THE INSTITUTE OF CONSERVATION

Icon Heritage Science Group

Ethical Sampling Guidance

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Content

Introduction

When sampling decisions for scientific investigations of heritage objects or sites are collaborative and transparent between researchers and owners/custodians, they encourage balanced, objective and consistent discussions and conclusions. However, finding, sharing or communicating information to support and direct common-ground decisions from multi-perspectives is not always easy.

To fill this important information gap, the Heritage Science Group committee of the Institute for Conservation (Icon) has developed this Ethical Sampling Guidance for materials research. It aims to be a practical, flexible and adaptive tool for scientists, conservators, curators, stakeholders and other decision-makers to engage in meaningful and informed dialogue and identify and manage expectations.

Underpinned by professional ethics and best practice for heritage conservation, the Guidance navigates the complexities and responsibilities of taking material from objects and sites. It addresses common important considerations and implications for sampling, from justification and agreement to sharing of results, and includes the important outcome of sustaining the connection between the sample, investigation and object/site which is often over-looked or under-valued.

The Guidance is not intended as a standard, directive or policy, nor limits the researcher to the scientist. Instead this unique document makes recommendations for researchers and owners/custodians to consider and discuss collaboratively when sampling is essential for scientific cultural heritage research.

Using the Guidance

The Guidance offers practical and workable recommendations for sampling cultural heritage objects and sites, including reference collections, in scientific research for academic investigation, routine analysis and at-bench tests for conservation. It can assist new and inexperienced researchers and be a helpful reminder of salient points for those with experience.
The document contains:

- A **flow-chart** of considerations for effective ethical sampling.
- A **detailed check-list** covering aspects for typical sampling scenarios, considered from the perspectives of the researcher and the owner/custodian of the heritage object or site.

Researchers and owners/custodians can apply the Guidance in a number of ways: as a stand-alone flexible and responsive tool; to develop ethical sampling policies and protocols; to complement

existing policies, guidance and standards; and as a framework to develop or revise sampling policies. The guidance is intended to be adopted and adapted.

Background

The Icon Ethical Sampling Guidance was initiated in 2017 by Icon's Heritage Science Group committee and launched in January 2019. It is based on views from consultation across Icon's professional membership and other interested parties including the European Research Infrastructure for Heritage Science (E-RIHS). This invaluable input of professional knowledge, understanding and experience was gathered by Icon HSG committee members Dr Anita Quye (University of Glasgow) and Professor Matija Strlic (UCL), and utilised in the following ways:

- an **on-line survey** with 121 UK (60%) and international (40%) participants from Icon and E-RIHS between September and October 2017, developed by the Icon Heritage Science Group Committee and digitally distributed using SurveyMonkey, to identify common areas of need for sampling decisions.

- an **invited workshop** with twenty UK-based participants from seven heritage organisations and three universities representing researchers and managers of heritage science and conservation, hosted by the University of Glasgow on 24 November 2017, to identify and discuss key factors and common ground for ethical sampling decisions. The outcomes framed a draft the Guidance.

- a **second on-line consultation** from 26 June to 10 October 2018 for comments on the draft Guidance through Icon, using Google Docs.

The resulting revised draft Guidance received feedback on 2 November 2018 from the Heads of Conservation & Scientific Research in National Museums, Galleries, Libraries and Archives, and the final revision was agreed by the Icon HSG Committee on 14 January 2019.

Accessing and Referencing the Guidance

This document can be freely downloaded from the Icon HSG web page https://icon.org.uk/groups/heritage-science/guidance-documents. Reference to its use and development is encouraged to enable tracking of its impact, and feedback from its practical application is also welcomed for future revision.

While the guidance is as comprehensive as possible for typical decisions, it is a series of recommendations and does not claim to cover every eventuality. Icon cannot accept any responsibility for its direct or indirect application.

Acknowledgements

The HSG Committee thanks all participants in the workshop, consultation, survey and feedback, especially Barry Knight and David Leigh: Alison Richmond and Michael Nelles for support and review comments; and Julie Wertz and Lianne Jordan for assisting with the Glasgow workshop.

References

Strlič, Matija and Anita Quye, Ethical Sampling - Icon Heritage Science Group survey report, 20 November 2017.

Quye, Anita and Matija. Strlič, Icon Heritage Science Group, Ethical Sampling Workshop Report, 24 November 2017, Glasgow. Institute of Conservation Group Report, January 2018.

