BLUE SHIELD
United Kingdom
Conflict & Military Activity
Working Group

Assessing Risks to Tangible Cultural Heritage: International Insights and UK-Specific Application

Conflict and Military Activities Blue Shield UK Working Group

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Intended Audience: This document is designed for heritage practitioners, policymakers, military planners, conservation experts, and academics specializing in cultural heritage protection and risk management. The section on risks applicable to the UK provides targeted insights for professionals working within the UK context.

Purpose and Use: This document serves as a practical guide for integrating cultural heritage risk assessment into policy development, military training, academic research, and strategic planning. It provides a structured approach to identifying, assessing, and mitigating risks to tangible cultural heritage, with a particular focus on threats posed by conflict, military activities, and broader human and environmental factors. This document refers to policies and risks within the United Kingdom, excluding the British Overseas Territories, as those territories face distinct risks, impacts, and geographic and tourism-related considerations that require separate analysis.

Application to Risk Management: The guidance outlined here is intended to inform decision-making at multiple levels, supporting:

- Policy Development: Offering evidence-based recommendations for embedding cultural heritage protection in national and international policy frameworks.
- Military Training and Operations: Enhancing cultural awareness among military personnel to prevent inadvertent damage and support compliance with legal obligations.
- Risk Preparedness and Response: Assisting heritage professionals and emergency planners in assessing vulnerabilities, developing protective measures, and responding effectively to crises.
- Academic Research and Knowledge Exchange: Providing a foundation for research, conferences, and workshops that explore risk management strategies for cultural heritage.

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1. Introduction: the rationale behind this analysis

This document aims to understand, anticipate, and mitigate the diverse threats endangering cultural heritage assets. These sites are increasingly vulnerable to a range of risks that span environmental changes, human activities such as armed conflict, and even global phenomena like climate change.

For our purposes, "cultural heritage" is defined broadly in line with UNESCO's frameworks. It includes both tangible heritage (fixed sites, monuments, historic buildings) and, where relevant, elements of intangible heritage (traditions, practices, and expressions). While some policies deliberately exclude movable objects—focusing instead on the often-irreplaceable nature of immovable heritage—the interconnections between movable and fixed assets mean that a comprehensive approach should consider both. The rationale is that even if certain objects (e.g., private collections or artifacts held in storage) are excluded from immediate protection measures, their loss may still undermine a community's cultural narrative.

Modern approaches to disaster risk reduction reject the notion of "natural" disasters, emphasizing that disasters emerge from the interaction between environmental hazards and human vulnerabilities—a perspective echoed by current Disaster Risk Reduction thinking[1] and Blue Shield guidance[2]. In addition to environmental risks, armed conflict presents a particularly acute threat by causing both deliberate and collateral damage to cultural sites, thereby erasing community identity and undermining social stability. Interdisciplinary academic research supports integrating heritage preservation with broader risk management strategies, ensuring that both natural and conflict-induced risks are proactively addressed. This integrated approach is crucial for policymakers and military stakeholders tasked with safeguarding our shared cultural legacy.

Risk identification must be a continuous process, beginning during the planning stages of heritage management and revisited periodically by both cultural heritage experts and military risk officers. A comprehensive assessment involves not only technical measures such as hazard mapping and vulnerability analysis but also a nuanced understanding of the motivations and actions of various actors[3] This multidisciplinary approach, which includes stakeholder consultation, ensures that evolving environmental, social, and political factors are effectively integrated into risk assessments—thus facilitating the identification of risks during routine conservation efforts, emergency planning, and in areas susceptible to both natural hazards and armed conflict.

For military planners, this risk-based framework is particularly relevant as it bridges the gap between long-term cultural preservation and immediate operational security. While conventional military risk assessments focus on the risk to mission success, and protection of personnel and critical assets,

[1] United Nations Office for Disaster Risk Reduction. (2021). *Global Assessment Report on Disaster Risk Reduction*. https://www.undrr.org

[2] Blue Shield International. (2020). *Guidance on the Protection of Cultural Heritage in Armed Conflict*. www.theblueshield.org

[3] Cunliffe, E. (2023). Methods, Motivations, and Actors: A Risk-Based Approach to Heritage Destruction and Protection. In: J.A. Gonzalez Zarandona, E. Cunliffe and M. Saldin (eds.) *The Routledge Handbook of Heritage Destruction* (pp. 110-126). Routledge.

heritage risk management prioritizes long-term resilience and the safeguarding of cultural identity[4]—factors that can be deliberately targeted during conflicts and which may exacerbate conflict and threaten mission success. This distinction underlines that, although both approaches address risks, they differ in scope and time sensitivity: heritage management seeks to preserve cultural legacies over time, whereas military risk strategies are tuned to mitigate immediate threats to heritage in specific situations. By aligning these complementary perspectives, planners can more effectively prioritize resources, implement preventative measures, and respond swiftly during crises, thereby ensuring that cultural heritage is protected alongside strategic military objectives.

This paper has included aggravating factors as risks. An aggravating factor does not directly cause damage but exacerbates the conditions under which destruction or deterioration is more likely to occur. While a full application of complex risk structures may not be practical for this document, the distinction between direct causes and aggravating factors remains crucial in the protection of cultural heritage. This paper addresses aggravating factors by acknowledging how underlying conditions—such as poor planning, political instability, environmental degradation, and lack of awareness—can increase vulnerability to both sudden disasters and cumulative processes. By integrating these elements into the broader risk framework, the document ensures a more comprehensive understanding of how different threats interact, providing a stronger foundation for risk assessment and mitigation strategies.

Through a comprehensive analysis of both historical and emerging threats, this document aims to evaluate their potential impacts and provide policy makers and military planners with the insights necessary to develop effective strategies for preserving cultural heritage. This analysis is crucial not only for safeguarding physical artefacts and sites but also for protecting intangible cultural elements that define communities' identities and histories. Moreover, understanding these risks helps policymakers, conservationists, and local communities prioritise efforts and allocate resources effectively to prevent irreversible damage or loss. In an era of rapid global change, such proactive measures are essential to ensure that cultural heritage is preserved and accessible.

This document explores the range of risks faced by tangible cultural heritage, examining global threats. Particular emphasis is placed on the UK context, examining how international threats intersect with current and potential future domestic challenges while considering the unique vulnerabilities of UK heritage sites. The paper is structured to provide a comprehensive framework for understanding and mitigating threats to cultural heritage. The first section defines risk within the context of heritage preservation, examines its intrinsic value, and discusses various methods for treatment and mitigation. This section also reviews the tools available for risk assessment and management and analyses the legal framework in the UK, thereby establishing a foundation for informed decision- making by policy makers and military planners.

The second section presents an overview of global risks by analysing each potential threat individually—from environmental phenomena such as climate change to direct human impacts including conflict, vandalism, and terrorism. This detailed examination situates the UK's challenges within a broader international context and highlights the emerging risks that may affect cultural

[4] Cunliffe, E. (2023). Methods, Motivations, and Actors: A Risk-Based Approach to Heritage Destruction and Protection. In: J.A. Gonzalez Zarandona, E. Cunliffe and M. Saldin (eds.) *The Routledge Handbook of Heritage Destruction* (pp. 110-126). Routledge.

heritage worldwide. The final section focuses on assessing the probability of these risks materializing in the UK, employing statistical analyses and case studies to pinpoint regional vulnerabilities. Collectively, these sections equip readers with the essential background and analytical tools necessary to develop effective strategies for preserving cultural heritage in a complex and evolving risk landscape.

2. Risks

2.1. Definition

According to Blue Shield International[55], a conflict is a specific type of hazardous event, which can become a disaster when it seriously impacts a community or society. The United Nations defines a disaster as a serious disruption of the functioning of a community or society due to a hazardous event with potentially long-lasting effects, leading to widespread human, material, economic and/or environmental impacts that may exceed the ability of the affected community or society to cope using its own resources.[6] Risks represent the presence of vulnerable elements in areas exposed to hazards. The Sendai Framework for Disaster Risk Reduction 2015-2030[7] defines disaster risk as the potential for loss of life, injury, or damage to assets in a community, society, or system over a specific period of time. This risk is determined by a combination of hazard, exposure, vulnerability, and capacity. Vulnerabilities are weaknesses that a threat can exploit. Risk refers to the likelihood of the threat materialising and the severity of the consequences if it does, considering the existing vulnerabilities.

ICCROM (International Centre for the Study of the Preservation and Restoration of Cultural Property)[8] distinguishes between three types of risk occurrences, which often overlap: rare events, common events, and cumulative processes. Rare events, such as floods, severe earthquakes, large fires, or thefts, occur less frequently than once every 100 years. Common events, on the other hand, happen multiple times per century and are therefore part of the routine experience of heritage organisations. These include incidents like water leaks, structural collapses, accidents, or small fires. Cumulative processes are those that occur continuously or intermittently over time, such as the yellowing of newsprint, the fading of certain colours, the erosion of stone, or the corrosion of metals.

For the purpose of this document, risks will be evaluated based on a timeline approach. This means that risks will be assessed not only in terms of their immediate impact but also with consideration of their potential long-term effects. The timeline evaluation will categorize risks based on their likelihood of occurring in the UK—high, medium, or low—while also considering their potential to cause cumulative or varied types of damage over time. This approach provides a comprehensive

[5] Blue Shield International. *Threats to Heritage*. https://theblueshield.org/why-we-do-it/threats-to-heritage/

[6] United Nations. *Risks and Disasters*. https://www.un-spider.org/risks-and-disasters

[7] United Nations Office for Disaster Risk Reduction. *Sendai Framework for Disaster Risk Reduction 2015-2030.* https://www.undrr.org/publication/sendai-framework-disaster- risk-reduction-2015-2030

[8] ICCROM. *Guide to Risk Management*. https://www.iccrom.org/sites/default/files/2017-12/risk_management_guide_english_web.pdf

understanding of risks, enabling more effective planning and mitigation strategies that address both immediate and long-term threats to heritage assets.

2.2. Value

Previous studies[9] have explored the criteria for recognizing heritage and detailed the methods for identifying, articulating, and affirming cultural significance— defined as the collective importance attributed to a site. This document, however, assumes that the cultural heritage in question already possesses established value and significance, and thus focuses exclusively on places that have been acknowledged as having significant cultural worth.

