBC 2019, p. 33). FBC

wanted to attract further investment (achieved £99,342 private sector, £778,632 FHSF), boost business confidence, and increase employment opportunities (Fylde Borough Council 2024a;b).

Local Residents and Community Groups: functioned as co-producers of the public realm works and the Heritage Health and Wellbeing programme to build a better 'ecosystem' (Shearn, 18 July 2023, pers. comms.; Fylde Borough Council 2024a). The community desired improved access to heritage and cultural resources, increased community engagement, and a better quality of life through a revitalised town centre, each of which was achieved through the HSHAZ (Fylde Borough Council 2024a). This possibly indicates a desire for access to data through greater access to heritage resources.

6.1.1. Built Heritage stakeholders:

Town Planners (e.g., Andrew Haley, Paul Hogarth company): Town planners facilitated the convergence of ideas from FBC, the local community, and their expertise to design improvements for the public realm (Haley, 24 August 2023, pers. comms.). Their experience working in historic sites and settlements ensured they integrated the town's character and culture into their plans (*ibid*). The project addressed local concerns and genuine community needs using a community-oriented approach.

Architects: Architects and architectural firms were responsible for creating designs and planning applications that met the client's requirements while adhering to the constraints of the conservation zone.

Builders (e.g., Eric Wright): Builders executed designs from architects and town planners while ensuring projects stayed within budget and met specifications on time. Eric Wright has since become responsible for the street artwork upkeep.

Property Owners: Initially slow to engage, property owners later showed increased interest in funding opportunities for aesthetic improvements and alternative income sources (Thorpe, 31 May 2023, pers. comms.). Most applicants were tenants, highlighting community-driven efforts in rejuvenating the High Street.

6.1.2. Heritage Health and Wellbeing stakeholders:

Helen Shearn of Helen Shearn Associates: a specialist consultant in arts, heritage, health, and wellbeing with over 25 years of experience evaluating, producing, and championing multi-partnership programs. She undertook an initial feasibility study and ultimately led the HH&W Strand of the Kirkham HSHAZ, and she continued her involvement coordinating this strand.

Sue Flowers: Director of Green Close, *a Lancashire-based arts organisation using creativity to support wellbeing and community engagement* (Green Close 2024), her role was to provide tasters, and then regular, weekly sessions in activities involving art, nature, and movement that would draw on the distinct heritage themes of Kirkham (Chatterjee and Shearn 2022). Sue Flowers has extensive experience working with communities through social prescribing and working with the wider Lancashire County Council.

Dr Linda Monckton, HE: Head of HE's Wellbeing and Inclusion Strategy. Kirkham was one of nine pilot projects exploring the potential of social prescribing. Kirkham was the only one combined with HSHAZ (note: Sunderland was a Heritage Action Zone rather than a HSHAZ) (Historic England 2022a). The Strategy included the following aims:

Wellbeing Integration: Successful integration of wellbeing outcomes in projects and partnerships, including collaborative events in Kirkham (*ibid*, 3).

Empowered Workforce: Strengthening internal expertise and empowering the workforce for positive wellbeing outcomes, as seen in projects like "History in

the Making" aligning with the Creative Heritage Explorers and "Greening the High Street", aligning with the 2025 national initiative *Nature Towns and Cities* (Historic England 2022a, 7; Nature Towns and Cities 2025).

Shared Knowledge: Sharing insights supported heritage organisations in incorporating wellbeing and aligning with government goals, including the Levelling Up initiative (*ibid*, 8).

Session organisers: Mandala CIC facilitated the Movement strand, Lancashire Wildlife Trust and Gathering Fields which ran the Nature strand, and illustrator Kremena Dimitrova created the artwork for elements such as the *A-Z of Kirkham – weather permitting* (see Dimitrova 2022) and other information leaflets.

6.1.3. Cultural Consortium stakeholder

Helen Juste: Director of Positive Placemakers CIC and an arts and cultural specialist with over 20 years' experience, developed and managed the Cultural Consortium. She co-designed a four-year cultural programme with the local community and key partners, developing new networks and increasing resources by involving local organisations in the delivery of individual events. Through this work, Helen aimed to increase local engagement with heritage assets, strengthen the community's sense of place and ownership of public spaces, and promote civic pride (Juste, 24 August 2023, pers. comms.).

6.2. Heritage, Health, and Wellbeing Programme

The Heritage, Health, and Wellbeing Programme (HH&W) was funded by the HSHAZ with matched funding from FBC. "The incentive of having funding from the Heritage Action Zones and matched funding from Fylde Council...[brought] together people that may not have thought about doing these sorts of projects...skilled practitioners, arts and health professionals" (Shearn, 18 July 2023, pers. comms.), and its overall aim was to "encourage a diverse mix of the community, irrespective of faith, gender,

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race etc." (FBC 2019, 19). The three-year HH&W programme was one of nine pilot projects associated with HE's Wellbeing and Place Strategy, led by Dr Linda Monckton and was designed to be co-developed with the community for the purpose of addressing the needs of the community (Flowers, 22 August 2023, pers. comms.).

The Phoenix Rising partnership delivered a heritage-based social prescribing programme in Kirkham from January 2022 through March 2024, achieving what stakeholders described as having "over-achieved" its aims (Williamson and Cyhlarova 2024, p. 66). The programme directly engaged over 110 individuals in ongoing heritage and wellbeing groups, with 878 people attending community events, and demonstrated measurable wellbeing outcomes including life satisfaction scores rising from 6.9 to 7.8, exceeding the Office for National Statistics Fylde mean of 7.6 (Williamson and Cyhlarova 2024, pp. 16-18, 27). Significantly, over half of those in contact with health services reported using them less often following programme participation (Williamson and Cyhlarova 2024, p. 30). The programme gained national recognition, featured in the National Centre for Creative Health's Creative Health Review 2023 and presented at HE's Wellbeing and Heritage Conference (Williamson and Cyhlarova 2024, p. 52).

Central to this success was the programme's engagement with multiple heritage datasets and collections that formed the foundation for wellbeing activities (Figs. 54-55). The programme drew primarily on three interconnected heritage resources: *the Kirkham in Amounderness Local History and Heritage Collection* at St Michael's Church, the *Kirkham Treasures: Voices from Kirkham* oral history collection, and specially commissioned heritage outputs including the *A-Z of Kirkham - Weather Permitting* heritage trail.



KIRKHAM TREASURES

Voices

FROM KIRKHAM & WESHAM

Enjoy a collection of oral histories-memories and stories loosely based on the following themes: Growing Up, Work, War Time, the High Street and *Going Out*. They are available to listen to at Kirkham library and online at:

<https://kirkhamtreasures.co.uk/oral-histories/>

This *Voices* collection was gathered and curated by the Kirkham Cultural Consortium working in partnership with Positive Placemakers CIC., as part of the *Going out* project with nostalgic events, commissioned by the Kirkham Heritage, Health, and Wellbeing programme. Volunteers were trained by Kirkham Library.

<https://kirkhamtreasures.co.uk/going-out/>

The Cultural Consortium's aim is to deliver engaging community heritage arts projects as part of Kirkham Futures. Details at:

www.kirkhamtreasures.co.uk and <https://www.kirkhamfutures.org/plans/the-hs-haz-cultural-programme>

If you are interested in joining KCC and making positive change happen or helping to continue the collection please contact Helen Juste, Cultural Producer

helen.juste@positiveplacemakers.co.uk

THE PHOENIX RISING PARTNERSHIP

Supporting heritage based wellbeing activities in Kirkham

ARTS, NATURE & MOVEMENT CLASSES, activities and courses to support the mental and physical wellbeing of our communities.

- Wednesdays (10:30am – 1pm)**
Explore the health benefits of local green spaces. Starting at Kirkham Library
- Thursdays (1pm – 3pm)**
Explore the people's history of Kirkham and create scrapbooks, drawings, textiles, and more. Creative Heritage at St Michael's Church
- Fridays (10am – 11am)**
Chair based dance with a celebration of local music and history. Kirkham Community Centre

BOOKING

Find out more and book at Kirkham Library or online:

www.phoenix-rising-wellbeing.co.uk/courses/

Funded by Historic England & Fylde Council and Kirkham Town Council

HERITAGE COLLECTION

Look through Kirkham in Amounderness Local History and Heritage Collection at St Michael's Church, Kirkham. The archives were brought together by local historian, the late Martin Ramsbottom. They were generously donated by his family – adding to the Church's own archives.

Specially commissioned heritage and wellbeing projects were part of the celebrations of the bicentenary (200 years) of the Church building in 2022. *Kirkham's Golden Threads* and *An A-Z of Kirkham - Weather Permitting* are available to view and download at:

<https://www.kirkhamfutures.org/post/threads-of-kirkham-golden-history-revealed>
<https://www.kirkhamfutures.org/document-library>



FIND OUT MORE:
www.stmichaelskirkham.org.uk

Need support accessing the activities?

Let's Connect Social Prescribing service can help you join activities if you need support. You can request a **LET'S CONNECT** self-referral form at Ash Tree House Surgery or Kirkham Health Centre, fill it in and give it to the practice reception.

Figure 62 and 63, a leaflet detailing the different aspects of the Heritage, Health, and Wellbeing programme (Kirkham Futures, n.d. b).



FREE Activities Celebrating Our Heritage



Flax Spinners

Birley John

ABOUT THE PROGRAMME

Kirkham's Heritage Health and Wellbeing Programme is a key part of the £11m Kirkham Futures Programme funded by Historic England, Fylde Borough Council, and Kirkham Town Council.

The 4 year programme, which runs from March 2020 – March 2024 is designed to reinvigorate the historic town centre by bringing important buildings back into use, improving streets and open spaces, with community-led cultural activities on the high street through the Kirkham Cultural Consortium, and boosting individual and community well-being and reducing isolation through the Heritage, Health & Wellbeing Programme, developing social prescribing and community spirit.

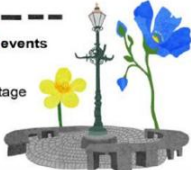
The Heritage Health and Wellbeing Programme has been devised by Fylde Council in collaboration with Helen Shearn, Arts, Heritage, Health & Wellbeing consultant, as the coordinator, supported by Dr Linda Monckton, Head of Wellbeing and Inclusion Strategy and Dr Desi Gradinarova, Senior Policy Adviser – Wellbeing and Inclusion at Historic England. The programme was informed by the Feasibility study produced by Helen Shearn supported by FVD Consulting in 2021 and has been co-developed with the providers Phoenix Rising Partnership, and through consultation, co-production and evaluation with stakeholders.

<https://www.kirkhamfutures.org/plans/health-and-wellbeing-programme>

www.historicengland.org.uk/whats-new/research/kirkham-forging-a-heritage-programme-as-a-bridge-to-wellbeing/

Find out about FREE events you can join and:

- Explore Kirkham's heritage
- Meet new people
- Share your memories
- Get creative, wander, and enjoy nature



CONNECTING KIRKHAM – FREE EVENTS & ACTIVITIES

CONNECTING KIRKHAM provides **FREE** heritage based wellbeing activities. As a part of Kirkham Futures, it aims to connect people with the past, present, and future of their town.

KIRKHAM'S HERITAGE, HEALTH & WELLBEING PROGRAMME

"Making **SOCIAL** Connections & Building **Community SPIRIT!**"

WELCOME!



SHARE YOUR IDEAS...

Do you have an idea for a heritage activity? Lancashire County Council's Community Projects team would love to hear from you!

Contact: amanda.spavin@lancashire.gov.uk

Funded by



Historic England



KIRKHAM
TOWN COUNCIL

Hi!
KIRKHAM



Fylde
Council

The Kirkham in Amounderness collection, donated by local historian Martin Ramsbottom and augmented by the church's own archives, provided physical materials, photographs, documents, and artefacts that participants could handle and explore during Creative Heritage sessions. The *Voices from Kirkham* oral history collection, gathered and curated by the Kirkham Cultural Consortium working with Positive Placemakers CIC as part of a "Going out" project with nostalgic events, comprised digital recordings organised thematically around Growing Up, Work, War Time, the High Street, and Going Out, accessible both at Kirkham Library and online. These existing heritage datasets were complemented by the A-Z trail map, commissioned for the bicentenary celebrations of St Michael's Church in 2022 and made available for viewing and download through the Kirkham Futures website.

This chapter examines how these datasets were reused, created, shared and the legacies thereof. Through this analysis, the chapter considers what this case reveals about heritage data reuse, community knowledge creation, and the relationship between archival materials and community wellbeing outcomes.

6.2.1. Data

Throughout each of the activities in the HH&W programme, a range of data was reused and shared, producing diverse outputs. Whilst there were many other outputs including heritage wellbeing walks and textiles from Stitch Away Stress including a tapestry conceived in the style of the Bayeux Tapestry (designed as a scroll to be unrolled and explored by local people learning about the town's textile production history) and reproduction of child labour clothing including dresses and aprons based on 18th-19th century textile mill workers' garments, these fall outside the remit of this thesis. In Table 14 below, the data created, reused and shared are stated, and this section shall analyse these aspects using a substructure of the different strands of the HH&W programme.

Table 14, data involved within the Heritage, Health and Wellbeing strand.

Strand(s)	Data input/output	Data	Location (source or site)	Process	File format	Legacy
All	Input	Books	Library, Archives, personal collection	Independent research	Paper	In archives
	Input	News cuttings, maps, tithe maps, directories	Kirkham archives (Martin Ramsbottom)	Independent research	Paper	Digitising if funded
Creative Heritage	Input	Photos	Kirkham and Wesham Facebook Group	Independent research	Mixed digital	Hive Facebook's data warehouse
	Input	Mixture of material	Online resources, library, and archive	Individual research	Mixture	Various
	Input	Mixture of material	Personal collections	To stimulate artistic processes	Paper	Private collections
	Input	Maps	Lancashire archives Scottish maps Online	Individual research Used as base map for output	Paper	In archive Used in map output
	Output	Map	St Michael's church	Coproduced drawn map with many labels of Kirkham	Paper	Physical archive
	Output	A-Z of Kirkham... Weather permitting leaflet	St Michael's church Website & Emails	Co-produced with Kremena Dimitrova	Paper .pdf	Physical archive Uncertain
	Output	Scrapbook	St Michael's church	Coproduced in sessions	Physical	St Michael's church

Strand(s)	Data input/output	Data	Location (source or site)	Process	File format	Legacy
Visual Art	Input	Mixture of material	Online resources, library, and archive	Individual research	Mixture	Various
Overall	Output	Feasibility report	Kirkham Futures Website	Commissioned to investigate potential for social prescribing	.pdf	Website
	Output	Metrics		Produced in sessions for reports	.pdf	HE Archives
	Output	Film	YouTube	Produced by stakeholders to showcase successes	.mp4	YouTube

Following the report, the Phoenix Rising partnership was commissioned as part of the HH&W Programme for three months, to deliver the activity programme in stages. The commission's funding was initially extended by three months, then by two six-month extensions, and lastly extended by a further year (i.e., total of 2.5 years) (Flowers, 21 July 2023, pers. comms.). The initial commission and extensions introduced taster sessions for the community to enable engagement with their local heritage.

From the above tasters and the subsequent governance, it is clear that the HH&W programme was designed to be co-developed with the community for the purpose of addressing the needs of the community (Flowers, 22 August 2023, pers. comms.). The community felt that the wellbeing of Kirkham residents had long been overlooked, with emphasis on other areas of Lancashire, and felt empowered through the HH&W programme and HSHAZ's focus on the real needs of the local population. This is particularly seen in the comment "I can't believe this is happening in Kirkham. Nothing ever happens in Kirkham. I can't believe it... we're actually getting something" (Flowers, 21 July 2023, pers. comms.), and "St Annes in Lytham is more affluent, and more provision and activity seems to happen that way" (Flowers, 22 August 2023, pers. comms.).

An example of the collaborative and codesigned process was the creation of the "Stitch Away Stress" Kirkham group, which was proposed by the local community. This collaborative element was "Really important," "essential," and a "big aspect" (Shearn, 18 July 2023, pers. comms.), and as a result, it was the collaborative approach of all stakeholders that contributed to the meeting of community needs and the success of the initiative (Fylde Borough Council 2024a). As such, it ties into ongoing government initiatives such as the *Pride in Place Strategy*, in which disadvantaged neighbourhoods are regenerated by funding community-led projects (DLUHC 2025). As will be seen below, this focus on meeting contemporary needs means that data creation and reuse was secondary to the project aims; nonetheless,

a wide range of datasets was reused, created, and shared, as shall be explored in the next sections, offering an opportunity to understand how data management and resources are considered within community wellbeing projects aimed to revitalise communities.

6.2.2. Data Reused

Kirkham in Amounderness Local History and Heritage collection

One of the most valuable HH&W programme data resources was the Martin Ramsbottom collection part of the Kirkham in Amounderness Local History and Heritage collection Archive at St Michael's Church (hereafter the Ramsbottom collection). This extensive collection, consisting of maps, directories, newspaper clippings, books, and artefacts, was donated by the Ramsbottom family after the collector's death (Shearn, 18 July 2023, pers. comms.). The archive's tangible nature proved beneficial for the wellbeing programme, as it allowed hands-on interaction with this "natural visual resource to produce creative outputs" (Flowers, 21 July 2023, pers. comms.).

Kirkham Creative Heritage Explorers

The Kirkham Creative Heritage Explorers (Fig. 64) used the Ramsbottom archive collection of "heritage to increase feelings of ownership and pride in the town centre" (Thorpe, 31 May 2023, pers. comms.). Whilst this is reuse of physical assets rather than digital, the community benefit derived from this initiative leads to parallels which must be considered when accessing and reusing digital assets. This was extremely successful within the Heritage Explorers, where a co-production strategy was adopted, enabling each participant to be "their own experts [which was] massive in terms of pride" (Flowers, 21 July 2023, pers. comms.). In practice, this meant guiding participants through the use of the Ramsbottom Collection and providing space and opportunity to talk about their own heritage interests, share

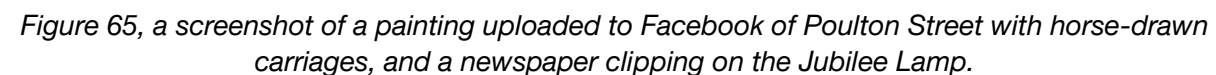
local knowledge and also research something different, leading to the production of diverse creative outputs (Flowers, 21 July 2023, pers. comms.). For example, "Somebody was looking at the Romans and where the Roman road might go...someone was talking about the history of the pubs and how there used to be twenty and now there's only seven...[and] a former farmer researched the history of her farm" (Flowers, 21 July 2023, pers. comms.). This opportunity to be independent within their own research allowed them to be more hands on with the archival material of the Ramsbottom archive, advocating for the role heritage information plays in encouraging community wellbeing and pride. As with Northallerton (see 5.2.3), it is the hands-on nature that made the initiative this successful.



Figure 64, the Kirkham Creative Heritage Explorers group with their stitching (Phoenix Rising, n.d.).

Alongside the Ramsbottom Archive, many resources were found by individual community members' research and their personal collections. By encouraging independent research, it provided the opportunity for the participants to research areas of interest to them, providing a grass roots and intangible glimpse into locally significant heritage. This localised view of heritage value is essential to create meaningful and valuable collaborations in order to preserve and promote the local unique history.

A further resource and disseminators channel for Kirkham was the Kirkham & Wesham Memories of the Past Facebook Group (Flowers, 21 July 2023, pers. comms.). As a social media platform, a digital community was created where users uploaded a diversity of images, often from inaccessible private collections of the contributor, which encouraged commenting providing community communication opportunities (e.g., Fig. 65). The Facebook group illustrates the interest and existing digital communities in local heritage. Social media platforms are often underused within professional heritage programmes due to complications in copyright, reliability and consent, yet they offer extensive opportunities to access a range of otherwise inaccessible datasets and provide opportunity to communicate with existing heritage research communities. As such, such platforms must be considered in terms of their potential impact in future initiatives.



6.2.3. Data Created

The HH&W programme's data creation was secondary to the aims of community engagement and social prescribing, nonetheless, a range of datasets were organically created that merit investigation in this thesis.

Within the Kirkham HSHAZ, a range of different physical outputs were produced including a map, an *A-Z of Kirkham* leaflet, and a scrapbook.

One of the outputs of the personal research carried out by the participants in the Kirkham Creative Heritage Explorers was the multi-layered, visually striking map. This is paper-based and housed in St Michael's Church community space, capturing the research created through the group and showcases individual research such as former pub locations, buildings of specific heritage value, military history, and contains materials like historic photographs and newspaper clippings (Fig. 66). The map fulfils the project aim of providing a tangible, material reflection of interest in the local heritage and the deriving pride in place. The creation of the map was a popular activity, and the activity gathered more information than could be easily disseminated within the map format. This led to the creation of a scrapbook. The scrapbook enabled the sharing of further information that could not be easily mapped geospatially or was too extensive to fit within the physical nature of the map.



Figure 66, the physical map created by the community.

It is here where digital capabilities offer potential opportunities to aid communities in their localised heritage research projects. Furthermore, whilst the layered and detailed map and scrapbook allow tangible and visually striking outputs of the

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initiative, further sharing of the information contained within is not possible. Initiatives such as Missing Pieces (Historic England 2023d), *Know Your Place* (Bristol City Council 2023) and The Ashwell Project (Lien-Talks 2024b) show potential solutions to these challenges. These digital platforms encourage(d) public participation allowing complicated, extensive and multimedia contributions of the community and embedding these records within professionally curated and created datasets. Such a platform could benefit from community interaction opportunities such as those used within The Ashwell Project and Facebook to allow commenting and reacting to content, enabling further opportunities for community cohesion. As such, it could be seen as a missed opportunity within the HSHAZ initiative, as whilst the map provides opportunities for public dissemination of localised research, without tying back to heritage platforms such as Missing Pieces, the information becomes isolated and lost. The exploration of such applications is recommended within future heritage initiatives to provide even more opportunities for increasing local knowledge, connectivity and pride.

Another output generated through data sharing was an *A-Z of Kirkham – weather permitting* leaflet (Fig. 67). This was designed to be an aesthetically pleasing method of conveying the complexities of Kirkham's past. The information visualised in the leaflet was also a product of the community consultation involving face-to-face workshops, creation of community member artworks, archival research, combined digitally into a single map by illustrator Kremena Dimitrova (25 August 2023, pers. comms.). The information behind the trail derived predominantly through conversations about personal interests and associations with the town yet also was influenced by the research of the Creative Heritage Explorers. The trail was stored as a .pdf file, able to be printed and accessed at St Michael's Church (*ibid*) but also stored on the Kirkham Futures website (see 6.3.4). As a result of the success of the project, it is recommended to use this approach again for other initiatives as it brings the community heritage alive and makes heritage more accessible.



Figure 67, the A-Z of Kirkham created in co-development with Kremena Dimitrova (Kirkham Futures, n.d. c.; available at Demitrova 2022).

6.2.4. Data Legacy

Overall, the Kirkham HH&W project does not meet the criteria of 3.7.4 of a digital legacy from the project, as there were no plans to create digital outputs, or to preserve them post initiative principally due to Kirkham's remit and focus being not on the digitising of the material, but rather the use of the material to encourage communications and promote wellbeing.

Community research

Despite the Creative Heritage Explorers' success in data sharing, this valuable dataset has limited legacy. The contrast with Northallerton, where digitisation and deposition within the local County Records Office ensured lasting access, illustrates a missed opportunity. Without communication channels between initiatives or institutional encouragement to deposit heritage records, datasets remain isolated rather than contributing to a cumulative knowledge base. This lesson is particularly relevant for HE's Missing Pieces initiative, which aims to identify and fill gaps in heritage records by encouraging public contributions of missing information, stories, and photographs.

The physical outputs, a map and scrapbook capturing spatial and thematic understandings of Kirkham's past, will endure through the HH&W programme and continue disseminating locally valued heritage assets to Kirkham visitors. Similarly, the community co-developed A-Z of Kirkham weather permitting leaflet demonstrates the value of combined physical and digital formats: the printed fold-up map remains accessible to locals and tourists, while digital copies extend reach.

However, current digital storage of the leaflet, scattered across emails, a personal computer, and the Kirkham Futures website, exposes critical vulnerabilities. This ad-hoc approach highlights the urgent need for initiatives to plan systematic digital preservation from the outset. Given the leaflet's value in capturing the HH&W programme's essence, it merits storage within HE's archive to demonstrate the

impact of community heritage initiatives. Yet without proactive data archiving conversations, such resources remain in fragile, siloed locations dependent on individual stewardship or precarious website funding.

In terms of digitisation, Lancashire Archives argued the need for strategic digitisation, emphasising that datasets should be evaluated based on both their irreplaceability and their broader appeal. Datasets containing elements of wider interest, such as family histories, listed buildings, or Kirkham's development, reflect community priorities illustrated in the Kirkham Creative Heritage Explorers research and hold value beyond the local area. To achieve these ends, collaboration between Lancashire Archives and the local community is needed to: first, create an inventory of existing materials; second, carry out digitisation of selected content; and third, ensure subsequent long-term management of the digital data. However, the absence of HE's engagement in establishing digitisation best practices or embedding these materials within the broader HSHAZ initiative raises questions about missed opportunities for programme-wide knowledge sharing and legacy planning.

Programme Documentation and Evaluation Data

By contrast, the programme's strategic documents have achieved more robust digital preservation. The feasibility report and subsequent evaluations illustrate potential techniques to engage communities with their local heritage, constituting pivotal documents in revolutionising the connection between heritage regeneration and community wellbeing. These have been archived within HE's archives and will continue to inform future initiatives with evidence-based strategies to promote local pride and wellbeing.

Helen Shearn Associates' feasibility report (2021) provided an important benchmark and evidence base informing the creation of the strategy for social prescribing. By investigating and establishing effective strategies to engage local communities with

specific targeted events, the programme met its desired outcomes. Such strategising and testing of ideas is extremely beneficial in projects where the main outcome is community engagement. Using agile frameworks for project development has long been common in product design and system creation, yet they remain underused in heritage and wellbeing programmes. The creation of the Kirkham feasibility report is both influential and visionary, one that other future initiatives could learn from. In heritage contexts, agile methods have been adopted within archival and research environments. For example, the National Archives has demonstrated benefits from iterative frameworks in heritage-focused projects such as the 'Our Heritage, Our Stories' initiative, which used Scrum techniques to adapt workflows and improve outcomes (Jell 2022). The feasibility report is stored as a .pdf file, accessible from the Kirkham Futures website, offering all stakeholders an open and transparent basis for evaluating the project's outcomes and successes.

The evaluation reports produced by independent researchers Toby Williamson and Dr Eva Cyhlarova (2022; 2024) provide crucial longitudinal evidence of the programme's impact through mixed-methods design combining quantitative wellbeing measures with qualitative stakeholder interviews and focus groups. Wellbeing scores showed measurable improvements, with life satisfaction increasing from 6.9 in the 2022 pilot to 7.8 in the 2024 final evaluation, exceeding the ONS Fylde mean score, whilst mental wellbeing scores measured by Short Warwick-Edinburgh Mental Wellbeing Scale (SWEMWBS) increased from 22.7 to 26.3, approaching UK general population norms (Williamson and Cyhlarova 2022, p. 19; Williamson and Cyhlarova 2024, pp. 25, 27). Qualitative data revealed consistent reports of health, wellbeing, and social gains, with participants describing developing new friendships, learning about Kirkham's heritage, and creating sustained community connections, including WhatsApp groups, regular coffee meetings, and the establishment of the Friends of Kirkham Library group (Williamson and Cyhlarova 2022, pp. 3, 20; Williamson and Cyhlarova 2024, pp. 31-34).

Monitoring data demonstrated substantial programme growth from 70 pilot

participants to over 110 individuals in ongoing groups, with 878 people attending various community events (Williamson and Cyhlarova 2022, p. 11; Williamson and Cyhlarova 2024, pp. 16-18).

Critical Lessons for Digital Data Management

For HE, the documented outcomes demonstrate that heritage-based social prescribing can effectively build community connections and enhance participants' understanding of local history, with participants consistently reporting they now "see the area with new eyes" (Williamson and Cyhlarova 2022, p. 21; Williamson and Cyhlarova 2024, p. 21). The programme's legacy extends beyond immediate participant benefits: the collected data on wellbeing improvements, community engagement patterns, and sustained social connections provides an evidence base for future heritage-wellbeing programmes. Key insights about the importance of standardised demographic data collection, systematic referral tracking, and longitudinal wellbeing measurement from programme inception will inform the design of subsequent initiatives (Williamson and Cyhlarova 2024, pp. 15-16, 68).

Most significantly for HE's broader HSHAZ programme, Kirkham demonstrates the value of systematic digital data collection combined with co-designed community research approaches in creating lasting knowledge resources about heritage-wellbeing programme impacts. The programme generated valuable datasets documenting participant journeys, community asset mapping, heritage discoveries, and social prescribing pathways. Yet the contrast between the robust archiving of evaluation reports and the fragmented preservation of community-generated heritage datasets, including the Creative Heritage Explorers research, participant stories, and local heritage documentation, reveals an inconsistency in digital legacy planning. Future initiatives must extend the same systematic preservation approach applied to programme documentation to encompass all datasets produced through community engagement, ensuring that community-generated heritage knowledge

contributes to a cumulative, accessible evidence base rather than remaining in isolated, vulnerable storage locations.

6.2.5. Conclusion and Recommendations

Overall, the initiative was exemplary of the potential of engaging communities through their local heritage to promote better mental health, stronger communities, and provide opportunity for prescribing. It is extremely important that these lessons are brought forward in future initiatives. With improved digital data management practices, including systematic digitisation, secure long-term storage in institutional repositories, and strategic partnerships between heritage organisations and archives, Kirkham can be seen as a pivotal moment in community-focused heritage practice.

This information will help inform several of HE's other objectives, particularly the Missing Pieces initiative, encouraging local contributions to heritage lists similar to the NHLE, and the Wellbeing and Heritage Strategy, where it is clear that heritage datasets have extensive opportunity for better community health and achieving prescribing aims. However, realising this potential requires HE to prioritise digital legacy planning across all HSHAZ initiatives, establishing clear protocols for dataset preservation, institutional partnerships for long-term storage, and embedding digitisation strategies from project inception. Only through such systematic approaches can community-generated heritage knowledge achieve the permanence, accessibility, and influence it deserves.

6.2.6. Synthesis: Heritage, Health and Wellbeing Programme

The HH&W strand occupies an unusual position in the data governance analysis of this thesis: it was the most explicitly community-centred strand across all three case studies, and consequently the one in which data creation was most firmly

subordinate to social objectives. The Ramsbottom collection is the clearest example of data reuse, whilst the Facebook group, the personal research of Creative Heritage Explorers participants, and the community stories to produce the map and A-Z leaflet were all data use, drawing on materials and knowledge held within the community before the HSHAZ began. The HH&W programme drew these out and gave them a temporary venue; it did not create an archival infrastructure to retain them.

The distinction between the programme's evaluation and monitoring data, which achieved relatively secure custody through HE's archive and the evaluation reports, and the community-generated heritage data, which did not, is significant. Institutional outputs generated for accountability purposes were preserved; community outputs generated for wellbeing purposes were not. This inversion reflects a broader pattern in the HSHAZ: data that serves institutional reporting functions is better preserved than data that serves community knowledge functions, despite the latter often having greater long-term heritage value.

6.3. Cultural Consortium

The Cultural Consortium, originally a part of the HH&W programme, received £80,000 to deliver community-based activities centred on the high street (Juste, 24 August 2023, pers. comms.). The aims were to revive the high street by restoring its historic character, and to develop a new cultural vision through artworks to improve the overall aesthetics of the town and bring communities together (*ibid*). Overall, the main aim was “to use [Kirkham's] identity, to have more of an arts and cultural destination, that can bring out its uniqueness” (*ibid*), stimulating local economic growth by re-engaging the community with activities on the high street (Fylde Borough Council 2019, p. 19). To achieve these ends, the consortium had three main aspects: the development of an annual heritage community event, the creation of a heritage trail, and the commissioning of art, including the town centre murals (Fylde Borough Council 2019, p. 19), generating diverse datasets (Table 15).

6.3.1. Data

Table 15, the data involved within the Kirkham Cultural Consortium strand.

Data input/output	Data	End location	Process and projects	File format
Input	Community research	Website	Community encouraged to carry out own research to contribute to 12 Days of Kirkham, K for Kirkham, Going Out	-
Input	Personal collections	Website	Community encouraged to share through website to contribute to 12 Days of Kirkham, K for Kirkham, Going Out	Digitised
Input	Personal stories	Website	Community encouraged to share memories to contribute to Oral History, Kirkham with Love, Going Out, Memories of Royal Events in Kirkham	.html/ WordPress
Output	Talking walls installation	Website / street	Particular stories were identified, and interviews took place as part of a taster project	
Output	Oral History	Website	Particular stories were identified, and interviews took place in the Voices Project	.mp3
Output	Archaeology Reports		Community test pits generating reports	.pdf
Output	Kirkham Through Time Map	Website	School groups encouraged to talk about local history and important sites	.pdf
Output	Kirkham Quest	Website	A quiz created to explore the local area	.pdf
Output	Kirkham futures Website	Website	Built for FBC to inform the works of the HSHAZ	.html
Output	Kirkham Treasures Website	Website	Built by the Cultural Consortium to advertise events and share results	.html/ WordPress

6.3.2. Data Reused

Data reused within the Kirkham Cultural Consortium derived from individual community members' personal collections of photographs and research. Despite primarily consisting of physical datasets, combining these information sources with digital technologies can provide greater reuse potential in the future, and provide understandings of the current interaction with heritage information. Like the HH&W strand, community members were encouraged to bring in items from their personal collections (Juste, 24 August 2023, pers. comms.). Although the materials were used in a similar way in both the HH&W programme and Cultural Consortium activities, a key difference to the HH&W programme was that these materials were digitised and then returned to the owner (Juste, 24 August 2023, pers. comms.), as was successful in the Heritage Hub in Northallerton (see 5.2.3).

Further dataset reuse consistent with the HH&W programme was personal research used to create community artworks. As with the HH&W programme, individuals were encouraged to engage and reflect creatively on aspects of their own and Kirkham's past, providing opportunities to capture Kirkham's intangible heritage. This rethinking of Kirkham's community heritage enabled local intangible heritage to be translated into tangible, visual representations, such as 'K for Kirkham' (Fig. 68). Visual representation enabled wider community engagement with the past, offering an alternative route to understanding the community's intangible heritage and increasing interest by raising questions based on the contents. Therefore, it is recommended that future projects consider incorporating artworks as a method of data dissemination to harness individuals' knowledge, stories, and experiences to capture otherwise inaccessible datasets of the past.



Figure 68, the “K for Kirkham” artwork (Kirkham Treasures, n.d.a).

6.3.3. Data Created

The Cultural Consortium also created a wide range of different datasets, including Oral History, archaeological reports and videos, each tailored to a different type of audience. Oral Histories were collected in the Talking Walls initiative (Fig. 69), to add layers to the heritage of the local area (Juste, 24 August 2023, pers. comms.), and to capture local intangible heritage stories, resonating with approaches used in Northallerton (see 5.2.4).

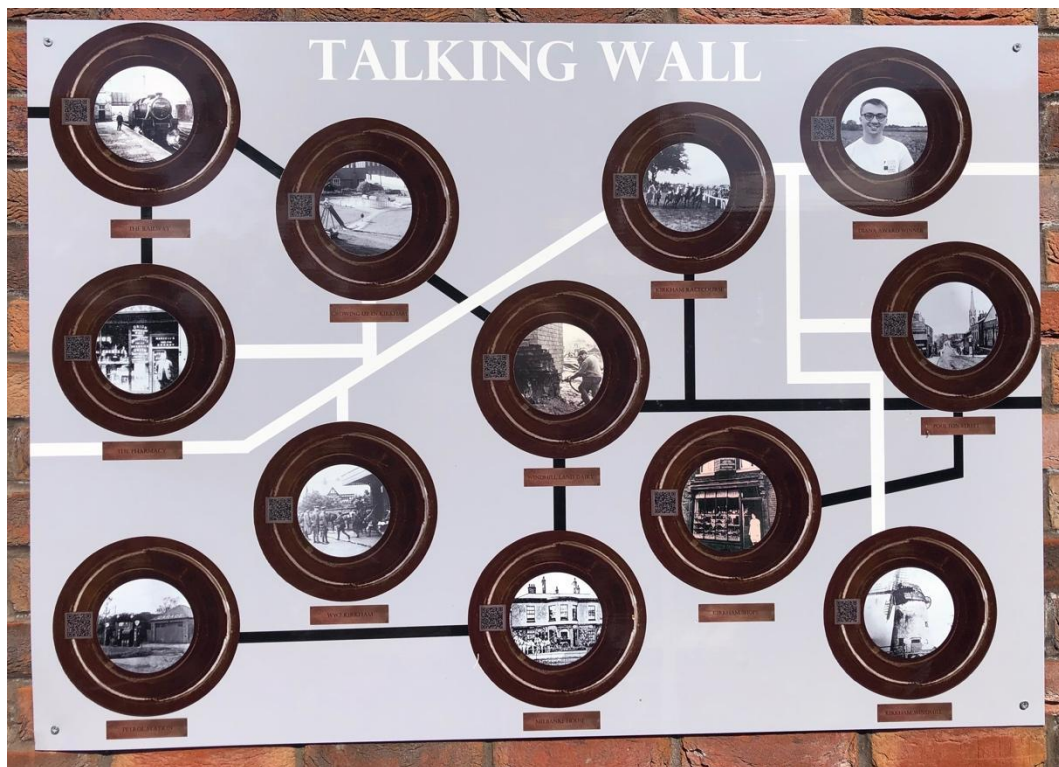


Figure 69, the Talking Wall installation.

The Voices Wall exemplifies the benefits of decentralised, community-led heritage governance. Initially established as a taster project to assess local interest in capturing Kirkham's heritage, the Wall's derived interest directly informed the expansion into the broader Voices project in collaboration with the HH&W initiative (Juste, 24 August 2023, pers. comms. - Fig. 70). This responsive, iterative approach allowed the project to evolve according to genuine community needs rather than predetermined institutional frameworks. For instance, during the Voices project, residents identified specific gaps in the historical record, such as wartime experiences of factory workers, which subsequently shaped collection priorities. The Cultural Consortium's collaborative model demonstrates how distributing decision-making power amongst stakeholders can yield more representative and meaningful heritage narratives. As noted in personal communication with Helen Shearn (11/08/2023), such collaboration enhances both community understanding of local history and overall wellbeing through active participation in the HH&W interests. This model warrants replication at scale to unlock greater stakeholder engagement across heritage initiatives.



Voices

FROM KIRKHAM & WESHAM

This is a fascinating spoken word (oral) collection of memories and stories that has been gathered from individuals who've lived most of their life in the local area.

They animate the characters, places and ways of life that are no longer and provide a real insight into people's lives.

The collection has been loosely organised into the following themes:

Growing Up • Working Life • Wartime • The High Street • Going Out in Kirkham & Wesham.

Access Voices From Kirkham & Wesham by **scanning the QR code below** or visiting **kirkhamtreasures.co.uk/oral-histories**



Thanks

To all those who have given their time and recollections.

Also to Jessica Toft, Library Officer, Kirkham Library, for her role in developing this project.

Also to Annette York & Barbara Parkinson for collecting the oral histories.



Historic England



This work forms part of Kirkham's Heritage, Health & Wellbeing programme. It has been funded through the Kirkham Futures programme, a partnership between Historic England (part of the High Street Heritage Action Zone) and Fylde Borough Council

Figure 70, a leaflet about the Voices project (Kirkham Futures, n.d. d).

However, a significant limitation constrains the Talking Walls installation's accessibility: its dependence on internet connectivity to access on-site digital materials. Currently, the installation cannot be reliably accessed without mobile data or WiFi connection, immediately excluding users with limited data allowances or inadequate network coverage. This technical barrier disproportionately affects the very communities such projects aim to serve, contradicting broader digital inclusion and 'levelling up' agendas. Before wider installation, the facility must be tested across various network providers and geographic locations to identify connectivity blackspots. Ideally, installations should be sited where multiple networks provide strong coverage, or alternatively, offline access options should be developed to ensure equitable community engagement regardless of digital infrastructure disparities. Without addressing this fundamental access issue, the democratising potential of digital heritage projects remains compromised.

Other datasets were created through community excavations in local gardens (Fig. 71). There has been long-standing demand for such projects in Kirkham: "We always wanted to do a community archaeology project" (Juste, 24 August 2023, pers. comms.), and the excavations successfully engaged residents in archaeological practice whilst generating valuable datasets. The community excavations, particularly test pits in private gardens, became a critical component of Kirkham's heritage engagement in order to promote local heritage and engage the communities. The excavations were community-led, with participating homeowners granting permission for investigations on their properties and community archaeologists providing guidance. Residents were particularly motivated to locate evidence of Roman occupation, reconnecting the community with a significant yet under-represented aspect of local heritage: "There were quite a few people really passionate about the fact that there was a former Roman bath and that there was no presence in the town for it" (Flowers, 21 July 2023, pers. comms.). From these excavations, grey literature reports were produced for deposition in the Lancashire HER, documenting the community excavations. As of December 2025, this has yet

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to occur. Glover noted that "the intention is still... to have this submitted to the HER, along with copies supplied to the local archive at St Michael's church, who will also be holding the finds. It is likely that we will create an OASIS record from this as well" (18 December 2025, pers. comms.). However, he acknowledged that this has been delayed "principally because new jobs have come along and taken the focus from all of us involved, meaning that like most archaeological units we're behind on the publishing of reports" (*ibid*). This reflects the broader challenges identified in Northallerton regarding publication delays (see 5.3.3), the systemic lag in making datasets available through the NHLE (see 4.3.4), and the time pressures facing contractors discussed elsewhere (particularly in Chester, see 7.3.4).



Figure 71, promotional material about the community excavations (credit Mike Glover).

Beyond data generation, the excavations created site records, plans, sections, and photographs, specialist finds reports and maps, building a comprehensive archive of Kirkham's archaeological landscape. Encouraging such community-led excavations,

integrated with formal archival repositories, should be a priority in future projects like the HSHAZ, as they ensure both community engagement and rigorous heritage preservation.

Nonetheless, a significant limitation undermines the project's impact: as of 2025, the grey literature reports from the community excavations remain undeposited in the Lancashire HER. This delay between investigation and public dissemination creates a problematic gap in knowledge accessibility. The community cannot yet draw upon this newly generated archaeological data when researching or sharing Kirkham's heritage, limiting the information's utility for education, further research, or heritage interpretation projects. This administrative bottleneck highlights the need for streamlined deposition protocols in community archaeology projects, ensuring that data becomes publicly accessible whilst community enthusiasm and engagement remain high. Without prompt archival integration, the full value of community-generated knowledge risks being diminished.

6.3.4. Data Sharing

In addition to considering the data created as part of the Cultural Consortium, it is crucial to examine how this information was shared. One of the most used methods of data sharing within the Cultural Consortium was the creation of websites.

Websites are a highly effective method of communicating different datasets to an equally diverse audience. Nonetheless, whilst websites are an excellent way to disseminate information, the two websites, "Kirkham Futures" and "Kirkham Treasures," have very similar-sounding names, leading to potential confusion (Juste, 24 August 2023, pers. comms.). The websites were commissioned separately; Kirkham Futures designed to inform the entirety of the Kirkham HSHAZ and containing content related to built heritage, HH&W, and Cultural strands, whilst Kirkham Treasures contains information relating only to the Cultural Consortium. Although both websites serve the broader Kirkham initiative, the lack of coordination

between commissions resulted in parallel platforms with overlapping audiences but distinct content scopes. This fragmented approach creates unnecessary navigational barriers for users seeking comprehensive information about Kirkham's heritage. Combining the two into one uniform outreach platform would reduce confusion, provide a more coherent user experience, and create opportunities for cross-referencing between the initiative's various strands. A unified platform would also facilitate more efficient content management and updates, ensuring that datasets from built heritage, health and wellbeing, and cultural projects could be explored in relation to one another rather than in isolation. The technical feasibility of such integration would depend on the respective software platforms used; however, even websites built on different content management systems can be consolidated through migration or the creation of a unified front-end interface linking to backend databases. Given that both sites serve the same geographic community and overarching initiative, retrospective coordination, whilst requiring investment, would significantly enhance public engagement with the project's collective outputs.

Challenges in data sharing can also be illustrated by the lack of effective communication between different strands of the Kirkham HSHAZ. Personal collections were amassed in both the Cultural Consortium and HH&W. Although the material was collated to serve different purposes, collaborations could have ensured that both strands of the HSHAZ had access to the material. The lack of coordination may have resulted in valuable resources being used within one strand and not the other, meaning that some material could have been digitised whilst others could have benefited the wellbeing of the community.

A further category of digital content generated through the Kirkham Cultural Consortium, and indeed across the HSHAZ programme more broadly, falls largely outside the scope of this thesis: social media. Platforms including Facebook, Instagram, and YouTube were used actively by HSHAZ delivery partners to publicise events, share community outputs, and engage audiences who would not necessarily

visit project websites or physical spaces. The Kirkham and Wesham Memories of the Past Facebook group, discussed in section 6.2.2, represents a particular case where social media functioned not merely as a dissemination channel but as a site of active heritage production, with community members uploading photographs from private collections, sharing memories, and enriching the contextual understanding of local assets in ways that no formal programme activity replicated. Short films produced through the Cultural Consortium were uploaded to YouTube, where they remain accessible but outside any institutional preservation framework.

Social media content has been treated as outside the primary scope of this thesis for practical and methodological reasons. The data is held by commercial platforms under terms of service that restrict systematic access and analysis, its volume and heterogeneity make consistent audit impossible within the constraints of this study, and questions of consent, copyright, and personal data make its inclusion in a heritage archive legally and ethically complex. These are not trivial barriers. However, the exclusion carries implications that should be acknowledged. Where social media formed part of deliberate, publicly funded heritage activity, as in the case of programme-commissioned films or photographer-in-residence outputs shared via YouTube, the absence of any preservation strategy means that materials with genuine heritage value remain entirely dependent on platform continuity and organisational account maintenance. The loss of the Kirkham Treasures website demonstrated how quickly web-based content can disappear; social media platforms present equivalent or greater risks over longer timeframes.

This represents a productive area for future research. Systematic investigation of how heritage regeneration projects delivery partners used social media as a heritage activity, what content was produced, and what has already been lost, would contribute to a more complete picture of the programme's digital legacy than this thesis has been able to provide. More broadly, developing methodologies and ethical frameworks for the selective archiving of community-generated social media

content within heritage programmes is an emerging challenge for the sector, one that the DPC and organisations such as the Community Archives and Heritage Group have begun to address but that remains unresolved in the specific context of publicly funded heritage regeneration.

6.3.5. Data Legacy

The complexity of data legacy is evident in the diverse information generated through the Cultural Consortium. One of the most significant demonstrations of the Consortium's legacy approach is the deposition of oral histories into formal archives, ensuring long-term preservation and accessibility (Juste, 24 August 2023, pers. comms.). Oral histories are irreplaceable resources, capturing lived experiences that cannot be retrospectively recreated: "it was important to capture this wonderful data and those voices of the older generation, because it can't really be replicated" (Shearn, 18 July 2023, pers. comms.). The intangible heritage captured through these oral histories includes personal memories of locally significant events, such as the Freckleton Air Disaster, which occurred within living memory, emotional responses to places and changes in the townscape, traditional practices, and community identity narratives that exist outside formal documentary records. These testimonies preserve subjective experiences of Kirkham's heritage that would otherwise be lost with the passing of older generations. For instance, stories about wartime Kirkham, the evolution of the high street, or the social significance of now-demolished buildings represent irreplaceable intangible heritage that enriches understanding beyond what material evidence alone can provide. This quote underscores the temporal urgency of oral history projects: events within living memory maintain direct emotional connections between heritage and community. By capturing and preserving these memories in accessible archives, the project safeguards intangible cultural heritage that would not have been documented without this initiative, creating resources for future research, education, and community identity.

Another consideration of the data legacy is the upskilling of community members. Training was provided by Lancashire Archives and the OHS through workshops on interview techniques, audio recording, metadata creation, and archival submission processes (Juste, 24 August 2023, pers. comms.). These skills now reside within the community, enabling autonomous heritage documentation beyond the project's funded lifespan. This capacity-building has practical implications: trained residents can document emerging topics, such as ongoing regeneration impacts or changing high street use, without requiring external commissioning. In Kirkham, collaboration between Lancashire Archives and trained community volunteers has established pathways for continued deposition of locally generated oral histories. This decentralised approach distributes heritage documentation capacity across the community rather than concentrating it within institutional frameworks alone. The long-term sustainability of such upskilling depends on maintaining relationships between local archives and community practitioners, ensuring technical support and quality standards remain accessible even after formal project completion.

Other ways in which the data legacy can be considered within Kirkham is the continuing legacy of dataset sharing. Websites have a complicated legacy, as exemplified by the different approaches used for two websites. The Kirkham Futures website was developed by the local council with institutional support and hosting infrastructure, whilst the Kirkham Treasures website reflected a community-oriented approach, relying on volunteer maintenance and community-managed hosting. Due to this reliance on community capacity without institutional backup, the Kirkham Treasures website has since been delisted, meaning the domain registration lapsed and the site is no longer accessible online, resulting in the loss of any information stored and shared exclusively through this platform. This includes event documentation that was not duplicated elsewhere. The loss demonstrates a critical vulnerability in community heritage projects: without sustainable hosting arrangements, institutional partnerships, or content migration strategies, digitally shared heritage can disappear entirely when volunteer capacity or funding

diminishes. As such, it is strongly recommended that heritage projects establish digital preservation protocols from inception, ensuring datasets are deposited in stable repositories (such as the ADS, local authority archives, or institutional repositories) rather than relying solely on project websites which have limited lifespans and depend on ongoing maintenance. This case underscores the need for redundancy in digital heritage: information should exist in multiple locations with different custodial arrangements to mitigate the risk of total loss when any single platform fails.

In the terms set out in section 3.7.4, the deposited oral histories represent a unique meeting of the threshold for a sustainable digital legacy, and the Kirkham Cultural Consortium's outputs meet that threshold in this respect alone. The closure of the Kirkham Treasures website and the absence of any archival arrangement for event documentation, films, and community research outputs is treated here as a governance finding, reflecting the absence of data management planning from project inception.

6.3.6. Synthesis: Cultural Consortium

The Cultural Consortium strand generated a larger volume of new heritage data than the HH&W programme, including oral histories, community excavation reports, artwork, and websites. Its legacy is bifurcated: the oral histories deposited in Lancashire Archives represent a model outcome, with formal custody, preservation-grade formats, and community upskilling that creates capacity for future deposits; the websites, event documentation, and most creative outputs are either already lost (Kirkham Treasures) or dependent on platform continuity (YouTube, Kirkham Futures) without institutional backup.

The strand also illustrates the hazard of treating websites as archives. The Kirkham Futures and Kirkham Treasures sites were designed as dissemination channels, but in the absence of any other repository they functioned de facto as the only access

point for much of the strand's output. When one closed, its content was lost entirely. This is not a technical failure but a governance one: the strand lacked a deposit protocol that would have routed outputs to a stable repository alongside their web publication. The successful deposit of oral histories shows the strand was capable of this; the failure of other outputs to achieve it reflects the absence of programme-level requirements that would have made it systematic.

6.4. Built Heritage

Kirkham HSHAZ's focus on built heritage derived from both the HSHAZ (HSHAZ) and the FHSF (Thorpe, 31 May 2023, pers. comms.). HSHAZ funding was "restricted" to the conservation area, while FHSF funded the rejuvenation of the remainder of the town (FBC 2019, 2). The primary objective of the built heritage strand of the HSHAZ was to enhance the "physical qualities" of the built environment and promote placemaking (Fylde Borough Council 2024a; Chatterjee and Shearn 2022).