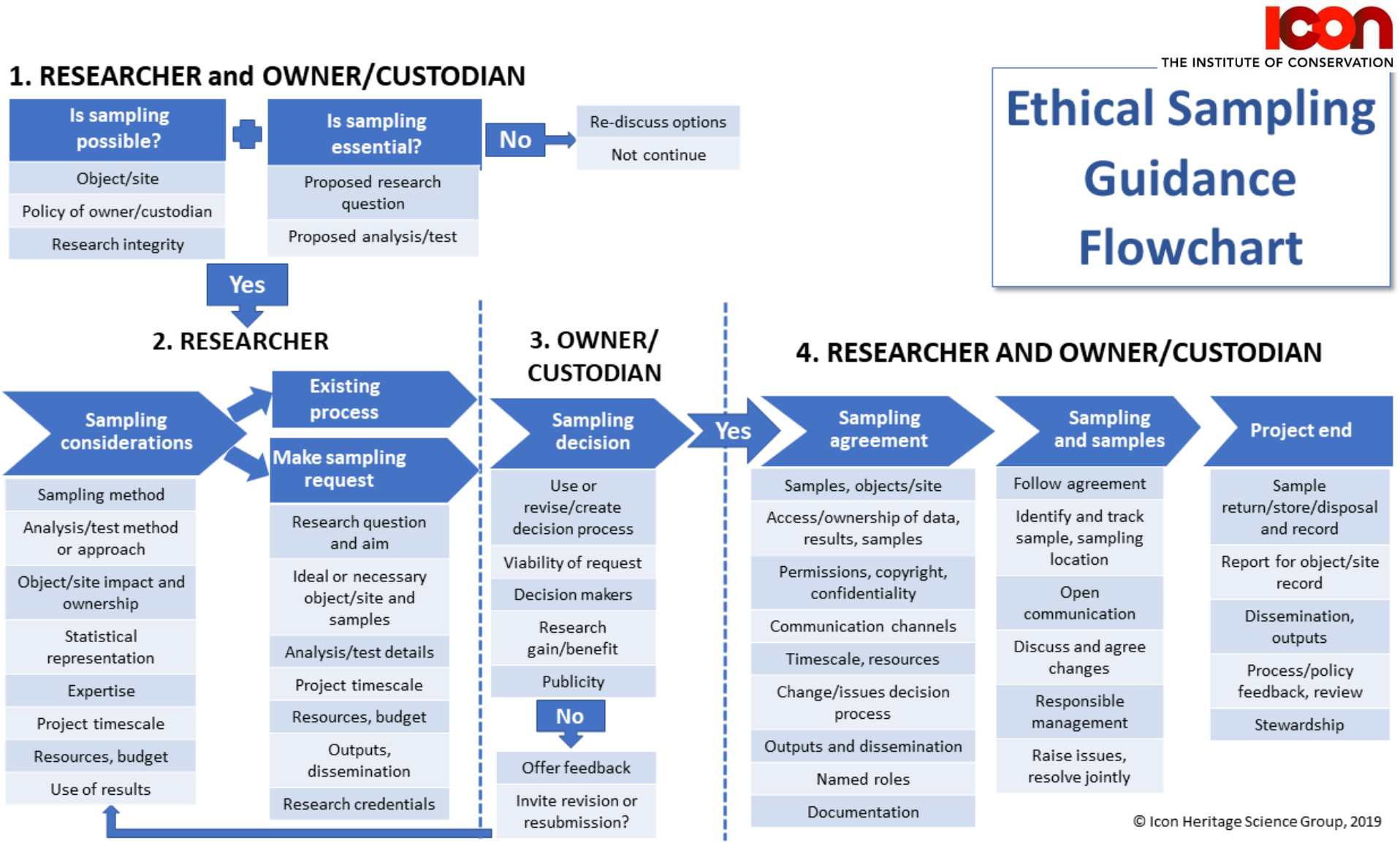
BSi European Standard for the Conservation of Cultural property - Methodology for sampling from materials of cultural property - General rules. March 2012.