2.3. Treatment and mitigation

According to ICCROM,[10] the term "treatment" is typically associated with the preservation of heritage items themselves. However, in this context, it is important to address risks, their underlying causes, and strategies for their mitigation. Within organisations, as in everyday life, risk is often perceived in terms of major disasters such as fires, floods, earthquakes, or war. These events are generally seen as unavoidable; hence, the focus tends to be on minimising losses during and after such occurrences, rather than on preventing them altogether. This approach, known as emergency preparedness, addresses one particular category of risk—those that are rare and catastrophic.

However, a broader perspective on heritage risks is necessary. Integrating rare, catastrophic risks with more common, everyday ones is essential. Therefore, it is logical to integrate emergency preparedness into a comprehensive heritage risk management system. This integration might reveal the need to reallocate resources, shifting some focus from "routine" risks, such as climate control, to more pressing concerns like flood mitigation. By aligning all risk management efforts under a single measurable objective, organisations can ensure a more balanced and effective preservation strategy.

A significant risk for heritage lies in the lack of understanding of how to interface effectively with the military during crises. While many institutions—such as the British Museum, the V&A, or Westminster Abbey—regularly conduct disaster planning exercises in collaboration with emergency services to prepare for fires, floods, terrorism, and other threats, the potential involvement of the military is often overlooked. Key questions remain insufficiently addressed: Under what circumstances would the military intervene? Who has the authority to make that decision? How would communication and coordination function between museums, emergency services, and military units? And finally, what role would government agencies play in facilitating or overseeing this interface? Without clear answers and planning around these questions, museums may find themselves underprepared in high-impact scenarios where military support becomes essential.

According to several studies collecting information from heritage institutions such as museums and libraries, all respondents indicated that they would turn to emergency services as their first point of

[9] De la Torre, M., ed. 2002. *Assessing the Values of Cultural Heritage: Research Report*. Los Angeles, CA: Getty Conservation Institute.

[10] ICCROM. *Guide to Risk Management*. https://www.iccrom.org/sites/default/files/2017-12/risk_management_guide_english_web.pdf

contact during a crisis—even in cases where no prior relationship had been established. Moreover, the majority of institutions remain unaware of the potential need for specialist support or the relevance of civil-military cooperation (CIMIC) and Military Assistance to Civil Authorities (MACA) in emergency planning for situations involving armed conflict.[11]

2.4. Tools

Assessing risks and threats to cultural heritage requires a comprehensive approach, utilising a variety of tools and methodologies to identify, evaluate, and mitigate potential dangers. While this document aims to serve as a guide to identifying possible risks, further work on practical strategies to avoid or mitigate these risks necessitates the integration of additional tools, such as:

1. Risk Assessment Frameworks: for instance, ICCROM's Risk Management Methodology[12] or First Aid to Cultural Heritage in Times of Crisis[13]
2. Sendai Framework for Disaster Risk Reduction 2015-2030[14]
3. UNDRR. Disaster Resilience Scorecard for Cities[15]
4. Disaster Risk Reduction Plans[16]
5. Community-based Risk Assessment[17]
6. Policy and Legal Frameworks, considering especially the Convention for the Protection of Cultural Property in the Event of Armed Conflict (1954), Hague Convention[18]
7. Insurance and Funding Mechanisms, including disaster recovery efforts[19]

[11] Bradford, B. (2015). Newcastle University. PhD Dissertation

[12] ICCROM. *Guide to Risk Management*. https://www.iccrom.org/sites/default/files/2017-12/risk_management_guide_english_web.pdf

[13] ICCROM. *First Aid to Cultural Heritage in Times of Crisis – Toolkit*. https://www.iccrom.org/publication/first-aid-cultural-heritage-times-crisis-toolkit

[14] United Nations Office for Disaster Risk Reduction. *Sendai Framework for Disaster Risk Reduction 2015-2030*. https://www.undrr.org/publication/sendai-framework- disaster-risk-reduction-2015-2030

[15] UNDRR. *Disaster Resilience Scorecard for Cities*. https://mcr2030.undrr.org/disaster-resilience-scorecard-cities

[16] See, for instance UNESCO https://whc.unesco.org/en/disaster-preparedness/, Blue Shield International https://www.blueshieldinternational.org/. or United Nations Office for Disaster Risk Reduction https://www.undrr.org/.

[17] Readers can consult resources such as UNESCO's Intangible Cultural Heritage Office at http://www.unesco.org/culture/ich/ and the United Nations Office for Disaster Risk Reduction at https://www.undrr.org/ .

[18] For further details on these frameworks, see the official UNESCO page on the 1954 Hague Convention at https://whc.unesco.org/en/convention / , and to the International Committee of the Red Cross (ICRC) resources available at https://www.icrc.org/en/doc/assets/files/publications/icrc-002-0955.pdf . Additionally, the UK government's guidance on heritage protection can be explored at https://www.gov.uk/guidance/heritage-protection for an understanding of the domestic legal context.

[19] Readers can refer to the following resources: UNESCO's Disaster Preparedness for Cultural Heritage: https://whc.unesco.org/en/disaster-preparedness/, Blue Shield International: https://www.blueshieldinternational.org/, UK Government's Heritage Funding Guidance: https://www.gov.uk/guidance/heritage-funding or ICOMOS (International Council on Monuments and Sites): https://www.icomos.org

2.5. Legal framework in the UK context

This section outlines the statutory and regulatory foundations that guide how cultural heritage is protected against natural risks, military impacts, and human- induced threats. It demonstrates the legal obligations, liabilities, and protections provided under UK laws and relevant international conventions. The UK has several national heritage bodies responsible for protecting and managing its cultural and historic assets. Historic England oversees England's historic environment, providing research, funding, and guidance. Historic Environment Scotland performs a similar role for Scotland, managing historic sites and advising on conservation policies. Cadw, part of the Welsh Government, protects and promotes Wales' heritage, while Historic Royal Palaces manages key royal sites like the Tower of London. The Department for Communities' Historic Environment Division plays a similar role in Northern Ireland.The National Trust and English Heritage (a charity distinct from Historic England) manage numerous historic properties and landscapes across England, Wales, and Northern Ireland. The legal framework detailed in this document should be used as a benchmark throughout the document to ensure that any strategies or risk assessments proposed align with existing legal requirements. For policy makers, military planners, and heritage professionals, this section provides the context necessary to gauge the enforceability of protective measures, integrate legal constraints into risk assessments, and ensure that proposed interventions are both effective and compliant with statutory standards. This comprehensive legal perspective thus enhances the overall reliability and applicability of the document's recommendations in managing the diverse threats facing cultural heritage.

Culture is a devolved responsibility in the UK, meaning each country within the UK is responsible for the legal management of its cultural sites and laws differ in the different countries, with Scotland and Northern Ireland often utilising on separate legal instruments or devolved frameworks for cultural heritage protection. This is also true for international treaties which the UK government has ratified, which have different domestic implementation across the different jurisdictions. The English, Scottish, Welsh, and Northern Irish devolved governments formally sponsor over fifty collections of movable and immovable heritage. Scotland and Northern Ireland's parliaments have primary legislative powers, meaning they pass their own laws, including over heritage. Wales, by contrast, has secondary legislative powers that allow it to differ from some laws passed by the UK parliament in some specific fields, including the historic environment.

Because there is no written constitution in the UK, there is no obvious or outlined hierarchy of norms. Parliament is sovereign, and due to a lack of constitution, safeguarding of cultural heritage is not found in any document that would have constitutional value. The British government is also supported by Historic England, ICOMOS UK, and the UK National Commission for UNESCO.

As Brexit has changed the regimes and conventions that the UK is involved in, Northern Ireland has retained some of these regimes.

2.5.1. National implementation of International laws

The 1883 Paris Convention for the Protection of Industrial Property obliges states to offer protection to industrial property, including patents, utility models, industrial designs, service marks, and others.

The 1886 Berne Convention on the Protection of Literary and Industrial Works, defining literary and artistic works as books, dramatic, choreographic works, musical compositions, drawings, paintings, and sculptures. Allows for unpublished and anonymous works to be subject to international protection.

The 1891 Madrid Agreement for the Repression of False or Deceptive Indications of Source on Goods, which aims to prevent the sale of goods with inaccurate

indications of origin, including cultural goods, and prohibits advertising misleading the public about a good's origin.

The 1954 Convention for the Protection of Cultural Property in the Event of Armed Conflict, and its two Protocols (1954 / 1999)[20] The UK is a signatory to this international treaty, which obliges state parties to take measures to safeguard cultural heritage from damage or destruction in times of war. The three parts are brought into UK law via the Cultural Property (Armed Conflicts) Act 2017, which detail offences and punishments. It is an international treaty to which the UK is a signatory: implementation guidance is the same for each national authority, but the recommended advisory bodies differ in each country.[21]

The 1992 Convention for the Protection of the Archaeological Heritage of Europe.[22] The Valetta Convention prioritises the conservation and enhancement of archaeological heritage as a key objective of urban and regional planning policies. It specifically addresses the need for collaborative arrangements between archaeologists and urban and regional planners to ensure the optimal preservation of archaeological heritage. The application of this document is subject to regional

[20] The 1954 Convention for the Protection of Cultural Property in the Event of Armed Conflict, and its two Protocols (1954 / 1999). https://www.unesco.org/en/heritage-armed- conflicts/convention-and-protocols/1954-convention

[21] Department for Digital, Culture, Media & Sport), Protection of cultural property in the event of armed conflict. Implementation of the 1954 Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict, its Protocols and the Cultural Property (Armed Conflicts) Act 2017, (2017) (Covers England and Wales) https://www.gov.uk/government/publications/protection-of-cultural-property-in-the-event-of-armed-conflict

Justice Directorate, Protection of cultural property in the event of armed conflict. Implementation of the 1954 Hague Convention, its Protocols and the Cultural Property (Armed Conflicts) Act 2017 in Scotland, (Scottish Government 2017) https://www.gov.scot/publications/protection-cultural-property-event-armed-conflict-implementation- 1954-hague-convention/

Historic Environment Division, Protection of cultural property in the event of armed conflict. Implementation of the 1954 Hague Convention, its Protocols and the Cultural Property (Armed Conflicts) Act 2017 (Northern Ireland, Department for Communities 2020) https://www.communities-ni.gov.uk/publications/hague-convention-protection- cultural-property

[22] The 1992 Convention for the Protection of the Archaeological Heritage of Europe. https://www.coe.int/en/web/conventions/full-list?module=treaty-detail&treatynum=143

differences, with each devolved administration—England, Scotland, Wales, and Northern Ireland—developing its own approaches to heritage protection and risk management.