The primary facets of the Built Heritage strand encompassed:

Public realm: These works addressed community needs and revitalised the Market Square area (FBC 2019, 13). In total 3565m² were improved (Fylde Borough Council 2024a).

Shop fronts: The project involved the creation of a style guide that incorporated new shop fronts with traditional designs, alongside repairs and implementing physical alterations to the façades (FBC 2019, 5 – Fig. 72). In total, 9 shop fronts were improved (Fylde Borough Council 2024a).



Figure 72, a proposed shop frontage scheme for Kirkham High Street (Kirkham Futures, n.d. a).

Repurposing of Buildings: This aspect focused on the restoration and renovation of upper floors of existing structures, to provide new use opportunities (Fylde Borough Council 2019, 16). This led to 1-3 Poulton Street owners investing their own funds into the conversion of upper floors (Fylde Borough Council 2024a).

The Built Heritage strand of the HSHAZ reinforced Kirkham's distinctiveness (*ibid*). Public realm enhancements tackled underutilised heritage assets, neglected public spaces, and aesthetic issues, particularly the 1960s shop units, which detracted from the historical character of Market Square (*ibid* – Fig. 73).



Figure 73, the 60's buildings around the Market Square.

These varied physical improvement schemes required planning permission, resulting in 71 new applications since 2020, including 7 for Market Square, 23 for shop fronts, and 9 for repurposing, as identified in the data audit. It is this new information, and their associated use, reuse and sharing of data that forms the analysis of the built heritage strand of the Kirkham HSHAZ (summarised in Table 16).

The analysis of built heritage datasets in Kirkham focuses on documenting changes in data production practices during and after the initiative, rather than examining how these datasets function within planning policy frameworks. This methodological choice reflects the case study's focus on understanding how community-engaged heritage projects generate, manage, and sustain datasets, and what barriers or enablers affect this process. The research therefore treats Kirkham as a case study in dataset creation and legacy planning within community heritage projects, examining what data types were produced, how they were shared, and what sustainability challenges emerged. This descriptive analysis establishes a foundation for understanding the practical realities of heritage data generation before evaluating policy impact. By contrast, the Chester case study allows examination of how heritage data becomes integrated into planning compliance and decision-making processes.

6.4.1. Data

Table 16, the data involved within the Kirkham built heritage strand.

Data input/output	Frequency total/post 2020	Data	Process	File format
Input	21/21	Historic photographs	Used to show shop front	.pdf
Input	4/4	Historic maps	Map regressions	.pdf
Output	65/35	Photos	Figure to show what was existing before works	.pdf and .jpeg
Output	114/ 68	Text – inc. heritage statements, archaeological reports, and appraisals	Written reports collated to inform application process	.pdf .docx and .msg
Output	84/50	Plans	Figure to inform what was prior/post works	.pdf
Output	85/49	Elevations	Figure to inform what was prior/post works	.pdf
Output	96/56	Map	To inform location of site	.pdf
Output	93/55	Annotated plan/elevation	Figure to aid understanding of plans and maps	.pdf
Output	7/5	3D models	2D figure to aid expression of intended works	.pdf
Output	121/ 72	Planning application metadata – address, approval status, submission date	To aid the planning process and review system	.csv

6.4.2. Data Reused

Data reuse within the built heritage strand remains limited, as one architect explained: “archives don’t form a big part of what we do... a passing moment or two of just quickly looking through what's available. And it might inform what you're doing... it might be different if that threw up something very profoundly important, but usually ... we're not seeing anything here... [or if] there is [or if it is listed]... we need to know more... we'll ask anybody and everybody [to] point us in the direction of what information is available, and we'll go and have a look at it, but usually it becomes a point of reference” (Haley, 24 August 2023, pers. comms.).

This statement reveals not mere oversight but a structural issue: data reuse is not a priority for consultants, as it extends project timescales without financial incentive. This time-pressured nature of the planning process indicates a clear call for better data availability, as if planning consultants spend limited time on looking for heritage datasets, it is the datasets themselves that need to be made more easily accessible. The NPPF's emphasis on ensuring "that the information required in support of applications for planning permission and listed building consent should be no more than is necessary to reach an informed decision" (Historic England 2017, p. 1) may inadvertently reinforce this pattern. While the policy appropriately prevents excessive burden on applicants, it creates little incentive to engage with existing heritage datasets beyond the minimum threshold. The result is that each application generates new bespoke assessments rather than building on - or contributing to - a cumulative evidence base. Over-production of standalone assessments may therefore contradict the broader policy intent of proportionate, well-informed decision-making.

A further trend discovered within the Kirkham scheme is that all archival materials (historic photographs (21 instances) and maps (4 instances)) postdate the programme's start (January 2020), indicating raised awareness of data reuse

through the HSHAZ. Furthermore, 100% of applications explicitly referencing the HSHAZ use historic photographs (e.g., Fig. 74). Yet this success reveals the conditions necessary for behaviour change: dedicated funding, programme officers actively encouraging evidence use, and explicit programme objectives around heritage understanding. Without such structured intervention, market forces drive minimal compliance rather than best practice. For Kirkham, the HSHAZ temporarily aligned incentives and applicants benefited from demonstrating heritage engagement to access funding, but the question remains whether these practices persist once external funding and oversight end.



Fig. 3 - The building that was demolished to make way for the bank building.



Fig. 4 - The elevation facing Poulton Street is visible in the above photograph (circa 1950s)

Appearance:

Please refer to drawing 21 1190 02 P01 Proposed Plans and Elevations.

The proposals under the HAZ initiative is to replace the existing windows with metal framed 'Crittall windows' or similar approved. The thickness and depth of the framing is to match the present glazing bars that are currently in place on the Birley Street windows. The proposed colour for the metal window frames is black.

The windows and door within the 1970s rear extension are to be replaced with metal windows to be in keeping with the rest of the elevation.

Damages to stonework/brickwork caused by the removal of cash machines and historic signage to be repaired with stone or brick to match the existing.

Please note, there is no proposal to amend the interior of this building which was subject to a refurbishment in 2021.

Figure 74, historic photographs embedded in the 22/0100 planning application (DC & MG Associates Ltd. 2022).

Historic photographs appeared in 21 of 121 post-2015 applications (17.4%); a modest figure that prompts critical questions. Why, despite NPPF guidance advocating such evidence (MHCLG 2024) and HE noting that "photographs, both new and historic, of the heritage asset... are always likely to be helpful" (Historic England 2019b, p. 15), do over 80% of applications omit readily accessible archival materials? Multiple explanations emerge including: architects may not know where to find materials efficiently despite guidance listing numerous sources (Historic England 2019b, p. 8); accessing archives requires time that project budgets do not accommodate; planning authorities rarely reject applications for lacking such evidence, as they are not deemed essential within planning applications in order to provide sufficient evidence, removing enforcement pressure; or alternatively the photographs may not exist or be useful for the particular application. The HSHAZ's 100% usage rate within funded applications demonstrates that knowledge and resources, not availability or relevance, constrain wider adoption. This gap is particularly significant given the ClfA Standard requiring that "desk-based assessment will establish the impact of the proposed development on the significance of the historic environment" (Chartered Institute for Archaeologists, n.d., p. 1), yet validation occurs even when assessments lack comprehensiveness.

6.4.3. Data Created

The HSHAZ shifted planning application focus from outside the conservation area toward the market square and historic core (Fig. 75).

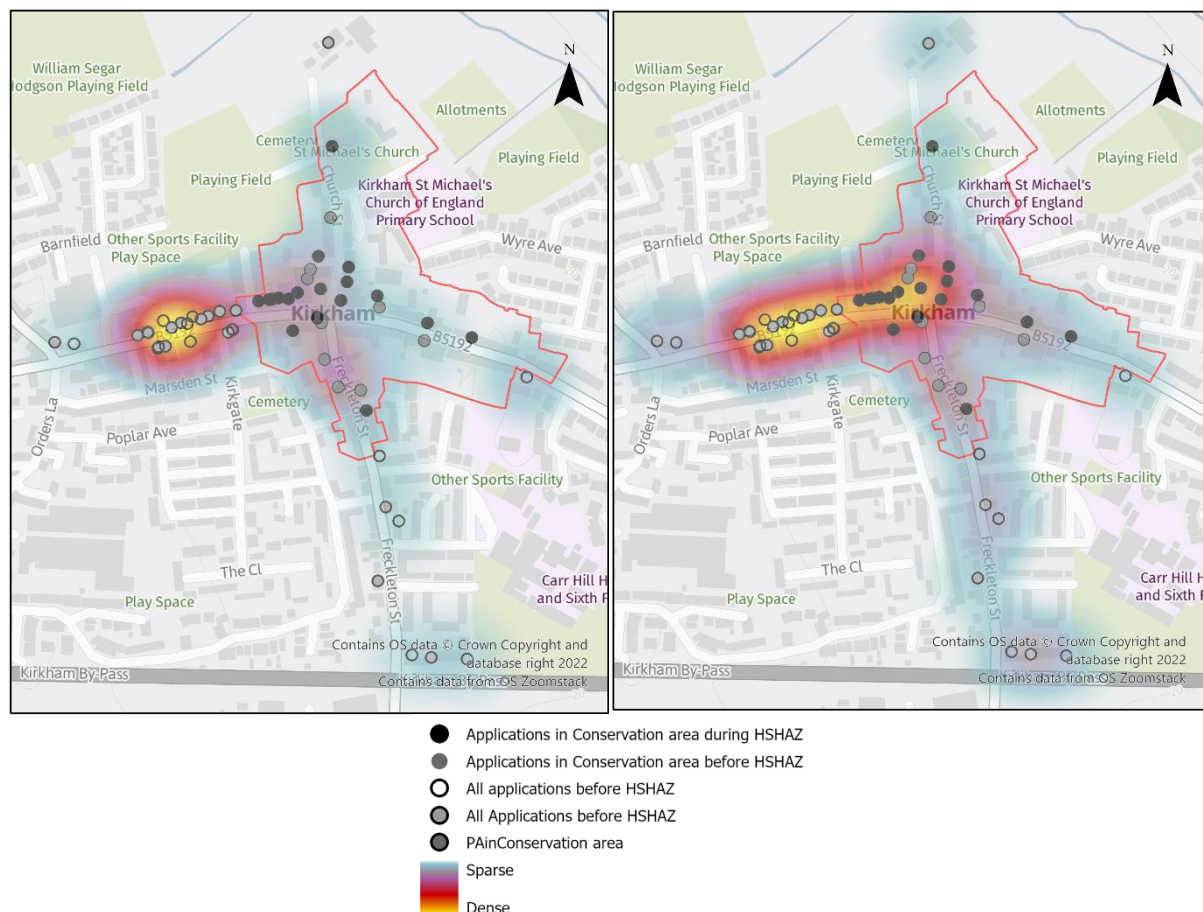


Figure 75, the changing location of applications prior and during the HSHAZ.

This concentration generated documentation, surveys, and assessments that enhanced understanding of the conservation area's fabric and character. Yet this raises a critical question: why does systematic heritage documentation require special funding programmes? The answer lies in the reactive nature of planning systems; heritage knowledge emerges as a by-product of development proposals rather than through proactive survey programmes. This contradicts the NPPF's requirement that local planning authorities "maintain or have access to a HER" containing "up-to-date evidence about the historic environment" (NPPF, para. 194; Ministry of Housing, Communities and Local Government 2024, p. 57), which implies proactive curation rather than reactive accumulation. The result is that heritage understanding develops unevenly, concentrated wherever development pressure or funding incentives direct applications, leaving other areas undocumented regardless of heritage significance. The recent loss from the NPPF main text of "the

requirement for local planning authorities to maintain or have access to a HER... seriously undermines the central role HERs in the planning process" (CIFA *et al.* 2018, p. 5), further weakening the infrastructure that might enable more systematic knowledge building.

Planning applications generated diverse datasets: written documents (94.4% (68 of 72)), maps (77.8% (56 of 72)), annotations (76.4% (55 of 72)), plans (69.4% (50 of 72)), elevations (68.1% (49 of 72)), photographs (48.6% (35 of 72)), and 3D models (6.9% (5 of 72)), with metadata universally present. The declining percentages reveal a hierarchy of what the system mandates versus what provides additional value: written justifications and site locations are non-negotiable, while photographs, which document existing conditions most thoroughly, appear in fewer than half of applications. This pattern reflects regulatory priorities that emphasise justifying proposals over comprehensively documenting existing heritage fabric. HE guidance notes that "photographs... and drawings including elevations for buildings, and detailed photographs of the features concerned, are always likely to be helpful" (Historic England 2019b, p. 15), yet the permissive framing ("likely to be helpful" rather than "required") means such documentation remains optional. The NPPF's proportionality principle, that detail should be "no more than is sufficient to understand the potential impact" (NPPF, para. 189; Ministry of Housing, Communities and Local Government 2024, p. 58), is interpreted as setting a ceiling rather than a floor, minimising rather than optimising documentation.

.pdfs dominated (100% of applications), with other formats (emails (.msg), .docx) used only for written consent. This near-total format homogeneity, while ensuring accessibility, reveals how planning portal requirements shape data dissemination. Applicants produce data in formats that satisfy submission requirements, not formats that maximise long-term research value. The .pdf preference emerges from legitimate needs, consistency, inalterability, cross-platform compatibility, but also from path dependency: planning portals are built for .pdfs, so applicants provide

.pdfs, reinforcing portal design assumptions. HE guidance acknowledges the need to "reference any sources of information used in preparation of the statement; this may help avoid lengthy reproduction of information" (Historic England 2019b, p. 7), implicitly accepting PDF-based workflows. Yet professional bodies have called for "the use and acceptance of GIS files as part of planning applications" which "might help to reduce the size of planning reports and applications and increase 'readability' as most of the data is visual" (Chartered Institute for Archaeologists 2023, p. 6), recognising that current formats constrain functionality. Alternative formats that might enable better reuse (spreadsheet data, vector files, georeferenced images) remain absent because portals do not request them and applicants lack incentives to volunteer additional formats. The gap between technological possibility and planning practice is evident in calls for "government investment in the development of HERs to improve data functionality" including "archaeological sensitivity maps" and "adoption of new data from technologies such as Lidar processed using AI" (Chartered Institute for Archaeologists 2023, p. 6), suggesting that infrastructure limitations rather than professional capability constrain innovation.

Questionnaire responses confirmed textual information as the most-used resource (Tables 14 and 15), yet this finding warrants scrutiny. Do applicants reuse text because it is most valuable, or because .pdf reports collate varied datasets together, making it easier to see the full picture rather than examining multiple other documents? The format shapes what can be reused: embedded images cannot be extracted without quality loss, maps cannot be updated without redrawing and plans cannot be measured without original Computer Aided Design (hereafter CAD) files. The apparent preference for textual data may thus reflect accessibility constraints rather than genuine utility preferences. HE guidance suggests that "it is good practice to reference any sources of information used" to "avoid lengthy reproduction" (Historic England 2019b, p. 7), yet this assumes sources remain

accessible; a problematic assumption when earlier applications' data remains trapped in .pdfs.

Table 17, the file format of data used within the Kirkham built heritage strand.

What were the most common file types you used? (n=4)		
.pdf	4	100%
Other written document	3	75%
Audio files (e.g. .wav)	1	25%
Other?	1	25%

Table 18, below, the prevalence of data types found, by planning permission applicants.

What were the most common file types you found? (n=4)		
Written document	3	75%
Image files (.jpeg / .tiff)	2	50%
Other?	1	25%

Plans and elevations, created in CAD software with accurate measurements (Fig. 76), are NPPF requirements allowing understanding of proposed alterations and heritage impact. Yet most datasets are embedded as figures within .pdf rather than shared as raw files. This practice serves immediate planning needs so reviewers can assess proposals, but destroys long-term value. Why do applicants not share CAD files? Three factors converge: intellectual property concerns (CAD files represent billable work products), portal limitations (accepting only .pdf), and absence of requirements (planning consent needs images, not data). HE guidance notes that "plans and elevations, including historic drawings, showing historical development may also be useful" but cautions that "part-plans may be less helpful, as they will not show the context for works" (Historic England 2019b, p. 15), focusing on content appropriateness rather than format reusability. The NPPF requires local planning authorities to "ensure that relevant planning conditions refer to clear and accurate plans and drawings which provide visual clarity about the design" (NPPF, para. 129; Ministry of Housing, Communities and Local Government 2024, p. 41), but again emphasises legibility for decision-making rather than data preservation. The result is a system optimised for planning review workflows but hostile to knowledge accumulation.



Figure 76, an example proposed plan and elevation used in planning application for the former TSB Building (DC & MG Associates Ltd. 2022).

Photographs provide insight into building aesthetics and condition. Despite .jpegs' advantages (lightweight, high-resolution and reusable) their prevalence has declined since 2020 (20% to 5.6%). This counterintuitive trend during a heritage-focused programme demands explanation. The shift reflects .pdf embedding becoming standard practice: rather than submitting image files that reviewers must open separately, applicants can embed images within narrative documents for reviewer convenience (Fig. 77). This improves immediate usability but degrades archival quality, as embedded images are compressed and unextractable. The decline thus represents optimisation for planning review workflows at the expense of data preservation, a rational response to misaligned incentives where applicants are judged on application quality, not dataset longevity. HE guidance emphasises that

photographs "are always likely to be helpful" and should show "the features concerned" (Historic England 2019b, p. 15), but does not specify format or resolution standards that would preserve archival value.



Figure 77, an example photograph embedded in planning application 22/0100 (DC & MG Associates Ltd. 2022).

3D models (e.g., Fig. 78) appeared more commonly post-2020, suggesting technological adoption. However, models are shared through static raster .pdf, rendering 3D data 2D and questioning why datasets were produced when illustrations convey the same information. The answer reveals tensions between innovation and infrastructure: architects create 3D models because modern design software makes this efficient, but planning portals cannot process 3D files, forcing reduction to 2D representations. This mismatch between production and submission capabilities means potentially valuable datasets are created but deliberately degraded for compatibility. The practice continues because changing portal

infrastructure requires resources planning authorities lack, while architects cannot justify maintaining separate dissemination workflows for data that satisfies no regulatory requirement. Given Historic Building Information Modelling (hereafter HBIM)'s rise in documenting built heritage, this represents a structural failure: the planning system generates 3D models as by-products but captures none of their research value. HE's current HBIM guidance aligns with this situation by emphasising HBIM as a flexible, project-level approach to information management, while offering limited direction on submission, archiving, or long-term reuse, with the result that 3D data generated through contemporary workflows is not routinely captured within planning or heritage data infrastructures (Historic England 2019b). Professional bodies recognise this gap, advocating "investment in developing new digital tools to improve access, presentation, and functionality of the planning system" and noting that "use accessible platforms for viewing GIS" would allow stakeholders to "see how the various data and proposals articulate across the full range of disciplines" (Chartered Institute for Archaeologists 2023, p. 6). However, without mandatory standards or infrastructure investment, such innovations remain aspirational. HE guidance states that submission formats are not prescribed (Historic England 2019b, p. 4), creating flexibility but also ensuring that innovation occurs only where commercially viable.



Figure 78, a 3D model depicting a possible use of the former TSB Building (Fylde Borough Council 2023).

Future initiatives should mandate sharing raw files alongside accessible formats, yet this requires resolving underlying tensions: Who maintains repositories for large 3D files? Who ensures long-term access? Who validates file integrity? The NPPF requirement that developers "record and advance understanding of the significance of any heritage assets to be lost... and make this evidence (and any archive generated) publicly accessible" (NPPF, para. 199; Ministry of Housing, Communities and Local Government 2024, p. 60) theoretically addresses long-term preservation, but applies only to assets lost through development, not the broader documentation generated through planning processes. Without addressing these infrastructure questions, exhortations to share raw data remain aspirational. Professional calls for "development of archaeological sensitivity maps" and improved HER functionality (Chartered Institute for Archaeologists 2023, p. 3, 6) recognise that better infrastructure must precede better practice.

Regarding storage, all applications appeared on the planning portal, with one excavation report in the HER (Greenlane Archaeology 2022). This divergence is revealing: archaeological reports enter curatorial systems because decades of advocacy established HERs as mandatory repositories, while planning application data remains distributed across portals with no preservation mandate. The pattern reflects differential heritage sector organisation; archaeology has curatorial infrastructure and professional standards requiring deposition, while built heritage planning operates through distributed consultancies with no equivalent deposition culture. ClfA Standards require that desk-based assessments "enable reasoned proposals and decisions to be made whether to mitigate" (Chartered Institute for Archaeologists, n.d., p. 1), but deposition requirements apply primarily to field archaeology rather than planning documentation. The NPPF requirement that local planning authorities "make information about the historic environment, gathered as part of policymaking or development management, publicly accessible" (NPPF, para. 195; Ministry of Housing, Communities and Local Government 2024, p. 57) theoretically mandates preservation, yet without specifying infrastructure, timescales, or standards, implementation remains inconsistent. Concerns persist that "it would be impossible to require developers to provide information or undertake investigation sufficient to describe the significance of heritage assets" under streamlined planning processes (CIFA *et al.* 2018, p. 14), suggesting that data governance weakens rather than strengthens over time.

Firms follow their own practices: Paul Hogarth Company retains files for 12 years due to indemnity obligations (Haley, 24 August 2023, pers. comms.). This illustrates how legal requirements shape data retention more powerfully than heritage value considerations. Twelve-year retention serves litigation risk management, not knowledge preservation, meaning deletion occurs despite potential heritage research value. HE guidance acknowledges that assessment work "is a potentially valuable resource and should be logged in the local Historic Environment Record" (Historic England 2017, p. 15), yet no mechanism ensures this occurs systematically.

The delay between creation and sharing exists to protect intellectual property; firms cannot release materials that might undercut future commissions, revealing fundamental tensions between commercial business models and data sharing aspirations that policy guidance acknowledges but does not resolve.

These challenges are not inevitable but reflect policy choices. The NPPF's proportionality principle, while preventing unnecessary burden, has been interpreted to minimise rather than optimise documentation. Calls to "clarify the expected requirements for applicants to provide analysis of significance and impact" (Chartered Institute for Archaeologists 2023, p. 5) recognise that "existing wording in a narrower sense, creat[es] an unhelpful situation where a developer could potentially withhold information from the local planning authority" (Chartered Institute for Archaeologists 2023, p. 5). Future heritage initiatives using governmental funding should assign copyright to relevant governmental actors, enabling more accessible datasets in shorter timeframes and allowing data reuse within initiatives themselves. However, this requires confronting uncomfortable questions: Would consultancies bid for work under such terms? Would copyright transfer reduce competition by disadvantaging smaller firms who rely on portfolio work? Would public copyright assignment inadvertently centralise work among large firms capable of absorbing reduced intellectual property value? Professional bodies welcome "government investment" in infrastructure (Chartered Institute for Archaeologists 2023, p. 3, 6), but without addressing the commercial structures that make data sharing disadvantageous, policy statements alone cannot transform practice. These trade-offs suggest that improving data governance requires systemic change addressing the economic structures that currently incentivise minimal compliance over best practice.

6.4.4. Data Sharing

Data sharing within the built heritage strand of the Kirkham HSHAZ represents a dynamic, iterative process, exemplified by the public realm strand. Proposals were shared with the local community and relevant FBC members through presentations and group discussions, accompanied by clear diagrams. During these sessions, feedback was actively integrated to align with the needs of the community and local council, increasing the possibility of meeting local needs. The updated plans showcased how feedback had been incorporated, with further iterations occurring if necessary. Subsequently, these plans were submitted to the Planning Portal and other pertinent bodies, such as the Highways Agency (Haley, 24 August 2023, pers. comms.). After council approval and the construction phase, finalised reports were once again disseminated to the relevant bodies.

The public realm works engaged the community in collaborative design, as Andrew Haley noted: "We are very collaborative in the way that we develop our projects from day one, with the local people [and] the statutory stakeholders" (24 August 2023, pers. comms. – Fig. 79). The public were kept informed about the intended redesign and given opportunities for bilateral communication, ensuring greater integration, pride, and validity of the works. This approach demonstrates that meaningful data sharing, making technical proposals accessible through visual diagrams and face-to-face dialogue, can successfully bridge the gap between professional expertise and community knowledge. However, the success depended on specific conditions: dedicated project funding that allocated time and budget for consultation, a committed design team willing to iterate based on feedback, and council support for the engagement process. These conditions are notably absent from standard planning applications, where statutory consultation requirements are minimal and applicants face commercial pressures to minimise revisions.



Figure 79, public consultation with Paul Hogarth company engaged in the Public Realm strand on proposed alterations to Market Square (Fylde Borough Council 2021).

Yet the process also revealed critical vulnerabilities. Challenges arose once work commenced, where communications broke down and delays generated negative public reaction (Fylde Borough Council 2024a). This breakdown is revealing; engagement during design phases succeeded because it served project objectives (securing community buy-in and planning approval), but maintenance of communication during construction, when outcomes were already determined, lacked the same structural incentives. Contractors managing construction face different commercial pressures than designers managing consultation: delays cost money, and maintaining public communication channels requires resources with no direct benefit to project delivery timelines. The communication breakdown thus exposes a fundamental limitation of project-based engagement: participation is sustained only while it serves immediate project needs, not as an ongoing commitment to transparency.

This pattern raises questions about the sustainability and scalability of the HSHAZ engagement model. The public realm consultation succeeded as an exemplar project with dedicated resources and high visibility, but can such intensive engagement be maintained across all heritage regeneration work? Standard

planning processes involve minimal statutory consultation, notice periods and opportunities to comment, but not iterative co-design. Extending the HSHAZ approach system-wide would require fundamentally restructuring planning timescales and budgets to accommodate meaningful dialogue, yet current policy pressures move in the opposite direction. As noted in policy responses, "proposed timescales for the production of local plans remains unrealistic and we are concerned that... the standard of information and analysis to support plan-making will be what suffers" (Chartered Institute for Archaeologists 2023, p. 3). If even professional planning processes face time pressures that undermine quality, how can resource-intensive community co-design become standard practice?

Moreover, the breakdown during construction reveals deeper issues about what counts as "data sharing" in heritage contexts. The iterative design process shared proposals and incorporated feedback, but the sharing was unidirectional regarding construction timelines, delays, and on-site decision-making. When unexpected issues arose, as they inevitably do in heritage work, the public who had co-designed the space were excluded from understanding why changes occurred or timelines shifted. This suggests that current approaches conceive data sharing as sharing finalised proposals for comment, not sharing the messy realities of implementation. True transparency would require sharing construction progress, explaining delays, and acknowledging when design intentions must adapt to discovered conditions; yet such operational transparency conflicts with project management practices that seek to minimise public concern and maintain professional authority.

A recommendation would be to keep project update information clearly accessible to the local community, and that these updates are mandated and regularly maintained during heritage regeneration initiatives to sustain positive connections with the local community. However, this recommendation must grapple with uncomfortable realities: Who funds ongoing communication when projects face budget overruns? Who manages communication when multiple contractors operate

on-site with different accountability structures? Who decides what information is "clearly accessible", technical details that satisfy thoroughness or simplified updates that risk oversimplifying complex issues? And to whom does this responsibility fall, the HAZPO, the local councils, HAZPLs or another entity? The HSHAZ experience demonstrates that good intentions during design phases are insufficient without structural mechanisms ensuring communication continues through implementation, yet creating such mechanisms requires resources, accountability frameworks, and cultural shifts toward transparency that current construction practices actively resist.

The public realm case also highlights a broader challenge for data sharing in heritage contexts: the tension between accessibility and comprehensiveness. The "clear diagrams" that facilitated community engagement necessarily simplified complex technical information - elevation changes, drainage systems, material specifications, archaeological constraints - into visually digestible formats. This simplification enabled meaningful dialogue but also meant that the datasets the public engaged with differed substantially from the technical documentation submitted to statutory bodies. The community participated in designing outcomes but not in the technical decision-making about how to achieve those outcomes. This raises questions about what authentic data sharing means: Is it sufficient to share interpreted, simplified information, or does meaningful participation require access to the same technical datasets that inform professional decisions? The former is practical but potentially patronising; the latter is comprehensive but may overwhelm non-specialists and create participation barriers.

Furthermore, the public realm consultation demonstrates how data sharing practices reflect and reinforce existing power dynamics. The council and consultants controlled when engagement occurred (during design but not construction), what information was shared (proposals but not budgets or constraints), and how feedback was incorporated (at their discretion, not through binding commitments). This is not to suggest bad faith, the engagement appears genuinely collaborative,

but to recognise that "collaborative" processes still operate within hierarchies where professionals retain ultimate authority. The community could influence design choices but not fundamental decisions about whether the project should proceed, what budget was available, or which aspects were negotiable versus fixed. True data sharing would require sharing not just proposals but the parameters and constraints that shape decision-making; the budget breakdowns, the engineering limitations, the regulatory requirements, and the political pressures that determine what is possible. Yet such comprehensive transparency would expose the messiness and compromises inherent in all planning processes, potentially undermining rather than building public confidence.

The NPPF requirement that planning should "be accessible through the use of digital tools to assist public involvement" (Ministry of Housing, Communities and Local Government 2024, p. 8) and that authorities should "publish a list of their information requirements for applications" (NPPF, para. 41; Ministry of Housing, Communities and Local Government 2024, p. 9) gestures toward transparency, but focuses on procedural accessibility, knowing what to submit, rather than substantive engagement with the data itself. The HSHAZ consultation exceeded these minimum requirements, but its success depended on resources and commitment that policy does not mandate. Without systemic changes that make intensive public engagement financially viable and procedurally required, the HSHAZ model remains an exemplar rather than a standard, demonstrating what is possible under ideal conditions while highlighting how far current practice falls short.

The breakdown during construction also underscores that data sharing is not merely a technical challenge of making information available, but a social and organisational challenge of maintaining relationships and trust. The community's negative reaction to delays suggests that earlier engagement had created expectations of ongoing transparency that the construction phase failed to meet. This reveals a paradox: successful early engagement can raise expectations that standard project

management structures cannot satisfy, potentially generating more dissatisfaction than if engagement had never occurred. Future heritage initiatives must therefore consider not just whether to engage communities in data sharing, but how to manage the expectations and relationships that engagement creates, ensuring that commitments to transparency can be sustained throughout project lifecycles, or being honest about the limitations of engagement from the outset.

6.4.5. Data Legacy

Whilst the ongoing use of .pdfs as the primary digital format within heritage and planning allows data to be discovered and used, as argued in the context of Northallerton (see 5.4.4), it greatly reduces reuse potential. It is worth clarifying, in the terms of section 3.7.4, that in most cases examined here PDF was not a lossy output format applied to richer underlying data but the only format in which data was created or retained. As such, it falls short of the sustainable legacy, as the datatype is not a format that permits future reuse. Furthermore, it adds layers of analysis, with both sharing policy, through the withholding of richer formats, as well as requirements to ensure data is reusable, through the creation of PDF files as the sole output. The Kirkham case demonstrates this tension: the public realm works generated extensive documentation through iterative design processes, yet this material remains trapped in .pdf format on the Planning Portal, inaccessible for future comparative analysis or reuse in similar regeneration projects. When Paul Hogarth Company's 12-year retention period expires (Haley, 24 August 2023, pers. comms.), this knowledge will be lost entirely despite having been generated through public funding. This pattern repeats across the 121 planning applications examined: valuable datasets - CAD drawings, original photographs, 3D models, are created but remain locked within .pdf or on private company servers with finite retention periods.

A recommended approach would be to encourage greater use of repositories or commercial platforms with open international formats (e.g., .e57 or .OBJ), such as

upgrading current planning portals, Local County Records Offices, or HE Archives (for materials related to listed buildings), which should mandate the deposition of raw files. The Kirkham evidence reveals specific needs: historic photographs appeared in 21 applications (20.2%) but remain embedded in .pdfs, disconnected from source repositories and impossible to locate efficiently for future research. Heritage statements about key assets, the former TSB Building, the Market Square, 30 Poulton Street, document aspects of the conservation area's character but remain isolated within individual planning applications rather than contributing to cumulative knowledge accessible through the Lancashire HER.

Once deposited in suitable repositories, DOI records should be created to ensure accurate and consistent linking of heritage assets to their associated records. This approach would reduce duplication (see 5.4.4) while enabling greater transparency and reuse potential. The Kirkham public realm case illustrates potential benefits: multiple applications referenced the market square improvements, but each accessed information through informal channels (phone calls, site visits) rather than systematically consulting archived materials. Had the preliminary designs, community feedback summaries, and construction documentation been DOI-linked and deposited in the Lancashire HER, subsequent applicants could have efficiently accessed comprehensive project information, reducing duplicated effort. Nonetheless, the creation of DOIs relies on extensive infrastructure (as discussed 5.4.4).

Furthermore, specific data types warrant targeted deposition strategies. Original historic photographs used in applications should be deposited in County Records Offices with metadata linking them to planning applications and heritage assets. Heritage and access statements, which synthesise significance assessments, should similarly be deposited in local HERs, enabling cumulative knowledge building about conservation areas. The current fragmentation means valuable archival

images and significance assessments remain scattered across individual PDF documents rather than systematically enriching heritage records.

The costs of these data depositions should be incorporated into initiative funding from the beginning to ensure capacity and enable meaningful measurable metrics. The implications of implementing such requirements, including questions about who would resource systematic deposition, whether this should be mandated in government funding specifications and tender evaluations, and whether the HSHAZ programme could serve as a test-case for wider sector adoption, are explored in the Discussion chapter (see 9.5.5), where the feasibility and potential benefits of systematic data governance in heritage regeneration initiatives are examined in detail.

6.4.6. Synthesis: Built Heritage

Kirkham's built heritage strand offers a useful comparative case alongside Northallerton's. Both relied on the planning portal as the primary data repository; both produced outputs dominated by .pdf format; and in neither case was raw data (CAD files, original photographs, 3D models) deposited in a formal heritage archive. However, Kirkham shows one distinctive feature absent from Northallerton: the HSHAZ's presence demonstrably shifted the geography of planning activity towards the historic core, and with 100% of historic photograph use being in HSHAZ related applications, suggests that the programme temporarily raised standards of evidential practice. This improvement was not embedded in governance structures, and there is no basis for assuming it persisted after funding ended.

6.5. Conclusion

The Kirkham HSHAZ initiative demonstrates the considerable potential of heritage-led regeneration to enhance both the physical environment and social fabric of a historic town. Through its multifaceted strands, Built Heritage, HH&W, and the

Cultural Consortium, the initiative delivered a broad programme of activities that simultaneously restored the historic environment, fostered community engagement, and tested new models of data use and reuse in heritage planning and wellbeing delivery.

The Built Heritage strand reinforced Kirkham's unique historic character while stimulating economic revitalisation. The physical improvements, from shopfront enhancements to public realm redesign, illustrate the power of placemaking to encourage civic pride. However, the strand also highlighted missed opportunities in long-term data management. Planning applications generated a significant volume of valuable heritage data, yet current storage practices and overreliance on static .pdfs have limited their reuse and interoperability. Future heritage initiatives must adopt more robust data governance frameworks, ensuring that raw datasets are properly archived, persistently identified, and made more discoverable for continued use.

The HH&W programme successfully integrated heritage engagement with public health aims. It empowered a diverse range of community members, particularly those underserved by traditional heritage or health initiatives, to engage with Kirkham's history and find pride and connection through creative and collaborative activities. The programme's use of community co-production, archival engagement, and targeted data reuse contributed to social prescribing objectives. However, while the programme yielded significant qualitative benefits, the limited digital legacy of its outputs, particularly the lack of centralised storage or structured archiving, again points to the need for foresight in digital preservation planning from the outset of such initiatives.

The Cultural Consortium further amplified the initiative's impact through heritage-inspired arts, oral history collection, and digital outreach. Yet, as with other strands, its data legacy has been weakened by a reliance on temporary platforms, fragile web hosting, and inconsistent archiving. Where oral histories were deposited into

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recognised archives, they serve as exemplary models of lasting community heritage. Where digital materials relied on community-managed websites or local storage, these now risk loss. These findings underscore the critical importance of long-term digital infrastructure and partnerships with professional archives to ensure sustainability.

Together, the three strands of Kirkham's HSHAZ initiative reveal both the rich opportunities and systemic weaknesses in current heritage data practices. The project shows that heritage regeneration, when aligned with community wellbeing and creative engagement, can have far-reaching effects. Yet to maximise these benefits and ensure lasting legacies, future initiatives must embed rigorous data management standards into their frameworks, promoting transparency, discoverability, and reuse across physical and digital datasets alike.

Ultimately, Kirkham's HSHAZ serves as a compelling case study of community-centred regeneration. It illustrates how data can be used to support inclusive, sustainable, and evidence-based practices, while also exposing the limitations of heritage data systems when strategic governance is lacking. If these lessons are heeded, Kirkham can be remembered not only for its revitalised streetscape and empowered community, but for its pivotal role in shaping a more coherent, equitable, and resilient approach to heritage data in practice.

6.6. Chapter 6 synthesis: data governance across Kirkham's HSHAZ strands

Table 19, Kirkham: programme structure, dataset provenance, custodianship, and legacy outcomes by strand

Strand	Delivery model	Pre-existing datasets used	HSHAZ-generated outputs	Custodian at close	Legacy outcome
Heritage, Health and Wellbeing	FBC-funded; Helen Shearn Associates; Green Close; HE Wellbeing pilot	Ramsbottom collection (physical), Lancashire Archives maps, Facebook community group	Community map and scrapbook (physical), A-Z leaflet (.pdf), evaluation reports (.pdf)	St Michael's Church (physical outputs). HE archive (evaluation). Leaflet: email / website	Partial. Evaluation secured; community heritage outputs informally held
Cultural Consortium	FBC; Positive Placemakers CIC; community volunteers	Personal collections (digitised and returned), community research	Oral histories (.mp3), community excavation reports (.pdf), websites, artwork, films	Lancashire Archives (oral histories). Kirkham Futures website. YouTube. No deposit (other)	Bifurcated. Oral histories secure; websites/films at risk; Kirkham Treasures lost
Built Heritage (shopfronts + public realm)	FBC grants; architects; Paul Hogarth Company; planning portal	Historic photographs (21 applications, all post-2020), historic maps (4 applications)	Planning applications, heritage statements, plans, elevations, 3D model images (all .pdf)	Fylde planning portal. No repository deposit	At risk. Accessible but not reusable; no deposit; IP retained by consultants

7. Chester (Cheshire)

The third case study, Chester, focuses on the built heritage strand of the HSHAZ and explores the extent to which existing datasets were reused within the initiative. This includes an examination of the datasets that predated the HSHAZ, the degree to which they were reused (7.2), and how they influenced the outputs (7.3.2 and 7.4.6) of the programme. A central research question is whether Chester exemplifies HE's long-term research engagement with a single city, most notably through the Rows Project, and how the data generated by such prior research efforts (7.2.1) shaped the HSHAZ and opened up new opportunities for heritage-led regeneration.

Chester, a historic city in northwest England located in the county of Cheshire and governed by Cheshire West and Chester Council, originated in the Roman era (Mason 2001, p. 10; Cheshire West and Chester Council 2019, p. 4). Founded as a Roman fortress, *Deva Victrix*, it has a rich history spanning over 2,000 years (Mason 2001, p. 128; Historic England 2019). "Chester... [is] a place with very, very deep history and very, very significant architecture" (Rimmer, 4 March 2024, pers. comms.). In the 5th century, Chester became part of Mercia and was fortified with extensive walls and had a bustling port (Mason 2007, p. 52). Its role as a fortified burh under Æthelflæd and its ceremonial significance under King Edgar illustrate its political centrality (Lewis 2008). Its distinctive Rows shopping galleries, with two tiers of shops, date from the 13th–14th centuries (Ward 2010, p. 49; Chester Business Improvement District 2020).

In 1968, the Chester City Centre Conservation Area, which includes most of the historical core of Chester, was designated (Cheshire West and Chester Council 2019, p. 5; Historic England 2019). Notable landmarks within the conservation area include Chester Cathedral, Chester Castle, the City Walls, the Rows, the Eastgate Clock, and over 100 other listed buildings (Cheshire West and Chester Council 2019, pp. 4–6; Historic England 2023a). The Rows are of particular significance, as

they represent a unique example of medieval shopping galleries in Europe. These multi-storeyed commercial complexes consist of vaulted stone under crofts at street level, accessed from the street, with upper galleries featuring covered walkways that provide access to a second tier of timber-framed shops at first-floor level behind and above the street-level shops. Many of these upper structures are surviving medieval halls and domestic accommodation. Although extensively restored during the 19th century, much of the medieval fabric remains intact. The Rows represent a unique architectural response to Chester's Roman and medieval topography, specifically the need to navigate the elevated ground levels created by Roman building debris, and constitute an ingenious solution to maximising commercial space, suggesting a rare example of medieval town planning on an ambitious scale (Ward 2010, p. 49; Brown 1999; Cheshire West and Chester Council 2019, pp. 4, 6). Given Chester's historical character, numerous archaeological and heritage projects have been carried out, generating extensive datasets (including building survey archived within HE's own archives - see 7.2.1).

The Chester HSHAZ initiative was implemented over a 4-year period from 2020-2024 with the Rows as its focus (Fig. 80; Cheshire West and Chester Council 2019, p.9, 13; Pakahan, 10 January 2024, pers. comms.). The programme comprised three key strands: Renew & Reuse, to revitalise vacant Rows properties; Rows Engagement, to connect people with heritage; and Rows Rebranding, to enhance marketing assets (Pakahan, 10 January 2024, pers. comms.). The aim of the initiative was to create a sustainably regenerated city centre with revived heritage assets and a more vibrant, viable high street (*ibid*). Key objectives included increased retail occupancy, footfall, and investment; strengthened community connections with local heritage, through programmes and events; enhanced physical conservation and accessibility of the medieval Rows; a renewed city brand and tourism offer; and an energised, collaborative approach between stakeholders (Cheshire West and Chester Council 2019, p.9).

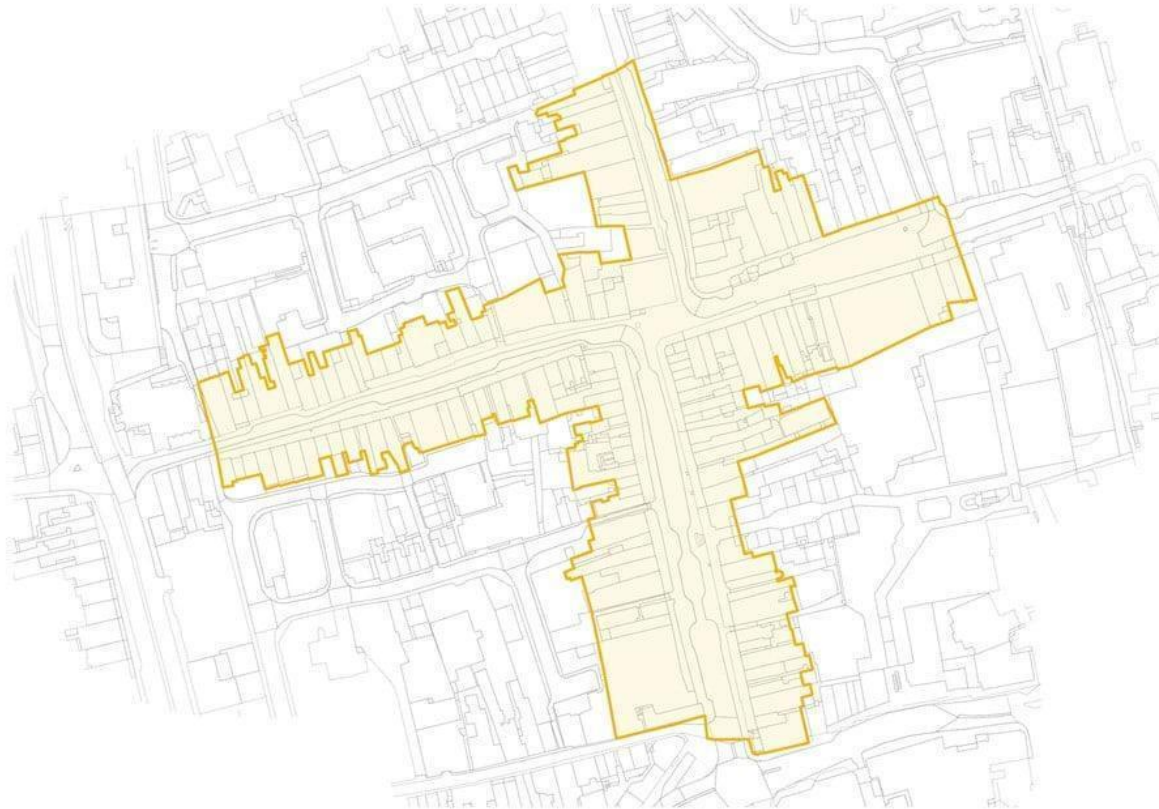


Figure 80, the HSHAZ outlined on a street plan of Chester © Crown Copyright and database right 2020. All rights reserved. Ordnance Survey Licence number 100024900.

A heritage-led regeneration of Chester's city centre was needed to revive the local economy, preserve historical assets, and reconnect the community with its history (Cheshire West and Chester Council 2019, pp. 6-8). Despite its rich history and contribution of £2 billion through tourism (Chester Business Improvement District 2020), since the 1950s Chester faced several challenges that threatened the viability of its city centre and heritage assets, forming the rationale for the Chester HSHAZ ((Potts, 12 March 2024, pers. comms.; Cheshire West and Chester Council 2019, pp. 4-5). These included a long-term decline in retail occupancy and footfall, with around 75% vacancy (Pakahan, 9 May 2024, pers. comms.). In particular, the unique medieval Rows suffered from under-investment, inappropriate alterations, high vacancy rates, and increased crime and anti-social behaviour, which deterred investors and tourists (Potts, 12 March 2024, pers. comms.). There were also issues with community disengagement from their local heritage (Cheshire West and

Chester Council 2019, pp. 6-8). Furthermore, Chester's youth population was declining as young people left for opportunities elsewhere (Cheshire West and Chester Council 2019).

7.1. Stakeholders

The Chester HSHAZ involved multiple stakeholders (Fig. 81), including:

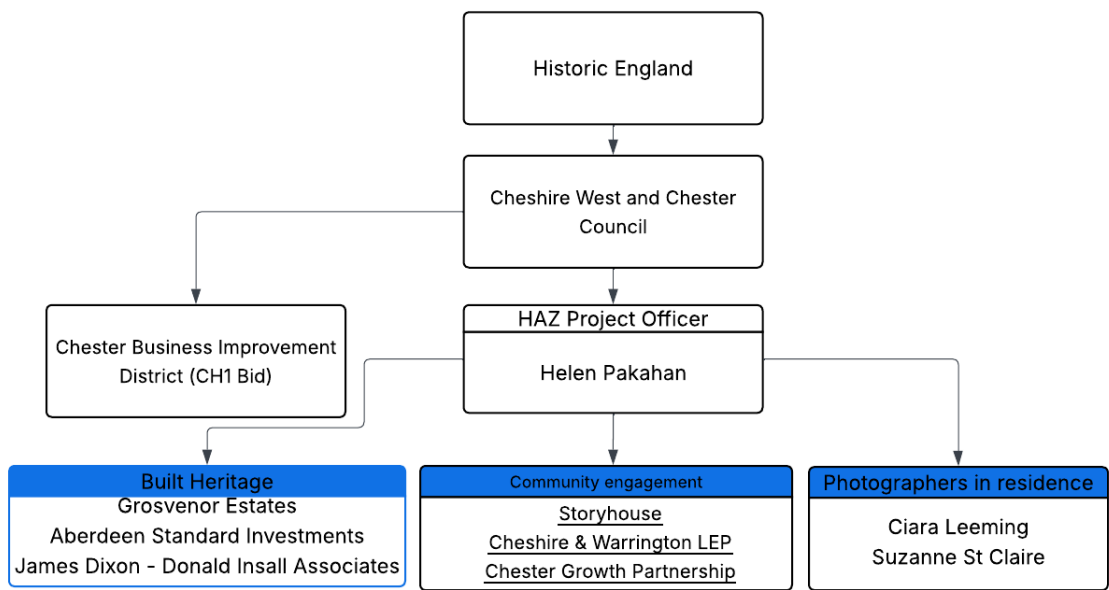


Figure 81, the stakeholders involved in the Chester HSHAZ.

HE: interested in preservation and restoration of the historic character of Chester's buildings and streetscape and increased heritage promotion in the local area. He also sought to update NHLE entries for Chester's historic assets, particularly the Rows themselves, building on their own previous research.

Cheshire West and Chester Council (lead partner (Cheshire West and Chester Council 2019, p.6, 9-10): The Cheshire West and Chester Council assumed the role of the lead partner. As the local governing authority, it served as the project sponsor and oversaw funding. The primary objective for the council was to revitalise Chester's economy, heritage assets, and community engagement (Cheshire West and Chester Council 2019, p. 8). The council's focus was to coordinate stakeholders

and deliver an integrated programme (Cheshire West and Chester Council 2019, p.9). Funding and project management were facilitated through various departments: planning (e.g., Daniel Nickson), conservation, culture, and regeneration teams (Cheshire West and Chester Council 2019, p.12).

Chester Business Improvement District (hereafter CH1 Bid) (funder, delivery partner (Cheshire West and Chester Council 2019, p.6, 9-10; Chester's Business Improvement District 2025): As a business organisation funded by local retailers, the CH1 Bid's role was funding, a delivery partner, and to lead business engagement with the scheme (Cheshire West and Chester Council 2019, p. 9). The organisation actively managed façade improvement grants to incentivise business investment, with the aim to enhance the trading environment and increase the vibrancy of the Rows' area (*ibid*, p.13).

7.1.1. Built Heritage Strand

Grosvenor Estates (funder, delivery partner (Cheshire West and Chester Council 2019, p.6, 9-10; Grosvenor 2025): Grosvenor Estates, a long-established local property developer and investor, was a funder and delivery partner in the regeneration project. The company invested in a new hotel development to bring the Rows' buildings back into use, aiming to stimulate footfall and revitalise both the Rows and the wider high street (Cheshire West and Chester Council 2019, p.7-9).

Aberdeen Standard Investments (delivery partner, funder (Cheshire West and Chester Council 2019, p.6, 9-10): Aberdeen Standard Investments, a major institutional property owner with assets in the Rows, played a role as a delivery partner and funder. Its collaboration focused on capital improvements to the Rows' properties, which aimed to enhance the value and viability of its real estate assets (Cheshire West and Chester Council 2019, p.7-9).

Donald Insall Associates (Donald Insall (delivery partner) Donald Insall are an established architectural firm with one practice based in Chester. Their role within the project was to deliver the rows development scheme and carry out a condition survey report. Their team also includes heritage consultants, which means that Donald Insall is an interesting company to investigate in terms of their data reuse.

7.1.2. Community Engagement Strand

Storyhouse (partner, cultural programme partner (Cheshire West and Chester Council 2019, p.9): Storyhouse facilitated the Rows' cultural events and activities based at the Storyhouse arts centre, with the objective to increase footfall and bring vibrancy to the Rows' area (Cheshire West and Chester Council 2019, p.9).

Cheshire & Warrington LEP (funder, delivery partner (Cheshire West and Chester Council 2019, p.6, 9-10): Cheshire & Warrington LEP provided funding and strategic support through the local enterprise partnership, aimed to enable growth in Chester's cultural and leisure offer (Cheshire West and Chester Council 2019, p.9).