Definitions

Invasive removal of material

Destructive sample cannot be used for further investigation or is no longer physically available to re-associate with the object/site

Principal Researcher (PI) individual researcher, team leader or student supervisor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Ethical Sampling Guidance Flowchart
1. RESEARCHER and OWNER/CUSTODIAN
Is sampling possible?
Object/site
Policy of owner/custodian
Research integrity
Is sampling essential?
Proposed research question
Proposed analysis/test
No
Re-discuss options
Not continue
Yes
2. RESEARCHER
Sampling considerations
Sampling method
Analysis/test method or approach
Object/site impact and ownership
Statistical representation
Expertise
Project timescale
Resources, budget
Use of results
Existing process
Make sampling request
Research question and aim
Ideal or necessary object/site and samples
Analysis/test details
Project timescale
Resources, budget
Outputs, dissemination
Research credentials
3. OWNER/ CUSTODIAN
Sampling decision
Use or revise/create decision process
Viability of request
Decision makers
Research gain/benefit
Publicity
No
Offer feedback
Invite revision or resubmission?
Yes
4. RESEARCHER AND OWNER/CUSTODIAN
Sampling agreement
Samples, objects/site
Access/ownership of data, results, samples
Permissions, copyright, confidentiality
Communication channels
Timescale, resources
Change/issues decision process
Outputs and dissemination
Named roles
Documentation
Sampling and samples
Follow agreement
Identify and track sample, sampling location
Open communication
Discuss and agree changes
Responsible management
Raise issues, resolve jointly
Project end
Sample return/store/disposal and record
Report for object/site record
Dissemination, outputs
Process/policy feedback, review
Stewardship
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Initial Discussion

Between Researcher and Custodian/Owner

The following are recommendations for consideration

Is sampling possible?

Object/Site	- Which object/site and why? - Is the object/site culturally, religious or medically sensitive? - Is sampling of the object/site acceptable?
Policy of owner/custodian	- Does a research/sampling policy exist? - If yes, is it relevant for this research? - Has sampling been allowed in the past?
Research Integrity	- Does the PI support/approve sampling? - Is future investigation compromised? - Is the sampling opportunity unique? - Is the outcome for monetary or reputational gain?

Is sampling essential?

Proposed research question	- Has this question been asked or answered for the object/site before? - How does it advance or enhance access, understanding and/or preservation for the object/site? - Is it relevant for existing and current knowledge? - Is it asked/agreed by PI?
Proposed analysis/test	- Have non-invasive options been explored fully? - How far can non-invasive options answer the research question? - Can a collaborator answer the question with less sample or non-invasively? - What is the analysis/test method or approach? - Does the proposed analysis/test answer the research question? - What are the advantages and limitations of the method or approach? - Are loose/detached parts of the object/site appropriate for the research question? - If samples are needed, where from and why? - What are the maximum sample size and number needed?

Detailed Checklist

For Researchers

The following are recommendations for consideration

Sampling considerations

Sampling method	- Experimental, published and/or established? - Optimised for minimal sample? - Is the sampling area accessible with minimal risk to the object/site or others associated with it? - Is there a cost for the sample or access? - How will the sample be removed and retained? - Type of sample and sampling area are needed? - What equipment, people and other resources are needed?
Analysis/test method	- Experimental, published and/or established? - Are there risks or limitations for sample preparation? - What sample retention/storage is needed?
Object/site impact and ownership	- Is ownership clear, requested, established or fully explored? - Is a contact identifiable to confirm or enquire? - Implications of on-site security for sampling and samples - Does object need moved to a secure analysis/test site?
Statistical representation	- How many samples are needed? - Which sampling areas/positions are necessary?
Expertise	- Experience/ability/qualifications of researcher/team - Who is the PI responsible for conduct and delivery? - Any training needs and who provides/funds this? - Any institutional research policy/framework?
Project timescale	- What is sampling for - project, funding bid, publication? - Any deadlines and are start/end dates fixed or flexible? - When are equipment and personnel needed?
Resources, budget	- What are the sampling and analysis/test costs? - Is funding secured? - Is insurance/liability cover needed, is it budgeted for? - Any shipping costs to get object to analysis/test site?
Use of results	- What will the results be used for? - Any professional and/or public dissemination and by who? - Any confidentiality conditions? - Will outcomes/data to be open access or on social media?