The 1970 UNESCO Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property.[23] The UK ratified this convention in 2002, committing to measures that prevent the illicit trade of cultural property and promote the return of stolen artefacts. However, it was brought into law in England, Wales and Northern Ireland via the Dealing in Cultural Objects (Offences) Act 2003, which does not apply in Scotland, and which does not legislate many of the provisions of the 1970 Convention into UK law.

The 1972 UNESCO World Heritage Convention.[24] The UK is a signatory to this international treaty, which aims to protect and preserve cultural and natural heritage for the benefit of humanity. The Convention obliges member states to take measures to safeguard UNESCO-designated sites, including those in all four countries of the United Kingdom. It is not brought into UK legislation through any domestic law; so, there are no defined offences or punishments for breaches. However, all UK World Heritage sites are also protected under other legislation for, e.g., listed buildings, or scheduled monuments.

1996 WIPO Performances and Phonograms Treaty 1996, which strengthened the rights of performers.

The 2003 UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage. The UK ratified this convention in 2024. It recognizes forms of intangible cultural expression such as traditional craftsmanship, oral traditions and expressions, performing arts, social practices, rituals and festive events, and knowledge and practices related to nature and the universe. The UK is currently developing its implementation measures.

The 2005 UNESCO Convention on the Protection and Promotion of the Diversity of Cultural Expressions. Ratified by the UK in 2007, this convention aims to safeguard and promote the diversity of global cultural expressions by encouraging countries to implement policies to protect their cultural industries, and by facilitating international cooperation to promote such industries.

The 2012 Beijing Treaty on Audiovisual Performances, obliged contracting parties to give rights to performing actors like those given to musical artists through the WPPT.

The *2018 EU Regulation on the Introduction and Import of Cultural Goods*, which aims to prevent the important and storage of illegally or illicitly imported EU cultural goods, still applies in Northern Ireland, though not Great Britain, but the HMRC website states there will be no change in how cultural property is imported to the country, creating a violation of the regulation and the protocol.

The UK *has not* ratified the UNESCO 2001 Convention on the Protection of Underwater Cultural Heritage.

[23] The 1970 UNESCO Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property https://www.unesco.org/en/legal-affairs/convention-means-prohibiting-and-preventing-illicit-import-export-and-transfer-ownership-cultural

[24] The 1972 UNESCO World Heritage Convention. https://whc.unesco.org/en/convention/

2.5.2. National Laws

The Ancient Monuments and Archaeological Areas Act 1979[25] This legislation makes provision for the investigation, preservation and recording of matters of archaeological or historical interest and (in connection therewith) for the regulation of operations or activities affecting such matters. It provides protection for scheduled ancient monuments,[26] making it illegal to alter or damage them without consent from the Secretary of State. It applies in England, Wales, and Northern Ireland, whereas Scotland is governed by its own heritage legislation, with provisions under the Historic Environment Scotland framework.

Protection of Wrecks Act (1973).[27] Many designated wrecks come under the Protection of Wrecks Act 1973, which safeguards sites of national archaeological importance from unauthorized interference. In cases where a wreck is deemed to have significant historic or archaeological value, it may be designated as a protected wreck, meaning any activity that might disturb or damage the site requires a license from the relevant authorities. Additionally, certain wrecks may also fall under the Ancient Monuments and Archaeological Areas Act 1979 if they are considered part of the national heritage. These legislative instruments work in tandem with guidance from Historic England, which plays a key role in managing and advising on the protection of maritime heritage. In Scotland, wreck sites are primarily protected under the authority of Historic Environment Scotland. Here, wrecks can be designated as scheduled monuments under Scottish heritage legislation—such as the Historic Environment (Scotland) Act 2014—ensuring that they receive appropriate legal protection and management. In Wales, wreck sites are generally safeguarded by the Protection of Wrecks Act 1973, and may also fall under the Ancient Monuments and Archaeological Areas Act 1979. Cadw, the Welsh Government's historic environment service, plays a key role in overseeing the protection and management of these maritime heritage assets. In Northern Ireland, the authority responsible for shipwrecks is the Historic Environment Division (HED), which operates under the Department for Communities. The Maritime Heritage Unit within HED manages and protects historic wrecks under the Historic Monuments and Archaeological Objects (NI) Order 1995.

Treasure Act 1996.[28] Defines what is considered treasure and requires finders to report their discoveries, applying to England, Wales, and Northern Ireland.

[25] The Ancient Monuments and Archaeological Areas Act 1979 https://www.legislation.gov.uk/ukpga/1979/46

[26] Scheduled ancient monuments. Scheduled ancient monuments are sites that have been legally designated as being of national importance due to their archaeological or historic significance. Under the Ancient Monuments and Archaeological Areas Act 1979, these monuments are protected from any unauthorised alterations or damage. The designation applies primarily in England, Wales, and Northern Ireland—with Scotland having its own equivalent protection mechanisms managed by Historic Environment Scotland. This legal status ensures that any work affecting such sites must receive consent from the appropriate authorities, thereby safeguarding these irreplaceable assets for future generations. For further details, see Historic England's guidance on scheduled monuments at https://historicengland.org.uk/listing/what-is-designation/scheduled- monuments/.

[27] Protection of Wrecks Act (1973). https://www.legislation.gov.uk/ukpga/1973/33

[28] Treasure Act (1996). https://www.legislation.gov.uk/ukpga/1996/24/contents

The Planning (Listed Buildings and Conservation Areas) Act 1990 (applicable in England and Wales)[29] */ Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997.*[30] These Acts protect listed buildings and conservation areas by requiring that any alterations or demolitions receive special consideration during the planning process. They ensure that the historical and architectural significance of these sites is preserved.

The Environmental Protection Act 1990.[31] While primarily focused on environmental protection, this Act also encompasses provisions relevant to cultural heritage, particularly in relation to pollution control and its potential impacts on heritage sites. It is a UK-wide piece of legislation, though its application can vary based on devolved environmental policy and local enforcement practices.

The Historic Environment (Wales) Act 2016.[32] This legislation provides a framework for the protection and management of the historic environment in Wales, including provisions for the designation of historic assets, management plans, and community involvement in heritage conservation. The Act places a duty on Welsh Ministers to set targets for reducing greenhouse emissions and also to set carbon budgets. It is specifically designed for Wales, addressing its unique heritage management needs.

The National Planning Policy Framework (NPPF).[33] This framework defines heritage assets as places, buildings, monuments, and landscapes that are considered significant enough to be considered in planning decisions. It provides guidance for local planning authorities on how to assess and manage heritage risks in the context of development proposals. It is an English policy document. Scotland, Northern Ireland, and Wales each have their own planning policies and guidance frameworks that address heritage and risk management.

The Heritage Protection Reform (2008).[34] This reform aimed to simplify and consolidate heritage protection legislation in England, promoting a more efficient and coherent approach to safeguarding cultural heritage. Although the full reforms have not yet been implemented, the principles behind them continue to influence heritage protection policy.

Local Government Policies. Local authorities play a significant role in heritage risk management through local plans, conservation area appraisals, and heritage impact assessments. These documents establish priorities and strategies for protecting local heritage assets. They are subject to regional differences, with each devolved administration—England, Scotland, Wales, and Northern Ireland—developing its own approaches to heritage protection and risk management.

[29] The Planning (Listed Buildings and Conservation Areas) Act 1990 https://www.legislation.gov.uk/ukpga/1990/9/contents

[30] Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997 https://www.legislation.gov.uk/ukpga/1997/9/contents

[31] The Environmental Protection Act 1990. https://www.legislation.gov.uk/ukpga/1990/43/contents

[32] The Historic Environment (Wales) Act 2016 https://law.gov.wales/historic-environment-wales-act-2016

[33] The National Planning Policy Framework (NPPF. https://www.gov.uk/government/publications/national-planning-policy-framework--2

[34] The Heritage Protection Reform (2008). https://www.fareham.gov.uk/planning/conservation/heritageprotection.aspx

Risk Management Guidelines.[35] Various heritage organisations provide guidelines and best practices for assessing and managing risks to cultural heritage. These resources help practitioners navigate legal requirements and develop effective risk mitigation strategies. These guidelines are provided by heritage organizations such as Historic England, the National Trust, The Department for Communities in Northern Ireland, Historic Environment Scotland, and others are tailored to the specific legislative and policy environments of each jurisdiction.

3. Overview of Global Risks

This section provides a comprehensive overview of the global risks that threaten cultural heritage, categorizing them into three distinct types: environmental risks, indirect human activities, and direct human activities. Splitting risks into these three categories is useful because each type involves different causative factors and requires specific approaches for prevention and response. Environmental are driven by natural phenomena that can cause cumulative damage over time. Indirect human activities encompass socioeconomic and political influences, such as urban development, industrial expansion, and policy neglect, which may gradually undermine heritage integrity. Direct human activities involve deliberate or immediate actions, including vandalism, theft, and armed conflict, which can result in rapid and overt damage. This structured categorization not only clarifies the nature of the risks but also guides stakeholders in prioritizing interventions and resource allocation according to the specific challenges posed by each risk type. Some of these risks are cumulative processes, where gradual, long-term factors contribute to deterioration or transformation. Environmental degradation from pollution, climate change, and extreme weather slowly weakens materials, while biological and chemical factors—such as mould, pests, and salt crystallization—cause progressive damage. Soil erosion, land subsidence, and uncontrolled urban development further threaten historic landscapes and archaeological sites. Additionally, neglect and insufficient maintenance accelerate decay, while societal shifts in cultural values, economic priorities, and land use can lead to repurposing or abandonment of heritage assets. Unlike sudden disasters, these processes operate over extended periods, making them harder to detect and mitigate without proactive monitoring, conservation planning, and adaptive management strategies.