Chester Growth Partnership (strategic support, partner (Cheshire West and Chester Council 2019, p.6, 9-10)): The Chester Growth Partnership, a regeneration board, championed and enabled sustainable growth, providing high-level strategic input and support to the initiative (Cheshire West and Chester Council 2019, p.9 and 11). The partnership aimed to deliver the One City Plan vision for Chester's development (*ibid*, p. 9).

Photographers (Ciara Leeming and Suzanne St Claire): The Chester HSHAZ also included two photography-in-residence projects led by Ciara Leeming and Suzanne St Claire. Here, the two contractors worked collaboratively with the community to co-produce a series of artworks enabling the community to have a heritage voice.

7.2. Existing datasets

Due to Chester's extensive history and exceptional heritage value, it has been the subject of many different research projects. As such, these pre-existing projects and their datasets will be introduced to illustrate the extensive quantities of data that could have been used within the Chester HSHAZ. The use of these datasets is shown in table 20 (7.3.1) and 21 (7.4.5).

7.2.1. Historic England datasets

HE's extensive research on the Rows of Chester, initiated by the Royal Commission on the Historical Monuments of England (hereafter RCHME) and later subsumed under HE, culminated in the *Chester Rows Research Project*, launched in 1984. This interdisciplinary initiative was undertaken in collaboration with stakeholders including Chester City Council and English Heritage. It produced a comprehensive and richly illustrated report (Brown 1999 – e.g., Fig. 82), accompanied by an extensive archive consisting of measured drawings, historic and contemporary photographs, plans, elevations, maps, artistic interpretations, and descriptive files (Historic England Archive, RCH01/016).

The core outputs of this project exist in both physical and digital formats. The printed report, digitised and made available through the ADS, provides detailed documentation on the origins, development, and conservation significance of the Rows. Meanwhile, the physical archive, held primarily at HE's Archive in Swindon and partially at Cheshire Archives, offers high-resolution drawings, survey notes, and original materials, many of which remain unavailable online (Historic England 2024a). Together, these resources represent one of the most detailed urban heritage surveys conducted on any medieval city centre in England.

Given the level of documentation produced and its clear relevance to the Rows' architectural and historic value, this archive had the potential to inform various

strands of the Chester HSHAZ. These include stallboard interventions, Conservation Management Plans, and heritage statements assessing the impact of proposed changes or applications for re-listing.

It might therefore have been expected that this rich archive would be reused within the Chester HSHAZ initiative, particularly as a basis for understanding the significance of the Rows and informing heritage statements about the impact of proposed changes or recommendations for re-listing.



Figure 82, an example illustration contained within the HE research publication. South side of Watergate Street showing the Row walkway running through buildings dating from different periods (Brown 1999, p. 17; RCHME Crown Copyright).

One of the most substantial outputs of the Chester Rows Research Project is the report *The Rows of Chester* (Brown 1999), which is publicly accessible via the ADS as a scanned .pdf. While this version ensures open access, it is presented in a rasterised format with no embedded text, meaning the content is not searchable or readily machine-readable. As such, researchers and practitioners seeking to engage critically with the material underlying the report, such as measured drawings, phasing diagrams, and building descriptions, must either manually extract information or apply Optical Character Recognition (OCR) and machine learning techniques to unlock its full reuse potential. This limitation constrains the integration of the document into data-driven heritage workflows or digital planning systems. Nonetheless, given the report's richness in architectural analysis, historical context, and illustrative detail, it is reasonable to hypothesise that the document, and the material underpinning it, would have been used within the Chester HSHAZ initiative (and is easily accessible from the ADS (see Brown 1999)). Its value lies in the detailed evidence base it offers for assessing the Rows' significance, and thus its potential role in shaping heritage statements concerning proposed changes and recommendations for re-listing.

HE listing

Separate to the Chester HSHAZ, several listings in the Chester Rows were updated, raising the possibility of other HE datasets such as The National List for England (see 2.6.6). This dataset could prove invaluable to research projects, planning applications and promoting Chester's existing understated heritage. Included within the list are descriptions of the buildings generated through architectural investigations, identifications of age, and photographs (see 4.3). These datasets could thus be supplementary to planning applications written regarding these properties. As such, the inclusion of data from this list will be investigated.

7.2.2. Other Chester heritage research projects

Mapping Medieval Chester

Mapping Medieval Chester provides a fully digital cartographic and textual resource that could have been utilised within the Chester HSHAZ initiative. The project brings together interactive maps, digitised primary texts, and interpretive essays to make datasets relating to 15th-century Chester more accessible and engaging. For example, the inclusion of annotated maps (e.g., Fig. 83) and contextualised historical sources (e.g., Fig. 84) offers valuable insights into the form, function, and cultural meaning of the Medieval Rows. The digital nature of *Mapping Medieval Chester* allows for easy integration into digital heritage tools, planning platforms, and public engagement strategies. This dataset offers significant value to Chester HSHAZ: they could have informed the Conservation Management Plan within the built heritage strand and supported efforts to promote Chester's understated heritage.

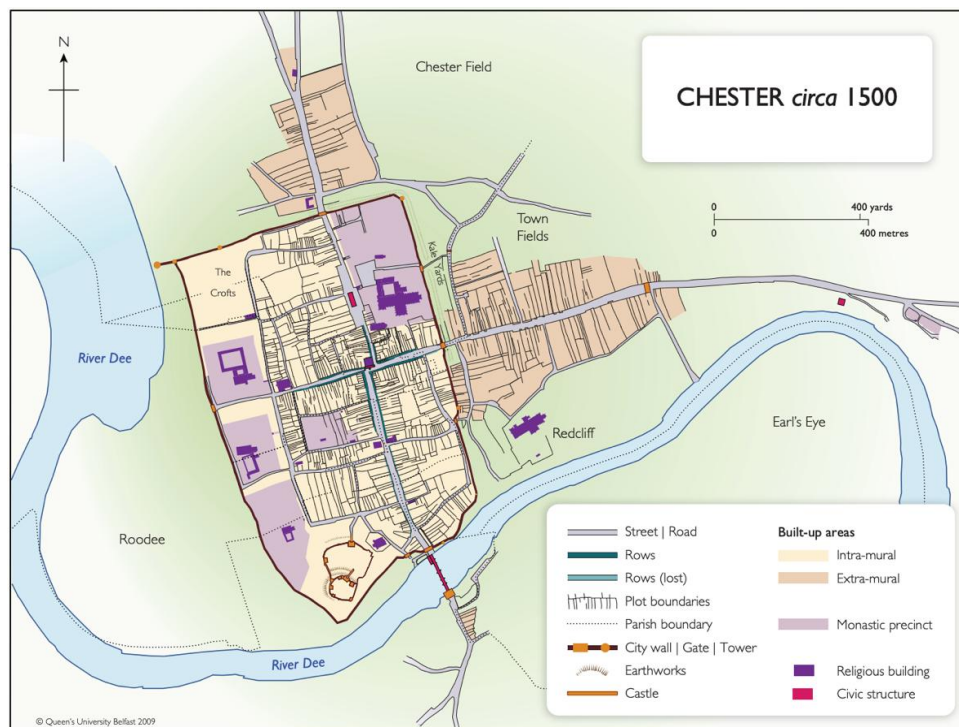


Figure 83, an example annotated map drawing (*Mapping Medieval Chester*, n.d.).

7.3. Built Heritage

The built heritage strand was a major component of the Chester HSHAZ initiative and ran throughout the duration of the project (2020-2024). It sought to revive the Rows by engaging public, private and community stakeholders through multiple mechanisms: community consultation events to identify priorities and concerns, co-design workshops where stakeholders contributed to conservation approaches, selection of key sites for intervention based on community feedback and conservation need, and direct restoration work on prioritised buildings (Cheshire West and Chester Council 2019, p.8; Pakahan, 10 January 2024, pers. comms.). Building works focused on the restoration of the shopping galleries, a distinctive feature of these multi-level covered walkways which were identified as being at serious risk of decline (Cheshire West and Chester Council 2019, p.4-5). This internationally unique asset experienced high vacancy rates, falling footfall, disrepair, underinvestment, inappropriate alterations (including disparate shop frontages), crime, vandalism, and antisocial behaviour since the 1950s (Cheshire West and Chester Council 2019, p.4-5; Potts, 12 March 2024, pers. comms.). As the Rows are “sheltered dark areas, it is a natural place for anyone...to have a safe place to sleep” (St Clare, 13 May 2024, pers. comms.). The overarching aim of Chester HSHAZ was to sustainably bring vacant Rows properties back into economically viable use through redevelopment, while also enhancing accessibility, safety, and the historical fabric and aesthetics (Pakahan, 10 January 2024, pers. comms.).

The delivery of the built heritage strand centred around two anchor projects led by major institutional investors. The two flagship redevelopment projects were a £3 million boutique hotel transformation, by the Grosvenor Estate, to bring prominent vacant buildings back into active use and a £150,000 restoration programme by Aberdeen Standard Investments, to repair and enhance the Rows properties led by Donald Insall (Cheshire West and Chester Council 2019, p.7). Overall, 106 properties

were significantly aesthetically improved (Cheshire West and Chester Council 2024b, p. 2). This repairing included improvements to Eastgate Row North such as lighting, Closed-Circuit Television (CCTV), stallboards and signage (e.g., Fig. 85) installed in line with Chester's Public Realm Design Guide (Donald Insall 2022a) and Conservation Management Plan to enhance safety, amenity, and historical character, primarily led by Donald Insall (Cheshire West and Chester Council 2024d, p.2).



Figure 85, new signage of the Rows.

Other attempts to foster heritage asset reuse included the improved physical access and highlighted historical aspects of the Rows, alongside partnerships facilitating pop-up shops, markets and cultural activation (e.g., Fig. 86 - Cheshire West and Chester Council 2019, p.7).



Figure 86, an example of upgraded public realm space, allowing adaptive reuse.

Alongside these projects, a façade enhancement scheme to incentivise business investment and creative mixed-use initiatives was established to facilitate creative use and cultural activation of empty units and spaces (Cheshire West and Chester Council 2019, p.7). Donald Insall also oversaw this strand of improvement works (e.g., Fig. 87).



Figure 87, an example of an improved shop front façade (Donald Insall 2022b).

The built heritage strand was funded by a combination of public and private sources including the council (£2,016,211), Marketing Chester (£99,179), CH1 BID (£83,113), Wildes Hotel Group Ltd (£365,201), Roman Tours (£47,623) and the University of Chester (£19,600) to help retain creative alumni post studies (Cheshire West and Chester Council 2024c, p.6; e). Capital enhancements to Bridge Street and Watergate Row took place in years one and two, followed by Eastgate Row improvements in year 3. The building frontage grant scheme was developed in year 1 and implemented in years 2 and 3 (Pakahan, 10 January 2024, pers. comms.). Projects repurposing empty shop units, for example as pop-up shops, hotels and galleries, ran across all 4 years. The works were awarded with the Chester Civic Trust's principal award for best heritage project in 2023 (Chester Civic Trust 2023).

These projects created and reused data to inform planning decisions (Table 20). By examining how the data was gathered, processed, and applied, it is possible to gain insights into the heritage data management practices and their impact on planning outcomes. This analysis will help highlight best practices, identify any gaps or areas for improvement, and underscore the significance of robust data management in urban planning initiatives.

7.3.1. Data

Table 20, the data involved within Chester's built heritage strand

Data input/output	Frequency n = 117	Data	Location	File format
Input	28	Historical maps	Planning portal	Mixture physical and digital
Input	21	Historical photographs	Planning portal	Mixture physical and digital
Input	0	Other HE Datasets	ADS, HE Archive	-
Both	24	HE's Listing Entry	HE Archive	.html – Print as .pdf
Output	117	planning application documents	Planning portal	.pdf: 73, .jpg: 36 (.jpeg: 5), .docx: 27, .TIF: 17, .msg: 3, .png: 1, .rtf: 1 and .xlsx: 1.
Output	100	Photographs	Planning portal	.pdf, .jpg, .docx
Output	33	Aerial photographs	Planning portal	.pdf
Output	4	3D models	Planning portal	.pdf
Output	98	Maps	Planning portal	.pdf
Output	71	Elevations	Planning portal	.pdf
Output	78	Plans	Planning portal	.pdf
Output	87	Annotated maps, plans or elevations	Planning portal	.pdf
Output	15	HE's application response	Planning portal	.pdf
Other projects				
Output		Drone photography and videography	Portable Hard Drive	.tiff and .avi
Output		Conservation Management Plan	Donald Insall servers	.pdf
Output		Condition survey report	Donald Insall servers	.pdf

7.3.2. Data Reused

The following section explores the successes and limitations of data reuse and offers suggestions for ways in which the accessibility and reuse of heritage data within the planning process could be enhanced.

Historic England Listing Data

The most common heritage data reused in the Chester Rows were HE's listing datasets, used within 24 heritage statements: 19 relating to repurposing projects and five to shop front improvements. The datasets themselves were easily findable, accessible and reusable through the Heritage Gateway and search tools (Historic England, n.d.e).

However, as revealed in communications with HE's Listing team, the re-evaluation of Chester's listed buildings has not yet been completed or published. According to Jayne Rimmer (4 March 2024, pers. comms.):

"The end product isn't there for Chester just yet... [as] it is for other HSHAZ's.... It's just the sheer volume of HSHAZ's... [for] just one listing team... [and Chester has] a large number of listed buildings within it... [that] gets uploaded at the end once DCMS has accepted it."

This statement reveals a critical structural misalignment: HE's list re-evaluation work is conducted in parallel with HSHAZ capital works programmes rather than preceding them. This sequencing problem stems from resource constraints, one listing team servicing multiple HSHAZ sites simultaneously, but reflects deeper issues about how heritage designation and conservation practice interact. The listing enhancement was conceived as supporting infrastructure for the HSHAZ, yet organisational capacity and approval processes (DCMS sign-off) mean this support materialises only after it could inform decision-making. This is not mere unfortunate timing but illustrates how different bureaucratic timescales operate: capital

programmes are time-limited with spending deadlines, while designation processes follow academic research timescales requiring peer review and ministerial approval. These competing temporalities are structurally incompatible.

Consequently, the updated NHLE entries, which could inform heritage statements, conservation approaches, and planning decisions during the HSHAZ delivery phase, are not available when most useful. Instead, improved list descriptions only become publicly accessible after capital works are complete and DCMS approval is secured, meaning the HSHAZ projects themselves cannot benefit from the enhanced understanding of significance that the listing work generates. Had the list enhancement been completed earlier in the HSHAZ timeline, updated significance assessments could have influenced building owners' approaches, informed grant priorities, and provided more robust heritage statements. The Chester HSHAZ therefore demonstrates that without fundamental restructuring, either frontloading designation work before capital programmes begin, or creating interim mechanisms to share draft findings, such initiatives will continue generating knowledge that arrives too late to inform the conservation interventions it was intended to support.

Another important consideration is the extent to which the NHLE dataset is being meaningfully interacted with during the planning process. While reuse takes multiple forms, including screenshots from the Heritage Gateway (Fifield 2022 - Fig. 88) and .pdf exports embedded in heritage statements (Sibson 2022 – Fig. 89), the most common practice is to copy and paste the NHLE entry text into the heritage statement as a separate section. This reproduced text typically appears without additional analytical commentary or integration with the rest of the application (Fig. 90).

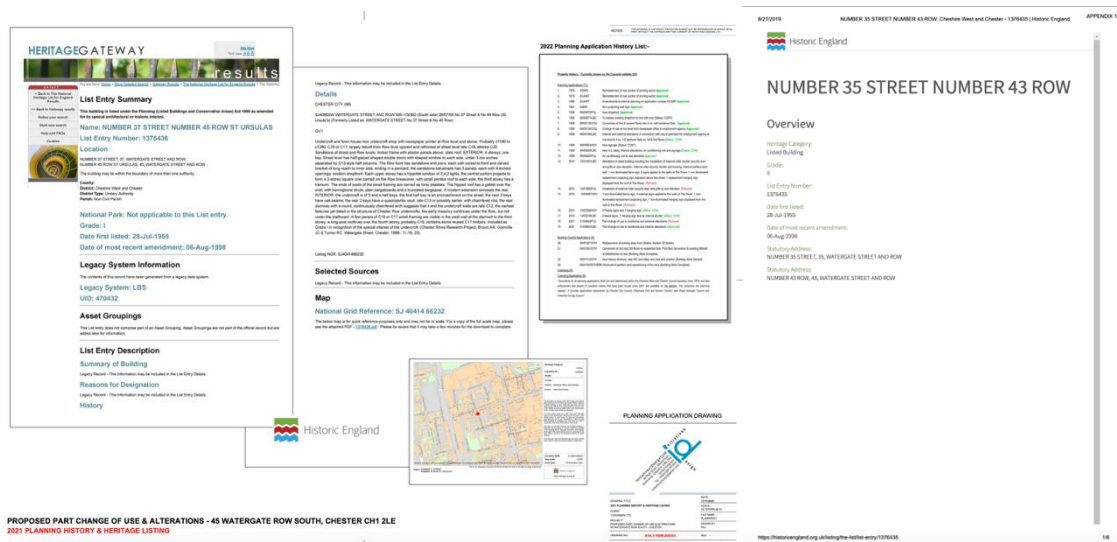


Figure 88, above left, a screenshot of the Heritage Gateway data reuse (Fifield 2022b). Figure 89, above right, the embedded .pdf within the planning application (Sibson 2022). Figure 90, below, evidence of copied text to be embedded in the text to be formatted like the rest of the Heritage Statement (Ellis-Jones 2021).

Historic Features of the building

From Historic England Listing text:

CHESTER CITY (IM)

SJ4066SE EASTGATE STREET AND ROW 595-1/4/160 (North side) 10/01/72 No.31 Street and No.25 Row (Formerly Listed as: EASTGATE STREET No.31 Street and No.25 Row)

GV II

Undercroft and town house now street shop, Row shop and offices. Rebuilt probably 1888, although Douglas had submitted proposals in 1867, and G Williams in 1864. Sandstone, partly now pebbledashed, and timber framing with plaster panels; brown tile roof with ridge at right angle to street.

This approach is often justified on the basis of maintaining formatting consistency within planning documents. However, it raises concerns about whether heritage data is being used as a meaningful analytical resource or simply as a checklist item demonstrating procedural compliance. The distinction is significant: meaningful engagement with NHLE data would involve interpreting the listed building

description in relation to the proposed works, identifying which specific aspects of significance might be affected, and using this analysis to inform design decisions.

Why does this occur? Three factors converge: first, commercial pressures incentivise template-based approaches where consultants maintain "ground base" text for conservation areas and adapt it minimally for each application (Potts, 12 March 2024, pers. comms.). This is rational business practice; bespoke analysis requires additional resources, but transforms heritage statements into copy-paste exercises (see Kirkham 6.4.2). Second, validation processes rarely challenge formulaic submissions. If applications containing copied NHLE text are routinely approved, consultants learn that superficial engagement suffices. Third, the guidance itself may enable this approach: HE states that heritage statements need not follow prescribed formats (Historic England 2019b, p. 4) and that "the level of detail should be proportionate" (Historic England 2019b, p. 1), which practitioners interpret as setting a minimum rather than an aspirational standard.

As Pendlebury (2012) argues, planning and conservation practices are often shaped by proceduralism, where demonstrating that heritage has been 'considered' takes precedence over genuine engagement with significance. The copy-and-paste approach exemplifies this tendency, reducing heritage data to a token of compliance rather than a basis for interpretation or critical reflection. This creates a paradox for programmes like HSHAZ: the NPPF requires assessment of impact on heritage significance (MHCLG 2024), yet investing public funds in enhanced designation research, as HE carried out within the HSHAZ, yields limited value if improved NHLE entries continue to be used procedurally rather than analytically.

Historical Photographs

Existing research projects, such as the 'Rows' Project and contributions to the NHLE, have created a publicly accessible archive of historical photographs of Chester's built environment in HE's archive (Historic England 2024a). Historical

photographs appeared in 21 Chester HSHAZ-related planning applications (e.g., Fig. 91), typically within heritage statements to illustrate the architectural or historical character of the asset. All eight concerned the repurposing of buildings, with one also proposing shopfront alterations.



Figure 91, an example of the use of Historical Photographs within planning application 21-04855-LBC (Edgeller 2021).

Notably, most images focused on external elevations, particularly the Rows, while corresponding planning works often concentrated on internal alterations, an exception being application (Wetjen 2022), which included some interior imagery. This pattern suggests strategic use of visual material to emphasise aspects of heritage significance most likely to support applications. Why would applicants foreground exteriors when proposing interior works? The answer reveals how heritage assessment can be instrumentalised: exterior photographs of the iconic

Rows evoke Chester's distinctive character and heritage value, creating favourable context for applications, while omitting interior evidence avoids drawing attention to potentially significant fabric being altered or removed. This is not necessarily duplicitous but reflects rational response to assessment frameworks that emphasise external architectural character, itself a legacy of listing practices that historically prioritised facades over interiors.

However, this pattern raises questions about selectivity and proportionality. By foregrounding exterior character through generic Rows imagery and omitting interior features, especially when those interiors are subject to alteration, applicants may be inadvertently limiting heritage assessment scope. Historic photographs of shop interiors, including retail fixtures, ceiling details, and spatial arrangements, exist within archival collections such as those documented in Brown's Chester Rows research (Brown 1999) and Cheshire Archives holdings. These interior photographs could provide comparative evidence for assessing the significance of features proposed for removal or alteration. Their absence from heritage statements potentially undermines NPPF paragraph 195, which stresses that detail should be proportionate but sufficient to understand the proposal's impact on significance (MHCLG 2024). If interior alterations are proposed, proportionate assessment would logically require interior photographic evidence, both contemporary and, where available, historical, to establish what is being lost or changed.

From a heritage perspective, this can lead to potential loss of undocumented and unpreserved heritage assets, such as building use and internal fabric, diminishing heritage datasets. This trend might indicate that fewer interior records are accessible from archives, either because historically the exterior was considered more important to capture, or modern practices find the exterior easier to showcase. Another factor is the predominance of exterior photographs in planning applications, with only two interior photographs used, both by Donald Insall (most likely due to their internal heritage consultants having experience in heritage research) (Potts, 12

March 2024, pers. comms.). The Donald Insall exception is revealing; firms with dedicated heritage research capacity produce more comprehensive documentation, suggesting that the problem is not availability of interior imagery but lack of research time in standard planning budgets (see 6.2.2). This returns to the commercial structures discussed in Kirkham: comprehensive heritage assessment is expensive, and without regulatory enforcement, minimum compliance prevails.

Whilst heritage body historic photographic archives contain a wealth of information, it is important to consider what datasets are instantly accessible. A quick Google search reveals that several images used in applications (e.g., Figure 84 and 86), including those on the planning portal, are readily obtainable through ShoutWiki pages and Mary Evan's Picture Library (The Keasbury-Gordon Photograph Archive, c. 1920s - Figures 86, 87 and 88). Ultimately, it is not the source that should be the focus, but rather the variety of places where these photographs are stored, indicating the disparate nature of heritage resources.

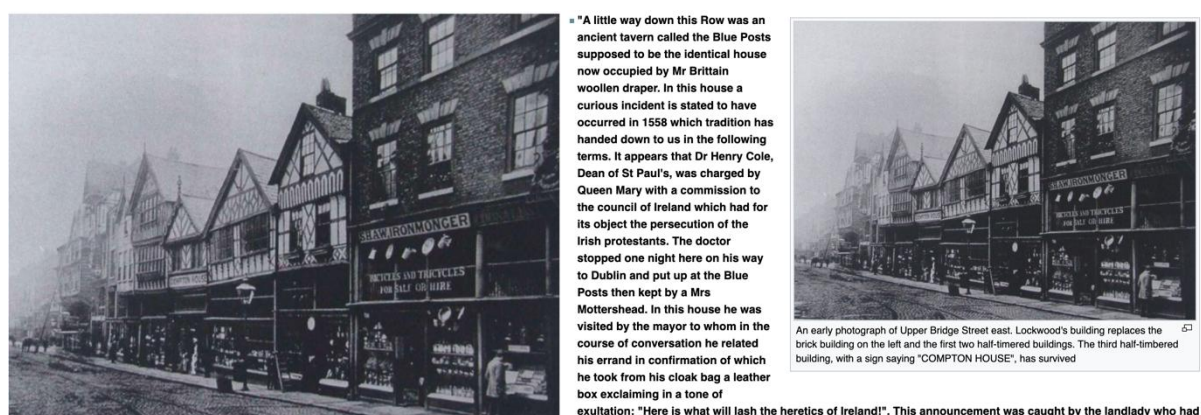


Figure 92, left, historical photographs in applications 20/00491/FUL (McCormack 2020) and Figure 93, the image used in Fig 92 found for this thesis (uploaded by Hooligan (2014), Chester ShoutWiki (CC BYSA 3.0), demonstrating the ease of finding photographs reused within the planning applications.



Figure 94, historical photographs in application 23/02160/LBC (Cragg 2023), Figures 95 and 86, the images inside Fig 94 found for this thesis found from easily discoverable archives, uploaded by Hooligan (2014), Chester ShoutWiki (CC BYSA 3.0); (right) Vintage Lantern Slide (Photo no. 13935905) and left © The Keasbury-Gordon Photograph Archive/Mary Evans.).

Number 29

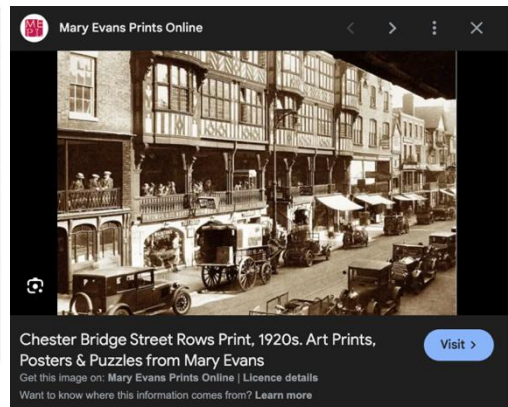
Number 29 is a brick building from about 1800 with cast iron Doric columns at the row level. The site of any medieval undercroft is largely obliterated by a vast subterranean printing press room.

Numbers 31-35

St Michael's Row is a large Vernacular Revival steel framed building of 1909-11 with a half-timbered facade designed by W. T. Lockwood, for the second Duke of Westminster. It replaces a similar scaled (but four bay) building of 1863 by Edward Hodkinson, and incorporates the row level entrance to St Michael's Arcade. The Row shops flank a pilastered, segmental archway with "figurehead" corbels, one a female, the other a bearded male. The frontage takes the form of a symmetrical, "E-shaped", late Elizabethan house, jettied (slightly) at each storey. The almost level stallboards and the Row walk are paved in terrazzo. The shopfronts to each side of the arcade have recessed doors in basket arches with Art Nouveau carvings.



Upper bridge Street after 1863, showing the prominent building with four gables designed by Edward Hodkinson and later replaced by Lockwood's St Michael Row. Note that St Michael's rectory is now "half-timbered" (compare with the photo above).



Chester Bridge Street Rows Print, 1920s. Art Prints, Posters & Puzzles from Mary Evans

Get this image on: Mary Evans Prints Online | Licence details
Want to know where this information comes from? Learn more

However, more intriguingly, photographs used in HE's own research projects (Fig. 97), including those used to compile and illustrate entries in the National List for England, are not as easily obtainable. This is because HE's research photographs are typically held in internal archives or project-specific collections not routinely made publicly accessible through standard Heritage Gateway or NHLE interfaces, with some data available through HE's England's Places (Historic England, n.d.b). Whilst listing descriptions themselves are publicly available, the supporting photographic evidence used during research and listing processes often remains within HE's institutional repositories, accessible only through specific requests or research permissions. This creates an asymmetry: the textual products of HE's research are freely accessible and routinely copied into planning applications, but the visual evidence that informed that research, which could provide valuable

comparative material for assessing heritage significance, remains difficult for planning consultants and applicants to locate and use.



Hall fireplace at the Leche House, 17 Watergate Street
(RCHME @ Copy Copyright)



Staircase in eastern part of Booth Mansion, 28-34
Watergate Street (RCHME @ Copy Copyright)

Figure 97, a citation in application 22-02903-LBC (Wetjen 2022).

Why does this asymmetry exist? It reflects organisational structures where designation teams produce NHLE text as public-facing outputs but treat supporting photography as internal research materials. This distinction may have made sense in pre-digital eras when photograph duplication was expensive, but persists through institutional inertia rather than contemporary logic. The result is that publicly-funded research generates visual evidence that remains inaccessible to the public sector (local planning authorities) and private practitioners who could benefit from it. This is particularly problematic given HE's stated commitment to open data and the NPPF requirement that local planning authorities "make information about the historic

environment, gathered as part of policymaking or development management, publicly accessible" (Ministry of Housing, Communities and Local Government 2024, p. 57). The organisation fulfils the letter of this requirement through NHLE text availability but not its spirit, as the evidential basis remains locked away.

Beyond the collections already utilised in Chester applications, several other significant historic photographic resources exist both nationally and locally. Nationally, The National Archives holds extensive photographic collections including government survey photographs and planning records. HE's own archive contains photographs taken during listing surveys and building recording projects, though as noted above, these are not routinely made publicly accessible. For Cheshire specifically, Cheshire Archives and Local Studies hold substantial photographic collections documenting Chester's built environment, including commercial photography, planning department records, and donated private collections. Additionally, the University of Chester's archives contain relevant visual material. Without coordinated efforts to improve metadata and standardise digital access, the potential for these rich visual resources to inform heritage planning will remain underutilised.

Historical maps

Within planning applications, it is standard practice to include modern cartographic visualisations to contextualise the proposed site, typically in the form of site location and block plans. However, in heritage-led applications, particularly those submitted under initiatives such as Chester HSHAZ, there is also a well-established expectation for historical mapping to support assessments of significance and change over time. This approach, commonly known as map regression, is outlined in guidance from both HE and the ClfA, where it forms part of a robust heritage statement or desk-based assessment (Chartered Institute for Archaeologists 2020a; Historic England 2019).

Given Chester's rich historical documentation and the availability of high-quality cartographic resources, such as the Historic Towns Atlas and digitised Ordnance Survey maps via the National Library of Scotland (NLS, n.d.), it was anticipated that these materials would feature in many applications. This expectation is borne out to a degree: historical mapping appeared more frequently than historical photographs across the Chester HSHAZ applications (28 instances). These maps, predominantly included in heritage statements (Fig. 98), contributed to a layered historical narrative of the site and its surroundings. Their use highlights how applicants draw on geospatial depictions of the past to substantiate the heritage value of buildings and to argue for the appropriateness of proposed interventions. While not a requirement in the same way that modern mapping is (modern being required in all applications, historic in applications of significant heritage value, where understanding the development and transformation of the site over time is necessary to assess its significance and inform appropriate change), the consistent inclusion of historical maps underscores their role in reinforcing heritage significance and supporting the case for planning approval.



Comparison of 1873 and 1908 OS maps – Leche House is marked with a red dot

Figure 98, example of historical map use in application 21-04855-LBC (Edgeller 2021).

Existing applications

Seven planning applications in Chester demonstrated evidence of reusing existing data from previous planning applications. This practice is exemplified in the case of 22-04283-FUL (Fifield 2022), where the application not only reused existing application details but also incorporated existing plans, elevations, and screenshots of planning consent (Fig. 99). In this case, the building in question had been subject to a previous planning application that was approved. As the more recent application proposed architectural works that substantially overlapped with the previously consented scheme, it was deemed both appropriate and efficient to reuse the existing datasets rather than commissioning entirely new surveys and drawings. This approach was facilitated by continuity in professional practice: the same applicant or architectural consultant was involved in both applications, ensuring institutional knowledge of the earlier scheme and straightforward access to the original documentation. Additionally, the relatively short time interval between applications meant that the building's condition had not materially changed, making the earlier survey data still relevant and accurate.

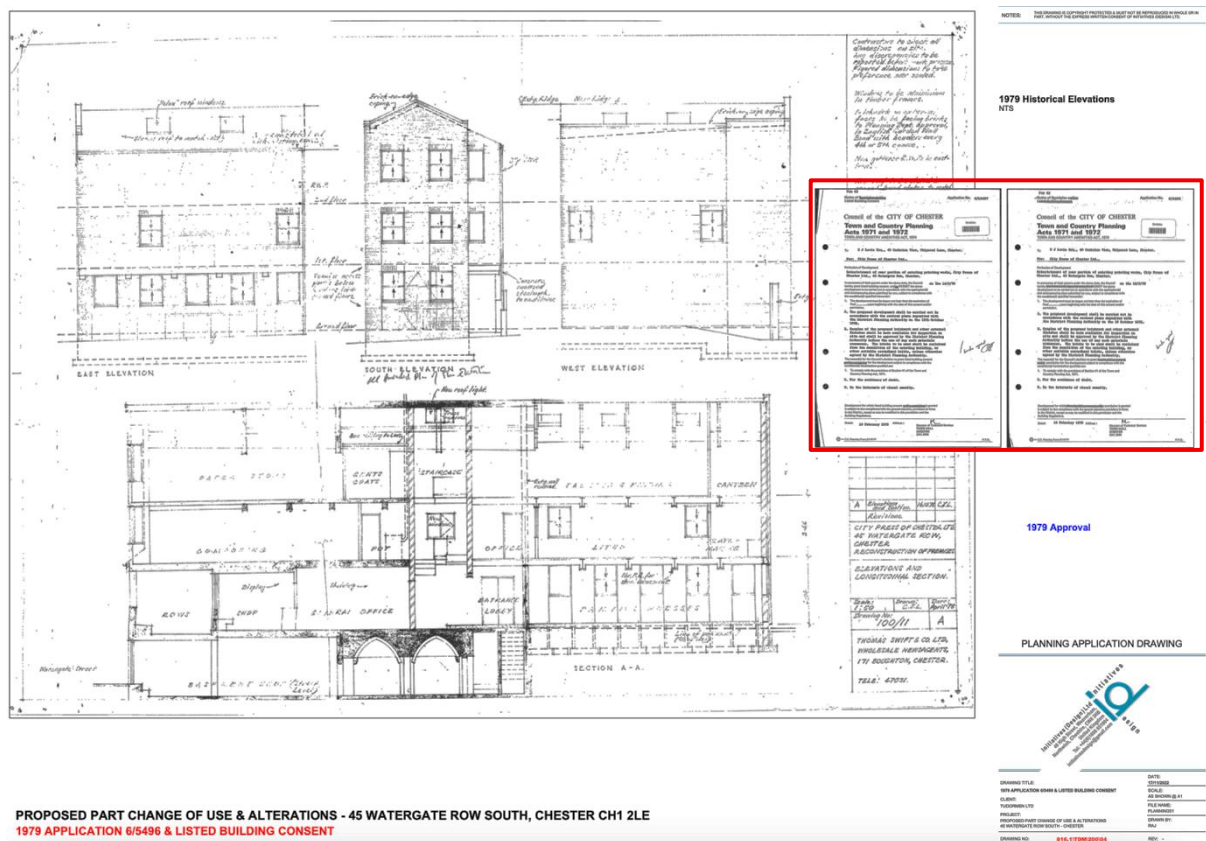


Figure 99, clear reuse of existing datasets in application 22-04283-FUL (Fifield 2022).

This extensive reuse of datasets underscores the feasibility and potential advantages of leveraging existing datasets for planning processes. Where proposals build incrementally on previously assessed schemes, reusing archived planning data can reduce costs, accelerate application preparation, and ensure consistency in how heritage significance is understood across successive interventions. This could be a valuable asset when supporting new planning applications, particularly in conservation areas where multiple phases of works to the same property are common.

Despite the inclusion of earlier planning materials in recent applications, this case also illustrates a persistent challenge when reusing planning application datasets: the limitations posed by the .pdf (see Northallerton 5.4.4), rendering the most practical way to reuse data to be through the use of screenshots (Fig. 99).

According to guidance from HE and the NPPF (MHCLG 2021; Historic England 2019), Heritage Statements and Design and Access Statements are intended to demonstrate a clear understanding of a site's heritage significance and how proposed changes respond to it. They also provide a key opportunity for applicants to show awareness of past interventions, assessments, and contextual materials. However, evidence from practice suggests this potential is not always realised.

This pattern was also evident in application (Stockton-King 2023), where the applicant acknowledged the existence of relevant supporting material within the planning portal (Fig. 100), but did not reuse the actual datasets, particularly image-based or geospatial materials. This represents a missed opportunity. Further evidence is shown by a familiar challenge in PDFs (see Northallerton 5.4.4), the truncation of text (almost an exact replica of the issues shown in Fig. 57), suggesting that the applicant did not check their datasets for dataset issues. In the case of 22-04283-FUL (Fifield 2022), where data reuse did occur successfully for the same building, the reused materials included elevations and plans. This demonstrates that when geospatial data, measured surveys, or photographic documentation from earlier applications is systematically integrated into subsequent proposals, it can provide valuable comparative evidence and reduce duplication of effort. The failure to follow this approach in other applications meant opportunities were missed to build on existing knowledge and create more informed assessments of cumulative change to heritage assets.

Proposal Number:	PP-11863500
Version Number:	1
Document Type:	Elevation (Front) - Proposed
This document is covered in:	Elevation (Front) - Existing - 0179-36 EXISTING AND PROPOS
Document Description:	

Figure 100, the file format .pdf causing the loss of data from application 23/00224/LBC (Stockton-King 2023).

These findings suggest that even when datasets are findable and accessible, they may not be reused in a meaningful way for full clarity of the planning authorities and amenity societies as they are not able to review available information collectively. This may reflect limitations in the content of the available material, but it may also point to barriers to reuse such as formatting, lack of clarity on licensing, or insufficient signposting. This disconnect between availability and reuse raises questions about how well current planning documentation practices support the goals of transparency, cumulative knowledge, and data efficiency. These issues are explored further in aspects of data creation.

7.3.3. Data Created

This data creation section will first look at datasets created outside of the planning applications before delving into the planning applications and the impact of NPPF and HSHAZ.

There are several other datasets that were created as part of the Chester HSHAZ that are not directly related to planning applications. These are a condition survey report and drone photography.

Condition survey report

As part of Donald Insall Associates' broader involvement in renovation projects on the Rows, a detailed condition survey report was produced for council-owned sections of the public realm, including the stallboards and supporting infrastructure. Each section of the Rows was given an individual assessment sheet, in which key components (ceilings, walls, floors, balustrades, lighting, and so on) were recorded and assessed, with associated repair recommendations (Potts, 12 March 2024, pers. comms.). The report also included a coordinated painting scheme to ensure a unified aesthetic across the Rows, proposals for balustrade restoration, and a cleaning and replacement programme for stallboards. Funded through the Chester HSHAZ and designed to stimulate additional private investment, the survey represents an important piece of indirect heritage research. Notably, it attempted to characterise the stallboards by historical period, identifying traits such as wider, hand-cut Elizabethan boards versus narrower, machine-cut Victorian replacements.

The creation of this report demonstrates the level of heritage-sensitive planning integrated into the Chester HSHAZ programme. However, it also raises important questions around data longevity and accessibility. Despite its research value, the current status of the report's archiving and discoverability is underwhelming. The report is available through the Chester planning portal in the relevant application, as well as being stored on the council's servers. Without proper archival strategy, there is a risk that this detailed and valuable dataset, produced with public funding, may not be accessible to future researchers or HE.

Why does this risk exist? It reflects the absence of designated preservation responsibility within project structures. The report was commissioned to inform conservation works, not to create a permanent heritage record. Once the project concludes, no individual or organisation holds responsibility for ensuring its long-term accessibility. The council stores it on their servers, while HE, despite funding the HSHAZ, has no formal mechanism to collect such outputs systematically. This

pattern, also evident in Kirkham (see 6.4.3), reveals how publicly funded heritage research becomes institutionally orphaned once projects end. The NPPF requirement that local planning authorities "make information about the historic environment, gathered as part of policy-making or development management, publicly accessible" (Ministry of Housing, Communities and Local Government 2024, p. 57) theoretically mandates preservation, yet without specifying who implements this, how long materials must be retained, or what constitutes "accessible," the requirement remains aspirational.

This situation highlights a broader challenge across the Chester HSHAZ initiative: while valuable heritage data was produced, mechanisms for archiving and sharing it were inconsistent. The Donald Insall report could serve as a model for future area-based conservation initiatives, both in terms of its methodology and its potential legacy. To maximise its value, local authorities or funders such as HE should consider requiring the deposition of such datasets in trusted digital archives and ensuring they are properly linked to planning records and HERs. Similar holistic surveys and conservation reports should be encouraged in other conservation areas as part of any future HSHAZ or place-based regeneration programme, provided that robust plans are in place to archive and make them accessible for the long-term. However, this recommendation encounters the same structural obstacles identified in Kirkham (6.4.5): without mandatory deposition requirements, allocated funding for archival costs, and designated institutional responsibility, exhortations to preserve materials remain voluntary and therefore unreliable.

Drone photography and videography

A further extensive project initiated by Donald Insall was a drone-based condition survey of the Chester Rows. This survey employed high-definition aerial photography to capture the entirety of the Rows' roofs, with particular attention to problematic areas such as damaged chimneys and deteriorating structures. Unlike other heritage datasets that are specified within formal project documentation or

planning briefs, this dataset emerged informally as a practical response to a specific conservation need to assess the physical condition of the roofs comprehensively. This highlights a recurring theme in built heritage projects: the creation of high-value datasets as by-products of conservation activity rather than through pre-defined data specification processes.

One of the most significant issues raised by this dataset is its sheer scale. The high resolution and coverage resulted in a dataset so large that it could not be transferred or shared via standard online platforms. Instead, it is currently stored on a portable hard drive, making it vulnerable to single-point failure. This storage method raises serious concerns regarding long-term accessibility, preservation, and data loss. Although the dataset supports effective management and conservation planning, particularly for difficult-to-access roof structures, its current fragility underlines broader challenges in heritage data infrastructure.

Why does technologically sophisticated heritage data end up stored on portable hard drives? The answer reveals fundamental mismatches between heritage recording capabilities and archival infrastructure. Heritage sector organisations invest in advanced recording technologies (drones, laser scanners, photogrammetry) that generate multi-gigabyte datasets, yet archival repositories remain designed for text documents and small image files. HERs cannot accept datasets of this scale. Planning portals have file size limits measured in megabytes, not gigabytes. HE's own archive infrastructure lacks capacity for routine ingestion of large-format digital materials. This infrastructure inadequacy is not unique to Chester but reflects sector-wide underinvestment in digital preservation capacity. As noted in policy responses, "government investment in the development of HERs to improve data functionality" including "adoption of new data from technologies such as Lidar processed using AI" (Chartered Institute for Archaeologists 2023, p. 6) is recognised as necessary, yet such investment has not materialised. The result is that the most advanced heritage documentation, potentially most valuable for future conservation,

is most likely to be lost because existing systems cannot accommodate it, such as HBIM above.

Given its potential long-term value for future conservation work, historical reference, or digital modelling, a more sustainable archiving and storage solution is essential. This issue is revisited in the discussion section (see 9.4.5), where it is considered alongside the challenges posed by similarly large 3D models. Together, these examples point to the need for strategic planning in heritage data management that anticipates not just creation and use, but also curation, storage, and reuse over time.

Planning Applications: File Formats and Heritage Value

Within this section, data that was created relating to the built heritage strand of the Chester HSHAZ will be evaluated in terms of the lessons it can offer about data management throughout the project. There are two main components: the appropriateness of different file formats and the extent to which these newly created datasets capture the existing heritage of Chester. By combining these two aspects, it is possible to establish to what extent planning applications can themselves become future heritage assets.

The planning portal contains a variety of file formats including planning application documents, photographs (including aerial), 3D models, maps, elevations, plans and annotated maps, plans and elevations. These datasets are generated in a range of different file formats. In terms of individual spread of file types, it is clear that the majority of files are .pdf (Fig. 101). The predominant use of .pdf was also seen in the other case studies, and illustrated a trend to generate documents in this format due to reasons discussed in Northallerton (5.4.4).

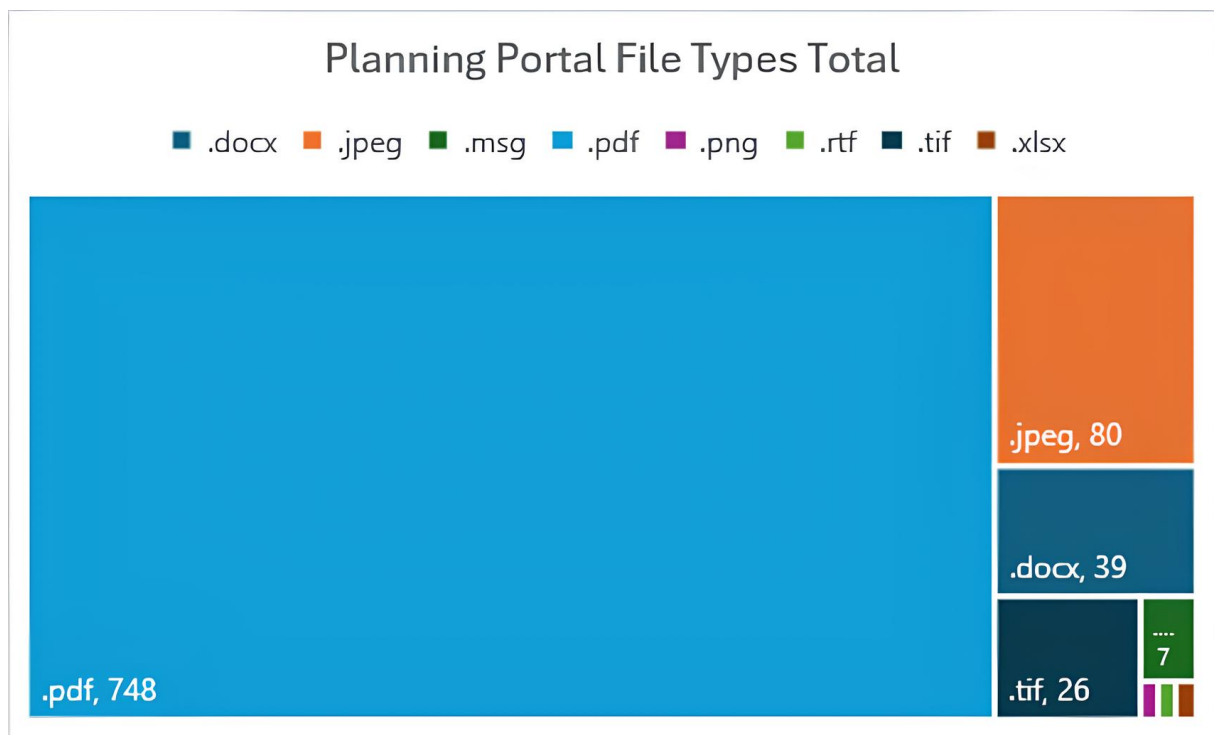


Figure 101, the overall file types used in the planning portal.

Planning application processes and documentation of data

Planning application documents can be classified into two main groups: those submitted as part of the application and those used as responses to the applications. The process of planning document submission is that the agent submits datasets through the planning portal, which are sent to the planning team, and populated into the back-office system. Cheshire West and Chester use IDox for their data management, which has map, data management, and user interface design features that enable them to fulfil all requirements of the council (Nickson, 28 February 2024, pers. comms.). The file formats remain the same as those submitted; as such, if a .pdf is submitted it will remain in the same format (*ibid*). As such, issues rendered from file formats are caused by the application rather than the planning application system.

Nonetheless, the council undertakes data migration to produce three distinct versions of planning submissions: a triple store comprising an internal submission copy, an archival version (dating back to 1948), and a public-facing version, which

redacts personal data, identifiable faces, and vehicle registration numbers. In addition, statutory consultees such as HE is automatically notified when applications meet specific criteria, such as involving a Grade I listed building or falling within designated areas like conservation zones (Nickson, 28 February 2024, pers. comms.).

Within the application, numerous administrative documents are included, such as planning applications (119, with 106 in .pdf format, five in .rtf, and four in .docx and .tiff format) and notices (149, comprising 50 .jpeg/.jpg, 98 .pdf files and one png). The applications themselves provide essential metadata (see appendix D). Some of these crucial documents are occasionally sent as .tiffs, a file format not commonly associated with textual documents. The file extension .tiff are well-suited for storing visual datasets, particularly high-resolution scans of physical documents, due to their lossless quality. However, issues arise when .tiffs are used to store born-digital materials, such as digital text documents (e.g., Fig. 102). Using this format for text-based content not only complicates accessibility and reuse but also suggests a potential misunderstanding of appropriate data formats or a lack of adherence to best practices in digital data management.

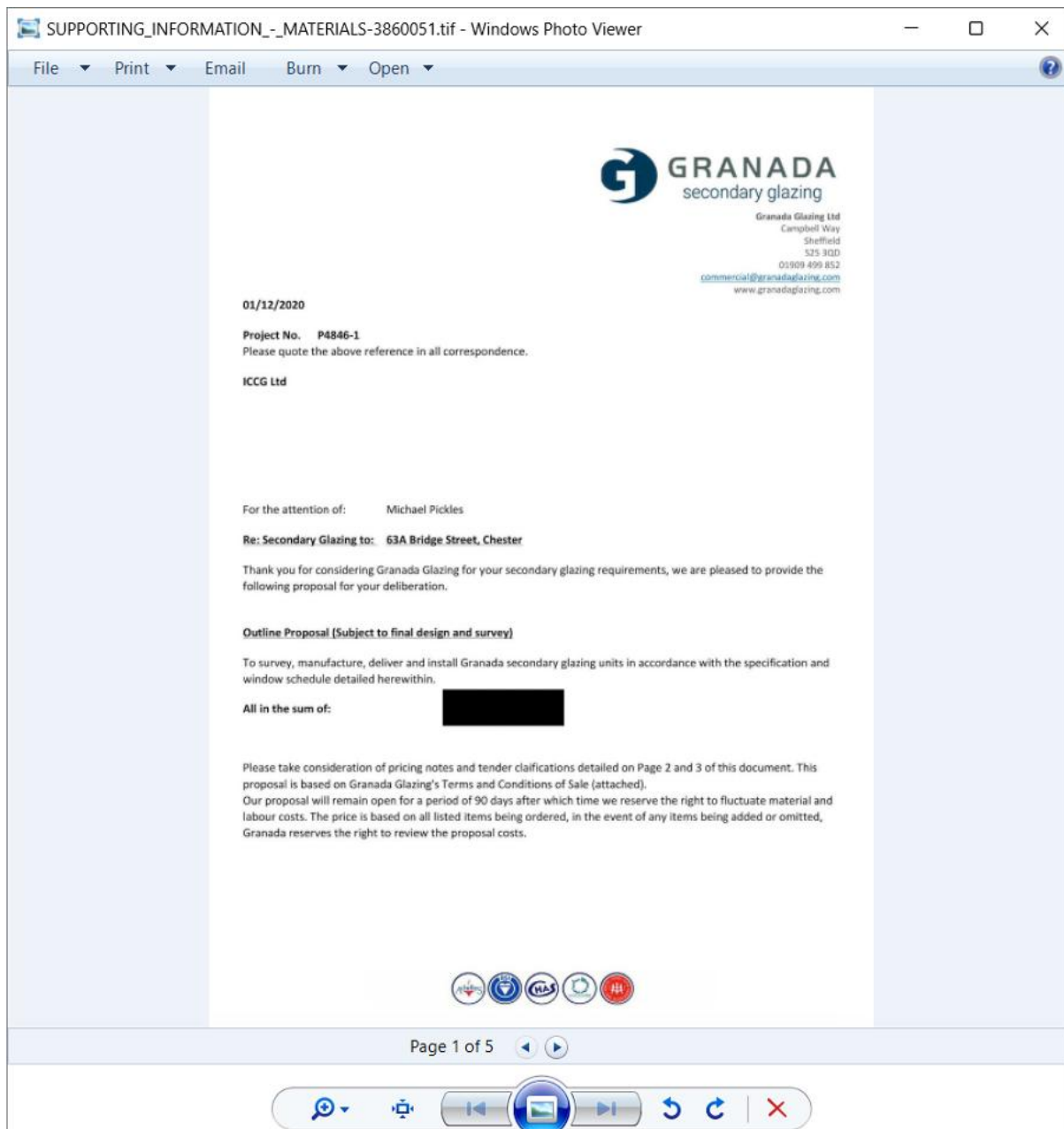


Figure 102, an example of .tiff format being used for a textual document in application 20/04596/DIS (Stacey 2021).