Sampling request Use the owner/custodian's application process or existing agreement. If this does not exist, it is recommended that the request covers the following, written at a technical level for an informed non-specialist:

Research question and aim	- Make the question and aim explicit, realistic and succinct - Place them in context of similar work in the field - Indicate how the research supports knowledge development for the object/site and in a wider context - Say what sampling will achieve or answer
Ideal or necessary object/site and samples	- Specify the object/site, and sample size/amount/number - Give the sampling method and outline risks or limitations - Is sampling in-situ or the object taken to the research site? - Must the researcher take the sample, or can they guide/instruct someone and what will be provided? - If sample is shipped, what is the preferred method? - Any sample shipment conditions or (international) permits needed, who arranges this and is it budgeted for?
Analysis/test details	- Describe and indicate sequence if multi-stage - Describe sample preparation and say if it is destructive - Can the sample be recovered or re-used? - Risks and limitations for a successful outcome - Is an initial trial necessary?
Project timescale	- Give critical deadline dates and reasons for timescale
Resources, budget	- Indicate resources needed and if agreed/available - Is funding agreed/available?
Outputs, dissemination	- Type of dissemination, when, by who, where - Any social media or open access? - What is the management policy for data and results?
Research credentials	- Named PI, researcher/project team and their CVs - Research and publication track record - Are the researcher/team trained or experienced object-handlers? - Research policy/framework information - Letter of support from the PI

Sampling decision

If no	- Request feedback - Ask if resubmission with revision can be made
If yes	- Prepare a joint agreement

Sampling agreement It is important to respect the owner/custodian's perspective while ensuring that selected objects/sites and samples are viable for the research question and aim and the analysis/test method. Recommended considerations are:

Samples, objects/site	- What is the owner/custodian's unique object/site identifier? - How many samples are allowed? - Which sampling areas/positions are allowed? - Do past internal research reports exist for the object/site and can they be shared? - How will the visual record of sampled areas of object/site be made - Who will take the sample? - Is on-site security needed and provided for sampling and samples? - Agree a mechanism for evaluating and changing the sampling and/or analysis/test plan
Access/ownership of data, results, samples	- How will samples be archived - Is an embargo period needed on data/results to protect intellectual property? - Agree use of results for all anticipated dissemination and outputs, like professional and/or public dissemination, publication, dissertation, open access/data and social media - Is co-authorship expected? - What support can be given for sample sets, datasets and other research outcomes
Permissions, copyright, confidentiality	- Clarify intellectual property terms and conditions - Clarify owner//custodian's permissions policy and terms and conditions
Communication channels	- PI and other research contacts named and details given
Timescale, resources	- Can a funding or project deadline be met? - Can the owner/custodian provide necessary resources?
Change/issues decision process	- Timely for research deadlines - Involves the PI - Agree a mechanism with owner/custodian to evaluate and change the sampling and/or analysis/test plan if needed
Outputs and dissemination	- Is co-authorship with the owner/custodian expected? - Is there dissemination with or for the owner/custodian? - Are there disclosure levels for selected audiences?
Named roles	- Appropriate level of individual responsibility
Documentation	- Signed, dated and shared in a timely manner

Sampling and sample use

Follow agreement	- Observe permissions, confidentiality and copyright - Clarify if needed
Identify and track sample, sampling location	- Record sample locations for object/site, ideally with image - Assign unique and consistent identifier to each sample - Link sample identifier to the owner/custodian's object or site identifier - Agree information management protocol with PI, team and owner/custodian
Open communication	- Agree levels - When will results be shared, with whom and in what format?
Discuss and agree changes	- Timely for deadlines
Responsible management	- Retain and manage research raw data, processed files and intermediate draft - Apply professional codes of conduct and good practice - Ensure file formats are sustainable and accessible to owner/custodian
Raise issues, resolve jointly	- Be honest and timely about errors and loss

Project completion

Sample return, store or dispose and record	- Return unused/reusable sample to owner/custodian - Manage traceable retention of prepared sample within expectations of life-time and degradation - Address needs of environmentally-sensitive or bulky prepared samples - Manage disposal of prepared sample
Report for object/site record	- Provide owner/custodian with a report at an appropriate technical level that includes the research question and aim, methodology, results summary and interpretation, and conclusions
Dissemination, outputs	- Outline intentions with owner/custodian - Acknowledge owner/custodian in internal and external outputs - Give copies of publications to owner/custodian
Process/policy feedback, review	- Ask owner/custodian for feedback - Review lessons-learnt and revise process as appropriate
Stewardship	- Use infrastructure and resources to secure and manage trackable, traceable and accessible data and prepared samples for their sustainable succession