The document includes both damage to UK heritage and damage caused by UK people to other people's heritage, which the UK has a legal obligation to mitigate. Regarding timescales, risks to cultural heritage in the UK can be both immediate and long-term, depending on the threat. Immediate risks include extreme weather events, vandalism, theft, and accidental damage from development projects, all requiring urgent intervention. Long-term risks, however, pose more systemic challenges, such as climate change, coastal erosion, urbanization pressures, and funding reductions for heritage protection. While direct threats from conflict are currently low, indirect risks—like cyber threats to digital heritage records or economic instability affecting conservation efforts—could have more immediate consequences. Overall, while long-term risks are more significant, certain immediate threats demand attention. This document has chosen to categorize risks to cultural heritage into the three broad groups—environmental risks, indirect human activities,

[35] See, for instance, Historic England https://historicengland.org.uk/ , the National Trust https://www.nationaltrust.org.uk/, The Department for Communities in Northern Ireland https://www.communities-ni.gov.uk/ or Historic Environment Scotland https://www.historicenvironment.scot/

and direct human activities—rather than differentiating between sudden disasters and cumulative processes. This approach reflects the fact that risks often arise from multiple overlapping factors rather than fitting neatly into a single timeline of immediate versus long-term impacts.

4. Environmental risks

Physical forces. Natural hazards generate both immediate and long-term secondary effects. High winds, heavy rain, and storm surges from hurricanes can damage structures, erode archaeological sites, and destroy landscapes, while tsunamis inundate coastal sites, causing similar destruction. Flooding not only washes away artefacts but also leads to mould growth and weakened foundations, with saltwater accelerating material degradation. Libraries and archives are especially vulnerable to fire, water, and humidity, which can irreversibly damage both paper-based and digital collections. Moreover, ongoing erosion—whether from natural forces or human activity—gradually wears away heritage sites, leading to the loss of structures, inscriptions, and historical features. Landslides are a common risk in the UK, especially following heavy rainfall, and can directly threaten heritage sites located on unstable slopes or coastal areas. These events may cause structural damage, loss of access, or irreversible loss of archaeological and historic features.

Changes in temperature. Blizzards, freezing, and extreme cold can cause structural damage to buildings, monuments, and artefacts by causing materials to contract and crack. Repeated freeze-thaw cycles are especially harmful, as they can weaken stone, wood, and other materials. Additionally, snow accumulation and ice formation can increase weight on roofs and other structural elements, leading to collapses.

Fires. Wildfires can destroy historic buildings, artefacts, and landscapes, and cause smoke damage to structures and collections. The heat and flames can also alter the physical properties of materials. Fires are considered in this study as a natural hazards, but they can also result from human activities, making them significant threats to cultural heritage. Accidental fires—caused by negligence, faulty electrical systems, or industrial activities—can lead to the rapid destruction of historic buildings, archives, and archaeological sites.

Droughts and floods. Droughts and floods pose serious risks to cultural heritage. Drought can lead to the drying out and cracking of organic materials, while desertification can cause the encroachment of sand on archaeological sites, burying or damaging them. Floods, on the other hand, can erode foundations, wash away surface features, and introduce pollutants or biological growth that accelerate the deterioration of materials. Repeated or prolonged flooding may also weaken structural integrity and separate movable heritage from its original context. Flooding can be exacerbated or directly caused by human actions, such as poor urban planning, deforestation, or inadequate drainage infrastructure. Construction projects that alter natural waterways, failure to maintain flood defences, or the mismanagement of water systems can lead to severe water damage at cultural sites.

Seismic activity. Earthquakes can cause severe structural damage or complete collapse of buildings and monuments, as well as landslides that may bury or displace heritage sites. Landslides can bury or displace heritage sites, causing physical destruction and making archaeological excavation and preservation difficult.

Volcanic eruptions. Volcanic eruptions can bury sites under ash and lava, causing immediate destruction or long-term deterioration due to acidic ash fallout.

Pests. Pests such as insects, rodents, and fungi primarily target organic materials like wood, paper, textiles, and leather. Common pests include termites, woodworms, silverfish, and mould, which can cause irreversible damage. In some cases, pest infestations may be exacerbated as a result of human activities. For example, inadequate maintenance, improper storage conditions, and changes in land use can create environments that foster pest proliferation in heritage settings, factors such as poor climate control in museums or conservation facilities, accumulation of organic debris, and water leaks can lead to increased moisture levels, which in turn promote the growth of mould and attract pests like termites and silverfish. Furthermore, urban expansion and changes in local ecosystems may disturb natural pest populations, inadvertently introducing or encouraging invasive species.

4.1. Indirect human activities[36]

Collateral and accidental damage in human conflict. Collateral damage refers to incidental harm affecting facilities, equipment, or personnel that are not themselves the legitimate military target but which may legally be damaged as part of a legitimate military strike, while accidental damage refers to unintended harm affecting these same entities. Ordnance can impact on shallow water areas and explosive devices placed on the seabed under a garret and then activated can affect areas of potential cultural heritage significance. According to the Laws of Armed Conflict, which emphasise the careful selection of weapons, it is imperative to choose weaponry that minimises damage to cultural property (the "proportionality principle").[37]

Military uses of the natural environment, including coastal and marine. There is a range of activities and operations conducted by naval forces and defence agencies worldwide with, for instance, military manoeuvres such as amphibious operations, antisubmarine warfare, mine warfare, explosive ordnance disposal, and unmanned underwater vehicles which can impact on land, coastal and underwater cultural heritage. Army training exercises also include tests with live weapons and exercises to practise disembarking on the coastline or making an emergency landing on a beach, both with planes and helicopters.

Lack of military awareness. Lack of military awareness itself does not directly cause damage to cultural heritage, but it acts as an aggravating factor that increases the likelihood of harm occurring. When heritage considerations are not integrated into military planning and operations, actions such as stationing heavy equipment, constructing temporary fortifications, or conducting training exercises may inadvertently damage or destroy heritage sites. In such cases, it is the military activity—such as the movement of tanks or the construction of bases—that directly causes harm, while the lack of awareness allows these activities to proceed without necessary precautions. Troops now require a

[36] More on the direct and indirect conflict risks can be found in P G Stone, The Seven Risk of Cultural Property in Conflict, *British Army Review, Special Edition Culture in Conflict* pp.102-113. https://www.army.mod.uk/media/6862/bar_special_culture_conflict_web.pdf

[37] The principle of proportionality prohibits attacks against military objectives which are "expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated". More information at: https://casebook.icrc.org/a_to_z/glossary/proportionality

deeper understanding of the locations and populations where they are deployed, surpassing previous expectations. NATO, for instance, has adopted what it refers to as its 'Comprehensive Approach,[38] which emphasises the importance of cultural awareness and the protection of cultural property as mission-critical priorities.

Lack of planning. The absence of cultural property protection in planning does not directly cause damage to heritage but serves as an aggravating factor that increases its vulnerability. If cultural heritage is not recognized as a priority before an armed conflict or during post-disaster recovery efforts, no resources will be allocated to safeguard it, leaving sites exposed to destruction, looting, or neglect. In conflict situations, the lack of pre-emptive protection can lead to avoidable collateral damage, as military operations proceed without regard for heritage sites. Similarly, in post-disaster recovery, failure to incorporate heritage conservation into rebuilding efforts may result in irreversible loss due to uncontrolled development, infrastructure projects, or the hasty clearing of damaged areas. Ultimately, it is the conflict or disaster that directly causes harm, but the absence of planning allows preventable destruction to occur and limits opportunities for effective mitigation and restoration.

Enforced neglect. It occurs when conflict or environmental disasters prevent staff from accessing cultural heritage sites, disrupting essential routine maintenance. During such events, maintaining precise environmental conditions often becomes impossible, further jeopardising the preservation of these cultural assets.

Development. This term encompasses the impact of development activities on cultural heritage, specifically focusing on heritage assets that have been lost, altered, or damaged as a result of such activities. Development can include a range of activities, from urban construction and infrastructure projects to rural industrial expansion and transportation network upgrades.

Mining. Mining operations, particularly surface mining or open-pit mining can lead to the direct destruction of archaeological sites, historic buildings, and cultural landscapes. In addition, blasting and heavy machinery used in mining can cause vibrations that lead to the cracking or collapse of nearby historical structures and monuments.

Pollutants. Pollutants such as sulphur dioxide, nitrogen oxides, ozone, and particulate matter can cause extensive damage to cultural heritage. These substances, often resulting from industrial activities, vehicle emissions, and urban pollution, can lead to chemical reactions that deteriorate materials.

Dissociation. When communities lose connection with their cultural heritage, either through urbanisation, migration, or shifts in cultural practices, they may become indifferent to the preservation of heritage sites.

Agriculture. The expansion of agricultural land often involves clearing large areas of land, which can lead to the destruction of archaeological sites, historic landscapes, and cultural monuments. These sites may be ploughed over or otherwise disturbed, leading to the loss of valuable historical information. Irrigation practices, especially those involving large-scale water diversion or the use of modern irrigation systems, can alter the hydrology of an area, in addition to causing extensive damage

[38] NATO https://www.nato.int/cps/fr/natohq/topics_51633.htm?selectedLocale=en

in their creation. Intensive farming practices, such as deep ploughing, irrigation, and the use of heavy machinery, can lead to soil erosion and degradation. This erosion can uncover or damage buried archaeological sites and artefacts.

Political and Social instability. In regions affected by conflict, political turmoil, or social unrest, cultural heritage often becomes a secondary concern as governments, institutions, and communities prioritize immediate survival, security, and economic stability. In such contexts, heritage sites may be neglected due to a lack of resources, institutional breakdown, or the reallocation of funding and personnel to more urgent humanitarian or security needs. Additionally, the disruption of governance and law enforcement can lead to looting, illegal construction, and unregulated development, further endangering heritage assets.

Economic pressures. Economic hardships can lead to a de-prioritization of cultural heritage, as resources are diverted to more pressing needs like infrastructure, health, and education. Heritage sites may be left without funding for maintenance, leading to deterioration.

Globalization and Cultural Homogenization. The forces of globalisation can lead to cultural homogenization, where local traditions and heritage are overshadowed by global cultural influences. This can result in a diminished appreciation for local cultural heritage and a focus on more commercially viable or popular cultural expressions.

Educational gaps. If cultural heritage is not effectively integrated into educational curricula, younger generations may grow up with little knowledge or appreciation of their cultural history. This educational gap can lead to a lack of interest or involvement in heritage preservation.

Alteration of cultural landscape. Many cultural heritage sites are embedded within broader landscapes that hold spiritual or cultural significance. Some activities can alter or destroy these landscapes, disrupting the cultural practices and beliefs of local communities.