Why does this format confusion occur? It likely reflects variation in technical literacy and software defaults among applicants. When scanning physical documents, many scanning applications default to .tiff output, and users may not understand when to convert to more appropriate formats for different content types. Alternatively, some planning applicants may believe .tiff's archival credentials make it universally superior, not recognising that these benefits apply primarily to preserving visual

information rather than text, or for digitised physical records rather than born-digital datasets (it is also likely that any number of PDFs are simply .tiff/raster images in .pdf format further exacerbating these issues). This pattern suggests that applicants would benefit from clearer guidance on appropriate format selection, yet planning portals typically specify what content is required, not what formats are appropriate. The Planning Portal's national guidance focuses on what documents must be submitted, not how they should be formatted, leaving such decisions to applicant discretion. This permissive approach creates inconsistency that complicates long-term data management.

Heritage statements

The 71 Heritage statements and design and access statements in the planning portal outline proposed works to identified sites, mostly in .pdf (68) with two in .tiff format and one .txt, once again illustrating the challenges of misused file formats (see Kirkham 6.4.3). These documents contain not only text but also reused material and exported figures of newly created datasets such as maps, plans, elevations, and photographs (see Northallerton 5.4.4).

Another challenge of the heritage statements is the inclusion of small figures of maps, plans, elevations, and photographs, reducing the resolution of these elements thus reducing heritage value (e.g., Fig. 103). The incorporated maps, plans, elevations, and photographs are also often submitted individually; however, this duplicates datasets within the planning portal.

Why does this duplication occur? It reflects the disconnect between document production and portal architecture, as discussed in Kirkham (see 6.4.4). Consultants create heritage statements as standalone documents embedding all visual materials for narrative flow and client review. Separately, validation requirements mandate submission of individual plan and elevation files. Rather than managing a single repository of assets referenced by both documents, practitioners upload materials

twice (once embedded, once standalone) to satisfy both readability and technical requirements. This inefficiency stems from planning portals being designed around document submission rather than asset management. A DOI-based system linking to archived datasets would eliminate duplication (see 5.4.4), but implementing such infrastructure requires investment that individual local authorities cannot justify, while national coordination through organisations like the Planning Inspectorate has not materialised.

T.01 – Retain original bay window.



T.02 – Retain original fireplace in-situ. To be refurbished as decorative feature



T.03 – Retain original fireplace in-situ. To be refurbished as decorative feature

Figure 103, example of photographs stored only within a heritage statement (McCormack 2020).

Archaeology reports

Archaeological reports are available in the planning portal (five in .pdf), but these represent inclusion of a single report titled "Proposed Extension to the Rear of 43 329

Watergate Row / Weaver Street, Chester CH1 2AX" several times within the planning portal, encompassing research conducted in August and September 2020. The inclusion of the report multiple times within applications shows the duplication of file formats within the planning portal. In most instances, this duplication is due to different types of application (e.g., FUL, LBC, DIS, PDC, S73, ADB) referring to a single proposal. Nonetheless, it is also indicative of the way in which data could be argued to be mismanaged as it leads to storing files multiple times, using more space, time and resources. A proposal would be to create a single repository of resources from which objects could be linked, using PIDs such as DOIs.

As noted in the Introduction to this thesis, professional archaeological bodies such as ALGAO and ClfA encourage that below-ground archaeological reports are deposited in digital archive repositories, such as the ADS, accompanied by an OASIS record. HE explicitly recommends that reports be submitted through OASIS and made publicly accessible via ADS as part of standard post-excavation process (Historic England 2022b). ClfA has collaborated with Historic England and ADS to develop the OASIS system as part of sector-wide efforts to ensure digital dissemination and preservation of archaeological grey literature (ClfA 2018; Historic England 2021a). Similarly, ALGAO supports archiving of digital outputs in ADS, encouraging consistent post-excavation reporting and data reuse (ALGAO 2015).

Although Chester's HSHAZ planning documentation involved only one archaeological report, it is evident this process was followed, indicating that current best practices in archaeological data management and dissemination were adhered to. The disparity between above- and below-ground archaeology reports highlights a gap in best practice guidance that must be addressed to ensure that datasets for built heritage are also preserved and archived in an accessible and reusable manner. It highlights the need for above-ground archaeology to learn from the current guidance of below-ground archaeology to ensure that unrepeatable

datasets, such as details of buildings before works, are preserved. The cause of these issues will be explored within the discussion (see 9.4.5).

Photographs within planning applications

Photographs are very common within planning applications (evident in 100 applications), and primarily feature embedded in the previously mentioned documents, but additional standalone photographs are occasionally included (as discussed in Kirkham 6.4.3). The data comprises 59 .jpg/.jpeg, 55 .pdfs, seven .png, and two .docx files, with 27 within applications for shop fronts. These shop front photographs serve the vital purpose of aiding the council in identifying the application site. The photographs also serve as an otherwise uncaptured dataset of shops "as is" in the early 21st century, and before major works as part of the Chester HSHAZ. Furthermore, some depict scenes of street life, offering glimpses into community characteristics and shopping habits, further increasing the likelihood for the dataset being of value in the future (Fig. 104 and 105). Nonetheless, some photographs are submitted as compressed thumbnails in .pdf and .docx files and are not found elsewhere, leading to potential data loss (e.g., Fig. 106). This is particular for those photographs that are included in the heritage statements and design and access statements, reducing resolutions (see 5.4.4). Therefore, photographs must not be submitted only embedded within .pdf and .docx files. As such, a solution would be to deposit the raw material within the planning application, meaning that a higher-resolution photograph will be contained within the application archive.

Aerial photographs

Aerial photographs were included in 33 planning applications, typically embedded within textual PDF documents in a similar manner to standard site photographs. In most cases, these consisted of screenshots taken from online mapping platforms such as Google Maps. As shown in Fig. 107, the majority were of low resolution and exhibited considerable blurriness, often making it difficult to discern architectural detail or site boundaries clearly.



Figure 107, an aerial photograph showing that it is often blurry from application (Stacey 2021).

While these images serve a basic function, usually to indicate the plot location or setting, their poor-quality limits their usefulness for heritage assessment or future referencing. Aerial photographs form part of the visual record of the Chester Rows prior to Chester HSHAZ interventions. As such, their long-term value extends beyond planning logistics to include heritage documentation. If images are too low in resolution to reveal structural context, rooflines, or urban grain, they may fail to capture key information for understanding above-ground archaeology.

Why do applicants submit such low-quality imagery? The answer reveals competing priorities: for planning purposes, low-resolution screenshots suffice to show site

location; higher-resolution imagery requires additional time to obtain and larger file sizes to submit. Applicants therefore optimise for immediate planning needs rather than long-term heritage value. This rational economising on effort reflects the broader pattern that planning processes drive data creation toward minimum compliance rather than comprehensive documentation. Without explicit requirements for image resolution or quality standards, applicants naturally gravitate toward whatever satisfies validation.

That said, it is important to consider what is reasonable and necessary. High-resolution aeriels may raise privacy or security concerns, for instance, by revealing details such as roof materials vulnerable to theft or surveillance infrastructure. However, guidance could strike a balance by recommending that aerial photographs be of sufficient resolution to meet defined minimum criteria (e.g., the ability to distinguish boundary walls, neighbouring building footprints, and heritage features), while anonymising or cropping sensitive elements where necessary.

It is therefore recommended that local authorities, in line with HE advice on visual material in heritage statements (Historic England 2019b), develop or adopt clear guidance specifying minimum standards for photographic submissions, including aerial images. This would improve the quality of heritage documentation on the planning portal and help ensure a more enduring visual legacy of above-ground historic fabric, particularly in high-significance contexts such as the Rows. However, recommendations for "minimum standards" encounter practical obstacles: who defines these standards, who enforces them, and what happens when applications fail to meet them? If validation officers routinely accept low-quality imagery to avoid application delays, standards remain notional. This returns to enforcement questions raised throughout this analysis: without consequences for non-compliance, guidance alone cannot transform practice.

New maps

Approximately a quarter of documents within the planning portal, a significant proportion, pertain to existing and proposed elevations, plans, and maps, each of which warrants closer examination.

Maps were included in 100 of the Chester HSHAZ-related planning applications and appeared in a range of file formats, predominantly .pdfs (142 instances), with a smaller number in .jpeg (six) and .docx (five). The quality and usefulness of these maps varied widely, often depending on the source or the consultant involved. Some were hand-annotated scans (Fig. 108), others were basic screenshots taken from Google Maps on mobile devices (Fig. 109), while a few were more advanced GIS-generated visualisations (Fig. 110).

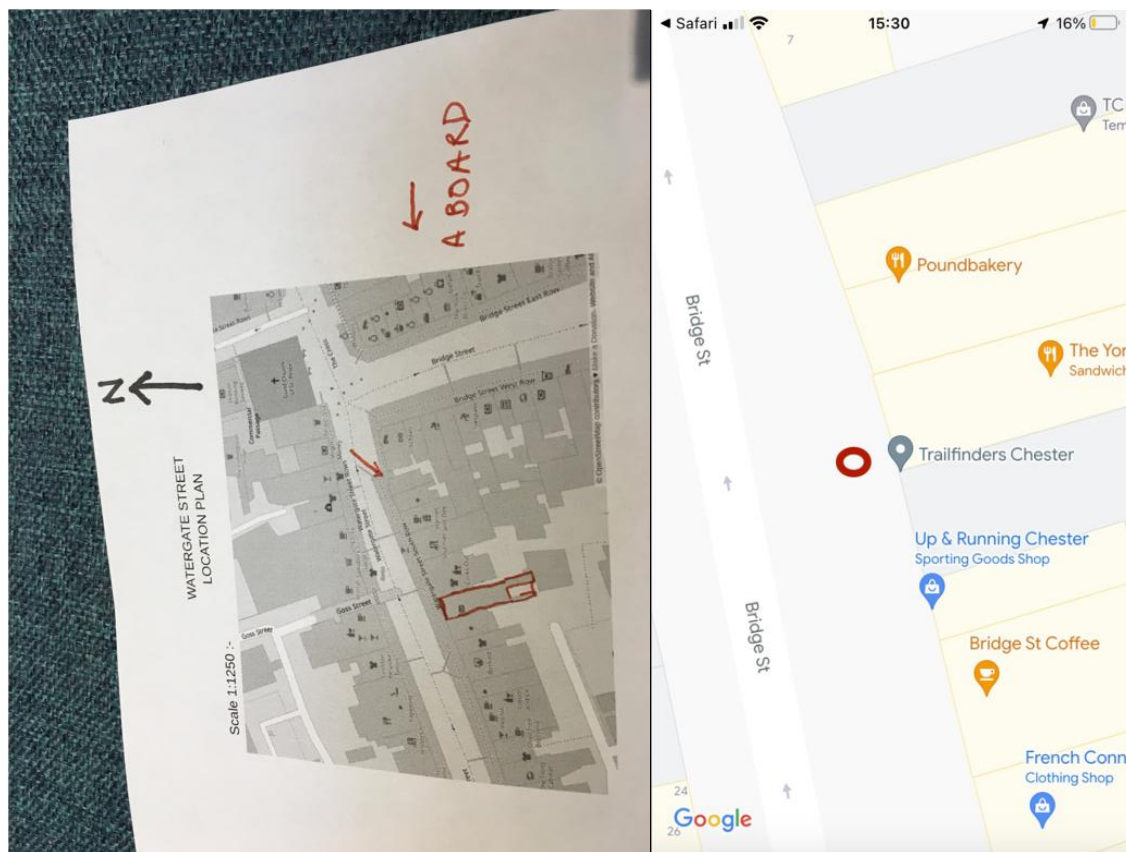


Figure 108, left, the hand annotated map for application 20/00877/ADB (Sibson 2020). Figure 109, right, the screenshot on the iPhone for application 22/01870/ADB (Middlehurst 2022).



Figure 110, a GIS map made for application 21/04050/LBC (Seddon 2021).

This variation illustrates a broader issue in the planning portal: a lack of consistency in spatial documentation. Some figures (e.g., Fig. 108), provide very limited contextual detail and are unlikely to be useful in the long-term. Others (e.g., Fig. 109), which documents shopfront uses, may become valuable heritage records in their own right, reflecting patterns of early 21st-century commercialism. At the more data-rich end of the spectrum, Fig. 110 offers a highly detailed record of the Chester Rows at the time of the Chester HSHAZ, suggesting that some consultants either have access to, or have generated, underlying GIS datasets. However, the source of these richer datasets is often unclear or unreferenced, raising questions about the transparency of data provenance.

To support more informed decision-making, local councils could play a more proactive role in defining minimum quality standards for map submissions. This might include encouraging the use of standard GIS formats (e.g., shapefiles), requiring clearer referencing of data sources, and promoting the reuse of internal

datasets already held by the council. Rather than simply increasing the volume of documentation, such interventions would help ensure that submitted materials are both usable and meaningful, contributing to better heritage outcomes and more transparent planning processes.

Plans

Plans were extensively used in planning applications, appearing in 78 instances. The predominant file format was .pdf (353 documents (see 5.4.4)), with only one submitted in .docx format.



Figure 111, a detailed plan for application 20/00491/FUL (McCormack 2020).

The quality of plans varied, ranging from highly detailed historical documentation (e.g., Fig. 111) to less comprehensive representations (Fig. 112), indicating several aspects that should be discussed. Firstly, the creation of detailed historical plans

shows how specialised heritage documents can be created for planning applications. A possible issue raised here, however, is how best to identify the existence of this dataset. This highly detailed and valuable heritage asset is uploaded as a PDF within a single application. Without carrying out a thorough data audit of all files relating to the Chester HSHAZ, it would not have been identified. Raising the ability to reuse these planning documents is thus an important issue (see 5.4.4). Here, the focus is to flag this issue and also argue the need to encourage similar datasets to be created in the future.

A second issue raised is the variety of quality. In the case of Fig. 111 (above), a clear reuse argument can be made, whilst other documents such as Fig. 112 (below) are created to meet the requirements of planning permissions. The range in quality is problematic as, if not to a high enough standard, details of the existing heritage, current structures, building use and details of commercialisation will be lost. As such, it is important to consider that not all datasets within the planning portal are likely to be reused again. Thus, is it necessary to preserve the entirety of the datasets within the planning portal? This argument is discussed in more detail (see 9.2), yet here, it is important to pose the argument whether the entirety of the dataset is essential for completeness, or are datasets being preserved for data's sake.

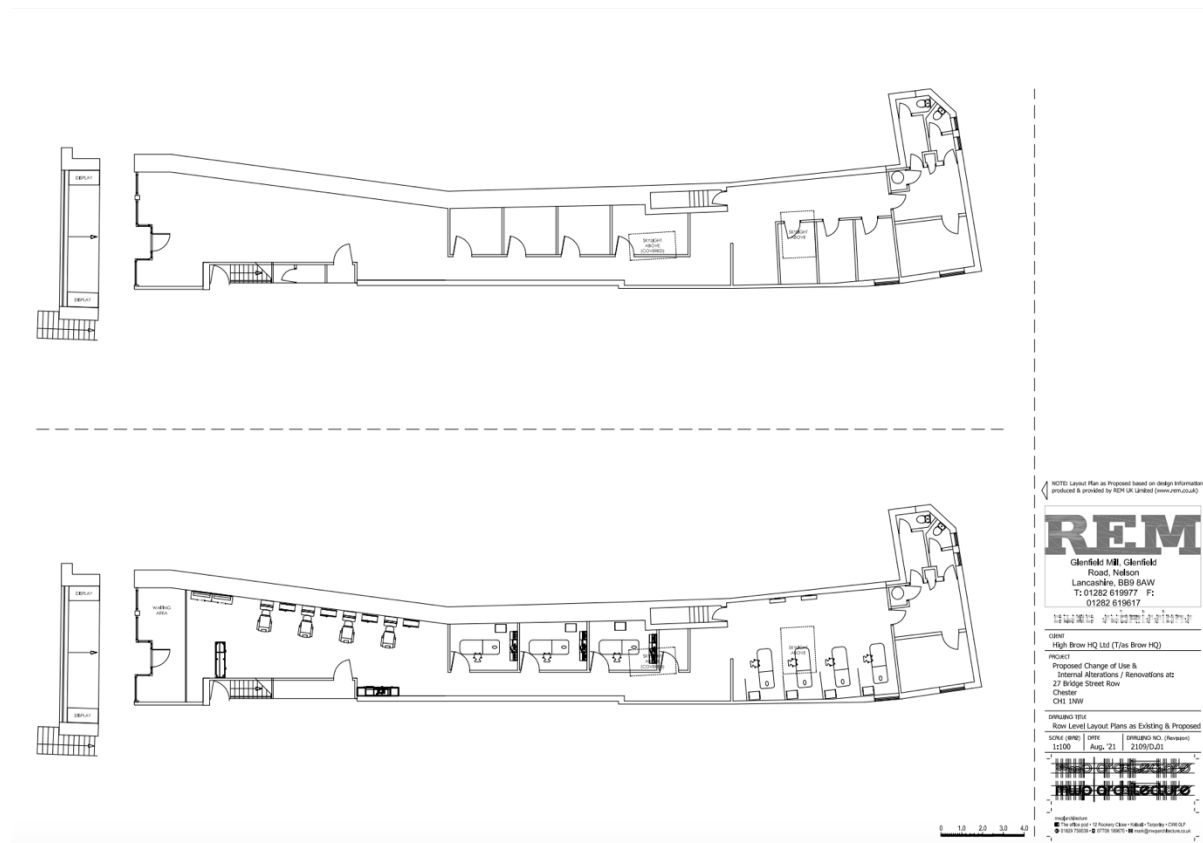


Figure 112, plans for application 21/03346/FUL showing the difference between proposed and existing plan details, and limited architectural information (Roberts 2021).

Another significant finding was that there were 212 proposed compared to 111 existing plans submitted in the planning applications. While planning applications are primarily forward-looking, illustrating proposed changes, the relative absence of documentation showing the current condition of heritage assets, especially within a nationally significant historic environment like the Chester Rows, raises concerns. In line with the requirements of the NPPF, Cheshire West and Chester Council, a Heritage Statement must include "a description of the significance of heritage assets affected" and "the contribution of their setting to that significance" (Planning Portal, n.d.). This should be informed by appropriate evidence such as historic maps, photographs, and measured drawings of the existing fabric. The NPPF echoes this, requiring that applications affecting heritage assets describe their significance "to a level of detail proportionate to the assets' importance" (MHCLG 2024, para. 207). HE's guidance on Statements of Heritage Significance (2019) and Understanding

Historic Buildings (2016) further reinforces that proper documentation of existing conditions is a core part of assessing the impact of proposed change.

The imbalance between proposed and existing plans suggests this principle is not consistently applied in practice. Why does this gap exist? As discussed in Kirkham (see 6.4.3), multiple factors converge: existing condition surveys require additional site access and measurement time, increasing project costs without directly serving the application's objective of securing consent. Consultants therefore minimise such work unless specifically challenged. Validation officers, often working under pressure to process applications quickly, may accept proposals without existing condition documentation if statutory consultees do not object. The proportionality principle is interpreted as a ceiling rather than a floor; "no more than necessary" becomes "as little as possible." This is problematic because without detailed records of the existing state, particularly for sensitive or listed buildings, there is a real risk of losing architectural and historical information that may not be documented elsewhere. As ClfA guidance notes, "the level of detail... should be no more than is necessary to reach an informed decision" but also that "those carrying out this work need enough information to understand the issues" (Historic England 2019b, p. 1). The Chester applications suggest the former clause receives more attention than the latter, with "no more than necessary" interpreted to minimise documentation rather than optimise understanding.

This concern is not hypothetical. Best practice as outlined by ClfA (2020), HE (2016; 2019), and national planning guidance makes clear that documentation of existing buildings is essential for assessing significance and managing change. In the context of Chester's Rows, an area with exceptionally layered urban heritage, failure to include accurate records of current state undermines both the planning process and long-term conservation efforts. The HSHAZ programme, with its substantial investment, represented a unique opportunity to systematically document the Rows before intervention, yet the emphasis on proposals over existing conditions means

much of this documentation opportunity was unrealised. This reflects broader programme design issues, as discussed in Kirkham (see 6.4.3): HSHAZ funding prioritised physical regeneration outcomes over knowledge infrastructure, with no specific requirements or resources allocated for comprehensive building recording.

In addition to architectural drawings, many planning applications include infrastructure and utilities plans, which detail proposed works and the integration of key facilities such as drainage, lighting, water, power, and fire safety systems. These plans are integral to the decision-making process, enabling the council to assess the feasibility, compliance, and potential risks associated with a proposed development. The datasets generated through the Chester HSHAZ initiative hold considerable potential for future reuse, particularly in mapping the location of key infrastructure across the city. Reusing such data, rather than recreating it from scratch, could significantly streamline future planning applications and coordination, saving time, resources, and public money.

However, a culture of restricted data sharing appears to persist. In part, this may stem from commercial concerns: architects and consultants may view detailed survey work as a potential income stream, while data deposition is often seen as an additional cost (see 6.4.5). This tension between professional practice and open data expectations has also been noted in heritage and planning literature (Dallas 2016; Jeffrey 2012). Addressing this issue will require efforts to promote the long-term value of data sharing and mitigate intellectual property concerns, for example by encouraging the adoption of licensing frameworks that support both attribution and reuse (e.g., Creative Commons or ADS licences).

Given that the Chester HSHAZ was supported by public funding through HE, it raises questions about who holds responsibility for ensuring data generated through the initiative is made accessible. In a similar future context, HE may be well positioned to promote data deposition standards and to work collaboratively with local authorities to embed data-sharing practices within the scope of funded work.

Doing so would not only enhance transparency and sustainability but would also align with wider sector priorities around open heritage data and public value.

Elevations

Elevation drawings were a common component of Chester HSHAZ-related planning applications, appearing in 71 cases, all submitted in .pdf (e.g., Fig. 113). These drawings typically depicted either proposed changes or the existing structure, though rarely both together. In fact, there were 140 elevation documents showing proposed works, compared to only 89 that documented the existing fabric, and just six that included both within a single file.



Figure 113, a detailed elevation for application 21/01954/LBC (McCormack 2020)

This imbalance is, to some extent, expected: the core function of a planning application is to illustrate proposed changes. However, in the context of listed buildings and conservation areas, such as Chester's Rows, planning policy requires

that proposals affecting designated heritage assets include a proportionate description of their significance, including visual materials sufficient to understand the impact of the proposed development (NPPF para. 194; Historic England 2019). The lack of consistent "as existing" elevations undermines this requirement and risks reducing the application to a design showcase, rather than a properly contextualised conservation-led proposal.

This pattern also raises broader heritage concerns. Given the Chester HSHAZ's aims of revitalising England's high streets, this initiative presented a rare opportunity to document the current state and character of Chester's historic fabric at a key moment of change. With only just over half (56%) of elevation drawings representing existing structures, this documentation opportunity appears to have been underused. The absence of elevations capturing the existing condition limits the ability of heritage officers, researchers, and future generations to understand the pre-intervention state of the built environment. This is especially problematic in cases involving substantial alterations or listed buildings, where even small interventions can lead to the permanent loss of historic material, including lesser-recognised features or under-documented heritage values (e.g., shopfronts, signage, construction methods, or colours and materials associated with intangible heritage practices) (as discussed earlier in this section).

While the quality of elevation drawings varied less than that of map outputs, discrepancies were still evident. Some drawings were highly detailed (Fig. 113), showing precise architectural features and finishes, while others were basic or schematic (Fig. 114). This further underscores the need to consider not just the presence of documentation, but its depth, clarity, and utility. Intriguingly, the application with less detail (Fig. 114) was refused, possibly making an argument for the need for high-quality data, although this is likely to be correlation and not causation, and cannot be definitively established from a single case.

The refused application (Fig. 114) exemplifies this point: its limited supporting documentation prevented a full assessment of noise mitigation measures, potential impacts on the Grade II building's historic fabric, and the archaeological implications of any below-ground works. The case was therefore refused not because the submitted data were of poor visual quality, but because essential technical evidence was missing, illustrating how data completeness, as well as quality, underpins planning decisions.



Figure 114, a less detailed elevation for application 22/03819/FUL (Mr and Mrs Revill 2022). This application was refused, illustrating how poor-quality or incomplete data can undermine both assessment and decision-making.

3D models

A less common but significant data type observed within the planning portal was imagery derived from 3D models, which featured in just four of the Chester HSHAZ

planning applications. These images, typically submitted as .jpegs or embedded within PDF documents, functioned as static visual aids intended to support the conceptualisation of proposed developments. However, in all cases, it was not the 3D models themselves that were submitted, but static images extracted from them. This practice reflects wider trends identified in Kirkham (see 6.4.3): while 3D recording is increasingly used in heritage and planning contexts, it is often only the derivative outputs, such as rendered screenshots, that are shared, not the underlying datasets.

There are advantages to this approach: .jpeg and .pdfs are open-standard formats that are universally accessible, ensuring that planning documents can be viewed on any device without specialised software. These formats also have the benefit of being static and fixed in appearance, preserving the applicant's intended presentation of the design. However, this use of static imagery also brings significant limitations. Full 3D datasets, such as those produced through laser scanning, photogrammetry, or BIM, offer much greater potential for reuse and analysis. Unlike screenshots, 3D models allow stakeholders to explore the proposed works from multiple angles, interrogate architectural elements in detail, and assess the proposal's spatial relationships with the surrounding context. As HE makes clear in its guidance on 3D laser scanning, BIM for heritage, and geospatial surveys, where 3D methods are used to record or model historic fabric, the full datasets should be archived and, where possible, made publicly accessible through appropriate repositories (Historic England 2019; 2020; 2024; see also Trognitz *et al.* 2016).

A notable example in the Chester HSHAZ dataset was the 3D model produced by Donald Insall Associates for application 21/04050/LBC (Fig. 115, Seddon 2021). The image depicted a redesigned pedestrian bridge linking sections of the Rows and featured a costumed Roman centurion, likely referencing Chester's Roman heritage. While the image served its purpose in showing the proposed colour scheme and

material composition, the inclusion of the centurion raises interesting interpretive questions. It may have been intended to support the cultural programme of the Chester HSHAZ or signal an imaginative use of shopfronts for temporary heritage installations, beyond conventional retail. This blurring of visualisation and interpretation points to the evolving role of planning graphics, not only as technical illustrations but also as tools for public engagement and place-making. However, without access to the underlying 3D model, the image could only convey a single perspective, limiting the viewer's ability to fully understand the spatial qualities and broader visual impact of the proposal. In this case, depositing the model on a public platform such as SketchFab could have facilitated richer, more interactive review by planners, consultees, and the public.



Figure 115, a 3D model made for application 21-04050-LBC (Seddon 2021).

In contrast, another example, a visualisation of proposed changes to a hotel site that included a roof terrace, pool, and lift tower, was less successful (Fig. 116). The absence of surrounding buildings or street context restricted the utility of the

visualisation in evaluating aesthetic and spatial impact. Hosting such models interactively, and including street scenes or comparative views, would significantly enhance their value as planning tools.

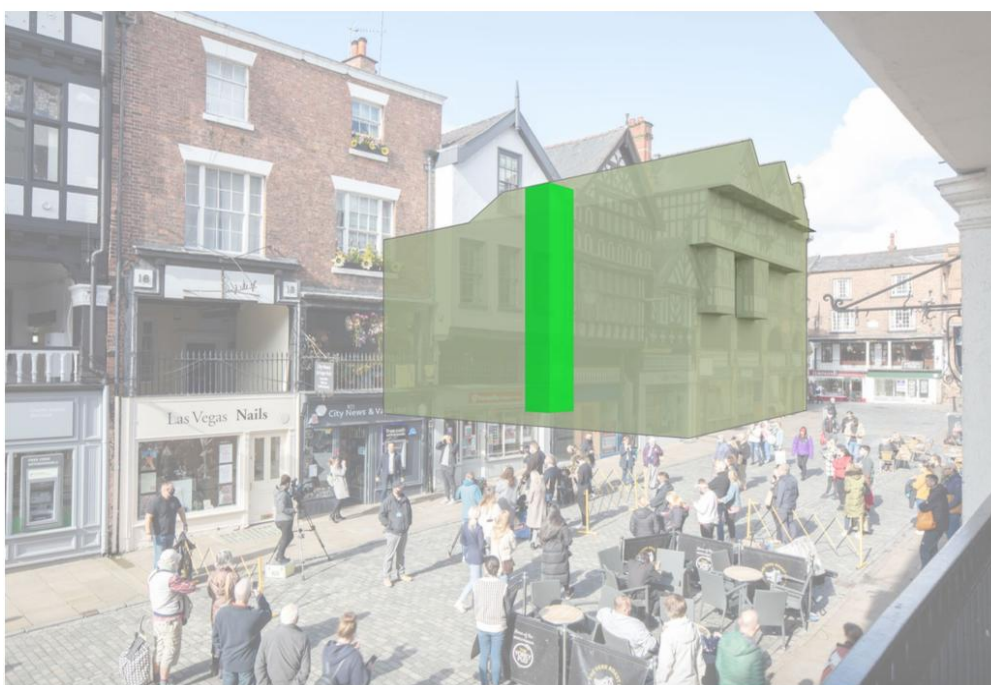
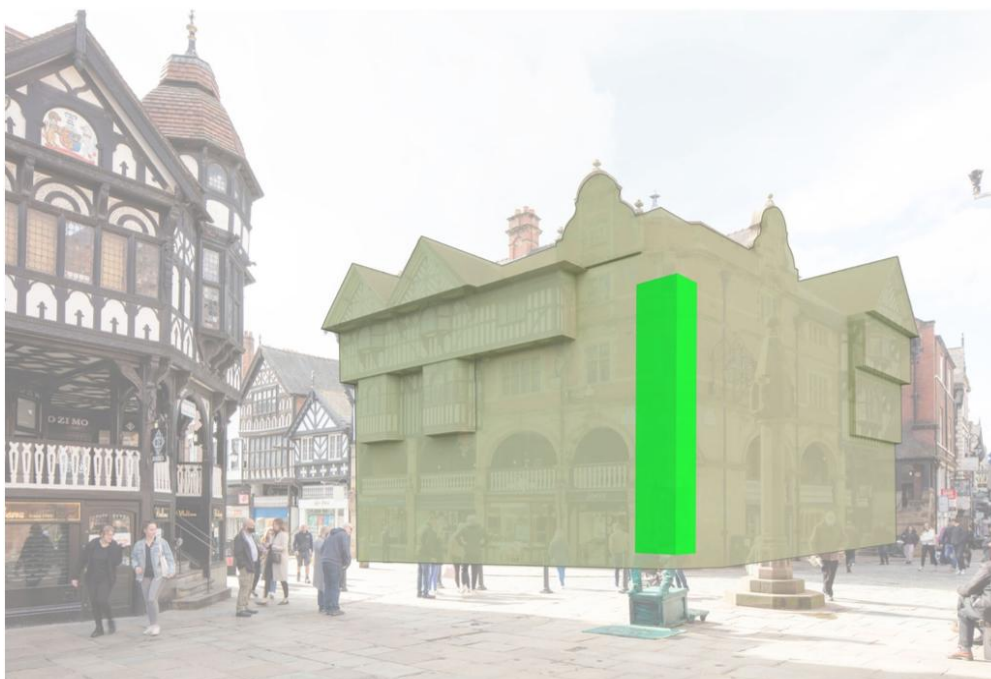


Figure 116, two 3D model outputs for application 20/00491/FUL (McCormack 2020).

Nevertheless, the limited uptake of interactive 3D model sharing may also reflect commercial constraints. Architectural practices often view survey and modelling as billable services, and the prospect of data reuse could be perceived as diminishing future income streams. While this is a valid concern, particularly in commercial heritage practice, publicly funded initiatives such as Chester HSHAZ arguably have a responsibility to promote more open and transparent data practices.

Despite their limitations, the static images derived from 3D models nonetheless played a valuable role in visualising complex proposals. Their use in planning applications reflects a growing trend towards advanced visualisation techniques in heritage planning. However, to fully realise the potential of these tools, there is a clear need to go beyond static imagery and embrace interactive, high-quality 3D datasets. Doing so would support better-informed decision-making, improve public engagement, and contribute to the long-term documentation of historic urban change.

7.3.4. Data Sharing

Data sharing in Chester occurs through two channels: public consultation and the planning portal. Public consultation serves as a platform for soliciting opinions and suggestions from the local community. Given that enhancing community pride is a key objective of the Chester HSHAZ, involving residents in decision making concerning the Rows achieves this aim. While there are few dedicated datasets created for public consultation, the process facilitates communication between the architects and the community by capturing community perceptions on heritage (e.g., Fig. 117).

Cheshire West & Chester Council

From our Past, Towards our Future - A Heritage Strategy for Cheshire West and Chester

Consultation document



Figure 117, Public Consultation on Chester's heritage (Cheshire West and Chester 2023).

The Chester planning portal offers more extensive opportunities for data sharing compared to the Kirkham planning portal, provided by the IDox platform. This is evident in features such as the interactive map and planning application documents (Fig. 118) (Nickson, 28 February 2024, pers. comms.). The interactive map enables quick and accessible assessment of planning applications over various time intervals, allowing the council, the local community, or heritage researchers to track proposed works. The interactive map is made available through the planning portal itself, meaning that the resources are accessible from one user interface, encouraging use of the platform. This capability is particularly pertinent to this thesis, as it highlights the significant number of applications for the Chester Rows within the duration of the Chester HSHAZ. The effective sharing of planning applications through geospatial mapping underscores the potential for creating user-friendly interfaces for broader datasets generated through the Chester HSHAZ or the wider HSHAZ.

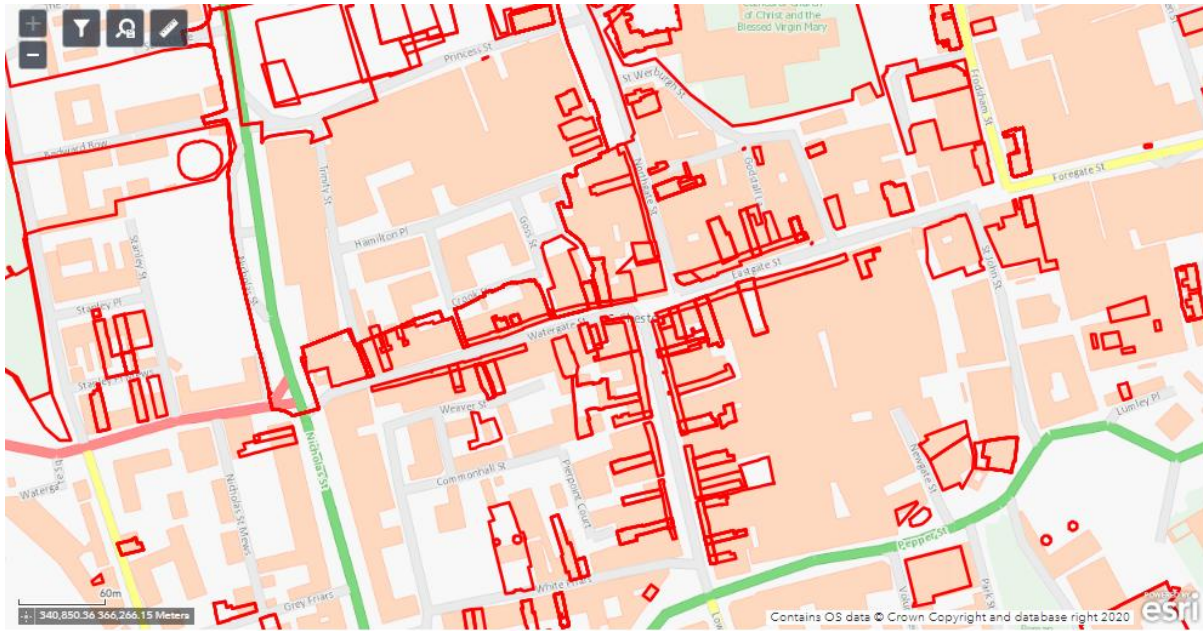


Figure 118, the interactive map on Chester's Planning Portal showing planning applications from January 2020-March 2024 (Cheshire West and Chester Council 2025).

The second effective method of data sharing in Chester is through interaction with planning documents within the portal. Users can measure distances of points on the documents (once calibrated), a functionality that extends across file types including .pdf (Fig. 119). This feature enables extraction of information from various file formats. Moreover, the capability to expand smaller text facilitates easy examination of annotations within application documents. However, this functionality is not foolproof, as illustrated by instances where text may be truncated, limiting its usefulness (e.g., Fig. 120 – discussed further in 5.4.4). Despite these limitations, the interactive nature of planning documents within the portal enhances accessibility and facilitates deeper engagement with the data produced within the Chester HSHAZ.

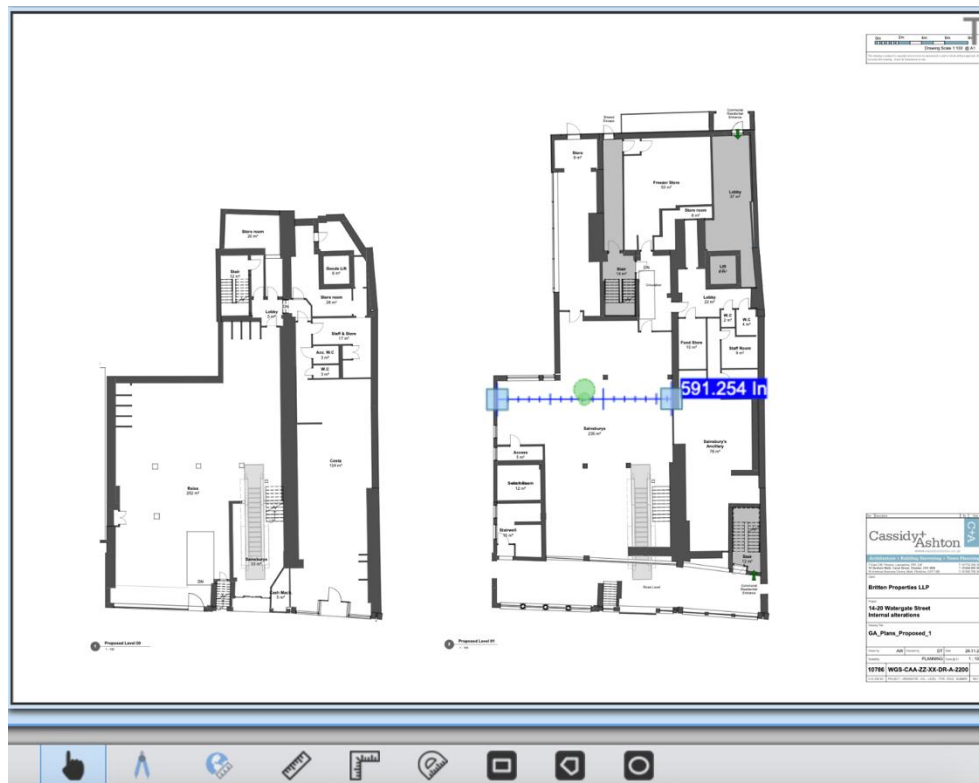
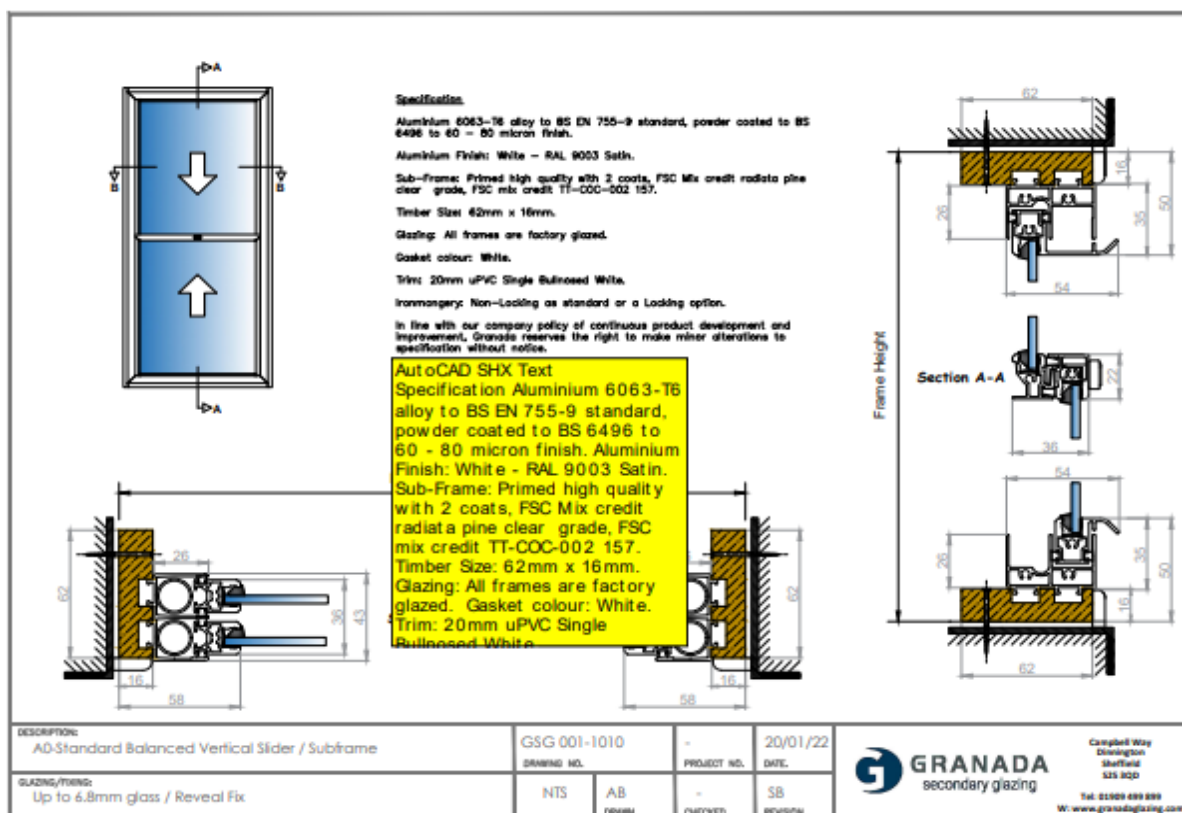


Figure 119, above, the possibility of measuring features in applications such as 23/03821/FUL (Cole 2023). Figure 120, below, the truncation of text from the .pdf in application 23/02787/DIS (Rigby 2023).



A further dataset generated within the Built Heritage Strand is evident in the Conservation Management Plan. Although not entirely produced through the Chester HSHAZ, it was developed alongside the Chester HSHAZ, and has potential to improve data management in the future. This comprehensive guide delineates best practices for the local council, property owners, and the community on how to effectively preserve the distinctiveness of Chester while simultaneously revitalising it and promoting further utilisation of its heritage assets. Within these documents, the requisite standards necessary to satisfy baseline requirements for planning applications are outlined, serving as essential reference materials for stakeholders involved in heritage conservation and development initiatives. Nonetheless, these criteria are for aspects of design rather than containing elements of what a planning application dataset should hold. As such, it represents a useful guide for planning applications to ensure consistency of design elements throughout the conservation area, but it does not help ensure better data management or quality and as such could be argued to be a missed opportunity. As three living documents contribute to the Conservation Management Plan (Cheshire West and Chester 2024b), there exists the opportunity in the future to incorporate and advocate for improved data standards within these guides of best practice. This endeavour could be facilitated through additional encouragement from HE to champion the future of digital datasets, ensuring that the guides align with evolving technological advancements and facilitate more effective heritage preservation strategies.

7.3.5. Data Legacy

The legacy of the datasets created within the built heritage strand of the Chester HSHAZ can be evaluated on a short, medium and long-term basis.

Using the framework of 3.7.4, the built heritage strand of the Chester HSHAZ does not meet the threshold for a sustainable legacy, as despite the data being

accessible, the formats, and the location of the raw datasets remains with the contractor.

In the short term, the datasets created for the Chester HSHAZ serve the immediate needs of securing planning and Listed Building consent for redevelopment and enhancement projects. The photographs, plans, elevations, and other materials provide crucial evidence to support decision-making on proposed works, ensuring that changes align with regulatory requirements and heritage preservation objectives. The documents' legacy over the next 1-2 years lies in facilitating the implementation of approved changes to the fabric of the Rows, contributing to the Rows' revitalisation and preservation. Accessibility to these datasets is primarily reserved for council planning officers and partners through the designated portal, limiting broader public engagement in the decision-making process.

In the medium term, spanning 2-5 years, the value of these datasets expands to encompass documenting the ongoing transformations through the HSHAZ programme. As redevelopment projects progress, the plans and photographs serve as invaluable tools for capturing physical changes to the Rows, providing a comprehensive visual record of their evolution. The documents' legacy manifests as a documented narrative of redevelopment efforts, illustrating the dynamic nature of urban regeneration initiatives. While accessibility remains somewhat restricted, there is potential to enhance wider accessibility by migrating these materials into archival repositories, such as the Historical Environment Record, thereby broadening their reach and enabling research and engagement opportunities.

In the long-term, extending beyond 5 years, the datasets hold an enduring legacy as a comprehensive record of the Rows during this significant period of transformation. The documents contain detailed architectural, technical, and spatial information that encapsulates the essence of the Rows' heritage, serving as a valuable resource for future generations. Preserved and accessible through archives, these datasets will facilitate in-depth research into the site's history, inform new planning decisions,

and foster community understanding of the implemented changes. The datasets' long-term legacy underscores their intrinsic value as a record of Chester High Street's rich heritage, ensuring that Chester's legacy endures for generations.

A further constraint on the data legacy of the Chester built heritage strand concerns the capacity of local archival institutions to receive and preserve the kinds of complex digital outputs the programme generated. Local authority archive services, including the planning portal, have demonstrated genuine commitment to digital acquisition. However, written documents in standard PDF formats represent a fundamentally different preservation challenge from multi-gigabyte photogrammetric models, point clouds, or high-definition drone survey footage. The technical infrastructure required to ingest, validate, format-migrate, and provide ongoing access to such materials, including dedicated storage, specialist staffing, and recurring operational funding, is not consistently present across local authority archive services, many of which have absorbed significant resource reductions in recent years.

This capacity gap directly undermines the policy goals articulated in this thesis. Recommendations for raw data deposition and archival parity between above-ground and below-ground heritage documentation presuppose that appropriate receiving institutions exist and are equipped to act on them. Where they are not, good intentions in programme design translate into datasets stored on contractor hard drives or commercial platforms, precisely the pattern documented in the Chester drone survey, as the current alternative, even if there is the capability to receive the documents, if shared with the local council they would be unmanageable and inadequately preserved. Addressing this requires investment beyond what individual programmes can provide, whether through expanding the ADS's scope to cover a broader range of built heritage digital outputs, through regionally resourced digital preservation hubs, or through prospective planning at project inception that

identifies an appropriate repository destination, and the resourcing to support it, before complex recording work begins.

In summary, while the datasets currently meet immediate needs, their long-term legacy is hindered. As such, recommendations put forward have the potential to safeguard invaluable heritage data for the long haul. By mandating citations and encouraging deposit of raw datasets from planning applications, a robust archive can be amassed documenting the evolving streetscapes and building stock. Greater reuse of HE's extensive research datasets and archives is also advocated, harnessing the wealth of historical documentation to better inform planning decisions. Adopting open formats, PIDs and integrated visualisation platforms would facilitate widespread data discovery, access and reuse by future researchers, heritage bodies and the public alike. Crucially, implementing data audits to identify high-quality resources worthy of archiving, alongside issuing revised best practice guidance championing open data, could instil an improved culture of data management and reuse. This would ensure the irreplaceable historical record is comprehensively preserved and made accessible for decades to come, allowing insights into 21st century architecture, urban fabric and socio-cultural trends to enlighten the heritage researchers of tomorrow.

7.3.6. Synthesis: Built Heritage

Chester's built heritage strand is the largest and most complex of the three case study sites, involving the greatest concentration of nationally significant listed buildings, the highest volume of planning applications, and the most technically sophisticated documentary outputs (including drone survey, HBIM-derived 3D models, and detailed condition surveys). Yet in governance terms it reproduces the same structural pattern as Northallerton and Kirkham: technically sophisticated creation, institutionally weak preservation. The condition survey and drone photogrammetry produced by Donald Insall Associates are among the most

evidentially valuable outputs generated anywhere in the HSHAZ programme; both remain on consultant servers or portable hard drives without deposit in any formal archive.

Chester also offers the clearest illustration of the pre-existing versus HSHAZ-generated distinction. For example, HE's Chester Rows Research Project archive, held at HE's Swindon archive and partially digitised at the ADS, represents decades of prior institutional investment in understanding the Rows. That archive was available, publicly accessible (in part), and directly relevant to every heritage statement produced during the HSHAZ. Similarly, given the extent to which the Rows are listed, these documents could have been utilised to show heritage significance and engagement thereof. Yet only 24 of 117 applications drew on NHLE listing data, and none appear to have consulted the Rows Research archive directly. Pre-existing datasets of exceptional quality and relevance were not systematically reused; newly generated datasets of comparable quality were not systematically preserved. Both failures reflect the same underlying condition: data governance was not embedded in the programme's delivery requirements.

7.4. Community Engagement Strand

The Chester Community Engagement comprised two main projects: *Refresh Chester* and *Rows Rebranded*. Within these overarching projects, individual subprojects of *More than a Shop – The Brown's story* and *Chester Contemporary* were included. These projects will be grouped together in this analysis due to their overlapping aims, stakeholders and data practices. Both projects focused on reinvigorating connection and engagement with Rows' heritage, through cultural programming and strategic marketing. As with the built heritage strand, pre-existing datasets created by HE and other research bodies could have benefited the research objectives, and as such the level and extent of data reuse shall be examined.

7.4.1. Refresh Chester

Refresh Chester project focused on reinvigorating community engagement with the medieval heritage and hidden stories of the Chester Rows. The Rows had declining footfall and loss of vibrancy as well as their heritage significance being overlooked and underappreciated by local residents and visitors (Cheshire West and Chester Council 2019, p.6). Although the Rows have a rich documented history, there was lack of promotion or sharing evident on-site or integrated into Chester's broader tourism, despite extensive works showcasing the significance of the Rows (Cheshire West and Chester Council 2019, p.6). The Chester HSHAZ aimed to reconnect people with Chester's heritage through cultural programming, digital storytelling, and coordinated marketing (Cheshire West and Chester Council 2019, p. 7). As set out in the city's Heritage and Visual Arts Strategy, the goal was to use Chester itself as a platform for immersive experiences that deepen public understanding of local heritage (Cheshire West and Chester Council 2019, p. 18). The main facets delivering this were an expanded outreach programme by Grosvenor Museum into the Rows; immersive digital interpretive installations, bringing hidden stories of the Rows to life; and the establishment of a new biannual Rows festival, specifically celebrating and showcasing this medieval heritage asset (Cheshire West and Chester Council 2019, p.7). The project ran over the full 4-year timeline of the wider HSHAZ initiative, from 2020-2024 (Cheshire West and Chester Council 2019, p.13).