Detailed Checklist

For Owners/Custodians

The following are recommendations for consideration

Sampling decision	
Use, revise or create existing policy/decision process and criteria	- Does it address cultural, religious and medical ethics? - Is it current and up-to-date? - Does creation/revision need legal input? - What are the costs and resources for creation/revision? - Is the decision-maker identified? - Does it include a conflict of interest process in case it is needed during the agreement?
Viability of request	- Seek and clarify object/site ownership and permissions - Has the object/site been requested for sampling and/or research before? - Does further research enhance object/site access conservation and/or preservation? - Does the research question and aim benefit the object/site? - How does sampling and/or research impact on object/site significance, value (cultural, religious, medical, monetary), reputation, uniqueness and aesthetic? - Is an initial trial appropriate? - What resources, cost and time are needed? - Are analysis/test options understood and transparent? - Where does the sampling take place? - Who handles the object and takes the sample? - Can a moveable object be safely and securely transported to analysis/test site?
Decision makers	- Identify the decision-maker individual/group - Involve external and internal advisors and experts - Are there third parties connected to the object/site who should be involved? - Timely decisions (3 months is reasonable) - Consideration of researcher's timescale and drivers particularly for funding applications - Notify researcher of delays, requesting a trial, agreeing a point of re-evaluation in the sampling process or research.
Research gain/benefit	- Does the research support knowledge development in a wider context for the object/site and/or the collection and stakeholders?

	- If the researcher gains reputation or monetarily, is it acceptable? - Is there reputational risk of allowing sampling of a culturally-sensitive object/site
Publicity	- Impact of results and information on stakeholders? - Any implications for public relations? - Is legal support needed and resourced? - Are there confidentiality conditions?

Sampling decision

If no	- Offer or consider requests for feedback - Decide if revision and resubmission should be invited and if guidance should be offered
If yes	- Prepare a joint agreement

Sampling agreement

Samples, objects/site	- Identify the object/site with accession number or another unique identifier - How many samples are allowed? - Which sampling areas/positions are allowed? - Provide object/site identifier and descriptions/database information - Can internal reports be shared? - Provide/request visual documentation of sampled areas of object/site - Is the researcher able or allowed to sample, or will an appropriate person, like a conservator, be provided? - Is on-site security needed and provided for sampling and samples? - Agree a mechanism for evaluating and changing the sampling and/or analysis/test plan
Access/ownership of data, results, samples	- How will the researcher archive samples? - Is there an embargo period on data/results to protect researcher's intellectual property? - Agree use of results for all anticipated dissemination and outputs - Is co-authorship with researcher expected/ - Agree researcher support for sample sets, datasets and other research outcomes
Permissions, copyright, confidentiality	- Follow organisational permissions policy and be clear about terms and conditions including those of third-party and/or stakeholder - Clarify researcher's intellectual property rights

Timescale, resources	- Can a funding or project deadline be met? - Can the researcher provide necessary resources?
Change/issues decision process	- Timely for deadlines - Agree a mechanism with owner/custodian to evaluate and change the sampling and/or analysis/test plan if needed - Consider third party arbitration as a last resort
Outputs and dissemination	- Agree use of results for all anticipated dissemination and outputs, like professional and/or public dissemination, publication, dissertation, open access/data and social media - Is co-authorship wanted? - Identify disclosure levels for selected audiences
Named roles	- Appropriate level of individual responsibility
Documentation	- Signed, dated and shared in a timely manner

Sampling and sample use

Follow agreement	- Honour research data embargoes
Identify and track samples and sampling location	- Associate samples and sampling location with object/site using identifiers given by owner/custodian and researcher - Resource and manage association of samples and sampling with object/site documentation, databases and images - Agree information management protocol with researcher
Open communication	- Agree levels - When will results be shared, with whom and in what format?
Discuss and agree changes	- Timely for deadlines - Accept sample loss during preparation/analysis as a small but common risk
Responsible management	- Apply professional codes of conduct and good practice - Ensure file formats from researcher are accessible - Agree how and when the researcher returns unused/reusable samples - Agree when and provides the owner/custodian with a final report
Raise issues, resolve jointly	- Raise timely concerns

Project completion

Sample return, store or dispose and record	- Ensure unused/reusable samples are returned - Sample retention needs justified by the researcher - Request information about how the researcher will manage prepared samples they hold, including life-time, degradation, prepared sample storage, request return of unused or prepared samples, accept sample loss through preparation/analysis
Report for object/site record	- Ensure the researcher provides a report with research details at an appropriate technical level
Dissemination, outputs	- Outline intentions with researcher - Acknowledge researcher in internal and external outputs - Ask for copies of publications
Process/policy feedback, review	- Ask researcher for feedback - Review lessons-learnt and revise process as appropriate
Stewardship	- Use infrastructure and resources to secure and manage trackable, traceable and accessible unused/reusable samples and internal/external outputs associated with the object/site for sustainable succession