Human speculative activities. Speculative human activities, such as profit-driven enterprises and factional interests focused solely on economic gain, pose a significant risk to heritage by prioritizing short-term financial benefits over long-term conservation. Over-commercialization can lead to excessive tourism, physical degradation, and loss of cultural authenticity, while privatization may restrict public access and limit preservation efforts. Additionally, real estate speculation and large-scale developments often result in the destruction or alteration of heritage sites, undermining their historical and cultural value. In July 2021, UNESCO's World Heritage Committee revoked Liverpool's "Maritime Mercantile City" status, making it the third site ever to lose this designation. The Committee cited extensive new developments—including the £5.5 billion Liverpool Waters project and Everton FC's new stadium—as having caused an "irreversible loss" of the area's historic evidence and significantly damaged its authenticity and integrity. This is not only a significant loss for Liverpool's international recognition, but it may also affect the area's eligibility for protection under the 1954 Hague Convention. The loss of World Heritage status could weaken legal arguments for its exclusion from military use during armed conflict—protection that would be especially critical given its proximity to a major port and rail hub.

4.2. Direct human activities[39]

Specific (or deliberate) targeting and damage, including terrorism. A site may be deliberately targeted if it has become a military objective. Political conflicts or regimes may destroy cultural heritage as a means of erasing the cultural identity of an adversary or suppressing dissent. Armed Non-State Actors (ANSAs) also often target cultural heritage sites as a form of performative destruction to achieve political or ideological goals. This deliberate destruction is not only symbolic but also serves to undermine the identity, history, and cultural memory of communities. Long-range weaponry, including missiles, artillery shelling, airstrikes, bombing campaigns, rockets and mortars, ballistic missiles, naval bombardment, and explosives deployed from drones, is increasingly used in modern conflicts and can be directly targeted at cultural heritage sites.

Heritage crime. Heritage crime refers to any illegal activity that harms the cultural, historical, or archaeological significance of a heritage asset. Such crimes not only result in the loss or damage of irreplaceable cultural resources but also undermine the identity, memory, and continuity of communities. Heritage crime can be driven by financial motives, such as the illicit trade in antiquities, or by neglect, ignorance, or even deliberate attempts to erase history.

Arson and tactical flooding. Fire and flood are not only natural hazards but can also be intentionally used as acts of deliberate destruction against cultural heritage. Arson has historically been employed as a tactic in conflict, terrorism, and ideological attacks, targeting culturally significant sites to erase historical narratives or intimidate communities. Similarly, deliberate flooding—through the destruction of dams, the intentional redirection of water sources, or sabotage of infrastructure—has been used as a weapon of war or a means of forced displacement, endangering heritage sites in the process. In such cases, fire and flood are not incidental consequences but deliberate strategies aimed at erasing cultural identity, inflicting psychological damage, or reshaping contested landscapes.

Deliberate reuse of sites. The deliberate reuse of culturally significant sites during armed conflict or military operations can have devastating effects on these heritage assets. This practice often involves the construction of fortifications, trenches, and military installations, as well as the placement of landmines, all of which can lead to physical destruction and long-term degradation of the site. Beyond the direct structural damage, reoccupation can disrupt the cultural and historical context of a heritage site, particularly when new occupants do not recognize or respect its significance. This disruption can alter the site's historical narrative, severing its connection to the community and eroding its cultural value. This differs from military uses of the natural, coastal, and marine environment (indirect human activities), which involve utilizing landscapes, waterways, or coastal areas for strategic purposes—such as training exercises, naval operations, or defensive structures—without necessarily targeting a specific heritage site.

Looting and pillage. Looting is frequently seen as an unfortunate byproduct of armed conflict and environmental disasters, yet it can result in significant and extensive damage on its own. Historical

[39] More on the direct and indirect conflict risks can be found in P G Stone, The Seven Risk of Cultural Property in Conflict, *British Army Review, Special Edition Culture in Conflict* pp.102-113. https://www.army.mod.uk/media/6862/bar_special_culture_conflict_web.pdf

records are replete with instances of victorious armies seizing the cultural property of their defeated adversaries, a practice now referred to as pillage.

Incorrect storage. Inappropriate lighting, ultraviolet (UV) radiation, temperature variations, relative humidity (RH) imbalances, and infrared (IR) radiation can have detrimental effects on cultural properties. Using inappropriate or insufficient packaging materials can also lead to physical damage. Some materials can cause chemical reactions that degrade artefacts, while inadequate cushioning can result in physical stress or breakage.

Distortion of historical narratives and cultural erasure. The manipulation of cultural heritage can take various forms, including appropriation, destruction, or recontextualization, often serving political agendas, asserting control, or influencing national identity. This process can lead to the distortion of historical narratives, the erasure of cultural identities, and the exploitation of heritage for political or financial gain. One significant manifestation of this is historical revisionism, where political entities alter or distort historical accounts to align with contemporary political objectives. This may involve emphasizing certain events or figures while omitting or downplaying others, reshaping collective memory to serve ideological purposes. Such practices not only compromise historical accuracy but also contribute to the marginalization of communities whose histories are rewritten or erased.

Tourism. Tourism challenges include increased human activity, environmental strain, and commercialization of cultural heritage. Social media worsens these issues, as viral posts drive sudden tourist surges. Many heritage sites have been damaged by people taking selfies or engaging in harmful behaviours for online attention. The influx often overwhelms fragile sites, which lack infrastructure to handle such crowds, increasing risks to preservation.

Improper management. Managers may selectively preserve and promote certain cultural heritage sites or practices while neglecting others. This selective approach can reinforce political agendas or marginalised minority cultures.

Inadequate legal frameworks. Inadequate legal frameworks or poor enforcement of existing laws can lead to the exploitation or destruction of cultural heritage.

Institutional neglect. When governmental or organisational bodies responsible for cultural heritage lack the resources, expertise, or commitment to effectively manage and protect heritage sites, these assets can suffer from neglect. Bureaucratic inefficiencies and corruption can exacerbate this problem.

Cyber-attacks. Cyber-attacks pose significant threats to cultural heritage, particularly to institutions that manage digital collections or rely on digital infrastructure. Such attacks can lead to data breaches, loss of access, and even permanent loss of digital heritage assets.

5. Probability of Risks in the UK

This section presents an analysis of the likelihood that various risks will affect cultural heritage assets within the UK. It synthesizes historical data, current trends, and predictive models to estimate the probability of risk events—ranging from environmental hazards to human-induced threats—occurring in different regions. The information provided here is crucial for policymakers, heritage managers, military planners, and risk management professionals, as it enables them to prioritize resources, develop targeted mitigation strategies, and implement appropriate emergency responses. By quantifying risk probabilities, this section helps stakeholders understand which hazards are most likely to occur and how their impacts might evolve over time. This evidence-based approach supports informed decision-making and proactive planning, ensuring that both immediate and long-term vulnerabilities are addressed.

Type of Risk	High risk	Medium risk	Low risk	*Information available up to July 2025*
Environmental risks				
Physical forces[40]				The UK has had more named storms since 2015, with 12 named storms from Storm Agnes in September 2023 to Storm Lilian in August 2024. The UK is getting more rain on average, with about 7% more over the past 30 years than in the previous 30 years. Five of the 10 wettest years for the UK since 1836 have occurred in the 21st century. In England and Wales, over 28% of the coastline experiences erosion of more than 10 cm per year Landslides are a relatively common natural hazard in the United Kingdom, particularly in areas prone to heavy or prolonged rainfall, such as coastal cliffs, upland regions, and unstable river valleys. These events pose a direct threat to heritage sites located in vulnerable landscapes, including historic buildings, archaeological remains, and coastal heritage assets. Sudden ground movement can lead to structural damage, loss of access, or even

[40] Physical forces sources:

https://www.metoffice.gov.uk/blog/2024/looking-back-on-a-storm-laden-season,https://www.metoffice.gov.uk/research/climate/understanding-climate/uk-and-global-extreme-events-heavy-rainfall-and-floods

https://commonslibrary.parliament.uk/research-briefings/cdp-2023-0230/

https://derbymuseums.org/news/flooding-causes-significant-damage-to-the-museum-of-making-in-derby

https://www.researchgate.net/publication/257496895_Landslide_management_in_the_UK-the_problem_of_managing_hazards_in_a_'low-risk'_environment

https://www.researchgate.net/figure/Recorded-fatal-landslides-in-the-UK-categorised-by-type-and-by-the-activity-of-the_tbl1_257496895

https://www.bgs.ac.uk/geology-projects/landslides/landslides-and-rainfall/

https://www.lyellcollection.org/doi/abs/10.1144/egsp29.4

Predictive model

https://www.metoffice.gov.uk/research/approach/modelling-systems/unified-model/weather-forecasting

Type of Risk	High risk	Medium risk	Low risk	*Information available up to July 2025*
				the complete destruction of irreplaceable cultural features.
Changes in temperature[41]				The most recent decade (2014-2023) has been on average 0.42°C warmer than the 1991-2020 average and 1.25°C warmer than 1961- 1990.
Fires[42]				In the year ending March 2023, there were 116,690 outdoor fires in England, which is a 27% increase from the previous year. Fire and rescue services attended 600,324 incidents in the year ending March 2024, a decrease of 3.6% compared with the previous year (622,659). Of these incidents, there were 138,977 fires, which was a decrease of 22% compared with the previous year (178,867). A Register of fires in heritage buildings (2017-2021) indicated high risks.