7.4.2. Rows Rebranded

The Rows Rebranded project aimed to promote the Rows through refreshed place-based marketing, integrated into Chester's broader destination branding (Cheshire West and Chester Council 2019, p.8). The emphasis for branding was built on HE's previous research prior and external to the HSHAZ, demonstrating the value of targeted place branding approaches for heritage sites (Cheshire West and Chester Council 2019, p.7). Key actions included collaborative development of a new Rows brand identity through community consultation, enhancing local and international

recognition of the Rows as a unique medieval heritage destination, and coordinating marketing campaigns across the city's cultural organisations and regeneration programs (Cheshire West and Chester Council 2019, p.7-8). The new brand was created in the first year of the Chester HSHAZ, with a multi-partner marketing campaign rolled out over years two to four (Cheshire West and Chester Council 2019, p.13).

7.4.3. More than a Shop – The Brown’s story

The *More than a Shop – The Brown’s story* project emerged following the closure of Browns department store in May 2021, ending over 230 years of continuous trading from an iconic Grade I listed landmark in Chester (Cheshire West and Chester Council 2024g). To locals, “*it was more than a shop,*” a place of family visits, work, friendships, and enduring memories (*ibid*). The key project activity was an event on 17 February 2024, in which former employees, shoppers, and community members with connections to Browns were invited to engage with surviving store materials and record short reminiscence interviews. These 15-minute conversations were subsequently edited into a collective soundscape that was presented as a public listening exhibit, offering a multifaceted portrait of Browns as a cultural touchstone (Cheshire West and Chester Council 2024g). The initiative was designed not only to capture the store’s tangible legacy through photographs and ephemera but also to preserve its intangible heritage: memories, emotions, and personal narratives, within the public record (Cheshire West and Chester Council 2024a). In addition to the edited soundscape, the raw recordings were deposited with the local archives to ensure their long-term preservation and availability for future research (Cheshire West and Chester Council 2024f). The project was delivered through collaboration between the council, Cheshire Archives and Local Studies, and the University of Chester, demonstrating the value of academic partnership in heritage data practice. The involvement of the university strengthened the project’s data legacy by embedding oral histories within established preservation infrastructures, developing

enhanced metadata for discoverability, and situating the material within wider scholarly debates on memory, place, and community heritage. This collaboration also opened pathways for the reuse of the recordings in teaching and research, while ensuring that the knowledge co-produced with participants extended beyond commemoration to contribute to broader understandings of high street heritage.

7.4.4. Chester Contemporary

Chester Contemporary was a major multi-faceted arts event that aimed to elevate Chester as a renowned hub for contemporary art. The extensive programme transformed the city into a vibrant platform for international and local artists to share their latest works. The project encompassed exhibitions, installations, live performances, films, and participatory community programming. Prominent locations, like the city walls, rows, and cathedral, were used as canvases for contemporary art tying them to Chester's heritage. A core part of Chester Contemporary was showcasing work by emerging artists and providing them with opportunities to create ambitious new projects. The programme also intended to catalyse a sustainable creative ecology in Chester where artists could build careers and engage with the community. Within this expansive event, the schools' programme offered a channel for connecting local youth to contemporary art. Professional artists collaborated with primary schools across Chester to create installations, sculptures, and other artworks inspired by the city's rich history. Here, students were able to engage with Chester's heritage through the use and creation of new heritage datasets inspired by Chester's heritage.

7.4.5. Data

Table 21, data involved in Chester's Community Engagement strand.

Strand(s)	Data input/output	Data	Location (source or site)	Legacy
Brown's	Input	Oral History	-	Raw recordings at Cheshire Archives
Brown's	Input	Personal collections	-	
Brown's	Input	Photographs, posters, and adverts	Cheshire Archives	Cheshire Archives
Brown's/ Chester Contemporary	Input	Physical artefacts	Grosvenor Museum	Grosvenor Museum
Refresh/ Chester Contemporary	Input	Archive maps	National Library of Scotland	
	Output	Press release		
Chester Contemporary	Output	Video		YouTube
Refresh	Output	Written word	On the https://chesterrefresh.org	
Refresh/ Chester Contemporary	Output	Photography		HE's Archive HE's Archive
Refresh/ Chester Contemporary	Output	Soundscape and Projections		
Browns	Output	Exhibition		Some artwork was sold

The data shown in Table 21, will now be analysed by the categories: reused, created, shared, and deposited, using a substructure of the different strands of the programme.

7.4.6. Data Reused

Data reuse was limited within the Chester HSHAZ community strand, with the majority of data reuse being within the “Browns – More than a Shop” project, including personal narratives and collections, ephemeral material and physical artefacts from Browns.

Personal collections

The idea of capturing otherwise inaccessible datasets can also be demonstrated in the collation of personal collections. As with Kirkham (see 6.2.2) and Northallerton (see 5.2.3), personal collections were brought in by the community, but in Chester, these materials served a dual purpose: to spark conversation around life in the Browns department store and to assist Cheshire Archives in cataloguing their recently acquired Browns collection. As Emma Knight explained, "a lot of the kind of photographs and things that they'd been given didn't come with information about them and they can only really archive things if they know what they are" (Knight, 25 November 2025, pers. comms.). Photographs lacking context - such as images described only as "the Christmas party from 1978 and Doris is there" - required community knowledge to become meaningful archival records (*ibid*).

The workshops facilitated this knowledge exchange in structured ways. At the archive recording session, participants brought personal items including records purchased from Browns' listening booths, where customers once sampled music before buying, and family photographs. These materials showed the role department stores played in the lives of individuals, from christenings to funerals, as Browns offered services spanning "birth to death" (Knight, 25 November 2025, pers.

comms.). Sharing this material within the heritage programme enabled a grassroots view of community heritage whilst simultaneously enriching institutional collections. As with Kirkham, the material collected was not for a strict heritage initiative; rather, it was brought in to help foster conversations and encourage participation, demonstrating the significance of personal collections to the appreciation of what individuals may consider heritage. Conversely, however, it helped capture the intangible and tangible lives of the people associated with Browns, capturing extensive details as with Northallerton.

Photographs, posters, adverts and physical artefacts

Other curated materials further illustrate the role of physical material in sparking conversations. The Cheshire Archives laid out images from the Browns collection during workshop sessions, using them as "visual prompts for people to kind of talk about Browns" (Knight, 25 November 2025, pers. comms.). These materials enabled multiple simultaneous conversations during sessions, allowing the sound producer to capture diverse perspectives whilst participants engaged with different archival items.

The reuse of these materials illustrates the significance of High Streets and commerce to the lives of communities. Memories shared included working in the furs department, where staff would allow aristocratic customers to take furs "to trial and bring them back if they didn't like them" — only to find "a race day ticket or something in the pockets" upon return (Knight, 25 November 2025, pers. comms.). Such anecdotes emerged through engagement with physical prompts, highlighting the importance of ensuring that these artefacts are as accessible as possible. It would be recommended that these materials be digitised to help ensure accessibility, as these materials are clearly significant to the community of Chester.

A further example of the reuse of photographic materials was the Picturing Chester City Centre (part of Picturing High Streets) project led by Ciara Leeming. Here,

Leeming had access to the HE archive, and glass plate pictures of Chester 100 years ago. Here, participants were encouraged to reuse this material to produce collages (see Fig. 121), yet here the focus is given to the nature of reusing the material. Here, Ciara laid the photographs on the table to provide hands-on access to the material. Further limitations of accessing the material were raised by Ciara with comments of “you have to physically go to some archives to see things”, “not accessible to the average person”, and “sometimes people can be a bit protective of archives” (Leeming, 29 April 2024, pers. comms.). The Chester HSHAZ provided possibilities to access the archival material which would not have happened otherwise. This interaction with HE’s photographic archive shows the potential these photographs have in inspiring local community heritage initiatives. As such, it would be recommended that such initiatives are fostered by HE, not only to allow a platform for sharing community heritage but to also raise awareness of the work and material that HE has. This is important as the “average person doesn’t really, would never know that it exists” (Leeming, 29 April 2024, pers. comms.), clearly a factor that needs to change.

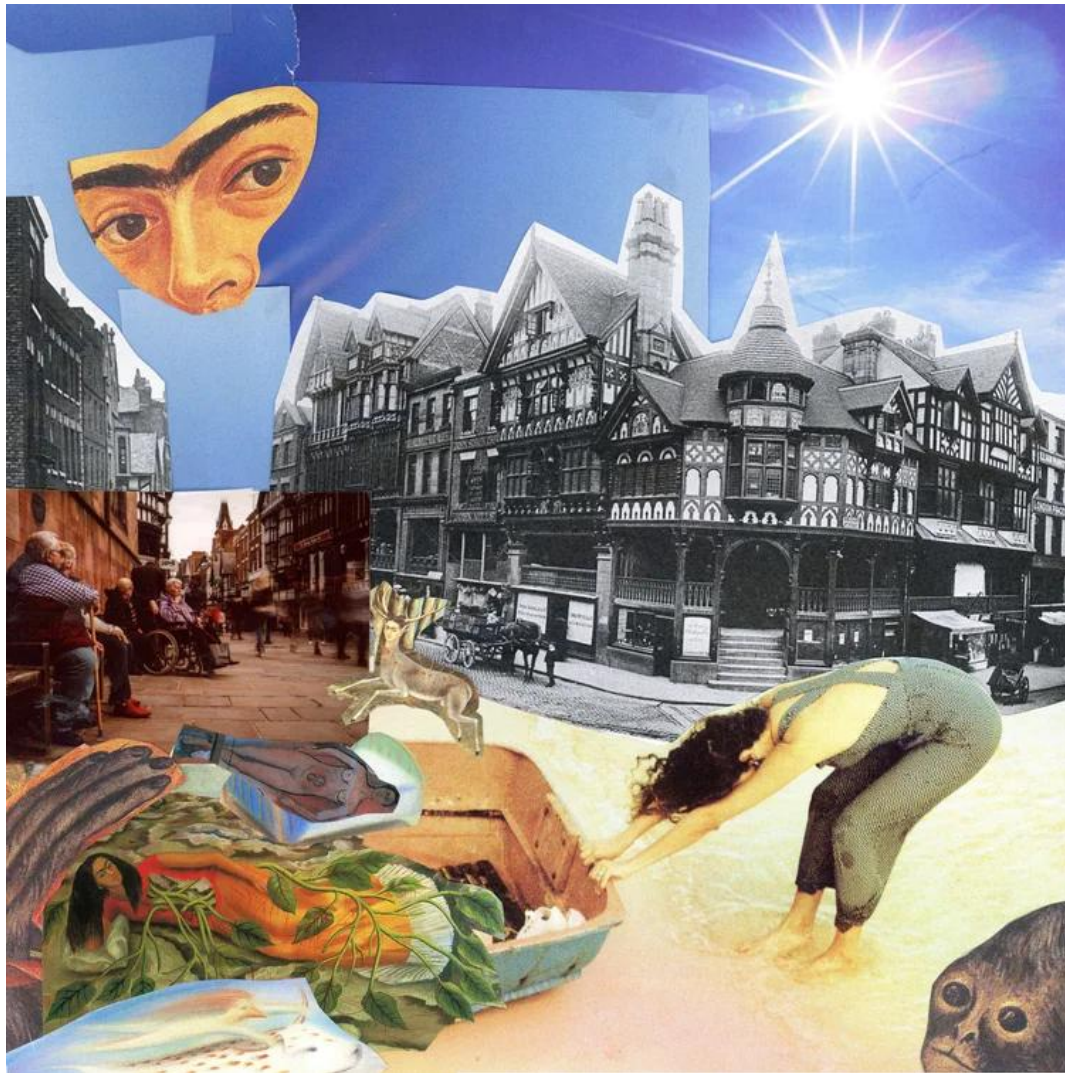


Figure 121, a collage created within Picturing Chester City Centre (Leeming, n.d.)

A further dataset accessed from the archives were historical photographs from HE's archive. Participants were encouraged to reinterpret these photographs through creative collage, reclaiming perspectives on the High Street. By juxtaposing their own memories and experiences against the archived images, it provided an opportunity for participants to situate their own intangible heritage within the context of official historical datasets. The reuse of historical photographs throughout the Chester project illustrates how creative engagement with archival materials enables communities to reassess, reimagine and reclaim their living heritage. By the community being provided with opportunities to integrate their local heritage within institutional datasets, it raised possibilities for greater placemaking, and as such was

a unique opportunity created through the HSHAZ that should be replicated in future projects.

7.4.7. Data Created

Audio: The Browns Soundscape

A significant dataset created through the Chester HSHAZ was the Browns oral history soundscape. The project employed a structured approach to capturing community memories across multiple sessions. Initial drop-in workshops held in a crypt-level café and art space on the Rows provided an informal setting where the archives team displayed photographs whilst a sound producer captured emerging conversations. A subsequent dedicated recording session at the archives employed a more structured format, with a facilitator and sound producer stationed at tables, conducting 10–15-minute conversations with groups of two or three participants before rotating to the next group (Knight, 25 November 2025, pers. comms.).

The raw recordings were edited into an approximately eight-minute soundscape featuring "different voices and kind of different from people who'd worked there to people who had shopped there and kind of their feeling about the space" (Knight, 25 November 2025, pers. comms.). Memories captured ranged from working "up in the cafe in a horrible brown polyester uniform" to recollections of the distinctive carpets with "big words kind of really dark carpet with big gold swirls on it" and the experience of getting lost across the store's multiple levels (Knight, 25 November 2025, pers. comms.).

Accessibility was prioritised through the creation of a transcript, ensuring alternative methods of engagement with the material. The soundscape was also adapted into a social media trailer by the council's communications team, combining audio excerpts with exhibition images and subtitles for Facebook distribution.

The creation of this audio archive demonstrates how oral history methodologies can capture intangible heritage that enriches understanding of High Street significance. The involvement of participants across generations—including "much older participants who were really keen to share...quite joyous then sharing these memories and kind of family histories...recollections that they wanted to make sure were kind of in a collective memory" (Knight, 25 November 2025, pers. comms.)—ensured diverse perspectives were preserved.

Photography

Within Chester, several photography projects were carried out, including *Photographer in Residence*, under the wider Picturing High Streets project led by HE (see 4.4).

The first of these projects, *Picturing Chester City Centre* (Historic England, n.d.e), comprised nine workshops in which participants were invited to create collages in a collaborative co-productive project between Ciara Leeming, Café 71 (a mental health centre in Chester) and the Open Eye Gallery (Historic England, n.d.e). Participants with mental health challenges were encouraged to explore Chester, taking photographs to spark discussions about personal experiences in familiar locales, and involved six individuals (Leeming, 29 April 2024, pers. comms.).

Participants were encouraged to write memories down, leading to stories emerging about rough sleepers finding refuge and utilising resources like café balconies for phone charging. These conversations informed the development of captions for the photographs, providing opportunities to include community voices (*ibid*). The works culminated in a showcase of displays in empty shop windows, linking the project to other Chester HSHAZ initiatives. The participants found the experience "utterly speechless", showing the extent to which pride and a sense of placemaking was developed as it gave their voice to the High Street, or rather, the High Street the community members' voice (Leeming, 29 April 2024, pers. comms.). Encouraging

participation from this targeted group worked alongside HE's interest in the importance of heritage for mental health and illustrates the potential of newly created datasets to help achieve improved social wellbeing for communities. This demonstrates the value of community-centred photographic projects in illuminating living heritage and capturing diverse experiences of place, which can supplement official archives, expanding on the ideas explored within the literature review (see 2.5).

Picturing Chester (Historic England, n.d.f), led by Suzanne St Clare collaborating with Open Eye Gallery in Liverpool, focused on independent business owners who traded in the iconic Rows (St Clare, 13 May 2024, pers. comms.). In the first year, Suzanne explored the traders' backgrounds, and how they came to Chester, using disposable film cameras, the traders captured their working lives in a candid documentary style inspired by photographer Daido Moriyama (*ibid*). The use of disposable cameras raises an interesting point about creating long-lasting physical archival material from disposable equipment. Alongside the photographs, St Clare captured video interviews of the shop traders, unexpectedly capturing evocative audio recordings of customer interactions – “the essence of trading on the rows” (St Clare, 13 May 2024, pers. comms.). This led to the creation of six short films, which paired images with soundtrack vignettes which were uploaded to YouTube. The dataset “shows the life of Chester’s High Street [and] is invaluable” (St Clare, 13 May 2024, pers. comms.). HE has detailed the videos and provided the YouTube video link; nonetheless, given the nature of the videos and the heritage wealth contained within, it could have been possible to archive these videos within HE’s archive, and as such, is a missed opportunity to preserve the heritage of Chester’s 21st-century trading. This seems at odds with other HE initiatives such as Missing Pieces, in which it would have been possible to link the community voice and heritage assets to locally significant sites, providing an opportunity to capture the intangible heritage of this unique asset.

In the second year, Suzanne collaborated with the traders to produce portraits, presenting the individuals behind the shops. Despite frustrations with profitability, the portraits aimed to depict the traders in empowered poses, celebrating the beauty of the retail spaces (St Clare, 13 May 2024, pers. comms.). Through comprehensive creative engagement, the initiative documented intangible heritage and catalysed dialogue about sustaining the Rows. Shopkeepers' voices, experiences, and vision for the future provide an invaluable record complementing official narratives. Furthermore, the comment "[they] felt that they'd reclaimed the city" (St Clare, 13 May 2024, pers. comms.) further shows the extent to which this project made meaningful impacts to the community. The creation of these datasets demonstrates the HSHAZ's role in fostering community-led heritage initiatives to encapsulate the essence of place. Importantly for this thesis, it shows the importance of data as a viewpoint to communities' own interpretation of the area around them, meaning preservation and access of this data is vital.

7.4.8. Data Sharing

Exhibition at Grosvenor Museum

A key method of sharing the Browns project outputs was through a physical exhibition in the Grosvenor Museum's Coins Gallery. Though modest in scale, approximately 3m², described as "like someone's sort of a large booth", the space enabled multisensory engagement with the collected heritage data (Knight, 25 November 2025, pers. comms.).

The exhibition combined multiple data types: visitors could sit on a bench and listen to the edited soundscape through headphones (two sets connected to one player, enabling shared listening experiences), whilst viewing block print posters commissioned for the project and interpretation panels. The museum contributed artefacts from their collection, including the concierge's top hat and marketing materials displayed in horizontal cabinets. The community-created word prints from

the workshops were also displayed, connecting visitor-generated content with professional curatorial presentation.

Interpretation was provided through A1 and A3 panels, the latter including credits for contributing artists and institutional logos. This layered approach to exhibition, combining audio, visual, archival and community-created elements, demonstrated effective methods for sharing diverse heritage datasets within constrained physical spaces.

Website

One of the main approaches to disseminating data collated and generated through the Chester HSHAZ was through websites. Much of the information regarding the Chester HSHAZ was available from the Uniform Resource Locator (URLs) www.CheshireWestAndChester.gov.uk, <http://Chester.WestCheshireGrowth.co.uk>, <https://ChesterContemporary.org/> and through HE's website <https://HistoricEngland.org.uk/Services-Skills/Heritage-Action-Zones/Chester/>. For this thesis, the quantity of websites continues the argument (shown in Kirkham - see 6.3.4) that websites are excellent methods of disseminating heritage information.

The main website was <https://ChesterRefresh.org/>, which detailed all aspects of the Cultural Programme of the Chester HSHAZ and offered easy access to events, news, as well as information about the programme itself. The website also contained stories and poems created through the initiative within the events section.

The council website was designed to share information with the local population. The inclusion of the Chester HSHAZ illustrates the importance that the council placed on the initiative and the council's role within it. The website also allowed press releases to be shared for upcoming events.

The Chester Contemporary site was specifically designed to disseminate information on the Chester Contemporary. The website contained a wealth of

different digital datasets including photography and videos and helped share information about upcoming events. The website works as an effective method to disseminate all information about the subproject and illustrates the potential of websites to convey various digital datasets to a varied audience.

The final website, <http://Chester.WestCheshireGrowth.co.uk>, offered a glimpse into the short-term nature of the initiative. The website was a sub-site of www.WestCheshireGrowth.co.uk and was created to inform people about the Chester HSHAZ project. Nonetheless, the website was not secured with a Secure Sockets Layer (hereafter SSL) certificate and only contained the page <http://Chester.WestCheshireGrowth.co.uk/Projects/Heritage-Action-Zone/>. The page offered more details into what the different aspects of the Chester HSHAZ entailed and those involved. Nonetheless, the lack of investment in SSL suggests that the website was only temporary.

7.4.9. Data Legacy

As with Kirkham and Northallerton, Chester offers insight into different data practices within HSHAZ projects. The Browns project provides a particularly instructive case study in the complexities of heritage data legacy.

Archival Holdings

The raw oral history recordings from the Browns project are held by Cheshire Archives, a shared service between Cheshire East and Cheshire West. This represents a secure long-term legacy for the primary source material. However, the relationship between raw and edited materials raises questions about what constitutes "the archive." As Knight explained, the archives "were much more interested in kind of the original raws because that's kind of that is the archive to them. The soundscape that was created is curated. It's edited. It's an artwork" (Knight, 25 November 2025, pers. comms.). This distinction between source material

and creative interpretation has implications for what is preserved and how future researchers might access different versions of the heritage data. It further adds layers to the debates on which data should be made available as explored in the discussion (see 9.2).

The Cheshire Archives is currently developing a new website and creating films for their new archive centre, presenting a potential opportunity for the edited soundscape to be made available online. As Knight noted, "it may be that they might feel comfortable putting that on their website, it'll be quite a nice thing to ask them actually whether that could kind of fit somewhere" (Knight, 25 November 2025, pers. comms.). This indicates that digital accessibility of the curated outputs remains uncertain but possible.

Future Opportunities

The interview revealed potential future opportunities for reconnecting heritage data with its original context. With John Lewis potentially occupying part of the former Debenhams/Browns building, Knight suggested "it might be quite nice to kind of have some of those memories put back into the fabric of that building somehow" (Knight, 25 November 2025, pers. comms.). This indicates awareness of heritage data's ongoing relevance and potential for reactivation in new contexts, though realising such opportunities requires proactive institutional relationships.

Outside of Browns, a more complicated legacy prevails. Some data has a semi-secure legacy, such as videos, written material, press releases and audio. These datasets rely on the Chester HSHAZ websites being accessible, linking the legacy of the datasets directly to the websites themselves. As was seen with the <http://Chester.WestCheshireGrowth.co.uk> website, the website legacy is not guaranteed, meaning that many of the datasets could be lost. The videos would be accessible through YouTube, but this is not a guaranteed legacy. The danger of potential data loss is greater with press releases, due to their reliance on more

fallible websites. These datasets were created to serve the function of advertising or disseminating outputs from events that took place as part of the HSHAZ. As such, it is understandable that their legacy beyond these events might be overlooked. Nonetheless, there is heritage value in some of these newly created datasets, and it would be hoped that they would be archived for accessibility purposes over a longer timeframe. The responsibility for ensuring accessibility is explored within the Discussion (see 9.5.5).

Applying the criteria established in section 3.5.7, a small proportion of the Chester community engagement outputs meet the conditions for a sustainable legacy. The Browns oral history recordings are held by Cheshire Archives under confirmed custodianship arrangements, and the photography project outputs were deposited with HE. The remainder, including event documentation, films, and press releases hosted on project websites, do not meet this threshold, as despite being on platforms that are currently accessible but have no confirmed long-term preservation arrangement. This is treated as a governance finding about which outputs were brought within institutional preservation frameworks and which were not.

The two examples that do meet the sustainability threshold are instructive. In the case of the Spider Project, a collage from each participant was archived alongside work-in-progress photographs within the HE archives (Leeming, 29 April 2024, pers. comms.), preserving a community view of the heritage assets in Chester that formal survey work could not have captured. The Browns project similarly demonstrates the value of local partner collaboration: the oral history recordings were coordinated by the Grosvenor Museum and Cheshire West and Chester Council before being deposited with Cheshire Archives, showing how institutional relationships established early in a project can help ensure that community-generated materials enter formal preservation frameworks rather than remaining dependent on individual stewardship.

7.4.10. Synthesis: Community Engagement

The community engagement strand in Chester demonstrates clearly what secure data governance in a community-oriented project can look like when institutional partnerships are in place from the outset, providing more evidence alongside Northallerton and Kirkham. The Browns of Chester project succeeded in depositing its oral history recordings with Cheshire Archives precisely because the project was designed in collaboration between the council, the Grosvenor Museum, and an academic partner from the University of Chester. Each of these institutions brought a different form of preservation capacity; the combination ensured that recordings reached a recognised archive rather than remaining on a hard drive. This outcome was not accidental; it was a consequence of partnership design.

The Photography in Residence outputs achieved similar security through HE's own archive. In both cases, the key variable was not the community's commitment to heritage documentation, which was strong throughout, but the presence of an institutional actor with both the mandate and the capacity to receive and preserve the material. Where such actors were absent, as in the web-based dissemination of event documentation and the YouTube-hosted films from Chester Contemporary, outputs remained accessible in the short term but without preservation guarantees.

7.5. Conclusion

The Chester HSHAZ initiative yielded a diverse range of datasets documenting and celebrating the city's invaluable heritage asset: the Rows.

The built heritage component produced extensive planning application materials, comprising photographs, maps, plans, elevations, 3D models, and technical documents. These datasets were primarily intended to support regulatory approvals for restoration and adaptive reuse projects for the Rows. Collectively, they provide a detailed record of Chester's built environment during the transformative period of

heritage-led regeneration. Proper archiving and open data practices could render this dataset an invaluable resource for future research in architecture, planning, and urban heritage conservation.

Supplementing the built heritage data were innovative outputs from community engagement initiatives, prioritising grassroots documentation of Chester's rich intangible cultural heritage. Participatory photography projects provided platforms for marginalised groups to creatively capture their lived experiences and emotional connections to the Rows environment. Personal narratives, memoirs, and oral histories ensured that intangible heritage was authoritatively preserved.

Commissioning new contemporary literary works, music compositions, artwork, and theatrical performances reinterpreted Chester's heritage through a vibrant cultural lens.

Digital media and open-access publishing played a crucial role in maximising the impact of the value and legacy of these community-generated datasets.

Photography projects were archived with HE, audio recordings were deposited with local museums and libraries, and written works and videos were published online through dedicated cultural programme websites. This democratic approach to heritage data creation, curation, and dissemination empowered communities to directly represent their living heritage alongside institutional records.

However, the data practices of the Chester HSHAZ project also underscored areas requiring improvement moving forward. Inconsistent citation practices, reliance on proprietary file formats like .pdf, and a lack of centralised archiving pathways jeopardise the long-term access and potential for reuse of these unique datasets. The scheduled dissolution of temporary project websites risks severing access to invaluable cultural data. Adopting open data standards, developing DMPs from project inception, and cultivating digital repository partnerships could more robustly preserve the rich community heritage materials generated.

Overall, the Chester HSHAZ project offered new opportunities for community-led, participatory data practices. The pioneering initiatives provided an exemplary blueprint for culturally engaged data creation and stewardship. However, looking ahead, sustained investment in digitisation, open data infrastructure, and sustainable digital preservation will be vital to ensuring that the diverse data legacies from Chester can be built upon and amplified. The responsible custodianship of these community-driven datasets represents a powerful opportunity to democratise heritage narratives and representations.

7.6. Chapter 7 synthesis: data governance across Chester's HSHAZ strand

Table 22, Chester – programme structure, dataset provenance, custodianship, and legacy outcomes by strand

Strand	Delivery model	Pre-existing datasets used	HSHAZ-generated outputs	Custodian at close	Legacy outcome
Built Heritage (Rows restoration)	CW&C Council; Donald Insall Associates; Grosvenor / Aberdeen Standard	NHLE listings (24 applications), historic photographs (21 applications), historic maps (28 applications)	Condition survey, drone photogrammetry, planning applications, conservation management plan (all .pdf or hard drive)	CW&C planning portal. Donald Insall servers. Portable hard drive (drone). No formal repository deposit	At risk. Most technically sophisticated outputs lack any repository deposit
Browns / More than a Shop	CW&C Council; Grosvenor Museum; University of Chester partnership	Cheshire Archives Browns collection, personal photographs and artefacts, HE glass plates	Oral history recordings (raw and edited soundscape), exhibition materials, community word-prints	Cheshire Archives (raw recordings). HE (photography). Exhibition materials at Grosvenor Museum	Secure (oral histories, photography). Exhibition materials partially held
Chester Contemporary / Refresh	CW&C Council; Storyhouse; external artists	HE archival photographs (glass plates), National Library of Scotland maps	Films (YouTube), written works (website), photography (.tiff and .jpeg), press releases	HE archive (photography). YouTube (films). ChesterRefresh.org (other). No formal deposit	Partial. Photography secure; web-hosted outputs at risk if sites close

8. Evaluation of the HSHAZ

This chapter examines the evaluation of the HSHAZ programme through a critical analytical lens, rather than simply reporting what the evaluation found. It draws principally on the 2025 AMION Consulting evaluation (AMION 2025b), commissioned by Historic England (HE), but treats that document as one artefact within a wider data ecosystem rather than as a transparent window onto programme reality. The analytical work of this chapter is threefold. First, it distinguishes between three distinct categories of data that are frequently conflated in discussions of programme performance: local delivery data produced by individual schemes, programme monitoring data collected centrally by HE, and formal evaluation data gathered by the independent evaluator. Second, it examines the evaluation's own epistemological architecture, including its choice of indicators, frameworks, and valuation methods, and asks what those choices make visible and what they render invisible. Third, it uses the evaluation as evidence for the thesis's central argument: that governance frameworks, including the governance of knowledge about a programme, shape what can be known about it, and that this has consequences for how future initiatives are designed.

The chapter does not evaluate HSHAZ as a regeneration programme: that task is properly the evaluator's. Its aim is rather to understand the evaluation as a knowledge-making practice embedded in the same institutional conditions that produced the data governance challenges documented in the case studies.

8.1. Three Tiers of Programme Data

A prerequisite for any critical reading of programme evaluation is a clear understanding of the different categories of evidence from which the evaluation is constructed. In the HSHAZ context, at least three distinct tiers of data can be identified, each produced by different actors, for different purposes, at different

points in the programme lifecycle, and with different relationships to the underlying realities of scheme delivery.

8.1.1. Local Delivery Data

Local delivery data encompasses the materials created by individual schemes in the course of delivering their programmes: planning applications, photographic surveys, oral history recordings, community event documentation, architectural surveys, archaeological reports, oral histories, leaflets, websites, and creative outputs. This is the data that the three case study chapters examine in detail. Its defining characteristic is that it was not created for evaluation purposes: it was produced as a by-product of doing the work, and its value to future researchers or evaluators is incidental to the reasons it came into existence.

As the case studies demonstrate, local delivery data is highly heterogeneous in format, quality, custody, and accessibility. Some of it was systematically archived (the Northallerton Heritage Hub's oral histories, deposited with the North Yorkshire County Record Office; the Chester photography projects, preserved in HE's own archive); much of it was stored informally on shared drives or planning portals in formats that limit future reuse; some of it has already been lost, most notably through the closure of project websites such as Kirkham Treasures. Local delivery data constitutes the primary evidential record of what was actually created by the programme, but because its preservation was not a programme requirement, it is systematically incomplete and uneven in ways that do not reflect the distribution of project quality or significance.

Crucially, the formal evaluation drew very little on this tier of data. AMION's methodology included scheme applications and close-down reports as documentary sources, along with a programme-wide case study exercise covering ten schemes, but the underlying heritage data assets created by individual schemes, their formats, their custody, their accessibility, and their long-term viability, fell

entirely outside the evaluation's scope. This is understandable given the evaluation's primary purpose, but it means that the formal record of the programme's knowledge legacy is largely absent from the only systematic external assessment of what the programme achieved.

8.1.2. Programme Monitoring Data

Programme monitoring data was collected centrally by HE throughout the delivery period, principally through the PowerBI dashboard used to track progress against Key Performance Indicators (KPIs). This data was created for management and accountability purposes: to enable HE to assess whether schemes were meeting their agreed targets, to inform funding release decisions, and to provide DCMS with evidence of programme performance.

The monitoring data had a number of defining characteristics that shaped what it could and could not show. It was output-focused, counting discrete, measurable deliverables: buildings repaired, shopfronts restored, square metres of public realm improved, events held, volunteer hours contributed. These were the metrics around which funding agreements were structured, and their primacy in the monitoring framework meant that activity which did not register clearly against these categories tended to be under-recorded in the central system. Questionnaire and interview evidence from the case studies suggests that HSHAZ Project Officers received more guidance on data management than Project Leads, yet data management itself was absent as a category in the monitoring framework entirely: there was no KPI for data deposition, no indicator for DMP completion, no metric tracking whether project outputs had been archived in a recognised repository. The absence of such indicators was not an oversight but a reflection of the programme's primary purpose, which was physical and community regeneration rather than digital heritage infrastructure. However, the consequence is that the monitoring data produced by HSHAZ contains no evidence of its own data governance outcomes.

The programme's digital legacy is invisible in the system designed to record what the programme achieved.

A further limitation of the monitoring data is its dependence on self-reporting by local delivery partners. Project Officers and Project Leads submitted returns against the agreed KPI framework, but the data was not independently verified at the point of collection. This is standard practice in programme monitoring and is not a criticism of HE's approach; it does, however, mean that monitoring data reflects what was reported rather than what was necessarily delivered, and that inconsistencies in how Project Leads interpreted category definitions could produce non-comparable returns across the 67 schemes.

8.1.3. Formal Evaluation Data

The AMION evaluation (Amion 2025a; 2025b; 2025c) constitutes the third and most formally structured tier of data. It was commissioned by HE and delivered by an independent consultancy at the conclusion of the programme, drawing on a combination of primary data collection (attitudinal surveys, case studies, stakeholder interviews, footfall analysis using mobile phone location data) and secondary analysis of programme monitoring data, scheme applications, and national statistics.

The evaluation is a sophisticated and methodologically self-aware document. It deploys multiple assessment frameworks, applies economic valuation techniques including contingent valuation, and is explicit about its data collection limitations. It represents the most comprehensive external assessment of the programme available, and the findings it reports are used extensively in the case study chapters of this thesis as context for understanding how individual schemes related to programme-wide patterns.

The relationship between formal evaluation data and the other two tiers is, however, mediated rather than direct. The evaluation cannot recover local delivery data that was never created, never preserved, or never made accessible to external researchers. It can describe the programme's outputs in aggregate terms derived from monitoring data, but it inherits that monitoring data's silences: the absence of data governance indicators in the KPI framework means that the evaluation contains no evidence of the programme's data legacy, not because the evaluator chose to exclude it but because the monitoring system never collected it. The evaluation is therefore not a comprehensive account of what HSHAZ created; it is an account of what HSHAZ created as measured by the frameworks HE chose to use.

Table 23, The three tiers of HSHAZ programme data, their characteristics, and their relationship to the data governance concerns of this thesis.

Data tier	Produced by / for	Relationship to data governance
Local delivery data	Individual schemes, as a by-product of delivery. Formats: planning applications, oral histories, photographs, creative outputs, websites, architectural surveys.	Primary evidence of what was created. Highly heterogeneous. Preservation varies from systematic (Northallerton NYCRO deposit) to absent (Kirkham Treasures website closure). Largely invisible to formal evaluation.
Programme monitoring data	Project Officers and Project Leads, reported to HE via PowerBI dashboard against agreed KPIs. Formats: structured returns, quarterly reports, close-down documents.	Captures physical and community outputs against predetermined metrics. Contains no indicators for data deposition, DMP completion, or digital legacy. Data governance is absent as a category.
Formal evaluation data	AMION Consulting, commissioned by HE at programme conclusion. Methods: attitudinal surveys, case studies, footfall analysis, stakeholder interviews, secondary analysis of monitoring data.	Most systematic external assessment available, but inherits the monitoring system's silences. Cannot recover inaccessible local data. Evaluation's own scope excludes digital heritage outcomes.

8.2. The Evaluation's Analytical Architecture

Understanding what the AMION evaluation can and cannot contribute to this thesis requires an examination of the analytical choices embedded in its design. These choices were made for legitimate reasons given the evaluation's purpose; the aim here is not to criticise them but to understand their implications.

8.2.1. Critical Success Factors, Key Performance Indicators, and the Metrics Question

The HSHAZ programme was assessed by AMION against ten Critical Success Factors (CSFs) organised across four themes: Productivity, Participation in Culture, Community, and Place. The evaluation notes, constructively, that the programme would have benefited from more specific and measurable KPIs alongside these CSFs, and that the difficulty of systematic progress tracking was a consequence of the CSF-based design. This is an important methodological observation, but its implications extend further than the evaluation acknowledges.

The choice between CSFs and KPIs is not merely a technical question about measurement precision; it is a substantive question about what kind of programme HSHAZ was understood to be. CSFs describe the enabling conditions for success rather than the outcomes of success: they specify what needs to be in place for the programme to work, not what a working programme would demonstrably produce. This framing reflects the genuine complexity and context-dependence of heritage-led regeneration, where the relationship between inputs, activities, and outcomes is non-linear and difficult to specify in advance. However, the consequence is that the evaluation's success criteria were established after delivery began rather than operationalised before it, making it methodologically difficult to distinguish between a programme that succeeded because its CSFs were met and one that succeeded for reasons unrelated to those factors.

More fundamentally for this thesis, neither the CSFs nor the KPI framework contained any indicator relating to data governance. The ten CSFs include factors relating to community engagement, physical conservation, economic viability, partnership strength, and cultural programming, but nothing concerning the management, preservation, or long-term accessibility of the heritage data that the programme generated. This absence is consistent with the programme's primary purpose, but it means that success in the terms the programme defined for itself is entirely compatible with comprehensive failure in data governance terms. A scheme could score highly against every HSHAZ metric while simultaneously losing all of its digital heritage outputs to format obsolescence, platform closure, or inadequate custodianship. The evaluation confirms that many schemes did in fact achieve their programme objectives; it provides no basis for assessing their data governance outcomes.

The evaluation's recommendation for future programmes to adopt "clear, measurable goals, objectives and KPIs" including "balanced scorecards that incorporate both qualitative and quantitative indicators" (Amion 2025b, p. 111) is a valuable lesson, but it stops short of specifying what those additional indicators should include. This thesis argues that data governance outcomes, specifically the proportion of project outputs deposited in recognised repositories, the presence of Data Management Plans, the licensing status of publicly funded datasets, and the integration of project records into HERs, should be among the indicators included in any future balanced scorecard.

8.2.2. Economic Valuation and What It Counts

The evaluation deploys social cost-benefit analysis, producing benefit-cost ratios of 1.32:1 for capital works and 2.4:1 for the full programme (AMION 2025b, p. 17, 79). These figures draw in part on a contingent valuation study commissioned mid-programme to monetise intangible benefits, producing estimates such as £30.29 per

person for ‘civic pride’. The evaluation is transparent about the methodological limitations of contingent valuation, noting that willingness-to-pay estimates of this kind are sensitive to how questions are framed and to the assumptions embedded in the valuation model. However, the use of these figures in a benefit-cost framework warrants more sustained interrogation than the evaluation itself provides.

Contingent valuation rests on the assumption that the value of a public good can be approximated by aggregating individuals’ stated willingness to pay for it. In the context of heritage benefits, this approach has been extensively debated in the literature (e.g., Sagger *et al.* 2021). The core difficulty is that heritage value is not simply an aggregate of private preferences: it includes option value (the worth of preserving resources for uses not yet anticipated), existence value (the worth placed on heritage assets simply continuing to exist), and bequest value (the worth of ensuring that future generations inherit a meaningful heritage record). None of these categories can be captured adequately through contingent valuation of present willingness to pay, because they concern relationships with time and with future people rather than with current preferences. The £30.29 civic pride figure is epistemologically coherent as a measure of how much respondents currently value a defined improvement; it is not a measure of the long-term value of the heritage knowledge that improvement created or could have created.

This matters for data governance because the most important value of heritage data is often prospective rather than current. The historical photographs embedded in Chester’s planning applications (7.3.3), the oral histories deposited at Cheshire Archives (7.4.3), the condition survey of the Rows produced by Donald Insall Associates (7.3.3), have uses that cannot be fully anticipated at the time of their creation. Their value accumulates over time as contexts change, as research questions evolve, and as the buildings and places they document themselves change. A cost-benefit framework anchored in present willingness to pay cannot capture this temporal dimension, and therefore systematically under-counts the

returns to good data governance relative to the returns to visible, present-day physical improvements. The evaluation's economic case for HSHAZ is credible on its own terms; it simply cannot speak to the value of the digital knowledge infrastructure that the programme could have created but did not.

8.2.3. The Attitudinal Survey and Its Comparators

The evaluation commissioned attitudinal surveys comparing residents in HSHAZ areas with residents in matched comparator areas, measuring perceptions of heritage, place quality, and community belonging. The quasi-experimental design, comparing HSHAZ participants with non-participants in similar localities, is methodologically the most rigorous element of the evaluation and produces some of the most compelling evidence of programme impact. The finding that HSHAZ residents showed measurably stronger place attachment and heritage engagement than comparators provides credible evidence of genuine community benefit.

However, the attitudinal surveys were introduced after the public announcement of HSHAZ scheme locations, meaning that no pre-programme baseline existed for the treatment group. The evaluation acknowledges this directly, noting that retrospective baseline reconstruction through comparator comparison involves assumptions about equivalence that cannot be fully verified. For the purposes of this thesis, the more significant limitation is different: the attitudinal surveys measured residents' perceptions of the high street and its heritage, not their access to heritage information or their ability to use project outputs for research, planning, or community purposes. A resident might feel stronger place attachment as a result of a restored shopfront without ever being able to access the photographic survey, architectural drawings, or heritage statements that were produced in the process of restoring it. The survey captures the experiential benefit of the physical outcome without capturing the informational benefit, or lack thereof, of the data governance outcome.

8.2.4. Footfall Data and Its Limits

The evaluation uses mobile phone location data from Huq Industries to assess whether HSHAZ schemes increased high street footfall (AMION 2025, p. 41). The evaluation itself notes the limitations of this method, including that it cannot demonstrate causal attribution (footfall may have changed for reasons unrelated to HSHAZ) and that it relies on a sample of mobile phone users which may not be representative of all high street visitors. The data shows mixed results across schemes, with some demonstrating clear footfall increases and others showing no discernible change (*ibid*, p.41-42).

The footfall analysis is included here not to extend the evaluation's own discussion but because it illustrates a broader pattern. The evaluation draws on multiple data sources, each with known limitations, and is admirably transparent about those limitations. What it does not do, and perhaps cannot do given its brief, is to stand back from those individual limitations and ask what they collectively reveal about the programme's epistemic condition. The difficulty of measuring footfall attribution, the absence of pre-programme attitudinal baselines, the mid-programme introduction of contingent valuation, and the reliance on self-reported KPI returns are not independent methodological inconveniences; they are symptoms of a programme that did not design its knowledge infrastructure in advance. The evaluation note that "data collection mechanisms were not adequately structured or maintained, which limited the ability to monitor or evaluate the programme fully" (Amion 2025b, p. 117) is a significant finding, but the thesis argues that this reflects a more fundamental condition: the programme treated knowledge about itself as a secondary concern, in the same way that it treated knowledge produced by itself as a secondary concern. The parallel is not accidental.

8.3. What the Evaluation Confirms, and What It Cannot See

The AMION evaluation provides credible and well-evidenced conclusions about the programme's performance against its own objectives. The headline findings are worth stating clearly before subjecting them to analytical scrutiny. The programme delivered 723 conserved heritage buildings, 462 restored shopfronts, and nearly 120,000 square metres of improved public realm. Social cost-benefit ratios of 2.96:1 for capital works and 1.48:1 for the full programme indicate positive returns on public investment. Community wellbeing benefits, particularly in schemes such as Kirkham where social prescribing was integrated with heritage activity, were measurable and exceeded national benchmarks in some instances (6.2). The Cultural Strand, when cultural benefits were factored into the assessment, was rated High success rather than Medium, demonstrating that heritage-led regeneration can deliver genuine social value beyond physical conservation. These findings are significant and should not be understated in the effort to produce a more critical reading of the evaluation.

The evaluation is also analytically self-aware in ways that are unusual for commissioned programme evaluations. Its identification of data collection inadequacies, its acknowledgement that the mid-programme introduction of contingent valuation was itself a symptom of insufficient baseline planning, and its constructive recommendations for future programme design (including the integration of evaluation partners at design stage, the development of baseline data before delivery begins, and the use of balanced scorecards) represent valuable institutional learning that future Heritage Action Zone initiatives would benefit from incorporating.

However, there are structural absences in what the evaluation can see, and these absences are not incidental.

8.3.1. The Absence of Data Governance from the Evaluation Frame

The most consequential absence, for the purposes of this thesis, is the complete absence of data governance as either an evaluation criterion or an area of finding. The evaluation examines physical outputs, community outcomes, economic returns, cultural benefits, and programme management efficiency. It does not ask, as a matter of programme assessment, whether the data generated by HSHAZ was managed appropriately, whether it has been preserved in forms that will sustain long-term use, whether it has been integrated into national heritage information infrastructures, or whether the digital assets created through the programme will be accessible to researchers, communities, or planners in ten or twenty years' time.

This absence is structurally determined. The evaluation's scope was set by reference to the programme's own objectives and the monitoring framework that operationalised those objectives. Since neither the programme objectives nor the monitoring KPIs included data governance, the evaluation had no criterion against which to assess it. The evaluation did not overlook data governance; the programme framework did not ask the evaluation to consider it. This is a finding about programme design rather than evaluation quality.

The implication is that HSHAZ as a programme leaves no authoritative external record of its own data governance outcomes. The case study chapters of this thesis constitute the most systematic assessment of those outcomes that exist, and they are limited in scope to three sites. There is no basis on which to generalise with confidence about data governance practices across the remaining 64 schemes. Some will have produced better outcomes than Northallerton, Kirkham, and Chester; many will have produced worse. The evaluation cannot tell us, because it was not designed to.

8.3.2. The Distinction Between Delivery Success and Knowledge Legacy

The evaluation's success ratings, the elevating of the Cultural Strand from Medium to High once cultural benefits are incorporated, the Acceptable to Medium improvement for the Capital Strand, rest on a coherent and defensible set of criteria. However, they implicitly define success in terms that are largely contemporaneous with the programme: buildings restored, events held, footfall increased, wellbeing improved. This is appropriate for a programme evaluation, but it does not address the question of whether the programme produced a lasting knowledge legacy.

The distinction between delivery success and knowledge legacy is analytically important because they are not reliably correlated. A scheme that restored twelve shopfronts, delivered a successful community excavation, and produced strong wellbeing outcomes could simultaneously have lost all of its photographic documentation to format degradation, failed to deposit its oral history recordings in an archive, and allowed its project website to lapse. Such a scheme would score well on every evaluation metric and leave almost nothing in the heritage record. Conversely, a scheme with modest physical outputs but careful data governance could produce a lasting and accessible heritage record of disproportionate research value. The evaluation framework cannot distinguish between these scenarios because it does not measure the second dimension.

The case studies in this thesis suggest that delivery success and knowledge legacy were, in practice, weakly correlated within HSHAZ. Northallerton, which showed the strongest data governance outcomes of the three sites examined, was also a scheme that attracted significant community engagement and produced innovative digital heritage outputs; but its data governance success was attributable to the individual expertise and institutional relationships of one community practitioner rather than to programme-level governance requirements. Chester, which was

among the most ambitious schemes in terms of the scale of capital investment and the significance of the heritage assets involved, showed some of the weakest data governance outcomes in terms of integration with national repositories and long-term accessibility. The evaluation would likely rate both schemes as successful by its own metrics; this thesis finds them to be substantially different in terms of the knowledge legacy they leave behind.

8.3.3. The Evaluation as a Data Governance Artefact

There is a reflexive dimension to the evaluation that is worth drawing out explicitly. The AMION evaluation is itself a large-scale data production exercise: it generated primary data through surveys and interviews, synthesised secondary data from multiple sources, and produced a set of findings and recommendations that will inform future HE policy. As a data governance artefact, it has some notable characteristics.

The evaluation reports are published as PDF documents on the HE website, which means they are accessible but not machine-readable in the sense relevant to FAIR data principles. The underlying datasets, including the attitudinal survey responses, the footfall data, and the stakeholder interview transcripts, are not publicly available for secondary analysis. This is consistent with standard practice for commissioned evaluations and reflects legitimate concerns about participant confidentiality, but it means that the evidence base for the evaluation's conclusions cannot be independently interrogated. The evaluation's own recommendation for future programmes to “integrate diverse data sources” and develop “interactive dashboards to visualise data insights in real-time” (Amion 2025b, p. 113) sits somewhat awkwardly alongside the fact that the evaluation's own data is not publicly accessible in structured or reusable form.

The evaluation also generated what might be called a ‘meta-data problem’: because the monitoring data was not structured with evaluation purposes in mind, AMION

had to commission bespoke primary data collection exercises to answer questions that a well-designed monitoring framework should have been able to address from the outset. The cost-benefit analysis required a mid-programme contingent valuation study. The attitudinal comparison required a purpose-built survey because no pre-programme baseline existed. The footfall analysis required the purchase of a commercial mobile phone location dataset because the programme had not built footfall measurement into its monitoring framework. These were not failures of the evaluation; they were consequences of programme design choices that left the evaluation with inadequate data infrastructure. The evaluation is, in this sense, a document of the programme's relationship to its own knowledge: a relationship characterised throughout by insufficient advance planning for the value of the information being produced.

8.4. Learning from the Evaluation for Future Programmes

The evaluation itself identifies a number of important lessons for future heritage-led regeneration initiatives. This section does not simply rehearse those recommendations but develops them through the analytical lens of the three-tier data typology and the critique of evaluation metrics set out above.

8.4.1. Embedding Data Governance in Programme Design

The evaluation's recommendation that future programmes embed evaluation partners at the design stage, developing monitoring frameworks and baseline data before delivery begins, is both correct and incomplete. It addresses the third tier of data (formal evaluation) without addressing the first (local delivery data) or the second (programme monitoring data). A programme that commissions excellent baseline data for evaluation purposes while failing to require schemes to manage

their local delivery data according to minimum governance standards will still lose its digital heritage legacy, even if it produces a better-evidenced evaluation.

What is needed is a three-tier approach to programme knowledge governance. At the local delivery tier, Data Management Plans should be required as a condition of funding, specifying file formats, repository destinations, licensing arrangements, and custodianship responsibilities before data is created. At the programme monitoring tier, KPIs should include at least a small number of data governance indicators: DMP submission rate, proportion of project outputs deposited in recognised repositories, number of OASIS records created, HER integration rate. At the formal evaluation tier, future evaluations should include data governance as a substantive domain of assessment, with its own criteria and evidence base.

These three tiers interact. If local delivery data is well-governed, it becomes available for evaluation purposes: the evaluator can draw on it directly rather than having to commission substitute data collection. If monitoring data includes data governance indicators, the evaluation can assess progress against them without having to develop bespoke survey instruments. If the evaluation framework includes data governance criteria, programme design will be influenced to meet them. The three tiers are not independent problems; they are components of a single knowledge governance system that can be designed to be mutually reinforcing.

8.4.2. Reconsidering What Success Means

The evaluation's deployment of multiple analytical frameworks, the RE-AIM model, the 3Es framework, social cost-benefit analysis, and attitudinal comparison, reflects a genuine effort to capture the multidimensional value of heritage-led regeneration. The thesis endorses this approach in principle while arguing that the dimension of knowledge legacy is currently absent from the portfolio of frameworks applied.