[41] Changes in temperature sources

https://bluettipower.co.uk/blogs/news/heatwave-warning-uk?cmp_id=21098024795&adg_id=&kwd=&device=c&gad_source=1&gclid=Cj0KCQiA_qG5BhDTARIsAA0UHSKCzA-HihaSmc5oq8ree9nS1F8qLkcd4ceFKoQvVxy9603Mu5bS69YaAg66EALw_wcB

Predictive model:

https://www.metoffice.gov.uk/research/approach/collaboration/ukcp

[42] Fires sources

https://www.gov.uk/government/statistics/detailed-analysis-of-fires-attended-by-fire-and-rescue-services-england-april-2022-to-march-2023/detailed-analysis-of-fires-attended-by-fire-and-rescue-services-england-april-2022-to-march-2023#:~:text=Key%20results.%20In%20the%20year%20ending%20March,9.4%%20decrease%20compared%20with%2010%20years%20ago.

https://www.gov.uk/government/statistics/fire-and-rescue-incident-statistics-year-ending-march-2024/fire-and-rescue-incident-statistics-england-year-ending-march-2024

https://www.fireprotect.me.uk/fires.html

Predictive models: https://www.nature.com/articles/s41467-025-58097-7

https://airqualitynews.com/headlines/the-uk-wildfires-and-the-technology-designed-to-reduce-risk/

https://www.ecmwf.int/en/about/media-centre/news/2025/scientists-present-new-ml-tool-improved-fire-prediction

https://emergency.copernicus.eu/

Type of Risk	High risk	Medium risk	Low risk	*Information available up to July 2025*
Droughts and floods[43]				Summer 2022 was the joint hottest (with 2018) and fifth driest since the 1890s. The drought affected large parts of the country and was the worst in some areas since 1976. However, the UK faces significant and growing flood risks. Recent severe flood events, such as those in early 2025 and throughout 2023– 2024, have caused widespread damage to homes, infrastructure, and public services. Forecasts suggest that by 2050, nearly half of UK roads and over half of its railways could lie within flood-risk zones. The new National Flood Risk Assessment (NaFRA) indicates that approximately 6.3 million properties—both residential and commercial—in England are located in areas at risk of flooding. Human settlement has always been located along rivers which means an increased flooding places sites at risk.
Seismic activity[44]				Although earthquakes are very common in the UK, they are almost never of sufficient magnitude to cause concern. Damage from UK earthquakes would be greatest in historic buildings such as churches, monuments and Victorian or Edwardian terraced housing. In 2007, a very shallow earthquake occurred near Folkestone in Kent. The most damaging UK earthquake occurred in 1884 in Colchester, Essex. The maximum observed

[43] Droughts and Floods sources

https://www.ceh.ac.uk/press/summer-2022-drought-provides-warning-future-years

https://www.gov.uk/government/publications/national-assessment-of-flood-and-coastal-erosion-risk-in-england-2024

https://www.gov.uk/government/publications/national-assessment-of-flood-and-coastal-erosion-risk-in-england-2024/national-assessment-of-flood-and-coastal-erosion-risk-in-england-2024

Predictive models:

https://hess.copernicus.org/articles/28/417/2024/

https://theses.ncl.ac.uk/jspui/handle/10443/4546

https://emergency.copernicus.eu/

[44] Seismic activity sources

https://earthquakes.bgs.ac.uk/earthquakes/recent_uk_events.html

Predictive models:

https://www.globalquakemodel.org/

https://blogs.nvidia.com/blog/quakes-deep-learning-forecasts/

Type of Risk	High risk	Medium risk	Low risk	*Information available up to July 2025*
				intensity for the earthquake was 8 EMS.
Volcanic eruptions[45]				The UK has no active volcanoes, but heritage sites—especially historic buildings—are still at risk from volcanic activity elsewhere, such as in Iceland or mainland Europe. Volcanic ash can travel long distances, affecting air quality and damaging building interiors, ventilation systems, and sensitive materials. While severe structural damage is unlikely, the cumulative effects on heritage infrastructure remain a concern.
Pests[46]				Pest legislation in the UK includes the Prevention of Damage by Pests Act 1949, the Food Safety Act 1990, and the Control of Pesticides Regulations 1986.
Indirect Human Activities				
Collateral and accidental damage in human conflict[47]				The 2025 Strategic Defense Review indicates the UK is preparing for warfighting readiness. This could manifest either through a conflict with the UK, or through a conflict in Europe that results in a NATO deployment for

[45] Volcanic eruptions sources
https://www.geolsoc.org.uk/Education-and-Careers/Ask-a-Geologist/Natural-Hazards/Volcanic-Activity-in-Britain
https://volcanoes.usgs.gov/volcanic_ash/buildings.html
https://gotw.nerc.ac.uk/list_full.asp?pcode=NE%2FM008878%2F1&classtype=Science+Topic&classification=Energy+%2D+Nuclear&cookieConsent=A

[46] Pests sources
https://www.english-heritage.org.uk/siteassets/home/learn/conservation/science/serpentine/insect-pests-historic-houses-poster.pdf
https://historicengland.org.uk/advice/technical-advice/parks-gardens-and-landscapes/pests-and-diseases/
Predictive models:
https://www.tandfonline.com/doi/abs/10.1080/19455224.2024.2347205
https://planthealthportal.defra.gov.uk/assets/uploads/PestRiskWebTool-2Page-FINAL.pdf

[47] Collateral and accidental damage sources
https://assets.publishing.service.gov.uk/media/683d89f181deb72cce2680a5/The_Strategic_Defence_Review_2025_-_Making_Britain_Safer_-

Type of Risk	High risk	Medium risk	Low risk	*Information available up to July 2025*
				the purpose of collective defence, which the UK would be a part of. UK armed forces are provided with coordinates of all UK sites "of great importance"; however, religious buildings that are not Grade 1/A listed; scheduled monuments that are not in World Heritage Sites; all Grade II or II* listed buildings are excluded, as are shipwrecks. In the event of armed conflict, it is unclear if or how coordinates would be provided to opponent forces. Although data relating to protected buildings in the UK's four nations is easily available online, an opposing force may not seek it out (though most major powers are signatories to the 1954 Hague Convention and have a legal obligation to do so). Conflict is increasingly occurring in urban environments, placing UK heritage at significant risk. Several heritage sites, such as the Mary Rose at Portsmouth Historic Dockyards—located beside an active naval base—are situated in dual-use areas. Yet, most UK heritage sites remain unprepared for conflict scenarios and lack the necessary training and expertise to respond effectively.
Military uses of the natural environment, including coastal and marine[48]				*Helicopter Training.* Throughout the UK, designated exercise zones are mapped and pre-selected by the Elite UK Forces Mobile Air Operations Team (MAOT) to ensure they meet safety and suitability standards as helicopter landing sites. Internationally, operational dynamics vary due to host-nation factors; however, a reconnaissance mission is always conducted prior to any landing or assault to assess conditions on the ground. *Adventurous Training* (UK Mainland and Coastal Areas). Personnel leading adventurous training activities, such as mountaineering or coastal kayaking, are required to submit formal documentation to obtain clearance

secure_at_homestrong_abroad.pdf

https://www.gov.uk/government/publications/protection-of-cultural-property-in-the-event-of-armed-conflict

Predictive models:

https://www.turing.ac.uk/about-us/impact/predicting-conflict-year-advance

https://viewsforecasting.org/

[48] Military uses of the environment sources

Expert sources.

Type of Risk	High risk	Medium risk	Low risk	*Information available up to July 2025*
				and insurance. Activities must undergo reconnaissance to verify route feasibility and identify hazards. Despite being located on public land, Defence Land Clearance is necessary, ensuring all proposed routes are risk-assessed and approved with designated escape paths. In Scotland, additional permission from landowners is often required, which can be time-consuming despite the general right to roam afforded to civilians. *Military Exercises on Private Land.* Pre-approved private landing sites are used for military training, established through agreements with local landowners. Before inclusion, sites are inspected by the Mobile Air Operations Team (MAOT) to ensure suitability. Landowner consent is sought for each individual use, with access potentially denied due to agricultural activities such as lambing. Training schedules rotate across different locations to distribute aircraft noise impact. *Military Training on MOD Estates.* Training on Ministry of Defence (MOD) estates is coordinated via Defence Estates and Landmarc. Access is subject to availability within the range booking system, and strict adherence to range regulations is required. For exercises simulating dynamic operations, multiple sites may be booked. Special provisions are enforced on environmentally and culturally sensitive locations, such as Salisbury Plain, including prohibitions on digging and mandatory provision of sanitation facilities. Range staff oversee compliance to protect heritage and environmental assets. *Mountain Flying Operations*. In mountainous terrain, airspace is constrained and shared by multiple aircraft types. Consequently, 'Low Flying Booking' procedures must be followed to prevent collisions. For instance, in Snowdonia, the nearest air station is notified of flight timings, routes, and landing sites. Upon completion, bookings are closed with detailed activity reports submitted. Liaison Officers ensure appropriate coordination with civil and military authorities. *Coastal Military Exercises*. Coastal training operations, a complex domain overseen by Plymouth Military, require strict coordination with civilian authorities. When pyrotechnics are used over maritime areas, the Coastguard must be notified both prior to and following the exercise to prevent unintended emergency responses, such as lifeboat deployment. These coastal zones are integral to the training of Wildcat and MK2 ASW Merlin aircrews, who may deploy ordnance or sonar buoys during operations. Nautical charts are consulted to identify shipwrecks, which are factored into both safety protocols and tactical scenarios, as

Type of Risk	High risk	Medium risk	Low risk	*Information available up to July 2025*
				adversaries may use such wrecks for concealment— particularly submarines. Environmental considerations are central to planning: the presence of marine life, including migratory species such as whales, is assessed before any activity involving sonar. Appropriate measures are taken to mitigate potential harm to these ecosystems. Additionally, maritime waste disposal is strictly regulated. Naval vessels are prohibited from discarding refuse at sea; instead, all waste is compacted onboard and retained until it can be properly offloaded ashore. *Unplanned Landings*. Unscheduled landings, such as those prompted by technical issues or medical evacuations (CASEVAC), are known as 'downbirds.' In cases where damage occurs—e.g., rotor wash impacting property—Significant Occurrence Notifications (SON) are filed and escalated through the chain of command. Emergency landings due to adverse weather are rare but possible. *Use of Civilian Facilities*. Civilian landing sites, including hospitals, may be utilised for training to maintain pilot familiarity. Permissions are obtained in advance from site owners. However, in the event of an armed conflict, armed forces are not provided with the locations of: natural world heritage sites; areas of outstanding natural beauty, sites of special scientific interest; protected wetlands, or other important natural areas, placing them at high risk.
Lack of military awareness[49]				A considerable amount of heritage has been damaged and destroyed simply because the armed forces were not aware of it, or of its importance. This is also an issue during disaster response, where first responders, for example, have cleared away the remains of damaged cultural heritage sites that could have been saved. The UK is significantly better prepared than many countries: the UK has implemented article 7 of the 1954 Hague Convention and has a specialist unit (the Cultural Property Protection Unit) who complete and conduct regular training in CPP. Cultural sites are uploaded and shared with the MoD to use in military systems. Training exercises sometimes include CPP.

[49] Lack of military awareness sources
https://www.ukblueshield.org.uk/lack-of-awareness.html

Type of Risk	High risk	Medium risk	Low risk	*Information available up to July 2025*
				However, many other states are significantly less prepared.
Lack of planning[50]				If cultural property protection is not identified as an issue either before an armed conflict, or when prioritising activity following an environmental disaster, no resources will be allocated to it. No preparations will be made for its protection (such as practising emergency evacuation in museums), and no military unit will be allocated any responsibility for it. Although the UK armed forces has a good level of CPP planning, and has developed a specialist unit, the current unit is significantly smaller than originally planned. The low staff numbers will not be able to support CPP across the entirety of the UK. At the 2025 Blue Shield symposium, attended by heritage professionals from multiple major institutions and heritage organisations, it was clear that (with very few exceptions) the UK heritage sector has not adequately planned and prepared for conflict.
Enforced neglect[51]				Examples of enforced neglect have emerged during events such as the COVID-19 pandemic, when prolonged site closures disrupted conservation schedules, climate control, and security at museums and historic buildings.
Development[52]				In total 11 city regions of the UK had over 27 million residents in 2015, over 40% of the total UK population of 65

[50] Lack of planning sources

https://www.ukblueshield.org.uk/lack-of-planning.html

https://collectionstrust.org.uk/accreditation/organisational-health/assessing-and-managing-risk/security-risk-assessment/

[51] Enforced neglect sources

https://committees.parliament.uk/writtenevidence/6909/pdf/

[52] Development sources

https://www.legislation.gov.uk/uksi/2017/571/contents

https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF_December_2024.pdf

https://www.gov.uk/government/publications/trend-deck-2021-urbanisation/trend-deck-2021-urbanisation

Type of Risk	High risk	Medium risk	Low risk	*Information available up to July 2025*
				million. Population projections from 2015 to 2025 show city regions have a percentage growth rate of 7.6% compared to the UK growth rate of 6.7%.. Town and Country Planning (Environmental Impact Assessment) Regulations and the National Planning Policy Framework. Historic England offers advice for reusing the historic environment in development to ensure good practice. Planning legislation includes a requirement to consider the historic environment, providing a balance of development and preservation.
Mining[53]				185.9 million tonnes of minerals were extracted from the UK landmass for sale in 2022. A further 91.3 million tonnes, consisting mainly of oil and gas (oil equivalent), but also marine–dredged sand and gravel, were extracted from the UK Continental Shelf.

https://historicengland.org.uk/advice/planning/housing/

https://www.gov.uk/guidance/conserving-and-enhancing-the-historic-environment

[53] Mining sources

https://www.data.gov.uk/dataset/e9b35aa7-0daa-4233-933c-588ec940f249/united-kingdom-mineral-statistics

https://www.gov.uk/guidance/dredging#dredging-by-type

https://committees.parliament.uk/writtenevidence/55721/pdf/https://www.responsibleminingfoundation.org/media/heritage-lost-to-mining-a-collective-responsibility/

https://historicengland.org.uk/advice/planning/mineral
-extraction/hydraulic-fracturing/

https://historicengland.org.uk/advice/planning/mineral
-extraction/impacts/

https://www.nationaltrust.org.uk/who-we-are/about-us/our-view-on-fracking

Predictive model

https://www.nature.com/articles/s41598-025-99869-x#:~:text=The%20probability%20integral%20model%20(PIM)%20is%20one%20of%20the%20most,model%20on%20the%20macro%20level.

Type of Risk	High risk	Medium risk	Low risk	*Information available up to July 2025*
				Mining, quarrying and fracking can have major impacts on the Historic Environment and natural environment. Globally, many mining companies will not commit to not mine WH Sites. However, in the UK, licensing Processes should include Environmental Impact Assessments and reference to the relevant heritage registers. However, these only detect known sites, not buried sites that are yet to be discovered, which may be at high risk. Some major organisations, like the National Trust, oppose processes like fracking, due to the impact. Their concerns are not only environmental but also cultural and social, as fracking can lead to landscape degradation, the disruption of heritage sites, and the erosion of community identity and well-being.
Pollutants[54]				A survey of over 170 heritage institutions conducted under the MEMORI project examined indoor air pollution, particularly the effects of acetic acid on heritage materials. The project developed a dosimeter, reader, assessment method, and decision-support model. Findings showed that only 13% of institutions conducted pollutant monitoring, and 12% carried out materials testing, despite attributing over 36% of observed damage to airborne pollutants. Reasons for not monitoring included lack of knowledge (57%), insufficient funding (54%), and limited staff capacity (46%). Although in some countries high levels of pollutants are corroding historic buildings, the levels in the UK are comparatively low.

[54] Pollutants sources
https://www.mdpi.com/2571-9408/6/10/361https://discovery.ucl.ac.uk/id/eprint/2443/1/2443.pdf
https://scispace.com/pdf/the-effects-of-air-pollution-on-cultural-heritage-2mvp66fj11.pdf
Predictive models
https://www.nature.com/articles/s41598-024-57784-7#:~:text=Data%2Ddriven%20methods%20are%20increasingly,regression%20model%20(MLR)3.
https://www.nature.com/articles/s41598-023-48409-6

Type of Risk	High risk	Medium risk	Low risk	*Information available up to July 2025*
Dissociation[55]				In 2024, 16% of people in the UK, which has a total estimated population of 66.9 million, were born abroad. In the UK, dissociation from culturally significant places is a common experience among migrant communities, many of whom arrive with deep attachments to heritage sites, rituals, and landscapes from their countries of origin. The UK is home to around 2,500 museums, housing over 200 million objects—around 130 million of which are held in national museums. Recent studies suggest this figure may be an underestimate. A significant portion of these collections remain un-inventoried or lack digital records. The British Museum thefts—where an employee stole around 1,500 unregistered Greek and Roman items between 1993 and 2022—highlight the risks. In a crisis, undigitised or incomplete records could lead to collections being separated from their documentation. Initiatives like the Museums Data Service now aim to connect and standardise museum records nationwide.
Agriculture[56]				The Utilised Agricultural Area (UAA) decreased by 2.3% and was 17 million hectares, covering 70% of land in the UK. The total croppable area saw little change and was 6.1 million hectares.

[55] Dissociation sources
https://migrationobservatory.ox.ac.uk/resources/briefings/migrants-in-the-uk-an-overview/
https://www.tandfonline.com/doi/full/10.1080/23311886.2025.2474739
https://www.culturehive.co.uk/wp-content/uploads/2020/10/MA-collections-love-museums-1.pdf
http://file///C:/Users/MaryStone/Downloads/British_Museum_announces_completion_Independent_Review.pdf
https://museumdata.uk/

[56] Agriculture sources
https://www.gov.uk/government/statistics/agriculture-in-the-united-kingdom-2023/summary
https://www.theheritagealliance.org.uk/wp-content/uploads/2021/01/Looking-after-our-landscapes-post-Brexit.pdf
https://www.devon.gov.uk/historicenvironment/land-management/farming-and-the-historic-environment/

Type of Risk	High risk	Medium risk	Low risk	*Information available up to July 2025*
				Rural heritage is under great pressure, as new ways of farming impact it. Many historic and archaeological sites are well preserved under permanent pasture, with appropriate stocking levels. However some farming practices inevitably have an impact on the Historic Environment. Often this can be because the landowner is not aware of the archaeological remains, or the effect of even shallow cultivation on below-ground archaeology. Cultivation has been assessed as the single biggest hazard facing monuments.
Political and Social instability[57]				The index of Political Stability and Absence of Violence/Terrorism measures perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism The latest value of political stability in the UK from 2023 is 0.51 points, a decline from 0.53 points in 2022. In comparison, the world average is -0.06 points, based on data from 193 countries. Historically, the average for the United Kingdom from 1996 to 2023 is 0.48 points. The minimum value, 0.08 points, was reached in 2018 while the maximum of 1.03 points was recorded in 2000. Riots during Brexit along the Irish border indicate tensions remain. Recent protests, such as the toppling of statues during the Black Lives Matter movement, demonstrate how monuments can become flashpoints in societal conflict.
Economic pressures[58]				The UK heritage sector receives funding from various sources, primarily through the National Lottery Heritage

[57] Political and social instability sources

https://www.theglobaleconomy.com/United-Kingdom/wb_political_stability/

https://lordslibrary.parliament.uk/targeting-culture-the-destruction-of-cultural-heritage-in-conflict/

Predictive models:

https://pmc.ncbi.nlm.nih.gov/articles/PMC8321219/

https://viewsforecasting.org/

https://www.turing.ac.uk/about-us/impact/predicting-conflict-year-advance

[58] Economic pressures sources

https://historicengland.org.uk/research/heritage-counts/indicator-data/funding-resources/

Type of Risk	High risk	Medium risk	Low risk	*Information available up to July 2025*
				Fund, which distributes grants from National Lottery player funds. Grants range from £10,000 to £10 million and support diverse heritage projects across the UK. Other key funding sources include the Department for Culture, Media and Sport (DCMS) and the National Heritage Memorial Fund (NHMF). Local Authority expenditure on services for the historic environment has significantly decreased (-47%) since 2009/2010. In 2025 DCMS received a significant cut to its budget.
Globalization and Cultural Homogenization[59]				The overall index of globalization covers the economic, social, and political dimensions of globalization. Higher values denote greater globalization. The latest value of overall globalization in the UK from 2022 is 87.95 points, a decline from 88 points in 2021. In comparison, the world average is 61.23 points, based on data from 190 countries. Historically, the average for the United Kingdom from 1970 to 2022 is 82.65 points. The minimum value, 68.02 points, was reached in 1970 while the maximum of 89.97 points was recorded in 2017.
Educational gaps[60]				School education includes significant amounts of UK history, ensuring all children are familiar with history. Many schools carry out museum and site visits to engage children in heritage. However, gaps in study remain. Since 2012 Historic England has managed a Heritage School programme, funded by the Department for Education. The programme aims to ensure that school children develop an understanding of their local heritage and its significance. Since its inception 10 years ago, the programme has engaged over 1.5 million young people with their local heritage, providing better access to heritage to pupils in almost 2000 schools in some of the most deprived areas of England

Predictive model

https://www.bis.org/publ/work1250.htmhttps://www.museumsassociation.org/museums-journal/news/2025/06/spending-review-reveals-cut-to-dcms-budget/