HM Treasury's Green Book (2024) guidance on public spending appraisal explicitly incorporates option value and existence value alongside use value in the assessment of cultural assets. Option value, the value of preserving resources for potential future uses not yet envisaged, and existence value, the value placed on cultural assets simply continuing to exist, are directly relevant to heritage data. A well-archived photographic survey of a conservation area has option value because future researchers and planners can use it in ways that cannot be anticipated at the time of its creation. An oral history collection has existence value because it preserves voices and experiences that would otherwise be permanently lost. These values are not captured by the programme's current evaluation frameworks, which focus on present-day use and observable current outcomes.

Incorporating knowledge legacy into programme success criteria does not require abandoning existing frameworks. It requires adding a further dimension: sustainable knowledge creation, defined as the proportion of project outputs that meet minimum standards for long-term accessibility, discoverability, and reuse. This dimension could be assessed relatively inexpensively through a data audit of deposited materials at programme close, comparing what was created with what is findable, accessible, and preserved. The AMION evaluation itself notes that "HS HAZ has shown how data-driven decision making can unlock different impacts" (2025b, p. 118) and recommends that HE use the evidence generated by the programme to shape future activity; this thesis argues that shaping future activity must include addressing the systematic under-investment in knowledge legacy that the programme evidenced.

8.4.3. The Relationship Between Evaluation and Accountability

Evaluation in public programmes performs multiple functions: it evidences value for money to funders, informs policy for future programmes, holds delivery partners

accountable for outcomes, and creates a public record of what was achieved. These functions pull in different directions when the evaluation framework is narrowly defined. An evaluation designed primarily to evidence value for money to DCMS will structure its criteria around the outcomes that DCMS cares about, which are primarily economic and social returns on investment. An evaluation designed to create a public record of what was achieved would need to cast its net more widely, including the knowledge produced by the programme alongside the physical and community outcomes.

HSHAZ, as the first systematic programme of heritage-led high street regeneration at this scale in England, had an unusual public accountability obligation: it was not only spending public money but creating a body of heritage knowledge that would, or should, constitute part of the national heritage information infrastructure. The evaluation does not fully reflect this obligation, partly because the programme itself did not frame it in these terms. Future programmes of comparable scale and ambition, particularly in the context of renewed government commitment to place-based regeneration following the 2025 Communities to Seize Control Over High Streets initiative (Ministry of Housing, Communities and Local Government 2025), should be designed with this dual accountability explicitly in mind: accountable both for the visible outcomes of physical and community improvement and for the less visible outcomes of sustainable knowledge creation.

8.5. Conclusion

This chapter has read the AMION evaluation not simply as a source of programme findings but as an analytical object in its own right, asking what the evaluation's own design and data infrastructure reveal about HSHAZ's relationship to knowledge. The chapter has distinguished between three tiers of programme data, each with different characteristics and different relationships to the data governance concerns at the heart of this thesis. It has examined the evaluation's choice of analytical

frameworks and asked what those choices make visible and what they leave in shadow. And it has traced the structural connection between the programme's failure to design its knowledge infrastructure in advance and the methodological difficulties the evaluation encountered in constructing a comprehensive evidence base after the fact.

The evaluation confirms that HSHAZ succeeded against its own objectives: it delivered conservation-led regeneration at scale, generated genuine community and economic benefits, and demonstrated that heritage assets can function as catalysts for broader social transformation. These findings are important and should inform policy. But the evaluation framework through which these findings were produced contains a systematic blind spot: it has nothing to say about the programme's data governance outcomes, about the accessibility and longevity of the heritage knowledge it generated, or about whether the digital legacy of the programme will be available to future researchers, planners, and communities. This is not a failure of evaluation quality; it is a consequence of programme design choices that treated data governance as outside the programme's scope.

The analytical work of this chapter bridges the formal evaluation and the Discussion chapter that follows. The Discussion chapter (Chapter 9) develops the recommendations implied by the analysis presented here, drawing on the case study evidence and the evaluation to argue for structural changes to how heritage-led regeneration programmes govern the knowledge they produce. The three-tier typology introduced in this chapter, local delivery data, programme monitoring data, and formal evaluation data, provides the organisational framework for those recommendations: improving heritage data governance requires action at all three tiers, and the mechanisms for improvement at each tier are different.

9. Discussion

This chapter synthesises findings from the three High Street Heritage Action Zone case studies examined in Chapters 5-7, evaluating the effectiveness of current heritage data management practices within community regeneration contexts and identifying systemic challenges that undermine long-term preservation and reuse of publicly funded heritage datasets. The analysis is structured in two parts. Section 9.2 establishes the value of heritage data across economic, planning, and cultural domains, demonstrating why effective data management matters for HE's strategic objectives and public investment justification. Section 9.3 examines five interconnected challenges revealed by the case studies: governance and ownership frameworks (9.4.1), tensions between local and national data storage (9.4.2), fragmentation and siloing of datasets (9.4.3), management of planned versus unplanned data contributions (9.4.4), and disparities between archaeological and built heritage data practices (9.4.5). Drawing predominantly on findings of the Case Studies and embedding comparative insights from HS2, TaNC, and HIAS (discussed in 2.4.3, 2.6.1 and 2.8.1 respectively), Section 9.5 proposes actionable recommendations, with details on how to enact these changes in 9.5.1, organised into five thematic areas: addressing data gaps (9.5.4), strengthening governance and standardisation (9.5.5), resolving ownership and copyright issues (9.5.6), leveraging digital innovation (9.5.7), and establishing core policy frameworks (9.5.7). Throughout, the discussion balances immediate realities of institutional capacity constraints with the strategic imperative for systemic reform, recognising that effective change must work with existing heritage infrastructure and stakeholder capabilities. Furthermore, the discussion is situated within the context that data management and governance was not a key aspect of the HSHAZ, yet it elucidates challenges and opportunities for future initiatives.

9.1. Cross-case synthesis: programme structure, custodianship, and legacy

The three case study chapters and the HE programme chapter (Chapters 4–7) generate a body of evidence that is summarised before the discussion proceeds to its thematic analysis. This section draws that evidence together through a comparative framework, identifying the structural conditions that most reliably predicted secure data legacy outcomes across the programme.

Table 24 presents a cross-case comparison at the level of individual strands, mapping each against five dimensions: the delivery model, the balance of pre-existing and HSHAZ-generated data, the custodianship arrangement at project close, the file format profile, and the resulting legacy outcome. The table covers eighteen strands across four chapters. Taken together, these strands constitute the primary empirical basis for the discussion’s recommendations.

Table 24, Cross-case synthesis: programme structure, dataset provenance, custodianship, and legacy outcomes across all HSHAZ strands examined

Chapter	Strand	Delivery model	Data balance (pre-existing : generated)	Custodian at close	Format profile	Legacy outcome
Ch. 4 – HE Cultural	Cultural Programme	External cultural partners; HE Business team	Low pre-existing : high generated	HE archive (photography only); project folders (other)	.mp3, .mp4, .tiff (photo); mixed/unarchived (other)	Partial
Ch. 4 – HE Schemes	Individual HSHAZ schemes	Local authority Project Leads; HAZPOs	Moderate pre-existing : high generated	Planning portals; project drives; no systematic deposit	.pdf dominant; .jpeg; .wav (rare)	At risk
Ch. 4 – HE NHLE	NHLE updating	HE Listings team; DCMS approval	High pre-existing (enhanced) : moderate generated	HE / DCMS statutory register. Unpublished AI reports: informal staff custody	.html (live list); .tiff (photography); .pdf (AI reports)	Secure (list). Partial (AI reports)
Ch. 4 – HE Photo	Photography programme	HE internal; commissioned photographers	Low pre-existing : high generated	HE archive	.tiff (archival standard)	Secure
Ch. 5 – Northallerton	Heritage Hub	HDC; community liaison officer; NYCRO partnership	High pre-existing (community digitisation) : moderate generated (oral histories)	NYCRO (formal deposit)	.wav (oral histories); .jpeg (digitised photos)	Secure (oral histories). Partial (photos: variable DPI)

Ch. 5 – Northallerton	AR Heritage Trail	Multi-contractor: HDC, YA, Heritage360, PEEL X	High pre-existing (LiDAR, maps, reports) : high generated (3D, AR, audio)	Google Drive (stakeholder-held). 3D geometry only deposited	.obj (geometry); .mp3; .fbx; .xml – mixed proprietary	Partial. Full models/audio at risk; app funded to 2027 only
Ch. 5 – Northallerton	Built Heritage	Private architects; HDC grants; planning portal	Moderate pre-existing (listings, maps) : high generated (planning docs)	Planning portal only. No repository deposit	.pdf (100%)	At risk. Accessible, not reusable; no deposit
Ch. 6 – Kirkham	HH&W Programme	FBC; Helen Shearn Associates; Green Close; HE Wellbeing pilot	High pre-existing (Ramsbottom collection, community research)	St Michael's Church (physical); HE archive (evaluation); email/website (leaflet)	Physical; .pdf (evaluation); .pdf (leaflet)	Partial. Evaluation secure; community heritage informally held
Ch. 6 – Kirkham	Cultural Consortium	FBC; Positive Placemakers CIC; volunteers	Moderate pre-existing (personal collections) : high generated (OHs, websites, art)	Lancashire Archives (oral histories). YouTube / Kirkham Futures (other). Kirkham Treasures: lost	.mp3 (oral histories); .html (websites); mixed (art)	Bifurcated. Oral histories secure; most other outputs at risk or lost
Ch. 6 – Kirkham	Built Heritage	FBC grants; Paul Hogarth Co.; architects; planning portal	Low pre-existing (21 historic photos, 4 maps) : high generated (planning docs)	Fylde planning portal. Consultants retain IP (12-year indemnity)	.pdf (100%)	At risk. No deposit; IP barrier to reuse
Ch. 7 – Chester	Built Heritage (Rows)	CW&C Council; Donald Insall; Grosvenor / Aberdeen Standard	Moderate pre-existing (NHLE, historic photos/maps) :	CW&C planning portal. Consultant servers. Portable hard drive (drone)	.pdf dominant; .tiff and .avi (drone, undeposited)	At risk. Most valuable outputs lack any repository deposit

			high generated (survey, drone, plans)			
Ch. 7 – Chester	Browns / More than a Shop	CW&C; Grosvenor Museum; University of Chester	High pre-existing (Cheshire Archives Browns collection, HE glass plates)	Cheshire Archives (raw recordings). HE (photography). Grosvenor (exhibition)	.wav/.mp3 (oral histories); .tiff/.jpeg (photos)	Secure (oral histories, photography)
Ch. 7 – Chester	Chester Contemporary / Refresh	CW&C; Storyhouse; external artists	Moderate pre- existing (HE glass plates, NLS maps) : high generated (films, events)	HE archive (photography). YouTube (films). ChesterRefresh.org (other)	.tiff (photography); .mp4 (film, YouTube); .html (web)	Partial. Photography secure; web- hosted outputs at risk

Three structural patterns emerge from this synthesis.

First, institutional anchorage is the strongest predictor of legacy outcome. Every strand that achieved a secure legacy had at least one institutional actor, whether HE's own archive, NYCRO, Lancashire Archives, Cheshire Archives, or a statutory register such as the NHLE, with a formal mandate to receive and preserve the material. Every strand that received only project-level custodianship (shared drives, planning portals, project websites) produced an at-risk or partial outcome.

Second, the pre-existing/generated distinction matters, but not in the way that might be assumed. Strands with high proportions of pre-existing data did not automatically achieve better legacy outcomes: the Chester built heritage strand drew heavily on NHLE and archival sources but generated new outputs that went undeposited. What matters is whether the governance infrastructure used to manage pre-existing datasets was extended to cover newly generated outputs. Where it was, as in the NHLE updating and the photography strand, as well as planning permission processes, outcomes were secure. Where it was not, even high-quality existing datasets were reused without contributing to a cumulative heritage record.

Third, file format is a necessary but not sufficient condition for sustainability. The photography programme's use of .tiff contributed to its secure outcome, but format quality alone cannot compensate for absent custodianship: the Chester drone survey was captured at high resolution and remains at risk because it lives on a portable hard drive. Conversely, the digitising of personal collections at the Heritage Hub in .jpeg format achieved security because they were deposited with NYCRO, not simply because the format was appropriate. Format quality matters most when combined with institutional deposit; without it, it is a precondition whose value is unrealised.

These patterns are developed into the governance recommendations in section 9.5. They underpin the thesis's central argument that the most important determinants of heritage data legacy are institutional and structural rather than technical, and that improving outcomes requires action on custodianship arrangements and programme governance rather than, or at least prior to, action on technical standards.

9.2. Value of Heritage Data

The management and legacy of heritage datasets is essential for sustaining the economic, planning, and social benefits that justify public investment in heritage-led regeneration. Here, 'legacy' refers to the sustained accessibility, usability, and preservation of datasets beyond project completion, ensuring they continue to serve research, planning, and community needs over time. The HSHAZ demonstrates how heritage data underpins measurable outcomes across multiple domains. According to the AMION evaluation's Executive Summary, the programme delivered significant returns through both direct capital investment and cultural benefits. AMION assessed the programme across different 'strands' measuring distinct types of impact: the Cultural Strand (evaluating social, community, and heritage outcomes) and the Capital Strand (assessing physical improvements and economic returns). When cultural benefits were factored into the analysis, they elevated the overall success ratings substantially, with the Cultural Strand rising from Medium to High and the Capital Strand from Acceptable to Medium (Amion 2025b). This demonstrates how heritage data and the activities it enables amplify the financial and social success of regeneration projects.

The evidence from HSHAZ shows heritage data functioning across three critical domains. From a planning perspective, datasets such as listings, historic maps, and photographs were essential in all three case studies, providing evidence for Heritage Access Statements that balanced development with conservation in Northallerton,

Kirkham, and Chester. This use of data supports findings by Sagger *et al.* (2021) and Trillo *et al.* (2021) that heritage information is invaluable for informed decision-making within the NPPF's emphasis on heritage for public benefit (CIFA *et al.* 2018). Economically, the programme delivered tangible returns: 723 conserved heritage buildings, 462 restored shopfronts, and nearly 120,000 square metres of improved public realm, outcomes directly enabled by heritage data identifying areas of need and targeting investment effectively. In Kirkham specifically, heritage-led activities generated ongoing social and economic benefits, with initiatives such as Stitch Together Kirkham and the Men's Shed (Fig. 122), continuing post-programme. These activities led to measurably reduced dependency on NHS services, with greater than 50% of respondents to the HH&W programme evaluation stating they are likely to use local General Practitioners, nurses, and social services professionals less often (Williamson and Cyhlarova 2024).



Figure 122, promotional material for the Men's Shed (credit Green Close)

Beyond immediate project outcomes, heritage data creates longer-term value recognised in economic appraisal frameworks. The UK Treasury's Green Book emphasises incorporating social, cultural, and community benefits into public spending decisions, recognising their critical role in ensuring long-term public good (HM Treasury 2024). It highlights how heritage contributes to economic growth through tourism, job creation, and creative industries, whilst encouraging valuation of non-market impacts. These include the 'option value' of preserving heritage resources for potential future uses not yet envisaged, and 'existence value', reflecting the worth society places on heritage simply continuing to exist, even when not directly used (HM Treasury 2024). Heritage data is fundamental to realising these values, enabling both immediate applications and preserving potential for future research, education, and community engagement.

For communities, heritage data proved critical in preserving cultural narratives and fostering social cohesion. Kirkham's community scrapbooks celebrated local achievements and empowered residents to consider their own intangible heritage, supporting findings by Nisi *et al.* (2023) and Ye *et al.* (2025) that data preserves narratives and strengthens social bonds. Northallerton's extensive oral histories and digitised materials captured otherwise inaccessible aspects of community memory, creating records that will outlast individual recollection. This cultural preservation function is particularly significant in areas experiencing social change or population mobility, where continuity of familial or oral histories can no longer be assumed. Without accessible and well-maintained datasets, communities risk losing unique historical narratives and cultural identities often critical for fostering social cohesion (Gallou 2022; Dorpalen *et al.* 2023).

It is this diverse value across planning, economic, and cultural domains that makes dataset preservation a critical concern (ARIADNE Consortium 2019a; ARIADNE Consortium 2019b). Without sustained efforts to archive and share heritage datasets, the extent of the benefits demonstrated in HSHAZ are limited, and the

potential for heritage-driven social and economic regeneration is undermined. Maintaining heritage data is economically crucial for research, education, tourism, and policymaking, making data preservation relevant to diverse stakeholders (Labadi 2019, p. 15).

9.3. Challenges

Despite the significance of heritage datasets, the HSHAZ initiative revealed substantial challenges in data management and legacy preservation. These challenges emerged from the complex interplay between technical capacity, institutional arrangements, and governance frameworks; what Dietz *et al.* (2003) and Janssen *et al.* (2020) describe as adaptive governance challenges requiring proportional, responsive approaches.

This discussion examines five key dimensions of heritage data management within the HSHAZ initiative. Throughout the analysis, numbered references in brackets (e.g., 1.2, 5.3) indicate specific recommendations developed in subsequent sections that address the challenges identified.

Formal vs. Informal Governance Approaches – exploring how different ownership and custodianship models shaped data preservation outcomes, from Northallerton's structured archival partnerships to Kirkham's informal community custody and Chester's fragmented consultant-controlled datasets.

Local versus National Storage – analysing tensions between local-first data storage and national-scale integration, examining how administrative scale affected heritage data accessibility and the challenges of bridging these systems.

Fragmentation and Siloing of Datasets – investigating how scattered datasets across incompatible platforms led to duplicated research efforts and barriers to data reusability, despite significant public investment in heritage documentation.

Managing Planned vs. Unplanned Datasets – considering how datasets with defined workflows differed from those emerging organically through community engagement, and the preservation challenges faced by valuable grassroots contributions.

Above and Below: Data Management Disparities – examining fundamental differences between well-established archaeological data management practices and inconsistent treatment of above-ground built heritage documentation.

This discussion examines these dimensions of heritage data management, drawing on lessons from initiatives such as HS2, TANC, and HIAS. It explores governance frameworks, ownership models, and the interplay between planned and unplanned data, with recommendations focusing on hybrid governance models, incentivised best practices, and alignment between local and national strategies. By addressing these challenges, HSHAZ provides valuable learning opportunities for ensuring heritage datasets remain accessible, reusable, and valuable for future users.

9.4. Key Challenges in Heritage Data Management

The HSHAZ initiative revealed significant variability in how data governance was structured across different localities, shaped by differing institutional capacities, community involvement, and project aims. While the initiative produced a wealth of valuable heritage data, it also highlighted both the strengths and learning opportunities arising from divergent approaches to data governance. Examining three case studies, Northallerton, Kirkham, and Chester, reveals how the structuring of ownership, custodianship, and access fundamentally shaped the long-term value and reusability of heritage data.

9.4.1. Issue 1: Formal vs. Informal Governance Approaches

The question of who "owns" and governs heritage data fundamentally shaped outcomes across the three HSHAZ sites, revealing how different legal and administrative frameworks can create vastly different preservation trajectories for publicly funded heritage work. The contrast between Northallerton's formal archival partnerships, Kirkham's informal community custody, and Chester's consultant-controlled datasets exposes critical tensions between public investment and private ownership, between community authority and institutional preservation, and between immediate project needs and long-term accessibility. These tensions reflect what Caswell and Cifor (2016) characterise as competing claims to cultural authority between professional experts, local communities, and commercial actors, tensions that Taylor (2017) argues can perpetuate forms of "data colonialism" where knowledge about communities becomes controlled by external institutions.

Formal vs. Informal Governance Approaches

Northallerton established the most structured approach through its partnership with the NYCRO. The Heritage Hub systematically digitised oral histories, photographs, and personal collections contributed by local residents, with formal deposit agreements designating NYCRO as the long-term custodian while contributors retained legal ownership. This arrangement created clear custodianship lines: the council and NYCRO maintained formal archiving strategies that enabled sustained access, while community contributors retained authority over their materials, a model that aligns closely with both HIAS principles of planned data lifecycles (Historic England 2019d; 2022) and the CARE Principles' emphasis on community authority and collective benefit (Carroll *et al.* 2020). Such early engagement with data archivers (1.2) demonstrates how standardised DMPs (1.6) can formalise governance across diverse project partners while respecting community ownership.

Kirkham operated at the opposite end of the governance spectrum, with an entirely informal, community-driven approach. Local groups and volunteers generated paper-based records including memory scrapbooks, large-scale maps, and wellbeing data, but without standard digital frameworks or institutional preservation pathways. Property owners and local volunteers effectively "held" the data, creating confusion about who could reuse or share materials. While this approach maximised community ownership and reflected grassroots priorities, it left valuable heritage outputs vulnerable to loss and inaccessible beyond their immediate locality. This vulnerability of community archives without institutional support reflects patterns identified by Flinn (2011) and the Community Archives and Heritage Group (CAHG 2018), who argue that grassroots outputs require targeted archiving support to ensure preservation without removing community ownership. The DPC's (2023) research identifies community-generated content in arts and heritage, along with digital archives of community groups, as "critically endangered" categories at severe risk due to major technical issues and unclear caretaker responsibilities.

Chester fell between these models but created its own complications through fragmented professional governance. The bulk of heritage data was generated by consultants, particularly Donald Insall Associates, producing detailed architectural surveys, condition reports, and listings data. However, these datasets were delivered primarily as .pdfs, stored on planning portals or retained by consultants, with no systematic integration into broader heritage infrastructures or clear long-term custodianship arrangements. This pattern reflects broader concerns identified by Siliutina *et al.* (2024) about decentralised, project-led governance leading to inconsistent practices and potential data loss, issues also documented in large-scale infrastructure projects. The experience of earlier infrastructure projects like Crossrail (now the Elizabeth Line) demonstrates similar challenges: despite comprehensive archaeological mitigation and detailed documentation, the absence of unified digital data management strategy from project inception meant that much early data remained stored in proprietary formats, siloed within contractors'

systems, creating challenges for consistency, accessibility, and long-term stewardship (Matsumoto 2018; Huggett 2020). Carver's (2010) analysis of the Crossrail project noted that historic buildings recording was managed through specialist subcontractors, but coordination challenges arising from sequencing conflicts, contractor turnover, and access restrictions occasionally led to reactive rather than proactive recording. While Crossrail achieved exemplary compliance, outputs were fragmented across multiple contractors and archives without unified frameworks to integrate built and buried heritage, challenges subsequently addressed in projects like the A14 Cambridge to Huntingdon Improvement Scheme, where MOLA Headland Infrastructure adopted unified digital systems including Intrasis for spatial and context recording alongside structured reporting workflows aligned with established standards (West *et al.* 2024; MOLA Headland Infrastructure 2025).

Legal Ownership vs. Shared Custodianship

The Northallerton model demonstrates how legal ownership and practical custodianship can be successfully separated. Community contributors retained copyright and legal ownership of their materials, while NYCRO assumed responsibility for preservation, access, and technical stewardship. This division respected community authority while ensuring professional standards for long-term preservation; a balance that neither Kirkham nor Chester achieved. This separation of ownership and custodianship reflects principles articulated in the CARE framework, where extended attribution recognises multiple and diverse contributions to data creation, whilst contextual documentation preserves relationships between data, place, and community (Carroll *et al.* 2020; 2021).

In Kirkham, unclear ownership arrangements meant that valuable community-generated content remained with community members and volunteers without formal archival arrangements. The absence of deposit agreements or institutional partnerships created a preservation gap: while materials were socially valuable and

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reflected local priorities, they lacked the technical infrastructure necessary for long-term survival or wider accessibility. The closure of the "Kirkham Treasures" website illustrated the fragility of heritage records without institutional archival support, reflecting what Flinn (2011) and Popple *et al.* (2020) identify as the vulnerability of community archives reliant solely on volunteer capacity.

Chester's ownership questions proved most complex, involving multiple stakeholders with competing claims. Questions arose over who "owned" final datasets: the private consultants who created them, the council that commissioned them, or national heritage bodies like HE that provided oversight. The default position, commercial retention of intellectual property, meant that publicly funded research remained effectively private, limiting both immediate project integration and long-term research value. This privatisation of heritage knowledge through commercial data retention reflects broader trends toward what Srnicek (2017) terms "platform capitalism," where information becomes a commodity controlled by those with technical and legal capacity to extract and retain it, particularly problematic in heritage contexts where public funding often subsidises creation of datasets that subsequently become private assets (3.1).

Tensions: Consultant Intellectual Property vs. Public Access

The Chester experience exposes fundamental tensions between commercial intellectual property practices and public access principles. Large volumes of technically sophisticated data, including condition surveys and architectural documentation, were controlled by consultants under standard commercial arrangements. This created immediate project inefficiencies; listing data only became available after the project's completion meaning it could not inform real-time decision-making (see 4.3.4 and 7.3.2), and long-term accessibility problems, as valuable datasets remained outside public heritage infrastructures.

These arrangements reflect broader patterns in publicly funded heritage work, where standard commercial contracts often prioritise consultant Intellectual Property (hereafter IP) rights over public access, despite public funding. The absence of explicit data-sharing clauses in tender specifications meant that valuable research outputs such as elevation drawings, 3D models and architectural plans were effectively privatised, undermining both immediate collaborative potential and long-term cumulative research capacity. This privatisation with UKRI's (n.d.; 2024; 2025a) policy establishing that "publicly funded research data are a public good, produced in the public interest" and should be "made openly available with as few restrictions as possible in a timely and responsible manner," emphasising that such openness empowers communities, practitioners, and researchers by ensuring data underpinning heritage activity remains accessible and reusable (3.2).

The contrast with Northallerton's approach is instructive: where clear custodianship arrangements were established early, both community and professional outputs were successfully preserved and made accessible. Where such arrangements were absent, as in Chester's consultant relationships or Kirkham's informal community custody, valuable materials were either siloed or at risk of loss. This pattern highlights potential benefits of mandatory public ownership or licensing of consultant-produced data (as shall be discussed in 9.5.6) and demonstrates how intellectual property concerns can limit dataset reuse unless funding bodies retain copyright of publicly funded material.

Implications for Heritage Data Infrastructure

These varying approaches reveal how governance frameworks, rather than resource constraints or technical capacity, determine data accessibility and preservation outcomes. The HIAS strategy advocates coordinated governance through shared standards and early DMPs (Historic England 2019d; 2022), principles that Northallerton's approach successfully demonstrated. However, the absence of programme-wide requirements meant Chester and Kirkham developed parallel,

incompatible solutions that limited knowledge transfer and created gaps in the national heritage record. This aligns with adaptive governance literature (Dietz *et al.* 2003; Janssen *et al.* 2020; 2012) which suggests that proportional, responsive governance integrated with existing infrastructures can better meet both professional and community needs than one-size-fits-all approaches.

The experience aligns with broader observations in heritage data management literature about the potential consequences of uncoordinated, project-led governance, as seen in earlier infrastructure projects like Crossrail. Without unifying frameworks, datasets can become fragmented across multiple custodians, formats, and access systems, potentially undermining both immediate project goals and long-term research infrastructure. The CARE Principles provide a framework for balancing community authority with institutional preservation (Carroll *et al.* 2020), but require proactive implementation rather than post-hoc application. Collaborative frameworks involving HE, ALGAO, and regional authorities could strengthen consistency and sustainability of datasets generated through initiatives like HSHAZ, particularly as the Levelling Up agenda (Fransham *et al.* 2023) gives regional bodies greater roles in heritage governance.

Most critically, the variability in ownership approaches across these three sites occurred within the same funding programme, suggesting that clear governance guidance from funding bodies at project inception could improve consistency without requiring additional resources. By establishing clear ownership expectations as standard funding conditions, HE could create precedent that normalises such frameworks across the heritage sector. Early engagement with data archivers and standardised DMPs (1.2, 1.6) could formalise the successful elements of Northallerton's approach across all projects. Early instigation in setting baseline ownership expectations (2.1) could establish frameworks that balance commercial, community, and public interests whilst creating sector-wide norms that extend beyond individual programmes. Hybrid governance models (2.4, 5.1) could preserve

local autonomy while ensuring minimum standards for preservation and access become standard practice rather than exceptional cases.

9.4.2. Issue 2: Local versus National Storage and the Tension of Administrative Scales

The HSHAZ initiative exposed fundamental tensions between local-first data storage and national-scale integration, creating a natural experiment in how administrative scale affects heritage data accessibility and long-term value. The programme's decentralised approach reflected broader policy trends including the Levelling Up agenda (Fransham *et al.* 2023) and the local HERs system, which aim to empower councils and communities to lead heritage-led regeneration. The NPPF's recognition that "a relevant authority must maintain an HER for its area" (Ministry of Housing, Communities & Local Government 2023) creates statutory support for local data infrastructures whilst emphasising proportionality in heritage assessment. However, while this approach fostered local ownership and contextually relevant outputs, it also generated significant challenges for cross-project learning, data discoverability, and national integration.

The contrast between successes and limitations across the three case study sites reveals that local capacity and institutional partnerships, rather than inherent advantages of either local or national storage, determined outcomes. Where strong local infrastructure existed, as in Northallerton's partnership with NYCRO, decentralised storage thrived while maintaining professional standards. Where such capacity was absent, as in Kirkham's paper-based archives or Chester's fragmented consultant datasets, valuable materials became isolated or vulnerable to loss. Meanwhile, HE's own coordination challenges between HAZ Project Leads (HAZPLs) and HAZ Project Officers (HAZPOs) demonstrated that even national bodies can experience challenges with consistent data management across multiple local contexts.

Advantages of Local-First Systems

Northallerton's Heritage Hub partnership with the North Yorkshire County Record Office exemplifies how local-first approaches can excel when supported by adequate institutional infrastructure. The project responded directly to community demands for a local museum and used heritage research to repurpose underused buildings, demonstrating the agility and responsiveness that decentralised systems can provide. Locally generated materials, including oral histories, family collections, receipts, and ephemera, were systematically digitised through NYCRO's professional frameworks, creating a model that preserved local relevance while meeting preservation standards.

This approach delivered immediate community benefits that would have been difficult to achieve through centralised national systems. The early deposit agreements ensured long-term custodianship while contributors retained legal ownership, aligning with CARE principles on community authority and benefit (Carroll *et al.* 2020) while satisfying HIAS requirements for planned data lifecycles (Historic England 2019d; 2022). The partnership leveraged Arrowsmith's local knowledge and networks, enabling the capture of materials that would never have emerged through top-down data collection strategies. This reflects what Taylor and Gibson (2016) term "collaborative digitisation," where academic expertise complements rather than supersedes community knowledge.

Kirkham's emphasis on wellbeing outcomes and community engagement similarly demonstrated the power of local-first systems to address contextual needs. Community-led initiatives generated rich outputs including paper scrapbooks, annotated maps, and wellbeing surveys that captured everyday heritage and local pride. The tactile, visible nature of these materials, particularly important for addressing social isolation and building community cohesion, reflected the participatory ethos that made HSHAZ socially valuable. This aligns with HE's research strategy recognising heritage's role in promoting individual and community

wellbeing through social connection and belonging (Historic England 2022a; 2022c). The digitisation work in the cultural programme showed how local capacity could evolve to meet preservation needs when supported appropriately.

Chester's Browns of Chester project provided another example of local resource value, where community-led archiving and storytelling created materials that reflected lived experience in ways that formal heritage records could not capture. The local focus enabled rapid response to community priorities and fostered the kind of ownership that sustains long-term engagement with heritage initiatives.

Challenges of National Integration

However, the advantages of local-first systems came with significant integration costs that could limit broader heritage infrastructure development. Even Northallerton's successful NYCRO partnership failed to extend to all project components: the AR Heritage Trail involved multiple stakeholders, but underlying 3D models and metadata were stored in closed systems such as Google Drive without standardised formats or metadata, preventing integration with HERs or the NHLE. This partial integration meant that even the most successful local approach created gaps in national heritage records, such as the derivatives from public funded projects including the full 3D model dataset from Northallerton (see 5.3.4). This reflects challenges identified by HE's (2018a) 3D Laser Scanning for Heritage guidance, which emphasises comprehensive metadata documentation and submission to trusted digital repositories like the ADS, specifying requirements for raw data file names, project references, scanning specifications, and site identifiers to ensure long-term accessibility and usability (Historic England 2018).

Kirkham's materials faced more severe integration challenges. Despite their social value and community significance, most outputs remained paper-based and stored locally without preservation pathways. The closure of the "Kirkham Treasures" website illustrated the fragility of heritage records without institutional archival

support, reflecting patterns identified by Flinn (2011) and Popple *et al.* (2020) regarding the vulnerability of community archives reliant solely on volunteer capacity. The DPC (2023) identifies this as "platform precarity," where many UK community archives rely on commercial digital platforms whose terms of service may change unpredictably, become prohibitively expensive, or disappear entirely, posing serious risks particularly in areas lacking technical capacity to ensure long-term data legacies. However, it also shows that some digital outputs can appropriately be temporary, serving project engagement needs without requiring permanent archiving, but with the caveat that decisions about what is temporary vs. permanent should be intentional rather than accidental.

Chester's experience illustrated tensions between local and national data systems even when both existed. Whilst listings data was being updated for the NHLE, this information only became available after the project's completion, meaning local teams could not access nationally held data during delivery. Meanwhile, much of the locally commissioned heritage data (architectural surveys, condition reports, and shopfront documentation) was stored on the council's planning portal or retained by consultants, with no mechanisms for integration with either the NHLE or regional HERs. This created a situation where national and local datasets existed in parallel without connection: national listings information was inaccessible when needed locally, whilst locally generated professional datasets never fed back into national heritage infrastructure. The absence of linking mechanisms between these scales meant that neither local practitioners nor national researchers could access a complete picture of Chester's heritage assets, demonstrating how the local-national divide can undermine both immediate project delivery and longer-term cumulative knowledge building.

At the programme level, HE's coordination challenges revealed institutional barriers to effective local-national integration. Discrepancies in data management between councils reflected different interpretations of requirements between HAZPLs and

HAZPOs, with limited mechanisms for sharing best practices across sites. The siloing of data for each council project meant that innovations in one location, such as Northallerton's custodianship model, were not systematically transferred to others facing similar challenges. This represented a learning opportunity for the programme to advocate for consistent data management practices (2.2) and develop hybrid governance models that could balance local autonomy with national coordination (2.4, 5.1).

Bridging Local and National Systems

The literature on large-scale heritage and infrastructure programmes demonstrates that local-national tensions need not be inevitable. HS2's Historic Environment Programme used hybrid governance with centralised oversight through the Asset Information Management System (hereafter AIMS) and Common Data Environment (hereafter CDE) alongside locally empowered data collection, showing how consistency and local autonomy can be combined (Patacas *et al.* 2020; HS2 Ltd 2022). The HS2 approach demonstrates how contractual requirements and institutional arrangements can enable integration whilst respecting local collection autonomy. The TaNC programme similarly demonstrates how LOD frameworks can integrate disparate local collections whilst preserving their provenance and context (Hawkins 2022; UKRI 2023a; Bailey *et al.* 2024). TaNC's foundational principles - including LOD and semantic web technologies, user-centred design, cross-domain standards, and sustainable technical approaches (UKRI 2022) - exemplify distributed approaches to heritage data infrastructure that pursue interconnection rather than centralisation. Projects like the Heritage Connector and Congruence Engine demonstrated how computational methods can identify connections between existing collection records and create thematic pathways across organisational boundaries while respecting institutional data sovereignty (Dutia and Stack 2021; Boon *et al.* 2022; Graham and Rees 2022).

However, the absence of such integrated approaches from HSHAZ reflects the programme's primary focus: addressing the immediate, tangible challenges of declining high streets through physical regeneration, community engagement, and economic revitalisation. Data management was not a core programme objective, and questions about long-term data integration or interoperability with national systems were not part of the programme's scope. Whilst this prioritisation is understandable given the pressing nature of high street decline, the consequences - fragmentation, duplication, and potentially inaccessible datasets - suggest that future heritage-led regeneration programmes could benefit from treating data legacy as a core deliverable alongside physical and social outcomes.

Access to Archives and Archives Hub provide working models for federated discovery that enable local archives to maintain their collections while contributing to national searchability. These approaches suggest that HERs could play a pivotal bridging role between local and national systems, working not as archives but rather as local advisory bodies - as technical and institutional intermediaries that preserve local context while enabling national integration. However, strengthening HERs and linking them with local efforts (5.3) would require sustained funding and technical guidance that was not part of the HSHAZ programme's scope.

The experience also highlights the importance of capacity-building and training for local councils (1.4) to enable effective coordination with national bodies. Where local expertise existed, as with Arrowsmith's knowledge in Northallerton, local systems could achieve professional standards. Where such expertise was absent, local storage became vulnerable to loss or inaccessibility. Systematic capacity-building could enable more councils to develop the partnerships and technical capabilities necessary for effective local-national integration.

Implications for Heritage Data Infrastructure

The HSHAZ experience reveals that the tension between local storage and national integration is fundamentally about institutional capacity and coordination mechanisms rather than inherent contradictions between scales. Linking decentralised and national datasets (1.1) would benefit from technical protocols and institutional arrangements that preserve local autonomy while ensuring discoverability and long-term preservation. Standardising comprehensive DMPs (5.2) could provide consistent frameworks for local projects while allowing adaptation to local contexts and capacity.

The variation in outcomes across the three sites, from Northallerton's successful hybrid approach to Kirkham's vulnerable paper archives to Chester's fragmented professional datasets, demonstrates that neither purely local nor purely national approaches fully meet the complex needs of heritage-led regeneration. Instead, incentivising best practices in data archiving (5.4) and learning from successful multi-authority coordination models like HS2, TaNC, and HIAS (1.7) offers pathways toward hybrid governance that preserves the responsiveness and community ownership that make local systems valuable while helping to ensure that materials contribute to cumulative heritage knowledge and remain accessible beyond their immediate contexts.

9.4.3. Issue 3: Fragmentation and Siloing of Datasets

The governance and scale challenges identified in the previous sections produced concrete consequences across the HSHAZ initiative: duplicated research efforts, scattered datasets across incompatible platforms, and fundamental barriers to data reusability and findability. The fragmentation occurred despite significant public investment in heritage research and documentation, creating inefficiencies that undermined both immediate project goals and long-term heritage infrastructure development. The experience reveals how cultural and technological barriers

interact to prevent effective data integration, even when individual projects produce high-quality outputs. These challenges directly contradict FAIR principles of Findability, Accessibility, Interoperability, and Reusability (Wilkinson *et al.* 2016), which have become increasingly emphasised in UKRI policy frameworks for publicly funded research (UKRI 2024; 2025a).

The contrast between sites demonstrates that fragmentation is not inevitable but results from specific institutional and technical choices, capacity and/or expertise. Where Northallerton achieved partial integration through NYCRO partnerships, other project components remained siloed in contractor systems. Where Chester produced technically sophisticated datasets, commercial ownership and format limitations prevented broader reuse. Where Kirkham generated valuable community content, the absence of integration protocols meant materials were duplicated across planning applications while remaining inaccessible beyond their immediate locality. These patterns point to systemic rather than project-specific barriers that could be addressed through coordinated institutional responses.

Practical Impacts of Data Silos

The most immediate consequence of fragmentation was the duplication of research efforts and datasets across projects and applications. In Kirkham, illustrations derived from 3D models were resubmitted for separate planning applications covering the same properties, representing unnecessary public expenditure (in the holding of duplicate files within the council server) and demonstrating how siloed storage systems can fail to enable asset reuse. This duplication occurred despite the materials being publicly funded and technically suitable for multiple applications, highlighting how institutional barriers rather than technical limitations can prevent efficient data sharing.

Chester's experience with the historic Rows demonstrates fragmentation's impact on nationally significant heritage assets. Despite being of exceptional historic

importance and the subject of previous English Heritage research, current project data remained scattered across multiple storage systems: planning files were split between the council's portal (in .pdf format) and consultants' private servers (containing raw data). This fragmentation meant that future applicants often re-commissioned research that had already been undertaken, creating cycles of duplicated effort that increased costs while failing to build cumulative knowledge about these critical heritage assets. This reflects patterns identified in earlier infrastructure archaeology projects: the Crossrail Learning Legacy Portal attempted to create a central repository for knowledge outputs including archaeological monographs and technical reports, but was primarily intended for engineering and project management knowledge sharing, only partially addressing long-term accessibility of heritage data (Matsumoto 2018; Crossrail 2021; Huggett 2020).

The delay in sharing Chester's listings data further illustrates how fragmentation can undermine immediate project effectiveness. Because updated NHLE entries were not accessible during the project delivery phase, local teams had to maintain parallel datasets and commission additional research to support planning and conservation activities. This created multiple, unlinked versions of similar information, with no mechanisms for ensuring consistency or enabling users to identify the most current or authoritative sources.

HE's own storage challenges demonstrate that fragmentation affects even national heritage bodies. The range of different storage locations and planning portals across local authorities created barriers to comprehensive oversight and knowledge transfer. While HERs provided some coordination mechanisms, their integration with project-specific datasets remained incomplete, meaning that valuable research outputs were not systematically feeding into established heritage infrastructures that could support reuse and discovery.

Technological vs. Organisational Barriers to Data Integration

The HSHAZ experience reveals that technological barriers to integration, while significant, are often secondary to cultural and institutional obstacles. Format differences certainly created challenges: Chester's consultant-produced datasets were delivered as .pdfs rather than in raw formats that would enable reuse and integration with digital tools. The absence of standardised metadata schemas across projects meant that even technically compatible datasets could not be systematically discovered or linked. However, these technical issues reflected deeper institutional patterns around intellectual property, commercial practices, and governance expectations.

Organisational barriers proved more fundamental to fragmentation patterns. Staff turnover in local authorities meant that institutional knowledge about project datasets was often lost, making materials inaccessible even when they remained technically available. The absence of clear protocols for data deposition meant that decisions about storage and sharing were made ad hoc, creating inconsistent outcomes that reflected individual preferences rather than systematic institutional approaches. Commercial consultants operated within standard intellectual property frameworks that prioritised client confidentiality over public access, even for publicly funded projects, creating structural barriers to integration regardless of technical capabilities. These dynamics reflect what Kitchen (2014) and Zuboff (2019) identify as forms of institutional power embedded in data governance arrangements.

The contrast with more integrated programmes demonstrates that these barriers can be overcome through appropriate institutional arrangements. HS2's CDE and AIMS enabled integration of diverse datasets by establishing clear technical standards alongside institutional requirements for deposition and sharing (Patacas *et al.* 2020; HS2 Ltd 2022). The TaNC programme similarly shows how LOD frameworks can overcome both technical and cultural barriers by providing shared vocabularies and institutional incentives for integration (Hawkins 2022; UKRI 2023a;

Bailey *et al.* 2024). TaNC's approaches reflect evolving thinking about heritage data governance, moving from centralised models towards connections emerging through documented relationships rather than enforced standardisation, an approach that acknowledges value of institutional expertise whilst recognising limitations of top-down approaches (UKRI 2022).

The persistence of fragmentation in HSHAZ despite available technical solutions suggests that cultural change benefits from institutional support. Standardising DMPs across all heritage projects (1.6) could address cultural barriers by making integration expectations explicit from project inception. Incentivising best practices in data archiving (5.4) could align commercial and institutional interests around shared data platforms. Establishing clear performance metrics for data governance (5.5) could provide measurable indicators of integration success and create accountability mechanisms for addressing fragmentation.

Addressing FAIR Principles and Reusability Challenges

The fragmentation patterns observed across HSHAZ sites directly contradict FAIR principles of Findability, Accessibility, Interoperability, and Reusability (Wilkinson *et al.* 2016). Materials stored in contractor systems or informal repositories lack PIDs, making them unfindable beyond immediate project contexts. Access restrictions based on commercial ownership or informal custody arrangements limit accessibility even when materials are technically available. Format and metadata inconsistencies prevent interoperability between datasets that should complement each other. The absence of clear licensing and preservation arrangements undermines reusability for future research or planning applications. This aligns with UKRI's (2024; 2025a) emphasis that publicly funded research data should be managed according to FAIR principles and made openly available with minimal restrictions.

Addressing these challenges could benefit from coordinated responses that tackle both technological and cultural dimensions of fragmentation. Linking decentralised

and national datasets (1.1) could provide technical infrastructure for integration while preserving local autonomy and context. Advocating for raw data deposition alongside PDF reports (3.4) would help ensure that future users can access and reanalyse materials rather than being limited to static interpretations. Implementing LOD frameworks (4.2) could provide technical mechanisms for reducing dataset duplication while enabling discovery across fragmented storage systems. HE's HIAS strategy, with its emphasis on FISH vocabularies and Heritage Data LOD services, provides foundations for such integration (Historic England 2023b), though their implementation requires both technical infrastructure and cultural commitment to standardisation.

Strengthening HERs and integrating them with national repositories (5.3) could create institutional bridging mechanisms that address both findability and long-term preservation. However, the HSHAZ experience suggests that technical solutions alone may be insufficient without accompanying changes to governance culture. Making data integration a core project deliverable rather than an optional outcome would benefit from institutional leadership that prioritises cumulative heritage knowledge over immediate project completion alone.

The fragmentation documented across Northallerton, Kirkham, and Chester represents learning opportunities for building more coherent heritage records that could support comparative research, inform future regeneration projects, and enable public engagement with heritage assets. The patterns observed need not be inevitable but reflect specific institutional choices about governance, ownership, and preservation that could be modified through coordinated policy interventions. The challenge is helping to ensure that future heritage programmes can learn from these experiences to create more integrated, accessible, and reusable data infrastructures that reflect the significant public investment in heritage research and documentation.

9.4.4. Issue 4: Managing Planned vs. Unplanned Datasets

The distinction between planned and unplanned datasets fundamentally shaped heritage data outcomes across the HSHAZ initiative, revealing how different approaches to data anticipation and integration create vastly different preservation trajectories. Planned datasets, those anticipated from project inception with defined workflows, resources, and institutional oversight, generally achieved technical rigour and secure preservation pathways, including NHLE updates, formal photography programmes, and consultant-led building surveys. However, their predetermined scope often limited adaptability and responsiveness to emerging community interests or unexpected discoveries.

Unplanned datasets emerged organically through community engagement, wellbeing activities, and creative programming, capturing lived experience, intangible heritage, and grassroots perspectives absent from formal heritage records. This organic emergence aligns with what Ridge (2014) identifies as crowdsourcing's capacity to enrich official records with community knowledge, whilst also highlighting challenges of maintaining data quality and coherence across diverse contributions. Yet without pre-defined pathways for incorporating such materials into archives, including early agreements with repositories, metadata standards suitable for community contributions, and technical support for digitisation, these contributions risked marginalisation or complete loss, undermining their potential long-term value despite often representing the most socially significant project outcomes. The HSHAZ experience demonstrates the consequences of not anticipating unplanned data: valuable community materials in Kirkham remained in vulnerable paper formats, whilst Northallerton's successful archival partnerships faced challenges in capturing spontaneous outputs from temporary events and digital activities.

Benefits of Unplanned Data

The value of unplanned datasets becomes apparent when examining their capacity to capture dimensions of heritage experience that formal documentation often misses. In Chester, community photography projects generated images that captured residents' personal heritage viewpoints and everyday interactions with historic spaces, providing contextual richness that complemented but could never be replicated by professional architectural photography. These grassroots perspectives revealed how heritage assets function in daily life, documenting seasonal changes, social patterns, and informal uses that formal surveys typically overlook. This reflects what Insole and Piccini (2013), and Insole (2017) identify in the *Know Your Place* project, where community contributions documented heritage often absent from official records, challenging dominant narratives.

Northallerton's Heritage Hub generated unexpectedly large quantities of community materials beyond the planned oral history and personal collections framework. Physical items, documents, and ephemera emerged through community networks that formal collection strategies could not have anticipated, representing family histories, business records, and social documentation that provided crucial context for understanding the town's heritage evolution. The organic nature of these contributions meant they often filled gaps in official records whilst reflecting community priorities about what aspects of heritage deserved preservation. This aligns with Flinn's (2007) research demonstrating how community archives enable documentation of histories often absent from institutional records, particularly those of marginalised groups and local communities, creating counter-heritage narratives that expand heritage understanding.

Kirkham's wellbeing-focused cultural activities produced narratives, artworks, and creative outputs that captured intangible heritage dimensions rarely documented in formal heritage records. Data deriving from these activities, including personal stories about place attachment, creative responses to environmental change, and

community mapping exercises, provided insights into how heritage contributes to social cohesion and individual wellbeing. These materials aligned with the CARE Principles' emphasis on community authority and collective benefit (Carroll *et al.* 2020), demonstrating how unplanned data can embody participatory governance principles whilst generating unique cultural documentation. This resonates with HE's (2022a; 2022c) research strategy recognising heritage's role in promoting wellbeing through social connection and belonging, though the documentation of these outcomes often lacks the systematic frameworks applied to physical conservation.

Even HE's planned activities generated valuable unplanned datasets. The Picturing the High Street social media campaign produced community-contributed images and narratives that extended beyond professional photography programmes, creating crowdsourced documentation that captured diverse perspectives on high street heritage. These contributions often revealed aspects of place meaning and use that professional documentation missed, providing evidence of how heritage assets function within contemporary community life. However, as Oomen and Aroyo (2011) note in their research on crowdsourcing in heritage contexts, such initiatives also raise questions about data validation, authority, and representation that require ongoing attention.

Risks of Oversight

However, the absence of systematic approaches to unplanned data preservation created significant risks that could undermine the long-term value of these contributions. The most immediate risk was simple loss: without formal deposit agreements or institutional custody arrangements, unplanned materials remained vulnerable to disposal, loss, or inaccessibility when individual custodians changed circumstances. Kirkham's materials exemplified this vulnerability, with community-generated content remaining in paper formats without digitisation protocols or archival partnerships, making them effectively ephemeral despite their social significance. The DPC's (2023) BitList identifies community-generated content in

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arts and heritage as 'critically endangered', at severe risk due to major technical issues and no responsible or capable caretakers. Conway (2010) characterises this pattern as 'preservation deferrals', where prioritising short-term access over sustainable preservation accumulates significant future risks.

The evaluation challenges experienced across the programme demonstrate how insufficient planning for unplanned data creates downstream consequences that extend beyond heritage research to immediate project assessment. As AMION's evaluation noted, limited consideration of what data evaluations would draw upon meant that crucial pre-project baseline information was missing, forcing evaluators to rely on partial or inconsistent data that made impact assessment less robust (Amion 2025b). This illustrates how consequences of insufficient data management can affect not only future researchers but also immediate, official assessment of project effectiveness.

Chester's experience revealed another dimension of risk: instant dissemination without legacy planning. Community photography and social media content achieved immediate visibility and engagement but lacked preservation strategies that would ensure continued accessibility. The emphasis on real-time sharing often prioritised immediate impact over long-term preservation, creating gaps in the heritage record despite significant community investment in documentation activities, further reflecting the 'platform precarity' (DPC 2023).

Northallerton's partial success with unplanned data preservation highlighted how even well-intentioned approaches can create inconsistent outcomes. While the NYCRO partnership successfully preserved community-contributed materials, other unplanned outputs, including digital assets from temporary events, community workshop documentation, and informal heritage discussions, remained outside systematic preservation protocols. This selective preservation meant that important contextual information about project development and community engagement processes was lost, reducing the completeness of the heritage record.

The absence of systematic approaches to unplanned data also created integration challenges that limited discoverability and reuse potential. Without standardised metadata schemas or consistent deposit protocols, unplanned materials often remained isolated from related formal datasets, preventing the kind of cross-referencing and thematic linking that maximises research and public engagement value. This fragmentation contradicts principles articulated by HIAS regarding data flows and integration (Historic England 2023b), suggesting opportunities for extending existing frameworks to accommodate diverse data types.

Strategies for Integrating Grassroots Data

The literature on large-scale heritage and infrastructure programmes demonstrates that planned-unplanned integration is achievable through appropriate institutional arrangements. The TaNC programme offers an approach through LOD frameworks that can integrate disparate content types whilst preserving their provenance and context. Projects like the Congruence Engine demonstrated how local industrial heritage archives could be linked with oral histories and community collections through controlled vocabularies and semantic frameworks (UKRI 2023a; Boon *et al.* 2022; Graham and Rees 2022). For HSHAZ contexts, such approaches could have enabled integration of informal storytelling or photographic contributions with HER entries, strengthening both thematic and geographical connections. The TaNC programme's emphasis on user-centred design and cross-domain standards (UKRI 2022; Bailey *et al.* 2024) provides models for accommodating diverse knowledge systems within shared technical infrastructures.

Proactive community engagement models, such as those developed in Europeana Migration Stories (Roiu 2019), provide practical templates for helping to ensure unplanned content can meet archival requirements from creation. By providing public contributors with metadata templates, digitisation standards, and ingestion guidance from project outset, such approaches help ensure that spontaneous contributions can be seamlessly integrated into formal repositories without post-hoc

technical remediation (Roiu 2019; Meghini *et al.* 2019). Applied to HSHAZ contexts, similar toolkits could have standardised community photo submissions or oral histories for direct integration into established archives.

The Community Archives and Heritage Group advocates for hybrid models that balance community interpretive control with institutional preservation infrastructure, directly addressing the tension between grassroots authority and technical sustainability (CAHG 2018). This approach could have preserved the community ownership that made Kirkham's outputs socially valuable whilst helping to ensure their long-term accessibility through professional archival systems. Such hybrid approaches align with CARE principles (Carroll *et al.* 2020; 2021), which emphasise extended attribution recognising diverse contributions whilst maintaining contextual documentation preserving relationships between data, place, and community.

Implementation Requirements

Integrating planned and unplanned datasets effectively offers opportunities to create richer, more comprehensive heritage records that capture both professional expertise and community knowledge. Whilst this integration brings resource implications, many enabling actions are modest in cost and build on existing infrastructure.

Engaging with data archivers early and planning for diverse data types from project inception (1.2) can help prevent loss of valuable materials whilst potentially avoiding costly rescue archiving later. This early engagement adds minimal cost to project planning phases but could yield significant long-term benefits by establishing clear preservation pathways before data creation begins. Working collaboratively with local communities (1.3) to develop digital literacy skills not only supports heritage record-building but creates lasting local capacity for stewarding community heritage. Such collaboration enriches formal archives with perspectives often missing from professional surveys, lived experiences, personal narratives, and

grassroots viewpoints that deepen understanding of heritage significance (Nisi *et al.* 2023; Ye *et al.* 2025). These activities could be integrated into existing community engagement budgets rather than requiring separate funding streams.

Building capacity within local councils (1.4) enables staff to recognise heritage value in spontaneous community outputs and understand preservation options. Training could be delivered through existing sector networks (Historic England, ALGAO, regional museum services) using online modules and peer-learning models that minimise costs whilst building sector-wide capabilities. Standardising DMPs that explicitly address unplanned data (1.6) could provide systematic frameworks without stifling organic community engagement. Template DMPs involve minimal development costs and once established, could reduce rather than increase administrative burden by providing clear guidance (Historic England 2019d; 2022).

Greater visibility for how diverse data types enrich heritage understanding (2.1) can shift sector perceptions about what constitutes valuable heritage evidence, encouraging voluntary adoption of inclusive practices. Facilitating open access for publicly funded datasets (3.3) enables integration of community contributions into established archives, helping to ensure grassroots materials achieve equivalent discoverability and long-term preservation as professional outputs. This primarily requires coordination and metadata work rather than substantial new infrastructure, as archival repositories already exist. However, research on community archives demonstrates that without institutional support, grassroots materials remain vulnerable to loss when volunteer capacity changes (Flinn 2011; Popple *et al.* 2020). Sheffield (2017) similarly demonstrates how independent community archives can document heritage often marginalised in official records, but face ongoing sustainability challenges without institutional partnerships.

The key resource requirement is staff time for coordination, metadata creation, and community support; activities that could build long-term value by preventing loss and enabling reuse of publicly funded work. The CARE Principles for Indigenous

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Data Governance provide frameworks for balancing community authority with institutional preservation infrastructure (Carroll *et al.* 2020). Evidence from archaeological data management suggests that proper archiving and curation represents approximately 1 to 3 per cent of total project costs, with lower percentages for larger projects (Richards 2002b). This modest investment could help prevent far costlier duplication and loss whilst creating archives that serve diverse future users.

The HSHAZ experience demonstrates that the most effective heritage projects could emerge when governance anticipates and accommodates both planned and unplanned datasets from inception. Rather than treating community contributions as optional supplements to formal heritage work, systematic integration approaches could create more comprehensive, accessible, and socially meaningful heritage records that reflect the full complexity of heritage experience and community engagement with historic environments. This aligns with what Smith (2021) identifies as necessary democratisation of knowledge production in heritage contexts, challenging traditional expert-led approaches whilst maintaining preservation standards.

9.4.5. Issue 5: Above and Below: Data Management in Heritage Projects

The HSHAZ initiative exposed fundamental disparities in how heritage data management practices diverge between below-ground archaeology and above-ground built heritage, despite both domains falling under the NPPF and contributing significantly to understanding historic environments. While archaeology benefits from well-established workflows underpinned by regulatory enforcement, sector-wide norms, and recognition of excavation as a destructive process necessitating thorough recording (Childe 1929; Oakley 2005), above-ground heritage outputs receive inconsistent archival treatment and often remain confined to local planning

portals with no systematic integration into heritage infrastructures. The absence of strong archiving mandates, coupled with commercial ownership of datasets and perceptions of lesser significance, can produce fragmented, inaccessible records that potentially undermine holistic heritage understanding (Boato and Pittaluga 2000).

Based on UK heritage guidance, fundamental disparities exist between above-ground and below-ground heritage data management. CifA (CifA 2020d; 2020e) maintains entirely separate standards for buildings versus excavation, reflecting their fundamental methodological difference: building archaeology obtains significant information through non-destructive means and should not normally result in loss of historic fabric (Boato and Pittaluga 2000; CifA 2020d), whilst excavation is inherently destructive and requires comprehensive recording because it cannot be repeated (Childe 1929; Oakley 2005). HE's 'Understanding Historic Buildings' (2016) establishes four proportionate recording levels (1 to 4) scaled to a building's significance and the extent of proposed alterations, whereas excavation follows mandatory comprehensive recording standards through Management of Research Projects in the Historic Environment (MoRPHE) guidance (Historic England 2015) regardless of site significance. These differences extend to data outputs: building records primarily comprise a single documentary file including photographs, drawings, and analytical reports, and practitioners are encouraged to submit to HERs within six months (CifA 2020d), whilst excavation generates both extensive physical artefact collections requiring museum-standard curation (CifA 2020a) and documentary records that are often deposited in the ADS (within England, this differs for Scotland and Wales) alongside an OASIS record. The result is a two-tier system where archaeological excavation benefits from standardised single repository deposition, sector-wide norms, and recognition of excavation as a destructive process necessitating thorough recording (Childe 1929; Oakley 2005), whilst above-ground heritage receives inconsistent archival treatment and often

remains confined to local planning portals with no systematic integration into heritage infrastructures.

This disparity reflects different perceptions of heritage significance and permanence: archaeological excavation is perceived as inherently destructive, making comprehensive recording essential for preservation, whilst built heritage assets remain physically accessible (with the occasional, building recording prior to demolition or major alteration to form a ‘preservation by record’ originally undertaken on a statutory basis in the past by RCHME (Emergency Recording) and is still done by HE when appropriate (Taylor, 18 December 2025, pers. comms.), creating assumptions that documentation is less critical. However, the HSHAZ experience demonstrates that above-ground heritage data, including elevation drawings, photographic surveys, and conservation assessments, can frequently become inaccessible or lead to a duplication of work and datasets unnecessarily, potentially undermining both immediate project effectiveness and long-term heritage knowledge accumulation. The contrast reveals how institutional norms rather than technical requirements can determine data preservation outcomes. Tsang (2020) notes that archaeological data management follows established frameworks prioritising data lifecycle management and public accessibility, whilst built heritage documentation lacks equivalent institutional development.

Structured vs. Unstructured Repositories

Below-ground archaeological investigations across all HSHAZ sites adhered to established workflows that ensured systematic preservation and discoverability. In Kirkham, Northallerton, and Chester, archaeological reports were deposited in the ADS and registered through OASIS, creating standardised records that integrated with local HERs and enabled national-level discovery. These processes followed ClfA (2020) standards and HE guidance on long-term management and accessibility (Tsang 2020), helping to ensure that excavation data could support future research and planning decisions.

The structured nature of archaeological data management reflects decades of institutional development that has normalised comprehensive archiving as standard professional practice. Multiple stakeholder groups, from excavation teams and post-excavation specialists to conservators and archivists, operate within shared frameworks that prioritise data lifecycle management and public accessibility. This ecosystem helps ensure that even routine archaeological interventions contribute to cumulative heritage knowledge through consistent metadata schemas, standardised recording protocols, and reliable preservation pathways. The ADS's (n.d.) Preservation Policy provides detailed technical and procedural recommendations for managing archaeological datasets in line with FAIR principles, offering domain-specific guidance that complements broader frameworks like the DPC's Rapid Assessment Model (DPC 2023).

By contrast, above-ground heritage documentation across the same HSHAZ sites received inconsistent treatment that reflected the absence of comparable institutional frameworks. In Chester, consultant-produced building surveys, condition reports, and heritage assessments were delivered as .pdfs to planning portals without systematic deposition in HERs or integration with national repositories. Even technically sophisticated outputs, such as detailed architectural surveys by Donald Insall Associates, remained isolated in proprietary formats that prevented broader reuse or integration with digital heritage tools. This pattern reflects what HE's (2018a) 3D Laser Scanning for Heritage guidance seeks to address, emphasising comprehensive metadata documentation and submission to trusted digital repositories, though implementation remains inconsistent across the sector.

Kirkham's experience illustrated the arbitrary nature of above-ground data preservation. While archaeological reports were systematically deposited in local HERs with OASIS records, building-related documentation was uploaded to planning portals in ad hoc formats without metadata standards or long-term

preservation strategies. This inconsistency occurred within the same projects, often involving the same professional teams, demonstrating that institutional expectations rather than technical capacity determined archival outcomes. Baker (2024) notes that whilst HE maintains its own Archive and Digital Preservation Policy for funded projects, no equivalent national framework exists to support smaller organisations or ensure consistency across the sector.

Northallerton provided a partial exception that proved the rule: a built heritage record was created in OASIS and data was deposited in ADS, demonstrating that above-ground materials could be preserved through archaeological frameworks when institutional awareness existed. However, this remained exceptional rather than systematic, highlighting how individual initiative rather than sector-wide norms drove comprehensive preservation.

Incentives and Regulations

The disparity in data management reflects different regulatory and incentive structures that shape professional behaviour across heritage domains. Planning conditions routinely require full archaeological archiving, creating legal obligations that help ensure compliance with data management standards. The requirement for OASIS submission and ADS deposition is embedded in standard planning conditions, making comprehensive archiving a contractual obligation rather than professional aspiration. This reflects the NPPF's requirement for proportionate heritage assessment whilst establishing clear expectations for archaeological mitigation (Ministry of Housing, Communities & Local Government 2019; 2021).

Built heritage documentation faces weaker regulatory requirements despite being equally subject to planning processes. While conservation guidance advocates for thorough documentation, particularly for listed buildings and conservation areas, mandatory archiving requirements are absent from most planning conditions. This creates discretionary rather than obligatory approaches to preservation, with

outcomes depending on individual Conservation Officer priorities or consultant practices rather than systematic institutional requirements (Historic England 2013). The contrast reflects what Wills (2018) and CIFA (2020a) identify as implementation gaps in heritage data integration with planning workflows, where emphasis on development management can overshadow broader potential for heritage data to inform strategic planning and public engagement.

HE's approach to heritage regeneration projects reflects this regulatory gap. While archaeological standards are clearly mandated and monitored, requirements for built heritage data management remain advisory. The development of HBIM and digital twin technologies has focused primarily on asset management purposes rather than creating lasting heritage records, representing potential learning opportunities for systematic preservation of building documentation (Historic England 2019).

The perception that built heritage documentation can be repeated, unlike archaeological excavation, can undermine incentives for comprehensive preservation. The assumption that buildings remain accessible for future survey work creates confidence that documentation loss is not critical. However, the HSHAZ experience demonstrates that building alteration, demolition, and changing access arrangements frequently make historical documentation irreplaceable, particularly for understanding pre-intervention conditions or tracking cumulative change over time. This suggests that the 'it can be recorded again' assumption may not reflect the reality of heritage change and accessibility.

Bridging Gaps

Attempts to bridge the gap between archaeological and built heritage data management have faced both technical and cultural obstacles. While OASIS could theoretically accommodate above-ground heritage documentation, uptake has remained limited due to institutional unawareness and the absence of regulatory requirements. The HERALD project's 2015 survey revealed stark contrasts between

different professional groups (Fig. 123): only 7% of conservation officers had both heard of OASIS and knew what it did, with over 60% having never heard of it at all, whilst archaeological contractors showed near-universal awareness and adoption, with almost a third using OASIS for all their projects and only 7% not using it at all (Gilham 2015a;b). Moreover, 90% of conservation officer respondents reported that OASIS forms were not included in briefs issued by their local authorities, demonstrating the absence of systematic requirements for built heritage documentation. Even among building specialists who were aware of OASIS, only 50% supported creating a bespoke building recording section, with concerns about additional administrative burden, whilst conservation officers were more supportive (80%) of expanding OASIS to collect building recording projects (Gilham 2015a;b). The technical infrastructure exists for integration, but cultural norms within the built heritage sector have not embraced systematic archiving as essential professional practice to the same extent as archaeology. HE's HIAS strategy provides policy frameworks for coordinated data management (Historic England 2023b), though implementation requires accompanying changes to professional norms and regulatory expectations.

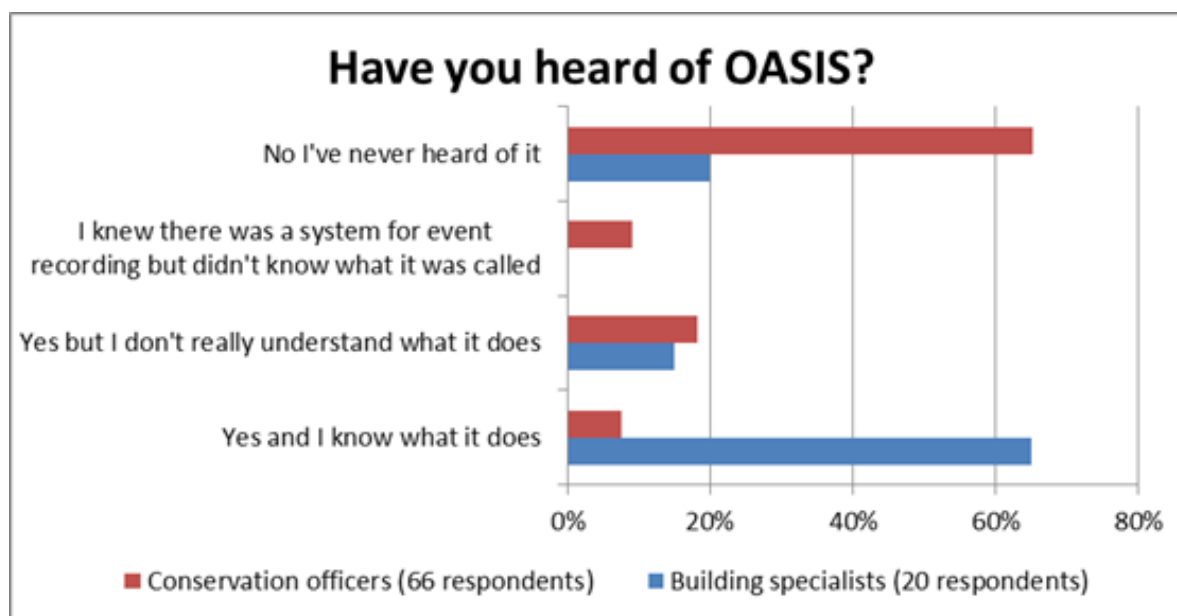


Figure 123, the proportion of building archaeologists and whether they had heard of OASIS (Gilham 2015).

HER-based tools offer another potential bridging mechanism, but their integration with above-ground datasets remains inconsistent across local authorities. Some HSHAZ sites successfully linked building documentation to HER systems, whilst others maintained parallel, unconnected archives. This variability reflects local capacity and priorities rather than systematic institutional approaches to heritage data integration. HE (2019a) notes in their *Guide to Historic Environment Records* that HERs operate at the intersection of multiple systems, expected to function as regulatory tools for planning decisions, research resources for academics, and public heritage assets for communities, but this multifaceted role presents both opportunities and challenges for data governance.

The fundamental challenge is perceptual: archaeological professionals operate within frameworks that assume comprehensive recording is essential because 'you cannot dig the same hole twice', whilst built heritage professionals may assume documentation can be repeated because buildings remain accessible. This perception can overlook the reality that buildings change continuously through maintenance, alteration, and environmental factors, making historical documentation increasingly valuable over time.

Strengthening HERs and integrating them with national repositories (5.3) could provide technical infrastructure for above-ground data preservation, but success would benefit from accompanying changes to professional norms and regulatory expectations. Bridging the gap between below-ground and above-ground data (1.5) could involve treating building surveys with comparable rigour to archaeological investigation, supported by standardised DMPs (1.6 and 5.2) that help ensure consistent archival treatment regardless of heritage domain.

Integrating these systems as part of localised heritage initiatives, particularly large-scale regeneration projects such as HS2, HSHAZ, or similar future schemes, could provide the resourcing and practical context to embed this process within community-led work, where dual benefits (meeting archaeological standards whilst

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serving local planning and engagement needs) could drive necessary cultural shifts. Governance and standards would sit with national bodies (HE, ALGAO), whilst HERs could play a crucial role in both building local practitioner capacity and providing guidance to mitigate technical interoperability challenges. Future pilots within such regeneration contexts could be valuable to test and refine this approach before broader implementation. The A14 Cambridge to Huntingdon Improvement Scheme provides a relevant model: MOLA Headland Infrastructure adopted unified digital systems encompassing both below-ground archaeology and historic building recording, ensuring all forms of heritage documentation were captured within the same interoperable framework guided by principles of preservation by record (West *et al.* 2024; MOLA Headland Infrastructure 2025).

Implications for Future Heritage Practice

The emergence of new technologies including AR, 3D digital twins, and AI-driven metadata extraction (4.1) will likely generate increasing volumes of above-ground heritage data, making systematic preservation approaches more critical. Without proactive governance frameworks, these innovations risk exacerbating existing disparities by creating additional datasets that remain inaccessible beyond their immediate applications. Given that much of this data generation is funded through public investment, particularly within large-scale infrastructure and regeneration projects, there is both a practical imperative and a democratic obligation to help ensure long-term public access, as articulated in government policy on publicly-funded research and data (UKRI, n.d.; 2024; 2025a).

The role of HIAS in streamlining heritage data (2.3) offers potential frameworks for unifying archaeological and built heritage preservation approaches, but implementation would benefit from institutional commitment that extends beyond technical guidance to regulatory enforcement. Adopting hybrid governance models (5.1) could align planning requirements for both below-ground and above-ground

investigations, creating consistent preservation expectations across heritage domains.

The HSHAZ experience demonstrates that the disparity between archaeological and built heritage data management need not be inevitable but reflects specific institutional choices about professional standards, regulatory requirements, and preservation priorities. Addressing these disparities could benefit from coordinated action across multiple stakeholder groups, from planning authorities and professional bodies to heritage organisations and academic institutions, to help ensure that all heritage data receives systematic preservation treatment regardless of whether it originates below or above ground. The challenge is extending the comprehensive archival culture that characterises archaeological practice to built heritage domains, creating integrated approaches that recognise the equal value of all heritage documentation for understanding and protecting historic environments.

9.5. Recommendations

The challenges outlined above, fragmented data preservation, inconsistent standards across heritage domains, emerging technological opportunities, and questions of public accountability, could benefit from coordinated action across multiple scales and stakeholders. This section sets out a framework of recommendations designed to address these systemic issues. It begins by acknowledging institutional capacity constraints that fundamentally shape what is realistically achievable, then presents recommendations organised into five thematic areas: addressing data gaps, improving governance and standardisation, resolving ownership and copyright issues, embracing digital innovation, and establishing core policy principles. Within each theme, the discussion follows a consistent three-part structure. First, it identifies opportunities, what comprehensive development could look like if resources and political will were available. Second, it evaluates feasibility, distinguishing between interventions that are immediately achievable with existing

resources and those that would benefit from more fundamental reform, additional funding, or sector-wide cultural change. Third, it specifies potential delivery mechanisms, outlining how changes could be implemented in practice, who might be responsible, what resources could be needed, and realistic timelines for progress.

These recommendations are designed to be mutually reinforcing; strengthening HERs could enhance local capacity, which in turn might support better integration with national repositories; embedding standards within large-scale regeneration projects could create both proof-of-concept and sustainable funding models; and establishing clear governance could help ensure that innovation serves long-term preservation rather than generating new silos of inaccessible data.

9.5.1. Enabling change

The recommendations presented in this chapter are not simply a list of discrete interventions but a mutually reinforcing sequence in which earlier reforms create the conditions that make later ones achievable. The process begins with a prerequisite political commitment from Historic England, funding bodies, or the NPPF to move from advisory guidance towards active enforcement: without that foundational decision, no mandate can be issued and no standard can be enforced. From that commitment, two immediate reforms follow in parallel. Establishing a hybrid governance model provides the authority and accountability structures within which all other standards can be set and monitored, whilst standardising data management plans gives that governance framework its operational substance, specifying what data will be created, in what formats, and where it will ultimately be deposited. Together these two reforms unlock a further sequence of immediate actions. Clear public ownership clauses and open licensing requirements, once embedded in funding agreements, remove the legal barriers that currently prevent datasets from being integrated, compared, and reused; without that licensing clarity,

even well-archived data remains effectively inaccessible. Extending archiving requirements to above-ground heritage data on the same terms as below-ground material then closes the most glaring equity gap in current practice, ensuring that the full heritage record rather than only its archaeological component is subject to systematic preservation. Embedding performance metrics from project outset completes Stage 1, not as a concluding step but as a continuous monitoring mechanism that feeds back to governance throughout all subsequent stages, allowing policy to be adjusted as evidence of compliance and gaps accumulates.

These foundations collectively unlock the medium-term reforms of Stage 2, where the contractual and institutional infrastructure can be built: HIAS principles become operational rather than aspirational once procurement language is updated to require compliance; Historic Environment Records can only function as active national governance partners once DMPs and metrics are already generating the consistent, structured data that integration with the Archaeology Data Service and the National Heritage List for England requires; incentive schemes for best practice can only be calibrated meaningfully once a performance baseline exists against which to measure excellence; and community data can only be routed into formal repositories once open licensing has removed the legal obstacles and strengthened HERs to exist as capable local hubs. It is this accumulated infrastructure that finally enables Stage 3: digital innovation in the form of AR, three-dimensional outputs, AI-driven metadata extraction, and linked open data pilots. These only become feasible once DMPs routinely specify digital formats, repositories are technically equipped to receive and preserve complex digital assets, and open licensing ensures that linked data can be reused freely across institutional boundaries. The diagram of change thus reflects one of the core arguments of this chapter: that the most technically sophisticated reforms depend entirely on the least glamorous ones being in place first.

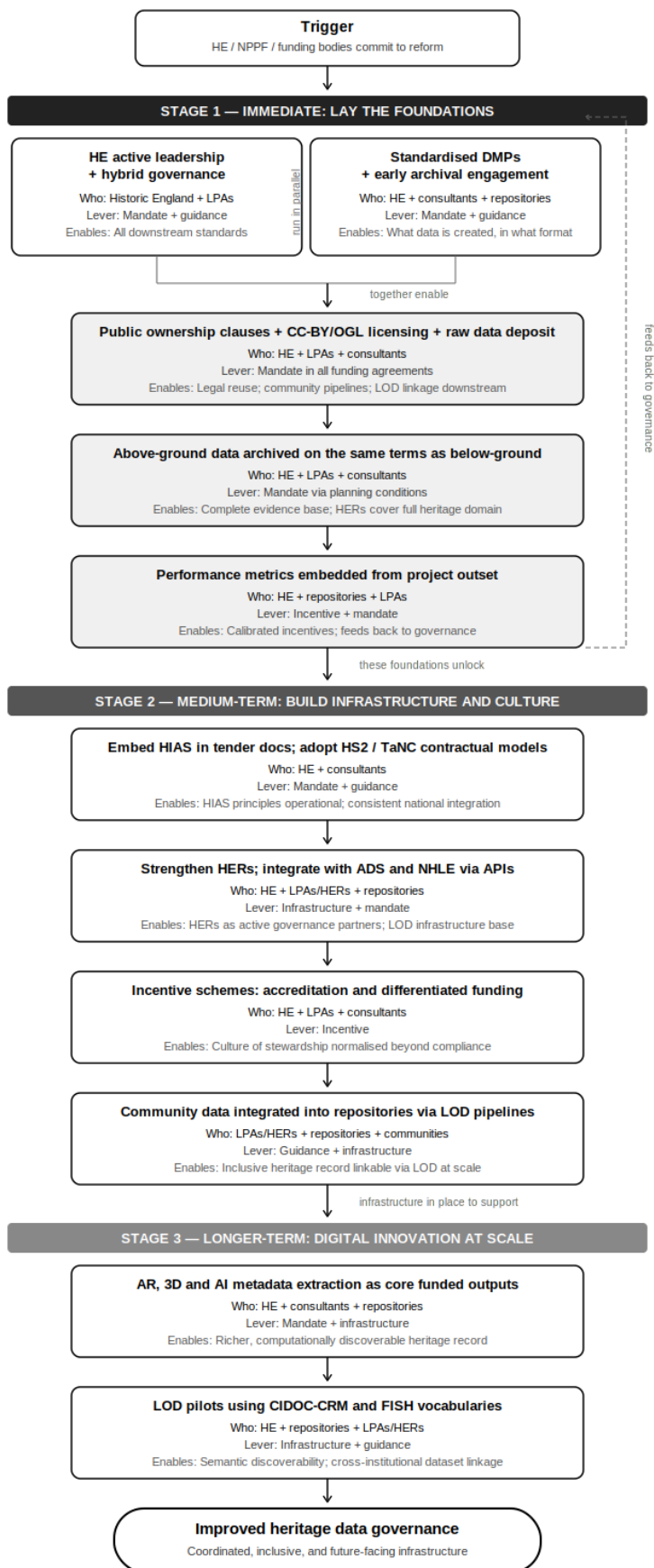


Figure 124. Diagram of change for heritage data governance reform. The figure presents the immediate-priority recommendations (Stage 1) as a sequential enabling chain, which allows stage 2, the infrastructure and cultural changes, before enabling 3, the role of emerging technology to facilitate and expedite data accessibility through the FAIR data principles.

Institutional Capacity Constraints

Before presenting specific recommendations, it is essential to acknowledge the institutional capacity constraints that fundamentally shape what is realistically achievable. Local authorities across England operate with severely limited heritage staffing, often relying on single Conservation Officers to manage extensive portfolios spanning planning, enforcement, and community engagement. Many councils lack dedicated data management expertise, with heritage information responsibilities distributed across planning, archives, and IT departments that may have little coordination. HERs vary dramatically in their technical capabilities and staffing levels, with some operating on legacy systems that struggle to accommodate modern data formats or integration requirements. The distributed nature of HER governance, with over 80 separate records in England alone maintained by different local authorities, results in significant variation in data structures, access policies, and technical capabilities (Historic England 2015d; Rocks-Macqueen and Lewis 2019). However, initiatives like the Arches Heritage Data Management Platform, developed by the Getty Conservation Institute in partnership with HE, demonstrate potential pathways for addressing these capacity challenges. Arches provides an open-source, freely available system that can help limited local authority budgets spread further whilst offering modern, web-based access to heritage data (British Archaeology 2025). The platform's implementation across multiple UK HERs, including Greater London, City of Lincoln, East Sussex, Jersey, and Isle of Man, shows how standardised technical infrastructure can enable more consistent data management and public accessibility without costly ongoing licensing fees. Yet successful implementation still requires sustained staffing, technical support, and training resources that many local authorities struggle to secure, highlighting how even well-designed technical solutions remain dependent on adequate institutional capacity.

These constraints mean that even well-intentioned guidance can face implementation challenges if it assumes capacities that simply do not exist. Mandating comprehensive DMPs, for instance, requires either additional staff time or simplified templates that can be completed by non-specialists. Similarly, proposals for enhanced repository integration must account for the reality that many local systems lack the technical infrastructure or expertise to implement complex metadata schemas or API connections. Effective reform could therefore proceed incrementally, building on existing capabilities whilst providing targeted support to address capacity gaps. This might involve regional consortia sharing technical expertise, government investment in HER modernisation, or partnerships with academic institutions to provide data management support. Without acknowledging and addressing these capacity realities, even the most technically sound recommendations risk remaining aspirational rather than implementable. Aitchison (2022) notes that whilst standardisation using systems such as Arches and HBSMR offers enhanced functionality and integration, technological developments also create governance challenges that require adequate resourcing to address effectively.

9.5.2. Priority Interventions

Given these constraints, this thesis argues for prioritisation of four interventions that build on existing infrastructure and practices whilst addressing the core governance challenges identified in this research.

First, **mandatory DMPs** could be required for all publicly funded heritage projects above £100,000, using standardised templates that specify file formats, repository destinations, and licensing arrangements. These documents should be submitted as part of Expression of Interest Forms, created by the interested parties in collaboration with local HERs and County Record Offices. The reviewing process should fall onto the responsible body for overseeing funding when they have an

appropriate internal team. In instances where an appropriate team is not identified, collaborations should take place with local HERs when enhancing local heritage. If the DMP is inadequate, or does not represent the entirety of the project, this should be reflected upon, with feedback on aspects needing enhancement. At project's conclusion, the extent to which the project met its DMP as well as other expressed KPIs within the EOI could also inform whether local bodies should receive additional funding as part of a “legacy fund”, sourced from the initial funding. As such, these funds could be used to ensure that initiatives have embedded funding to ensure legacies not just of the data but also aspects of the initiative. This represents a potentially low-cost intervention that leverages existing project management processes whilst creating systematic data planning habits. HE's HIAS strategy already advocates coordinated governance through shared standards and early DMPs (Historic England 2019d; 2022), suggesting that frameworks and strategies for embedding such requirements largely exists.

Second, **clear intellectual property clauses** could be embedded in all public funding agreements, helping to ensure that datasets created with government investment remain accessible for public benefit. This requires no new infrastructure but demands political commitment to challenging current commercial practices that privatise publicly funded research. This aligns with UKRI principles establishing that publicly funded research data constitutes 'a public good, produced in the public interest' (UKRI, n.d.; 2024).

Third, **above-ground heritage data** could be subject to the same systematic archiving requirements as archaeological material, with planning conditions requiring deposition in recognised repositories alongside standard reporting. This would address the most glaring disparity identified in this research whilst building on established archaeological data management workflows. ClfA standards and HE guidance on archaeological data provide templates that could be extended to built heritage contexts (ClfA 2020; Tsang 2020). However, voluntary encouragement from

bodies such as the ADS, HERs, and HE has thus far had limited effect; realistically, systematic change would require funding conditions that explicitly link grant awards to compliant data deposition, as already operates for many archaeological interventions. Without such structural incentives, built heritage data will likely continue to fall outside formal archiving frameworks.

Fourth, and most likely the least achievable within current constraints due to funding constraints, **HERs** could receive targeted investment to become active partners in heritage data governance rather than passive recipients, with funding for staff training, technical upgrades, and integration capabilities. The NPPF's statutory recognition that authorities must maintain HERs (Ministry of Housing, Communities & Local Government 2023) provides policy foundations, though resourcing remains inconsistent.

These four changes, data planning, ownership clarity, archival parity, and HER strengthening, could address the core governance challenges identified in this research whilst remaining achievable within current institutional and political constraints. They represent pragmatic starting points for systemic reform, balancing ambition with achievability.

9.5.3. Addressing Data Gaps

Recommendation number:

- 1.1.** Linking decentralised and national datasets
- 1.2.** Engaging with data archivists (local repositories/ HERs/ County Records Office) early on & ensuring pre-project data collection
- 1.3.** Working collaboratively with local communities
- 1.4.** Capacity-building or training for local councils
- 1.5.** Bridging the gap between below-ground and above-ground data
- 1.6.** Standardising DMPs across all heritage projects
- 1.7.** Lessons from initiatives like HS2, TANC, and HIAS

Opportunities for Development

Addressing data gaps in heritage projects could benefit from a combination of equitable governance, standardisation, integration, and capacity-building. As shown in 9.4.5. a central priority would be the application of equivalent governance and deposition standards to both above-ground and below-ground datasets alongside standardising DMPs.

Alongside this, the integration of local and national systems could be valuable. Using interoperable metadata, APIs, and LOD approaches could allow local outputs (whether consultant-produced or community-generated) to feed into HERs, the NHLE, and the ADS. This approach could also be extended to community data inclusion, helping to ensure grassroots contributions such as oral histories, photographs, and participatory mapping are preserved within formal repositories without losing their local context. These measures could benefit from being underpinned by targeted capacity-building for local authorities, providing them with the skills and resources to manage, preserve, and share heritage datasets effectively, though this requires resourcing. Future initiatives could also learn from proven models: adopting HS2's contractual requirements for data integration, TaNC's methods for aggregating diverse content types, and HIAS's frameworks for interoperability and coordinated custodianship.

Feasibility

Some of these measures are both realistic and potentially cost-effective in the short term. Standardising DMPs can be achieved through templates linked to funding milestones, with potentially minimal administrative burden. Requiring early engagement with archival bodies such as ADS or local HERs at project inception stage could help ensure preservation pathways are established before data creation. This should also be expanded to include training and support of local government archives and statutory records to ensure that they are able to preserve the diversity

of outputs created through initiatives such as the HSHAZ. Capacity-building could be delivered through modular e-learning, downloadable guidance, and partnerships with academic institutions, allowing councils to strengthen governance without necessarily needing dedicated heritage data officers. The technical challenge of linking decentralised and national datasets has been substantially addressed through existing repository standards, open APIs, and LOD protocols that can be leveraged to cross-link planning portals, HER records, and national repositories. These procedural changes could potentially be implemented relatively quickly without creation of new infrastructures.

However, whilst feasible, these actions alone would not fully resolve structural weaknesses in heritage data management. More comprehensive reforms could be beneficial to help ensure long-term equity and integration in order to preserve the entirety of heritage assets, and to follow wider best guidance. UKRI policy establishes that 'publicly funded research data are a public good, produced in the public interest' and should be 'made openly available with as few restrictions as possible in a timely and responsible manner' (UKRI, n.d.; 2024). Important amongst these broader reforms is the need to bridge the gap between above-ground and below-ground datasets, with built-heritage records ideally following comparable deposition and preservation standards as archaeological archives. Embedding community-generated data into formal heritage ecosystems could also be valuable as a core component, supported by agreed metadata standards and repository pipelines. Contractual and workflow reforms could draw directly on proven models such as HS2 and HIAS, helping to support consistent national integration and potentially reducing the fragmentation observed in past programmes.

Resourcing

Delivering this vision could benefit from alignment across funding, policy, technology, and training. Public funding bodies, including HE, could consider making DMP compliance, early archival engagement, and data integration

milestones conditions of grant awards. Planning frameworks such as the NPPF could be updated to encourage parity between above-ground and below-ground heritage domains, and to promote deposition in recognised repositories. Technical infrastructure could be strengthened through pilot schemes that link planning portals, HERs, and national datasets via LOD-based systems, providing scalable models for wider adoption. Capacity-building could be expanded through partnerships with the DPC, universities, and sector organisations, helping to ensure that planning officers, heritage staff, and community groups have access to high-quality training and guidance.

Community collaboration mechanisms could be enhanced by expanding platforms like *Know Your Place* to support direct contribution into linked repositories, helping to ensure grassroots materials meet technical and metadata requirements. This expansion need not require separate funding streams but could be embedded as a core component of future heritage initiatives, such as HSHAZ schemes, major infrastructure projects, or urban regeneration programmes, with lead partners responsible for implementation and monitoring. Finally, feedback loops could be embedded into programme monitoring, tracking metrics such as the proportion of above-ground datasets archived nationally, the integration rate of community-generated data, and compliance with metadata standards. Together, these measures could help create a coordinated, inclusive, and sustainable heritage data infrastructure, balancing local relevance with national discoverability and long-term stewardship.

9.5.4. Governance and Data Standardisation

Recommendation number:

2.1. Need for greater leadership from heritage bodies

2.2. HSHAZ can be considered a missed opportunity to advocate for data management practices

2.3. The role of HIAS in streamlining heritage data

2.4. The need for a hybrid governance model balancing local autonomy with national oversight

Opportunities for Development

Improving governance and data standardisation in heritage programmes could benefit from both enhanced leadership from national bodies and more consistent application of existing frameworks. The HSHAZ programme illustrates consequences when governance is left to local discretion: fragmentation, potentially lost data, and duplicated effort. A key priority would be embedding the principles of HIAS into project workflows. HIAS already sets out clear guidance on data flows, integration with HERs, and the delineation of roles and responsibilities; the challenge is not conceptual but operational. Aligning project-level requirements with HIAS through templated workflows and standardised DMPs is achievable with existing resources.

In parallel, greater clarity on governance roles could be valuable so that local authorities, consultants, and delivery partners understand who is responsible for data archiving, curation, and public access. Issuing standard role-and-responsibility documentation as part of funding agreements or national guidance could help resolve much of the existing ambiguity. Hybrid governance models that combine national oversight with local flexibility (5.1) offer another promising development, helping to ensure minimum standards for metadata, formats, and deposition locations whilst allowing councils to tailor processes to local contexts. Finally, development of centralised evaluation metrics (measuring, for example, how often deposition targets are met or how well metadata standards are followed) could provide a clearer picture of sector-wide performance and identify where additional support might be required. To a certain extent, this can be partially automated through digital object tracking and provisions of DOIs.

Feasibility

Whilst these measures are both technically and institutionally feasible, more fundamental reforms could be valuable to address longstanding inconsistencies in heritage data governance. Enhanced leadership from heritage bodies such as HE could help in establishing clearer expectations around governance standards. A shift from purely advisory guidance towards establishing minimum requirements with appropriate monitoring mechanisms could help support more consistent practice across projects. Without coordinated sector-wide standards, as evidenced in HSHAZ, decision-making can be left to local teams operating with varying capacities and priorities, which may result in fragmented and incomplete records.

A sector-wide evolution in approach could also be beneficial to position data governance as a core deliverable rather than a secondary concern. At present, many practices are left to contractors or under-resourced councils, which can undermine potential for long-term preservation, cross-site comparison, and public accessibility. National heritage initiatives could benefit from better integration with existing digital infrastructure strategies, helping to ensure that HIAS principles are embedded in contracts, regulations, and funding mechanisms rather than remaining aspirational. Importantly, any requirements would benefit from being accompanied by operational support, including guidance, templates, and resources, particularly for local authorities with limited technical capacity. This aligns with adaptive governance literature (Dietz *et al.* 2003; Janssen *et al.* 2020) suggesting that proportional, responsive governance integrated with existing infrastructures can better meet diverse needs than one-size-fits-all approaches.

Resourcing

Delivering this change could benefit from coordinated action across funding, policy, infrastructure, and capacity-building. First, all publicly funded heritage projects could be encouraged to submit and adhere to standardised, HIAS-aligned DMPs

covering the full data lifecycle from creation to public access, with compliance potentially tied to funding eligibility. Second, heritage bodies could provide national templates for governance, including role delineation, deposit checklists, and preferred metadata schemas, potentially reducing duplication of effort and helping to ensure consistency.

Third, governance requirements could be embedded in planning policy, with the NPPF and local plans potentially including clauses that make planning consent for heritage-related developments contingent on archiving data in recognised repositories. Fourth, good practice could be incentivised through accreditation schemes, bonus funding, or reduced reporting requirements for projects demonstrating exemplary data stewardship. Fifth, HERs and local infrastructure could benefit from resourcing as active partners in governance, with dedicated funding for staff, training, and digital systems. Sixth, national monitoring mechanisms, such as a central dashboard, could be established to track compliance, benchmark performance, and inform policy adjustments.

Finally, regional advisory hubs could be encouraged and enabled through several mechanisms. First, they could be established through partnerships between existing heritage organisations (such as regional HER services or Archaeological Trusts) and universities, building on established relationships rather than creating entirely new structures. Second, modest seed funding could be provided through HE or AHRC grants to establish pilot hubs in two to three regions, demonstrating proof of concept before wider rollout. Third, these hubs could be incentivised by making their support services a recognised route to meeting funding compliance. For example, projects that engage with a regional hub for DMP review could receive streamlined approval processes or reduced reporting requirements.

Fourth, universities could be motivated through research impact opportunities, as supporting heritage data management directly contributes to knowledge exchange and public engagement metrics that are valued in Research Excellence Framework

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(REF) assessments. Finally, making hub support a recommended, and eventually a potentially expected, stage in major heritage funding applications could create demand and justify resource allocation. The key is positioning these hubs not as additional bureaucracy but as practical support infrastructure that makes compliance easier for under-resourced teams whilst potentially improving data quality sector-wide.

9.5.5. Ownership and Copyright Issues

Recommendation number

- 3.1. Commercial vs. community vs. tendered datasets – ensure that HE keep ownership of datasets
- 3.2. Intellectual property concerns limiting dataset reuse – show good example potential and how this benefits the company
- 3.3. Encouraging open access for publicly funded datasets – stipulated in projects outset
- 3.4. Need for raw data deposition alongside synthesised reports

Opportunities for Development

Addressing ownership and copyright challenges in heritage data could benefit from a combination of contractual clarity, open licensing, and a cultural shift towards seeing datasets as core public assets. Several practical steps could be implemented in the near term. First, all publicly funded heritage projects could include clear ownership statements at the outset, specifying who holds copyright and under what terms the data can be accessed and reused. Such clauses are common in academic and public sector grants and can be readily adapted for heritage contexts.

A similar relatively obtainable requirement is the advocacy for open access for datasets generated with public funding, aligning with broader UK government commitments to transparency and reuse of publicly funded outputs. Implementing

this would not require new infrastructure, only consistent contractual language and enforcement. It would also be realistic to encourage deposition of raw (or at least semi-processed) data alongside PDF reports. Repositories such as the ADS already accept multi-format submissions, and many heritage professionals produce high-quality image, spatial, and tabular datasets as part of their workflow. Making raw, structured data a funding condition is administratively straightforward and could greatly enhance future reusability. Furthermore, it would be feasible to distinguish between commercial, community, and contracted datasets, applying proportionate expectations in each context. For example, publicly tendered work could consistently be deposited openly, even where commercial consultancy outputs are more tightly licensed.

Feasibility

Whilst these measures are feasible, they would not on their own address deeper structural barriers to data accessibility and reuse. Ideally, heritage data created with public investment would be treated as public property, with usage rights retained by commissioning bodies such as HE or local authorities, rather than by original contractors. Without this shift, even well-archived datasets can remain legally inaccessible. Copyright policies could also benefit from explicitly enabling reuse. At present, restrictive or ambiguous licensing (such as 'all rights reserved') can prevent datasets from being integrated, analysed, or compared across sites and time periods. A sector-wide move towards Creative Commons or Open Government licences could help enable both academic and public use, aligning with UKRI Open Data principles.

Similarly important is a re-evaluation of the status of raw data. At present, PDF reports dominate as the public-facing outputs of heritage work, often summarising or compressing rich datasets in ways that limit discoverability and analytical potential. Without deposition of raw formats (such as shapefiles and CAD files, .CVSs, original image files, or 3D scans), key evidence remains locked in forms

poorly suited to modern tools like GIS, AI, or LOD systems. Finally, this could benefit from a cultural shift away from a document-centric model to a dataset-centric one, where raw outputs are valued as public resources rather than as internal working files. This reflects what Srnicek (2017) identifies as tensions between platform capitalism and public knowledge commons, where information control determines value extraction.

Resourcing

Delivering these changes could benefit from action on several fronts, though implementation would ideally be realistic and phased. All funding agreements and tender documentation could embed ownership clauses specifying that publicly funded data belongs to the commissioning body and should be made openly accessible under an agreed licence, with narrowly defined exceptions for sensitive material. Whilst this represents a significant shift from current commercial practices, it aligns with established UKRI principles for publicly funded research and could be introduced gradually, perhaps initially for projects above a certain threshold value.

Open licensing could become standard practice, with outputs deposited under Creative Commons (preferably CC-BY or CC-BY-NC) or Open Government licences, explicitly stated in procurement and funding documentation. However, achieving sector-wide adoption could benefit from not just policy changes but also demonstrating tangible benefits to consultants and contractors, such as enhanced professional reputation, easier compliance processes, and reduced liability concerns when data is properly archived.

Deposition of raw data could be encouraged and, where feasible, increasingly expected, with repositories such as ADS and local HERs working with the sector to develop practical submission pathways that do not create excessive burden for small projects or under-resourced teams. This might begin with pilot schemes in major regeneration projects before broader rollout. Heritage bodies could also

publish clear, sector-wide guidance on copyright, licensing, and data reuse, including template licence statements and workflows for transferring rights from consultants to clients, recognising that many practitioners currently lack clarity on these issues.

Training and support for both consultants and local authority officers would be valuable, with funded workshops, webinars, and guidance materials helping to normalise open data practices gradually rather than through sudden requirements. Ultimately, achieving a culture of data stewardship could benefit from demonstrating value and building capacity alongside policy development and supporting the sector through this transition. Incentives could be created for projects that exceed minimum expectations, for example by sharing high-quality raw datasets with rich metadata, through awards, commendations, or dissemination grants. Importantly, institutions could champion a culture of data stewardship, recognising data curation as skilled work and valuing archivists and digital managers as integral members of project teams. Only by embedding these principles at both contractual and cultural levels can heritage data become truly open, reusable, and preserved for the long-term.

9.5.6. Digital Innovation and Future Directions

Recommendation number

- 4.1. Enhancing data accessibility through AR, 3D digital twins, and AI-driven metadata extraction
- 4.2. LOD frameworks for reducing dataset duplication

Opportunities for Development

Digital innovation presents significant opportunities for the heritage sector to transform data accessibility, integration, and engagement. Several technologies are already within reach and could be embedded into standard practice rather than

treated as experimental additions. Experience from the HSHAZ and similar initiatives has demonstrated the viability of AR, 3D visualisations, and AI-assisted processing at a local level. It could be valuable to treat these tools as core components of heritage data strategies, with dedicated planning, resourcing, and training.

Similarly, adoption of LOD frameworks is increasingly realistic. Many HERs and HE systems already support structured metadata, and LOD-compatible platforms such as ARCHES are being piloted in heritage contexts (Arches Project 2025). Whilst achieving full LOD integration across all heritage systems remains a longer-term goal, targeted implementation for specific datasets (such as listed buildings, planning records, or shopfront surveys) represents an achievable step in the near term. AI-driven metadata extraction, particularly from PDF reports and image sets, is also now accessible through readily available tools. These systems can support entity recognition, tagging, and classification, potentially reducing manual burden on heritage professionals and enabling more efficient workflows, even if human oversight remains valuable for quality control.

Feasibility

However, digital innovation represents more than simply a desirable enhancement; it offers strategic advantages if the heritage sector is to remain relevant, transparent, and responsive to modern expectations. Continued reliance on unstructured, siloed PDF reports restricts discoverability, interoperability, and reuse, effectively locking valuable information into static formats. By contrast, digital outputs such as 3D models, geospatial data, and tagged multimedia can integrate more readily with planning systems, academic research, and public engagement platforms. These forms of data could be regarded as important components of the heritage record, not experimental extras.

Reducing dataset duplication could also be valuable, as current practices often result in multiple disconnected copies of similar information stored in separate

repositories and project servers. Without shared ontologies, PIDs, and uniform resource identifiers (URIs), datasets can remain isolated and their long-term value diminished. Similarly important is embedding digital preservation planning into early stages of projects. Preservation could benefit from being budgeted for and integrated into data management planning, helping to ensure that storage infrastructure, metadata standards, and governance mechanisms are in place before content is created. Without this, even high-quality digital assets can quickly become inaccessible. The DPC (2023) identifies several high-risk categories relevant to UK heritage data, from critically endangered community-generated content to vulnerable cloud storage and PDF formats, highlighting the importance of proactive preservation strategies.

Resourcing

Achieving this transformation could benefit from coordinated action across the sector. Digital deliverables such as AR applications, 3D scans, and AI-driven tagging could be embedded into project proposals and funding calls as core outputs, with DMPs specifying file formats, metadata standards, and licensing arrangements. Clear guidance and templates for depositing digital assets could be issued by HE and national repositories, covering standard formats for 3D models (such as OBJ, glTF), geospatial datasets (such as GeoJSON, shapefiles), and metadata schemas compatible with LOD principles.

LOD adoption could be progressed through targeted pilot projects, for example structuring datasets on listed buildings, historic shopfronts, or conservation areas using shared ontologies such as the International Committee for Documentation Conceptual Reference Model (CIDOC-CRM) or the Heritage Data vocabularies, and publishing these via SPARQL endpoints or APIs. HE's HIAS strategy already provides frameworks through FISH vocabularies and Heritage Data LOD services (Historic England 2023b), though implementation requires both technical infrastructure and cultural commitment to standardisation.

Funding could be made available for development and testing of AI pipelines capable of extracting metadata from legacy PDFs, images, and other unstructured sources, ideally through collaborative projects between heritage bodies, archives, and research institutions. Alongside technical innovation, training could be valuable explicitly within AI capabilities and necessary data management baselines in order to develop these pipelines. Workshops, webinars, and drop-in support could cover the digital data lifecycle, from creation and preservation to public access. Innovation clusters could be formed across HERs, archives, and universities, operating as 'sandbox' environments to trial new tools and workflows in live heritage contexts.

Finally, investment in long-term digital preservation infrastructure could be beneficial, whether through expanding national repositories such as the ADS or developing federated local solutions. These would ideally be underpinned by PIDs, robust governance frameworks, and secure, interoperable storage to safeguard digital heritage assets for the future. The ADS's Preservation Policy and related guidance (ADS/Digital Antiquity 2009; Payne and Niven, n.d.) provide foundations for such approaches, establishing pathways for format migration, documentation of creation methodologies, and creation of preservation derivatives alongside working files.

Emerging Technical Standards and the Limits of Technical Solutions

It is worth mentioning here the emerging technical standards and solutions. The rapidly changing technical landscape presents both genuine opportunities and important caveats for heritage data governance. Several existing and emerging standards deserve brief consideration for their potential relevance to initiatives like HSHAZ, while the central lesson from this research remains that technical measures, however sophisticated, cannot substitute for the governance, ownership, and cultural changes identified throughout this discussion.

The International Image Interoperability Framework (IIIF) presents opportunities meriting mentioning within this discourse. Developed primarily for digitised cultural heritage collections, IIIF enables deep linking, annotation, and comparison of images across institutional boundaries through standardised APIs (Snydman *et al.* 2015; International Image Interoperability Framework Consortium 2026). For heritage data, this raises the possibility of planning portal photographs, HER imagery, NHLE photographs, and community-contributed collections being viewed and compared within a single interface without requiring centralisation of the underlying files. The approach could partially address the fragmentation observed in Chester, where historic photographs held in multiple repositories, including HE's archive, Cheshire Archives, and easily discoverable public platforms, could not be efficiently cross-referenced during planning processes (see 7.3.2). Several UK institutions, including the National Museums Scotland (Coulson 2020); have implemented IIIF, and its potential extension to local authority heritage records has been discussed within the sector (Padfield *et al.* 2022), though implementation in planning contexts remains unutilised. The barriers are again primarily institutional and resourcing-related rather than technical.

Linked Open Data approaches, already discussed in section 2.6.1 in relation to TaNC, are closely related to the question of interoperability standards. Vocabularies maintained through FISH and published via the Heritage Data service, including the Historic England Thesaurus and Monument Types Thesaurus, provide the semantic infrastructure for linking heritage records across systems (see 2.6.1). CIDOC-CRM (ISO 21127), referenced in the context of the NHLE (see 4.3), provides a higher-level ontological framework for integrating heterogeneous heritage information (International Organization for Standardization 2023). The practical challenge, as the case studies demonstrate, is that these standards operate at a level of abstraction above the everyday workflows of planning consultants, community groups, and local authority officers. Linking records requires not only the technical infrastructure but also consistently structured metadata, clear PIDs, and institutional commitments to

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maintaining those links over time, all of which presuppose the governance reforms argued for throughout this chapter.

The claimed potential of artificial intelligence deserves particular acknowledgement, as it has attracted substantial sector attention in recent years (Bellat *et al.* 2025). AI-assisted metadata extraction, named entity recognition applied to grey literature, and machine learning approaches to image classification all offer genuine efficiency gains for heritage data workflows (Brandsen *et al.* 2022). For this thesis, AI could help with automated transcription of oral histories, AI-assisted OCR of historic documents, and predictive modelling of heritage significance. Nonetheless, the lived experience of the HSHAZ provides some grounding for cautious optimism: the volume of PDF-embedded heritage data identified across the three planning portals represents precisely the kind of corpus that natural language processing pipelines might productively analyse if documents were machine-readable (due to deficiencies in Optical Character Recognition). However, several important qualifications apply. The quality and consistency of outputs from AI tools depends directly on the quality and consistency of the underlying data (Tenzer *et al.* 2024), and the fragmented, poorly described, inconsistently formatted datasets documented across HSHAZ offer a relatively unpromising foundation. There are also substantive questions about consent, attribution, and community authority over AI-processed heritage data, particularly where community-generated oral histories or personal collections are concerned, questions that CARE principles foreground but that current AI governance frameworks in the heritage sector have not yet resolved. Most fundamentally, AI tools applied to inadequately governed data can produce outputs that appear authoritative while embedding or amplifying existing gaps and biases in the record.

The pattern that emerges from considering these technical developments together is consistent with the broader argument of this thesis. PDF/A-3, IIIF, LOD, and AI each address real limitations in current heritage data practice, and all merit serious

consideration within future programme planning. But none of them resolves the underlying questions of who owns publicly funded heritage data, who is responsible for its long-term stewardship, whether built heritage documentation receives the same systematic treatment as archaeological investigation, or whether community-generated knowledge is preserved with the same intentionality as professional outputs. The technical infrastructure is increasingly available; what remains insufficient is the governance framework within which it would operate. This is not a counsel of despair about technology, but a restatement of the thesis's central finding: that the most significant determinants of heritage data outcomes are institutional and political rather than technical, and that investment in standards and tools will only deliver their potential when accompanied by the governance reforms, ownership clarity, and cultural change identified in this chapter.

9.5.7. Core Policy Recommendations

Recommendation number

- 5.1.** Adopt hybrid governance models
- 5.2.** Standardise and enforce comprehensive DMPs
- 5.3.** Strengthen HERs and integrate with national repositories
- 5.4.** Incentivise best practices in data archiving
- 5.5.** Establish clear performance metrics for data governance

To help ensure that future heritage initiatives can learn from the challenges of fragmentation, duplication, and short-termism observed in past projects, five strategic recommendations are proposed as potential foundations for sector development. These build upon sections 9.5.3-9.5.7, yet explore the potential of five low-cost, high return aspects that are achievable within a short timeframe. As such, it repeats aspects of the previous mentioned sections but adds more detail to advocate for these core policy recommendations for long-term data benefit. These measures are both technically and administratively feasible and represent significant

opportunities for achieving long-term impact. Implemented together, they could offer a coherent framework for strengthening heritage data governance across local, regional, and national contexts.

Adopt Hybrid Governance Models

The first recommendation is to explore hybrid governance models that balance national consistency with local autonomy. This approach would allow HE and similar bodies to establish minimum standards (covering areas such as metadata requirements, licensing conditions, and deposit responsibilities) whilst enabling local authorities to adapt to context-specific needs. By avoiding the extremes of rigid over-centralisation, which can stifle innovation, and complete decentralisation, which can lead to inconsistency, hybrid models could offer both clarity and flexibility. Achieving this balance could benefit from sustained engagement between national bodies and local stakeholders through governance working groups, consultation processes, and tiered guidance that distinguishes between essential and recommended practices. The HS2 and HIAS programmes provide valuable examples for how such models might be implemented effectively within the heritage sector (Patacas *et al.* 2020; HS2 Ltd 2022; Historic England 2023b). Furthermore, developments shared within the biannual HER forums should be embedded within wider HE initiatives.

Standardise and Enforce Comprehensive DMPs

The second recommendation is to work towards standardised and comprehensive DMPs. Despite their importance for helping to ensure long-term data sustainability, DMPs are sometimes omitted or treated as superficial paperwork in many projects. To be more effective, they could be integrated from project inception through to completion, covering not just technical details like file formats and storage but also roles, responsibilities, metadata standards, rights management, and legacy arrangements. Standardised templates tailored to different project types (from built

heritage surveys to community co-production and archaeological excavations) could provide helpful starting points.

Linking compliance to funding milestones, final reporting, and archival sign-off, whilst providing repositories and HERs with resources to review and support DMP implementation, could help embed these practices. This relatively modest intervention has significant potential to reduce confusion, duplication, and data loss whilst enhancing discoverability and interoperability. HE's HIAS strategy already advocates coordinated governance through shared standards and early DMPs (HE 2019d; 2022), suggesting that much of the necessary infrastructure exists.

Strengthen HERs and Integrate with National Repositories

Third, HERs could benefit from strengthening and better integration with national repositories. HERs represent crucial locally relevant data infrastructure, but many operate with limited resources, varying structures, and constrained interoperability. Strengthening them would benefit from both technical development and institutional investment, including staff training, sustainable funding, and enhanced collaboration with other repositories. Expanding HER capacity to manage a broader range of data types (including those generated by built heritage projects, community engagement, and emerging digital formats) could increase their value.

Enhanced integration with national repositories such as the ADS and HE archives could support continuity and discoverability. Through APIs, shared metadata schemas, and linked data approaches, HERs could serve as both contributors to and access points for a more federated, searchable, and transparent national heritage data ecosystem. The NPPF's statutory recognition that authorities must maintain HERs (Ministry of Housing, Communities & Local Government 2023) provides policy foundations, though consistent resourcing remains a challenge. HE's (2019a) guidance notes that HERs operate at the intersection of multiple systems, and strengthening their capacity could enable them to better fulfil this bridging role.

Incentivise Best Practices in Data Archiving

The fourth recommendation is to develop incentives for best practices in data archiving. Requirements alone may be insufficient to change behaviours, particularly in a sector as varied as heritage. Incentives might include accreditation schemes recognising exemplary data management, recognition for outstanding deposit practices, differentiated funding for projects demonstrating best practice, or streamlined administrative processes for those working within established frameworks. By encouraging a culture of excellence beyond basic compliance, these measures could help raise sector-wide standards whilst accommodating the diversity of project sizes, budgets, and capacities. The Heritage Fund's digital capacity-building programmes provide models for how incentive-based approaches can encourage heritage organisations to develop shared technical infrastructure and expertise (Heritage Fund 2019).

Establish Clear Performance Metrics for Data Governance

Finally, reform efforts could benefit from clear performance metrics for data governance. Without measurable indicators, progress is difficult to track or evaluate effectively. Relevant metrics might include the percentage of projects with approved DMPs, the proportion of data deposited in recognised repositories, the percentage of datasets with PIDs and open licences, the median time between project completion and data publication, and the degree of dataset reuse across repositories or planning processes. Integrating these indicators into project planning and funding assessments from the outset, rather than applying them retrospectively, would enable timely adjustments where needed. Regular reporting on these measures could help funders, heritage bodies, and researchers to identify both successes and areas where additional support may be beneficial.

Taken together, these five recommendations offer a structured, mutually reinforcing approach to developing heritage data governance. Effective governance supports

standardisation; standardisation facilitates integration; integration creates conditions for meaningful incentives; and all benefit from robust performance metrics to guide and sustain improvement. For future heritage programmes to achieve their full potential (digitally, socially, and intellectually), these actions deserve serious consideration as core components rather than optional additions.

9.6. Conclusion

The HSHAZ initiative stands as a compelling case study in the potential and the challenges of heritage data governance in practice. Across 67 towns and cities, HSHAZ generated an unprecedented volume and diversity of heritage datasets, ranging from planning surveys and AR models to oral histories, wellbeing records, and community scrapbooks. These outputs collectively demonstrate the richness of heritage-led regeneration when it is allowed to respond to local needs, integrate cultural memory, and inspire civic pride. Yet they also expose critical learning opportunities in how heritage data is valued, managed, and preserved.

The discussion presented in this chapter highlights that heritage data is not simply an administrative by-product, but a vital resource with cultural, economic, planning, and social relevance. Its long-term preservation and discoverability are essential to helping ensure that investments in place-based regeneration deliver intergenerational impact. Through detailed case studies of Northallerton, Kirkham, and Chester, we have seen how governance choices around ownership, licensing, storage, and metadata directly shape the reusability and public benefit of heritage data. Structured partnerships and clear custodianship arrangements, such as those in Northallerton, can enable sustainable data legacies. By contrast, ad hoc and fragmented practices, as observed in Kirkham and Chester, can result in the loss or siloing of valuable material.

Challenges encountered in HSHAZ, such as inconsistent deposition practices, the potential invisibility of unplanned datasets, tensions between consultant IP and

public access, and the enduring divide between above- and below-ground heritage data, reflect wider sectoral issues. These are not new problems, but HSHAZ brings them into sharper focus, revealing potential benefits of scalable and enforceable solutions. The comparative analysis with initiatives like HS2, TaNC, and the HIAS strategy demonstrates that more coherent, inclusive, and technically sophisticated models are both possible and have been successfully implemented elsewhere.

The key recommendations emerging from this chapter, most notably exploration of hybrid governance models, standardised DMPs, strengthened HER integration, incentivised best practice and introduction of performance metrics, could be seen not as optional improvements, but as valuable reforms. Crucially, heritage data governance could benefit from shifting from a model of permissive guidance to one of active leadership and embedded infrastructure, supported by funding mechanisms, policy mandates, and technical frameworks.

It is important to recognise that the HSHAZ programme's primary focus was addressing immediate, tangible challenges of declining high streets through physical regeneration, community engagement, and economic revitalisation. Data management was not a core programme objective, and questions about long-term data integration or interoperability with national systems were not part of the programme's original scope. This prioritisation is entirely understandable given the pressing nature of high street decline and the programme's emphasis on delivering visible outcomes for communities. The observations in this chapter are therefore offered not as retrospective critique but as constructive reflections that might inform future programmes where data legacy could be positioned as a core deliverable alongside physical and social outcomes.

HE's conceptual frameworks, including HIAS, the NHLE, and various guidance documents, demonstrate considerable sophistication in heritage data management principles. The challenge lies not in the absence of frameworks but in their consistent application across diverse contexts with varying capacities. The

recommendations in this chapter build upon HE's strong foundations, suggesting ways that existing principles might be more systematically embedded in future programmes through clearer funding conditions, enhanced capacity-building, and stronger integration mechanisms.

Ultimately, the success of future heritage programmes depends not only on what is built, conserved, or displayed, but on how knowledge is stewarded, shared, and sustained. The lessons of HSHAZ underscore that meaningful, inclusive, and future-facing heritage work could benefit from robust data governance from the outset. Only then can heritage datasets truly serve the communities they document, the professionals who rely on them, and the public who fund their creation.

10. Conclusion

10.1. Reaffirming the Purpose

This thesis set out not to mandate definitive solutions, but to explore the layered, sometimes opaque, governance structures surrounding heritage data within the HSHAZ initiative. At its core, the research aimed to understand, not resolve, the entanglements of responsibility, infrastructure, and expectation that underpin how heritage data is produced, managed, and (occasionally) preserved in planning and regeneration contexts.

Rather than framing heritage data governance as a purely technical or procedural problem, this study sought to interrogate the socio-technical systems in which data decisions are embedded. It examined how different actors, planners, consultants, local authorities, HE, and community groups, approached data responsibilities in the absence of consistent mandates or frameworks. In doing so, the thesis shifts the focus away from the oft-assumed deficits of technical expertise or funding, and towards more structural questions: *Who is responsible for heritage data governance? Who is empowered to shape its future? And how do the priorities of time-bound regeneration initiatives intersect with long-term data stewardship?*

By analysing how data was, and critically, how it was not, managed across HSHAZ projects and comparable initiatives, the research exposes a landscape characterised by inconsistent expectations, mismatched capacities, and limited foresight. Importantly, the goal was not to critique individuals or organisations, but to illuminate the broader system of fragmented responsibilities and tacit assumptions that surround heritage data in practice.

This approach required attending to both formal governance frameworks (such as those proposed under HIAS or through project-level evaluations) and the informal, often overlooked practices that shape how data is actually produced and retained. It

also meant treating ‘data’ as more than a neutral by-product of heritage activity. Instead, the thesis recognised data as a socio-material artefact, one shaped by institutional priorities, planning pressures, and broader discourses of value, reuse, and legacy.

Crucially, the thesis did not aim to deliver a singular ‘fix’ for heritage data governance. The problems uncovered are too systemic, too context-dependent, and too entangled with wider infrastructural and regulatory dynamics for that. Instead, this research aimed to provide a critical scaffold, a way of conceptualising the landscape of heritage data governance that accounts for its institutional, legal, and temporal complexity. In doing so, it invites future policy, practice, and research to be more reflexive, more structurally aware, and more committed to ensuring that the heritage data generated today will still be meaningful, accessible, and valued tomorrow.

10.1.1. Summary of Key Findings

The findings of this thesis expose a heritage data landscape shaped by missed opportunities, structural weaknesses, and uneven responsibilities. Rather than presenting a linear narrative of failure, the research reveals a fragmented picture in which small gains are undermined by systemic inertia, and where well-intentioned actors work within infrastructures that limit, rather than enable, long-term data value. The HSHAZ initiative, designed and launched before contemporary data management expectations became standard in heritage practice, offers valuable lessons for future programmes. The absence of consistent data management planning, the treatment of data stewardship as secondary to heritage outcomes, and the reliance on local capacity without coordinated support resulted in fragmented outputs. Whilst these issues were not failings of the programme itself (which succeeded in its primary regeneration objectives), they highlight what future initiatives could address differently. These shortfalls reduce the potential for

integrated analysis, limit the discoverability of heritage knowledge, and undermine opportunities for transparency in public-sector decision-making.

10.2. Reflections on HSHAZ

The HSHAZ initiative was presented as a major opportunity for physical regeneration and community revitalisation within which improving the ways heritage data is created, used, and preserved is an essential part. In principle, the HSHAZ could have served as a testbed for new models of data governance, bringing together planners, heritage professionals, community groups, and policymakers in a coordinated effort to steward both tangible and intangible heritage for the long-term. In practice, however, this potential was only partially realised.

While HSHAZ generated a significant volume of heritage data, from building condition surveys and planning reports to oral histories and photographic records, there was no consistent strategy for how these materials should be managed beyond the lifespan of individual projects. The initiative lacked a centralised data infrastructure, clear mandates on metadata or licensing, or a cohesive policy linking local outputs to national heritage systems. As a result, the fate of data varied significantly between sites, and between types of intervention.

This variation across case studies such as Northallerton, Chester, and Kirkham was not just a function of local capacity or interest, but indicative of broader systemic issues. Sites with strong existing heritage teams or active community groups were more likely to experiment with new forms of engagement or to make efforts toward long-term data sharing. Conversely, in sites with limited heritage infrastructure or unclear leadership on data matters, digital outputs were often scattered, under-documented, or quickly lost from public view.

Importantly, these discrepancies were not necessarily a sign of local failure. Rather, they highlight how national-level programmes like HSHAZ can unintentionally

reproduce inequalities by devolving responsibility without providing the necessary frameworks or support for consistent practice. Furthermore, it shows how the current practices in heritage regeneration and initiatives currently handle datasets, when data is not of primary concern, raising the importance of the need to consider these datasets in future initiatives. The flexibility of the HSHAZ model, while useful in fostering local creativity, also meant that core components of data governance were optional rather than integral.

At the same time, the thesis recognises that HSHAZ did achieve some notable successes, particularly in relation to community engagement and experimentation. In all three case studies, creative practitioners and local groups generated new forms of heritage data that would not typically be produced in planning-led projects: personal testimonies, social media archives, digital exhibitions, and interactive maps. These outputs enriched the cultural record and expanded definitions of what counts as heritage.

However, these innovations were often isolated and short-lived, lacking the institutional pathways to ensure their preservation or integration into mainstream heritage systems. Without standardised archiving processes, consistent licensing, or links to national repositories, these community-generated materials risk becoming digital ephemera, appreciated locally for a brief time, but not sustained as part of the heritage record.

Moreover, while the HSHAZ provided a platform for piloting different approaches, it did not offer a mechanism for learning across projects or consolidating good practice. There were no opportunities for collaborations between the local councils in order to consider aspects of project running, community engagement and more crucially for this thesis for data lessons, guidance on DMPs or archiving, and limited follow-up on the digital legacies of funded interventions. This absence points to a missed opportunity for sectoral learning: the initiative could have served as a

catalyst for improving heritage data governance across the UK, but it lacked the oversight and policy emphasis to do so.

Ultimately, the HSHAZ serves as a cautionary tale: without clear expectations, infrastructure, and accountability, even well-funded and well-meaning initiatives can falter in preserving their own digital and documentary traces. While it is encouraging that many sites experimented with data creation and engagement, these efforts must be backed by systems that support long-term access, reuse, and public benefit. Otherwise, the data legacies of the HSHAZ will be as uneven and ephemeral as the high streets it sought to revive.

10.3. Answers to the Research Questions

RQ1: How are heritage datasets produced, managed, and deposited in national initiatives such as HSHAZ?

The three case studies reveal that heritage data production within HSHAZ was extensive but uneven, shaped far more by local capacity, individual initiative, and project type than by any consistent programme-level framework. Below-ground archaeological data followed established workflows through OASIS, HERs, and the ADS, producing systematic, discoverable records. Above-ground built heritage documentation, by contrast, was produced primarily as a regulatory by-product of the planning process, delivered overwhelmingly in PDF format, stored on planning portals or private consultant servers, and rarely integrated into national heritage infrastructures. Community-generated data, including oral histories, participatory maps, and creative outputs, was produced prolifically in some schemes but without consistent preservation pathways, remaining vulnerable to loss when project funding ended. Formal deposition in recognised repositories was exceptional rather than standard. The NHLE updating strand and the HE photography programme demonstrated that planned, institutionally anchored data production can achieve

strong preservation outcomes; the majority of HSHAZ activity did not replicate these conditions.

RQ2: What structural or institutional barriers prevent the creation of a coherent and accessible heritage data ecosystem?

Five interconnected structural barriers were identified. First, governance fragmentation: the absence of clear, mandatory data management requirements at programme level meant that ownership, custodianship, and archiving responsibilities were distributed across local authorities, consultants, and community groups without coordination mechanisms. Second, the commercial retention of intellectual property: datasets created with public funding routinely remained under consultant ownership, preventing integration with national systems or reuse by other projects. Third, format and metadata inconsistency: the near-universal reliance on PDF as a submission format, combined with the absence of standardised metadata schemas, created records that were technically preserved but analytically inaccessible. Fourth, the above-ground and below-ground disparity: the absence of equivalent archiving requirements for built heritage documentation meant that significant professional survey work never entered the heritage record. Fifth, capacity inequality: local authorities and community groups lacked the technical expertise, time, and institutional support to implement even basic data preservation measures without targeted guidance.

RQ3: How can national strategies better support decentralised, community-driven, and above-ground data initiatives?

The research demonstrates that national frameworks, principally HIAS, already provide conceptually sound guidance on data planning, interoperability, and HER integration. The gap lies not in the frameworks themselves but in their operationalisation. Embedding HIAS principles as funding conditions rather than advisory guidance, requiring DMPs as part of Expression of Interest submissions,

and providing local authorities with templates, training, and access to archival partners would allow national strategy to support local delivery without removing the contextual flexibility that makes decentralised programmes effective. The Northallerton model, in which a locally embedded practitioner with archival expertise established formal deposit agreements with NYCRO from project outset, demonstrates that the necessary institutional partnerships are achievable within existing resource constraints when expectations are made explicit. Know Your Place and Missing Pieces offer further models for integrating community-generated data into formal heritage systems; the challenge for future programmes is to treat such integration as a designed-in feature rather than an optional addition.

RQ4: What governance models best support equitable and sustainable access to heritage information?

The research supports a hybrid governance model that combines nationally mandated minimum standards, covering DMPs, open licensing, archival deposition, and above-ground recording parity, with locally adapted delivery that preserves community authority and contextual relevance. The CARE principles offer a productive framework for thinking about community-generated heritage data, particularly the emphasis on collective benefit, community authority, and ongoing responsibility that extends beyond project completion. Applied to HSHAZ contexts, this means ensuring that community-generated oral histories, photographs, and participatory outputs receive the same systematic preservation treatment as professional survey work, with communities retaining meaningful say over how their materials are accessed and used. FAIR principles, meanwhile, provide the technical vocabulary for ensuring professional outputs are findable, accessible, interoperable, and reusable across institutional boundaries. Neither framework alone is sufficient: FAIR without CARE risks treating community knowledge as raw data to be extracted and standardised; CARE without FAIR risks leaving community materials outside the

discovery systems through which heritage knowledge circulates. Future governance models could benefit from holding both frameworks in productive tension.

10.4. Contribution to Knowledge

This thesis offers several substantive contributions to the field of heritage studies, particularly in the growing area of digital heritage governance. While previous research has explored issues of data stewardship in archives, museums, or academic contexts, few studies have critically examined how heritage data is managed within *planning- and regeneration-led* initiatives. By situating its analysis within the HSHAZ programme, this thesis brings a fresh and sector-specific perspective to the wider conversation around data value, responsibility, and legacy in heritage practice.

10.4.1. A Planning and Regeneration Lens on Heritage Data

One of the key contributions is the application of a planning/regeneration lens to heritage data governance. Much existing scholarship on digital heritage focuses on curated collections, digitisation projects, or digital engagement initiatives, contexts in which data is deliberately created for public access or research. In contrast, this thesis examines data that emerges from *infrastructural and place-based interventions*, often not originally conceived as long-term digital resources. It brings to light how data is embedded in bureaucratic, commercial, and policy processes, often fragmented, under-documented, and vulnerable to loss.

By focusing on the HSHAZ, the thesis explores the tensions between short-term funding cycles and long-term data stewardship, a dynamic that is rarely explored in detail. It also foregrounds the interdependence between local authority practices, national policies, and third-party contractors highlighting how distributed responsibility shapes (and often dilutes) accountability for data legacies.

10.4.2. A Conceptual Framework for Data Governance in Heritage

Perhaps most significantly, the thesis offers a framework for understanding how infrastructure, responsibility, and resourcing interact to shape heritage data legacies. Rather than focusing narrowly on technology or policy, the research adopts a socio-technical approach, tracing how formal governance structures (e.g., HIAS, HERs, procurement contracts) intersect with informal practices (e.g., consultant-led decision-making, community archiving, tacit expectations).

10.4.3. Extending Data Policy Critique into the Heritage Sector

Finally, this thesis positions heritage data governance as a critical policy issue in its own right. While digital preservation has been widely discussed in archives and digital humanities, heritage planning and regeneration remain underexplored in this regard. This research shows how heritage data is governed through implicit norms and fragmented accountability, and argues that policy critique and reform must extend beyond cultural institutions into the spaces where heritage is enacted on the ground.

It also opens up new avenues for applying principles from adjacent domains, such as FAIR (Findable, Accessible, Interoperable, Reusable) data, CARE (Collective Benefit, Authority to Control, Responsibility, Ethics) principles for data governance, and the emerging discourse on data justice, to the heritage planning context. These concepts offer tools not only for critiquing current practices but for imagining more equitable, inclusive, and durable models of data stewardship in future projects.

10.5. Limitations and Future Research

As with any research project, this thesis is shaped by a set of methodological, empirical, and conceptual boundaries. While every effort has been made to conduct a robust and reflective investigation, it is important to acknowledge the limitations of this study, not as shortcomings per se, but as signposts for future research.

10.5.1. Geographic and Programmatic Focus

This study primarily focuses on three case study sites within the HE HSHAZ initiative: Northallerton, Chester, and Kirkham. While these were chosen to reflect a diversity of geographic locations, governance arrangements, and project aims, they represent only a small sample of the broader HSHAZ programme, which encompassed over 60 sites. As such, the findings cannot claim to be universally representative. Instead, they offer a grounded and comparative analysis of typical challenges and dynamics, rather than a comprehensive audit of the initiative as a whole.

Moreover, the research is grounded within the policy and institutional frameworks of England. While many of the issues explored, such as unclear data responsibilities, fragmented infrastructure, and uneven access, are likely to have resonance across the UK and internationally, the specific regulatory context (e.g., HE's frameworks, planning legislation, HER standards) is distinctly English. Future research could usefully compare how similar issues manifest in devolved nations (e.g., Wales, Scotland, Northern Ireland) or in international regeneration programmes, where different governance cultures and legal regimes might yield alternate models of data stewardship.

10.5.2. Temporal Scope

Another limitation concerns the temporal scope of the study. The research was conducted during and shortly after the implementation of HSHAZ-funded activities,

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which means that long-term outcomes, especially those concerning data archiving, reuse, and legacy, remain emergent. It is possible that some of the data judged to be at risk or inaccessible during fieldwork will, over time, find its way into formal archives or institutional workflows.

Furthermore, due to the nature of the funding for this thesis, the research time started post initiative commencement, and as such, the thesis takes a reactive and responsive approach, rather than embedding change. As such, it is important to note that the researcher had no act in ensuring data practices were embedded within the project.

However, this temporal limitation also highlights a broader issue: the lack of longitudinal data governance planning in the heritage sector. Very few projects within the HSHAZ had concrete mechanisms to revisit, update, or recontextualise their data after project closure. Future research would benefit from returning to these sites after several years, tracing the afterlives of project data and assessing how (or whether) it has been preserved, integrated, or lost. Such research could contribute to a more dynamic understanding of heritage data legacies and the infrastructural challenges of long-term preservation.

10.5.3. Community Data and Participatory Approaches

While this thesis touches on community-generated heritage data, it does so primarily from a governance and systems perspective. It was not feasible within the scope of this research to conduct sustained ethnographic or participatory work with community groups, nor to explore in depth how data is produced, interpreted, and repurposed by local actors beyond formal institutional structures.

As a result, the thesis offers only a partial view of community-led archiving, grassroots documentation, and local knowledge practices. These areas warrant further attention, not only for their cultural value, but for the alternative governance

models they suggest. Future research could explore how community groups navigate licensing, consent, and preservation in practice, and how their approaches challenge or complement institutional data norms. There is also scope to investigate how digital inclusion and exclusion shape who gets to participate in heritage data creation and stewardship.

10.5.4. Intersections with Other Regeneration Programmes

Finally, while this research focuses on HSHAZ, it acknowledges that heritage data is also being produced, transformed, or overlooked within other, parallel regeneration programmes, such as the FHSF, Levelling Up Fund and local economic development initiatives. These programmes often involve overlapping stakeholders, physical sites, and data outputs, yet are rarely considered in a coordinated way.

A comparative study that examines how different types of regeneration schemes handle heritage data, whether explicitly or by omission, would offer valuable insight into the systemic pressures and policy disjuncture that affect data governance. It would also allow for a more holistic view of how the UK's urban transformation efforts are shaping the digital record of place.

10.5.5. In Summary

While this thesis provides a robust and multi-layered analysis of heritage data governance within the HSHAZ, its findings are necessarily partial and situated. The limitations described here do not detract from its contributions; rather, they point to the richness and complexity of the field, and to the need for ongoing, interdisciplinary research that bridges heritage studies, planning, digital policy, and community practice.

10.6. Closing Reflection

This thesis has shown that heritage data, while often treated as a peripheral or technical concern, is in fact central to how we understand, manage, and sustain the cultural value of place. From planning reports and architectural surveys to oral histories and community maps, data is the connective tissue that binds heritage practice across time, space, and stakeholder groups. Yet, the findings from the HSHAZ initiative demonstrate that this data is too often neglected, siloed, or lost due to systemic gaps in governance, responsibility, and foresight.

The variation in data practice across HSHAZ sites reflects a wider truth: that heritage projects will always differ in scope, resourcing, and local context. What should not vary, however, is the intentionality with which their data legacies are conceived and safeguarded. If heritage data is to be a meaningful public asset, capable of supporting future research, planning, education, and engagement, it must be planned for, resourced, and protected with the same seriousness as physical conservation or community outreach.

This requires a shift in thinking. Not more data, but better data: data that is managed strategically, shared responsibly, and valued as a key legacy of heritage interventions. Such a shift depends not on any single actor but on collective commitment across the sector, from funders and policymakers to local authorities, consultants, and community groups. It demands clearer frameworks for data planning and licensing, stronger coordination between local and national systems, and greater investment in the infrastructures and human capacities that underpin data stewardship.

The research presented here does not claim to offer a universal fix. Rather, it invites practitioners and policymakers to think differently: to recognise that governance is not merely a backdrop to heritage data, but an active force shaping its creation, preservation, and public value. It also urges those working at the intersection of

heritage and planning to move beyond compliance-led approaches and to embrace more integrated, participatory, and future-facing models of data governance.

As regeneration programmes continue to reshape urban spaces, and as digital tools become ever more central to heritage work, the stakes for heritage data governance will only increase. In order to ensure that the knowledge generated today endures tomorrow, stronger policies, clearer responsibilities, and more proactive planning are essential.

The core message of this thesis is simple but urgent: the value of heritage data lies not in its volume, but in its management. To have more informed future programmes, planning decisions, community outreach, social cohesion, and continuation of our historic high streets, it is not the presence of data alone that ensures legacy, but the presence of care. In essence, by preserving our digital pasts, it becomes more possible to inform our heritage futures.

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12. Appendix A: An example Questionnaire

Introduction and Consent

Q1.1 Thank you for taking the time to complete this questionnaire. It will take approximately 10 minutes to complete.

This questionnaire explores your role and interaction with data generated from the Historic High Street Heritage Action Zone (HAZ) programme. The responses will form part of my PhD thesis research at the University of York, conducted in collaborative partnership with Historic England and the Archaeology Data Service.

My research investigates the extent to which data included within High Street HAZ projects has a lasting legacy. The questionnaire examines data management trends, and participants are invited to participate in a follow-up semi-structured interview to discuss projects in greater detail.

Confidentiality and Data Protection

- Participants may withdraw from the project at any stage.
- All responses will remain anonymous in the thesis and any related publications.
- Questionnaire data will be stored securely on University Cloud Storage for 5 years before destruction.
- Results will be made available to participants through a summary report and thesis extracts upon request.

For questions or concerns, contact: Alphaeus Lien-Talks at AT1186@york.ac.uk

Q2.1 I consent to my participation and responses being used within Alphaeus Lien-Talks' thesis and related publications.

- Yes
- No

Section 1: Project Background

Q3.1 Which High Street HAZ have you been working on? *[Open text response]*

Q3.2 In what capacity did you work on this High Street HAZ?

- Local Council
- Local community organisation

Q3.3 Who have you collaborated with? *(Select all that apply)*

- Historic England
- Local Archives
- Educational institutions
- The Local Community
- Local Community Groups
- Other: [specify]

Section 2: External Influences

Q4.6 To what extent do you believe COVID-19 changed your daily practices?

- Strongly disagree
- Disagree
- Somewhat disagree.
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Q4.7 To what extent do you believe political change influenced your High Street HAZ project?

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Q4.8 To what extent do you believe the cost of living crisis influenced your High Street HAZ project?

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Section 3: Data Management Guidance and Preservation

Q4.2 Have you had any guidance on data management for this High Street HAZ?

- No
- Maybe
- Yes

Q4.3 What data do you think is important to preserve? *(Select all that apply)*

- Websites
- Planning Applications
- Archaeological reports
- Building Surveys
- 3D data (point cloud and mesh)
- Virtual reality models
- Photographs
- Oral History/Testimony
- Other: [specify]

Q4.4 What should be included as part of a record of the High Street HAZ? *(Select all that apply)*

- Community created datasets
- Planning documents
- Archaeological reports
- Building surveys
- Technical files (3D models, BIM and LiDAR)
- Raw data collected for planning applications
- Partly processed data collected for planning applications
- Oral History
- Other: [specify]

Q4.5 To what extent do you agree that the reuse of data is important?

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Section 4: Data Reuse

Q5.1 Did your project involve reusing existing datasets?

- No
- Maybe
- Yes

If No, skip to Section 5

Q5.2 Where was most of the data found? *(Select all that apply)*

- Historic England
- Local HER (Historic Environment Record)
- Planning portal
- Archaeology Data Service
- Local archive
- County Records Office
- Portable Antiquity Scheme
- Community Groups
- Other: [specify]

Q5.3 Were you advised on where you might find existing datasets relating to the High Street HAZ?

- No
- Maybe
- Yes

Q5.4 How was most of this data stored? *(Select all that apply)*

- Paper copies
- Digital media (CDs, floppy disks)
- Memory sticks (USB drives)
- Databases
- Online drives (e.g., Google Drive)
- Published journals/reports
- Unpublished reports
- PDF
- Other: [specify]

Q5.5 What were the most common file types you used? *(Select all that apply)*

- Written documents
- Image files (.jpeg/.tiff)
- Spreadsheets (Excel/.csv)
- Audio files (.wav/.mp4)

Section 5: Project Activities and Data Production

Q6.1 What activities took place in your High Street HAZ? *(Select all that apply)*

- Shop front improvements
- Re-purposing of unutilised spaces
- Public realm improvements
- Enhanced security/accessibility
- Oral History/Testimony
- Craft activities
- App development
- Website creation
- 3D Surveying
- Archival investigations
- Archaeological investigations
- Digitising of archival collections
- Skills training/sharing/upskilling for the community
- Arts programme
- Other: [specify]

Q6.2 What data was produced in your High Street HAZ? *(Select all that apply)*

- 3D models
- Virtual Reality Models
- Building plans
- Building elevations
- Planning applications
- Archaeological investigation reports
- Geophysical surveys
- LiDAR surveys
- Oral History
- Information Boards
- Sketches
- Aerial photographs
- Printed leaflets
- Websites: [if selected, provide web addresses separated by commas]

Q6.3 What file formats did you create? *(Select all that apply)*

- PDF
- Word document (.doc/.docx)
- .png
- .tiff
- .jpeg
- Excel (.xlsx)
- Spreadsheet
- Audio file (.wav)
- Audio file (.mp3)
- Paper
- Other: [specify]

Q6.4 Were you given advice on managing datasets during the High Street HAZ?

- No
- Maybe
- Yes - Once
- Yes - More than once
- Yes - On a frequent basis

Q6.5 Who provided advice on your data management? *(If applicable)*

- Historic England
- Local Archive
- My own knowledge
- Your organisation
- Archaeology Data Service
- Local HER
- County Records Office
- Other: [specify]

Q6.6 *(If no advice was received)* To what extent do you think advice on data management would have been helpful for the High Street HAZ?

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Q6.7 Have you heard of Data Management Plans?

- No
- Maybe
- Yes

If No, skip to Section 6

Q6.8 Have you ever used a Data Management Plan?

- No
- Maybe
- Yes

Q6.9 (*If yes to Q6.8*) Did you create a Data Management Plan for your High Street HAZ project?

- No
- Yes

Section 6: Data Storage and Sharing

Q7.1 Where do you store your data during a project? (*Select all that apply*)

- Team online drive (Google Drive/Dropbox)
- Personal online drive
- Personal computer
- External hard drive
- Other: [specify]

Q7.2 How frequently do you share your data?

- Never
- At the end of the project
- Monthly
- Every other week
- Once a week
- More than once a week
- On point of creation

Q7.3 (*If data is shared*) How do you share your collated data? (*Select all that apply*)

- Through an archive
- Through a project website
- Through a team online drive (Google Drive)
- Through presentations
- Through printed material
- Other: [specify]

Q7.4 How frequently do you backup your data?

- Never
- At the end of the project
- Monthly
- Every other week
- Once a week
- More than once a week
- On point of creation

Q7.5 How long do you keep your data (excluding personal data) following project completion?

- Deleted immediately
- 1 week
- Less than a month
- 1 month
- 2-3 months
- 4-6 months
- 1 year
- 2-3 years
- 4-5 years
- 6-7 years
- 8-10 years
- Indefinitely

Q7.6 How often do you document file content and track the most up-to-date version?

- Never
- Only once or twice
- Sometimes
- About half the time
- Most of the time
- Always

Section 7: Data Deposition

Q7.7 Did you deposit your data in a repository or archive?

- No
- Yes

If No, skip to Section 8

Q7.8 Where did you deposit the data?

- Local HER (Historic Environment Record)
- Local County Records Office
- Different local archive
- Archaeology Data Service

Q7.9 What file formats did you deposit? *(Select all that apply)*

- .pdf
- Word document (e.g., .doc/.docx)
- .png
- .tiff
- .jpeg
- Excel (e.g., .xlsx)
- Spreadsheet
- Audio file (.wav)
- Audio file (.mp3)
- Paper copy
- Other: [specify]

Q7.10 How did you deposit this data?

- Provided access to team drive
- Uploaded to repository system
- Email
- Delivered paper copies
- USB
- Other: [specify]

Section 8: General Data Practices

Q8.1 What level of processing should shared files have?

- Raw data (entirely untouched, except for anonymisation - e.g., point cloud, BIM file, CAD file)
- Semi-processed data (clarified content and cleaned data)
- Fully processed (including interpretation - e.g., exported image, embedded image in report)

Q8.2 To what extent do you agree that valuable datasets are being lost?

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Q8.3 *(If applicable)* Why do you think this data is being lost? *(Select all that apply)*

- Data is not published
- No requirement to publish data
- Data is not archived
- No requirement to archive data
- Data is not made publicly accessible
- No requirement to make data publicly accessible
- Other: [specify]

Section 9: Follow-up and Results

Q9.1 I would like to receive: *(Select all that apply)*

- Electronic copy of my own answers
- Electronic copy of questionnaire/interview report
- Electronic copy of the PhD thesis

Q9.2 If you would like to discuss your responses further in a follow-up interview, please provide your name: *[Open text response]*

Q9.3 Email address: *[Open text response]*

End of Questionnaire

13. Appendix B: An example Semi-Structured interview guide

Semi-Structured interview

The project

- Tell me about the project that you are involved in.
- Why do you think this project is taking place?
- How does the project relate to history or heritage?
- Do you think these projects will lead to a long legacy of benefits?
- Tell me about your role in this project
- What would you say is most significant about your work?
- Tell me about the collaboration in this project?
- From whom have you received data management advice from in this project?

Data creation

- Talk me through your data creation, talking about what do you consider at each moment
- What file formats did you use?
- Why these?
- Where is your data stored?
- During
- After
- How long do you keep your data for?
- Do you create DMPs?

Data Reuse

- Did you use any pre-existing data?
- Were there any challenges in reusing this information?
- Where did the data come from?
- Do you document where you got the data from?
- Why did you use this data?
- What were the main file formats?
- Have you used any “community” datasets?
- Why do you think the reuse of data is not important?
- Were there any gaps in data that you wish you had access to?

Data Sharing

- Did you share any of your data?
- Was this the final product, processed data, or raw data?
- What data did you share?
- How did you share this data?
- Where will this data go?

General practices

- What is your familiarity level with the FAIR data principles?
- Are there any guides/guidelines you use for managing information in your projects?
- What impacts have there been from COVID-19?
- Why do you think community datasets shouldn't be included as part of the archive?

Permissions

- Would it be possible to continue these conversations when something is produced
- May I use a few images within my thesis?
- May I have access to your data for analysis purposes?

14. Appendix C: An example updated Listing

The next few pages contain the listing for Northgate Street 5, 7 and 9, first with the overview and then the official list entry. The listing is yet to be updated following from the enhancing the list strand (Historic England 1972).

5, 7 and 9 Northgate Street

Listed on the National Heritage List for England. [Search over 400,000 listed places](#)

(<https://historicengland.org.uk/listing/the-list/>)

Official list entry

Heritage Category: Listed Building

Grade: II*

List Entry Number: 1376336

Date first listed: 10-Jan-1972

Date of most recent amendment: 06-Aug-1998

List Entry Name: 5, 7 and 9 Northgate Street

Statutory Address 1: 5, 7 and 9, Northgate Street, CH1 2HA

This List entry helps identify the building designated at this address for its special architectural or historic interest.

Unless the List entry states otherwise, it includes both the structure itself and any object or structure fixed to it (whether inside or outside) as well as any object or structure within the curtilage of the building.

For these purposes, to be included within the curtilage of the building, the object or structure must have formed part of the land since before 1st July 1948.

[Understanding list entries](https://historicengland.org.uk/listing/the-list/understanding-list-entries/) (<https://historicengland.org.uk/listing/the-list/understanding-list-entries/>)

[Corrections and minor amendments](https://historicengland.org.uk/listing/the-list/minor-amendments/) (<https://historicengland.org.uk/listing/the-list/minor-amendments/>)

Location

Statutory Address: 5, 7 and 9, Northgate Street, CH1 2HA

The building or site itself may lie within the boundary of more than one authority.

District: Cheshire West and Chester (Unitary Authority)

Parish:**Non Civil Parish**

National Grid Reference:**SJ4051866339**

Details

This list entry was subjected to a Minor Enhancement 10 December 2024 to Update Name, Address and Details, add Selected Sources and reformat the text to current standards

SJ4066SE

595-1/4/278

CHESTER CITY (IM)

NORTHGATE STREET

Nos.5, 7 and 9

(Formerly listed as NORTHGATE STREET AND ROW (West side) Nos.5, 7 & 9 Street, previously listed as NORTHGATE STREET (West side) Nos 5-9 (odd) Row)

10/01/72

GV

II*

5, 7 and 9 Northgate Street were built as a range of three properties in 1900, replacing three medieval plots, as part of the reconstruction of a group of buildings known as 'Shoemakers' Row' (3 to 31 Northgate Street) between 1897 and 1909. The redevelopment of the Row was prompted by concerns over insanitary conditions in the congested Northgate area, alongside a renewed interest in the vernacular style, and was carried out as part of a municipal road widening project at the end of the C19. The building was designed by their owner and architect, John Douglas, in the Vernacular Revival style. Douglas (1830-1911) was prolific across the region and known for his 'Old English' style of half-timbered domestic work. He also acted as architect on several other buildings in the Shoemakers' Row redevelopment. Number 9 was partially rebuilt in 1914 following fire damage and is recorded as having retained evidence of its earlier undercroft. Together with 11-31 Northgate Street (odd), they form a group of Vernacular Revival buildings, which includes shops by Harry Beswick, County Architect for Chester 1895-1926, and James Strong. The building comprises three street level shops with accommodation above. Number 9 is now part of a larger shop that extends into 11 to 13 Northgate Street. It is timber framed with plaster panels and has a slate roof with gables to the street.

EXTERIOR: the building is of two storeys with cellars and is built in a late-C16 style.

The street level has an arcade of six bays, raised two steps above the level of the pavement, with moulded timber posts on shaped sandstone plinths and three-centred timber arches with richly-carved spandrels and central keys. The shopfronts are modern. Above the arcade is a bressumer carved with a running pattern which is dated 1900.

The upper storey has shaped plaster panels beneath two canted oriel windows of five lights to each shop, with shaped mullions and moulded transoms. Each window is carried on four brackets set on a carved panel and has leaded glazing with shaped panes and ogee heads to the upper lights surmounted by richly-carved panels. There is a niche between the two oriels of each shop which contain a

carved figure: Justitia on number 5, St Crispin on number 7, and Hugh Lupus on number 9.

The three jettied gables have carved bressumers carried on shaped brackets and each has shaped panels, carved bargeboards and ornate finials. The rear of the buildings is concealed.

INTERIORS: 5 and 7 Northgate Street have cellars that have succeeded the former undercrofts. Number 9 has brickwork evidence of a partly medieval undercroft.

Listing NGR: SJ 40518 66339

Legacy

The contents of this record have been generated from a legacy data system.

Legacy System number:470331

Legacy System:LBS

Sources

Books and journals

C Hartwell, M Hyde, The Buildings of England: Cheshire (2011), p267

Brown, A, The Rows of Chester: The Chester Rows Research Project (1999), p123, 174

Websites

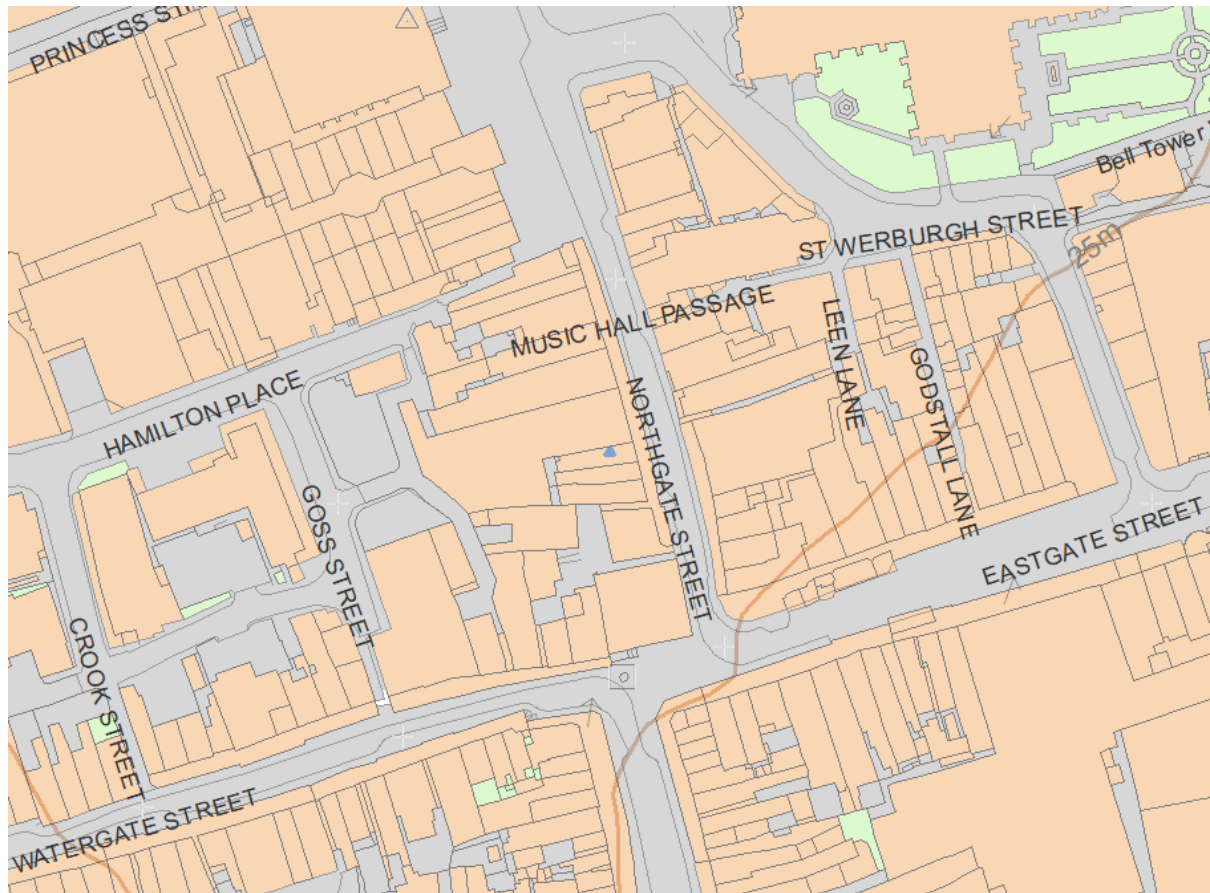
Information on John Douglas from A Biographical Dictionary of the Architects of Greater Manchester, accessed 2 March 2023 from <https://manchestervictorianarchitects.org.uk/architects/john-douglas>

Other

Chester City Council: Improvement Committee Minutes: MB (1899).

Legal

This building is listed under the Planning (Listed Buildings and Conservation Areas) Act 1990 as amended for its special architectural or historic interest.



Map

This map is for quick reference purposes only and may not be to scale. This copy shows the entry on 30-Dec-2025 at 01:46:06.

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End of official list entry



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15. Appendix D: Results

The results of the questionnaires and the Planning Portal analysis are seen in appendix D, attached as an .xlsx.

16. Appendix E: Information sheet

Information about the project

Title of the study: Informing our Heritage Futures: Preserving our Digital Pasts

Description:

Heritage data is of exceptional importance, not only in understanding the past, but in recognising trends for the future. The Historic High Street is no exception. Relevant data can be very diverse in its nature, including information related to lifestyle, migration, demographics, economics, environment, climate change and housing needs. The diversity of data and its sources creates limits on its accessibility and interoperability. These issues are extended further by the scale and diversity of new data types generated from laser scanning, LIDAR, GIS and HBIM. These all contribute to the “Big Data” of the historic built environment. This presents considerable challenges to make the best use of digital data. In this context, a collaborative approach is essential, not just between the Archaeology Data Service, Historic England and the University of York, but wider institutions, commercial organisations and members of the public. As such research will take place investigating narratives, data practices and the anthropological framework from which data practices of the Historic High Street derive.

Researcher: Alphaeus Lien-Talks, PhD candidate in Archaeology at the University of York

Methods of research: Written emails and questionnaire

Confidentiality, anonymity and data protection: Participants may withdraw from the project and withdraw their consent at any stage. A report on the results of the questionnaires and the relevant points from the email interviews will form one part of the PhD thesis. Respondents in the emails and questionnaire will be kept anonymous.

All email responses and questionnaire answers will be stored confidentially and digitally on the secure University Cloud Storage for a period of 5 years before being destroyed.

Results of the study: The outcomes of the questionnaires and interviews will be made available to participants through the publication of a simple report that can be emailed as well as form part of the thesis which can be emailed to you, if requested. Participants' will also be offered an electronic copy of the questionnaire/interview section of the report.

If you have any questions or concerns, please contact Alphaeus Lien-Talks at AT1186@york.ac.uk.

17. Appendix F: Consent form

Informing our Heritage Futures: Preserving our Digital Pasts

Consent signatures

Participant Name:___

Signature:___

Date:_____

Please tick the relevant box:

I consent to my participation this project Yes ☐ No ☐

I give permission for my questionnaire and email interview responses to be saved
anonymously Yes ☐ No ☐

I give permission for all questionnaire responses, email interview responses to be
used in Alphaeus Talks' PhD thesis and derivatives therefrom. Yes ☐
No ☐

Please tick all which apply:

I would like to receive:

an electronic copy of my own answers ☐

an electronic copy of questionnaire/interview report ☐

an electronic copy of the PhD thesis ☐

Participants may withdraw from the project or the email interview and withdraw their
consent at any stage.

If you have any questions or concerns, please contact Alphaeus Talks at
AT1186@york.ac.uk.