[59] Globalization and Cultural Homogenization sources

https://www.theglobaleconomy.com/United-Kingdom/kof_overall_glob/

[60] Educational gaps sources

https://historicengland.org.uk/content/docs/education/impact-heritage-schools-programme-2022/

Type of Risk	High risk	Medium risk	Low risk	*Information available up to July 2025*
Alteration of cultural landscape[61]				£164bn planned investment between 2023/24 and 2024/25 in major infrastructure and construction projects in the UK. Planning legislation includes a requirement to consider the historic environment, providing a balance of development and preservation
Human speculative activities[62]				A new report by the Institute for Public Policy Research highlights that speculative land practices and weak strategic planning are undermining sustainable development in England. Since 2007, developers have secured planning permission for over 1.4 million homes, yet many remain in the planning phase due to strategic delays aimed at increasing land value.
Direct human activities				
Specific (or deliberate) targeting and damage, including terrorism[63]				It is an offence under UK law for armed forces to deliberate damage a cultural heritage site without military necessity. However, evidence from recent global conflicts indicates that the deliberate targeting of cultural sites has become a strategic weapon of war. Given the reach of long range weaponry, and the dual use of

[61] Alteration of cultural landscape sources

https://www.gov.uk/government/publications/national-infrastructure-and-construction-pipeline-2023/analysis-of-the-national-infrastructure-and-construction-pipeline-2023-html

https://www.gov.uk/guidance/conserving-and-enhancing-the-historic-environment

[62] Human speculative activities sources

https://www.ippr.org/media-office/revealed-1-4-million-homes-left-unbuilt-by-developers-since-2007

https://whc.unesco.org/en/news/2314#:~:text=The%20World%20Heritage%20Committee%2C%20holding,universal%20value%20of%20the%20property.https://www.bbc.co.uk/news/uk-england-merseyside-57879475

[63] Specific damage, targeting, terrorism, sources

Type of Risk	High risk	Medium risk	Low risk	*Information available up to July 2025*
				many sites (e.g., Houses of Parliament / Westminster WH Site) the risk of deliberate targeting in conflict is high. When expanded beyond inter-state war to include internal unrest and ideological clashes, the risks to heritage increase. Riots during Brexit along the Irish border indicate tensions remain. Recent protests, such as the toppling of statues during the Black Lives Matter movement, demonstrate how monuments can become flashpoints in societal conflict. Planned attacks on St Paul's Cathedral and the British Museum demonstrate the likelihood of sites being targeted.
Heritage crime[64]				Heritage crime is any offence which harms the value of heritage assets and their settings. An estimated 18.7% of all listed buildings in the UK were physically affected by crime last year. That is over 70,000 listed buildings. For almost 30,000 listed buildings the impact was substantial.
Arson and tactical flooding[65]				Given the significant risk posed by arson, courts in England and Wales take the full impact of arson or criminal

https://lordslibrary.parliament.uk/targeting-culture-the-destruction-of-cultural-heritage-in-conflict/

https://www.ingentaconnect.com/content/mcb/jchmsd/2021/00000013/00000002/art00010

[64] Heritage crime sources

https://historicengland.org.uk/advice/caring-for-heritage/heritage-crime/definition/

Predictive Models:

https://www.turing.ac.uk/about-us/impact/predicting-conflict-year-advance

https://viewsforecasting.org/

https://www.sciencedirect.com/science/article/pii/S2405844023061030

https://iopscience.iop.org/article/10.1088/1742-6596/2577/1/012007

[65] Arson and tactical flooding sources

https://historicengland.org.uk/whats-new/news/new-sentencing-guidelines-damage-heritage-cultural-assets/

Predictive Models

Type of Risk	High risk	Medium risk	Low risk	*Information available up to July 2025*
				damage—such as vandalism—on national heritage assets into account, including listed buildings, historic artefacts, and irreplaceable elements of the historic environment. The considerations were introduced through new sentencing guidelines issued by the Sentencing Council, which came into effect on 1 October 2019. Tactical flooding refers to the deliberate manipulation or destruction of water infrastructure—such as dams, levees, or rivers—with the intent to cause large-scale disruption, environmental devastation, or civilian displacement. This strategy has been employed historically, such as during World War II when dams were breached to flood industrial zones, and it continues to be used in modern conflicts, as seen in recent cases where flooding has been deliberately triggered to gain military or political advantage.
Deliberate reuse of sites[66]				As of 2024, there are 5000 structures in the UK recorded on Historic England's Heritage at Risk Register, 30% of which are buildings and structures. Finding a new use for these sites presents one of the best opportunities to remove them from the 'At Risk' list and protect them. Two of the biggest groups on the 'At Risk' register are industrial buildings and places of worship. The UK is significantly better prepared than many countries: the UK has implemented article 7 of the 1954 Hague Convention and has a specialist unit (the Cultural Property Protection Unit) who complete and conduct regular training in CPP. Cultural sites are uploaded and shared with the MoD to use in military systems, and may only be used in cases of military necessity. Training exercises sometimes include CPP. However, in the event of an armed conflict, armed forces are not provided with the locations of: natural world heritage sites; areas of outstanding natural beauty, sites of special scientific interest; protected wetlands,

https://www.nature.com/articles/s41467-025-58097-7

https://www.ecmwf.int/en/about/media-centre/news/2025/scientists-present-new-ml-tool-improved-fire-prediction

https://emergency.copernicus.eu/https://sosresponds.org/blog/water-and-conflict/?utm

[66] Deliberate reuse of sites sources

https://www.archaeologyuk.org/resource/reusing-large-industrial-sites-big-budget-projects.html

Type of Risk	High risk	Medium risk	Low risk	*Information available up to July 2025*
				or other important natural areas, placing them at high risk. Further, the UK already possesses several dual use sites, for example, the Mary Rose at Portsmouth Historic Dockyards is adjacent to the current naval base. The boundaries of Stonehenge World Heritage site also contain a military garrison, etc.. However, in general, the UK is not likely to deliberately reuse many cultural sites.
Looting and pillage[67]				Historic England and the National Police Chiefs' Council (NPCC), members of the Alliance to Reduce Crime Against Heritage (ARCH), released a study on heritage and cultural property crime in England. Funded by Historic England and conducted by Opal analysts between 2020 and 2023, the research showed that what began as an illicit hobby has grown into a semi-professional criminal industry. The assessment identified a range of threats to the historic environment, including theft of historic lead and stone, high-value burglaries, unlawful metal detecting (nighthawking), and the illegal removal of artefacts from protected wreck sites. Historic England found that in 2024[*] an estimated 18.7% of all listed buildings were physically affected by crime last year. That is over 70,000 listed buildings. For almost 30,000 listed buildings the impact was substantial. The biggest single threat is metal theft and the most threatened type of building is a church. About 3 in 8 churches or other religious buildings were damaged by crime last year. [* the website indicates "last year", but is undated. 2024 is an assumption]
Incorrect storage[68]				Many materials which may seem suitable for storage or display purposes can cause serious damage to museum collections. They can cause corrosion, discolouration or deterioration of objects, either because they

[67] Looting and pillage sources

https://historicengland.org.uk/whats-new/news/heritage-crime-research-findings-revealed?utm_

https://historicengland.org.uk/advice/caring-for-heritage/heritage-crime/definition/

[68] Incorrect storage sources

https://collectionstrust.org.uk/wp-content/uploads/2016/11/Museums-Galleries-Scotland-Advice-Sheet-The-effects-of-storage-and-display-materials-on-museum-objects-March-2009.pdf

Type of Risk	High risk	Medium risk	Low risk	*Information available up to July 2025*
				give off harmful vapours or because they are in direct contact with the museum object. These processes of corrosion, discolouration and deterioration are speeded up by high temperature and/or high humidity levels. In order to obtain accreditation, institutions must have correct storage.
Distortion of historical narratives and cultural erasure[69]				A 2020 YouGov poll found that only 32% of Britons believe the empire was more something to be ashamed of than proud of, reflecting persistent gaps in public understanding. The national curriculum has also been criticised for marginalising colonial history; a 2021 report by The Black Curriculum revealed that only 11% of GCSE history students studied modules that referred to the British Empire. The persistent debates about statutes of colonial figures, often involved in activities like slavery, indicate the complexity of the issue. UK Gov brought in new legislation: the 'Retain and explain' policy will see assets kept in place, accompanied by an explanation of their historical context. It supplies to custodians of all public memorials, including statues, monuments and commemorations. Some argue that retaining them erases the harm these figures did, which cannot be adequately captured by a brief panel: others argue that to remove them is also a form of erasure.
Tourism[70]				In 2023, inbound tourist visits in the UK totalled approximately 38 million, which was over 20 percent higher

[69] Distortion of historical narratives and cultural erasure sources
https://yougov.co.uk/society/articles/51483-british-attitudes-to-the-british-empire
https://theblackcurriculum.com/research

[70] Tourism sources
https://commonslibrary.parliament.uk/research-briefings/sn06022/
Predictive Model:
https://www.strath.ac.uk/workwithus/innovationentrepreneurship/casestudies/predictiveanalyticsfortourism/

Type of Risk	High risk	Medium risk	Low risk	*Information available up to July 2025*
				than the previous year. Heritage tourism supported over 1.1 percent of UK GDP. In order to manage visitor numbers, and preserve sites, many UK sites have ticketed entry with capped numbers.
Improper management[71]				Improper management occurs when decisions about what to protect, restore, or promote are based not on historical, cultural, or scholarly merit, but on political expediency, tourism economics, or nationalist ideologies. UK heritage sites are subject to management legislation, and high accreditation standards.
Inadequate legal frameworks[72]				The UK has robust legislation for listed buildings and scheduled monuments, museum collections, and intangible cultural heritage. Heritage impact assessments are a required part of planning legislation.However, gaps remain in enforcement and in addressing emerging threats such as climate change and illicit online trade. Notably, the UK has not ratified the 2001 UNESCO Convention on the Protection of the Underwater Cultural Heritage.
Institutional neglect[73]				*Physical neglect*: Inadequate maintenance of sites or collections, allowing decay or vandalism.

https://www.heritagefund.org.uk/sites/default/files/media/research/20160927_-_the_impact_of_heritage_tourism_on_the_uk_economy_-_final_repo.pdf

[71] Improper management sources

https://www.routledge.com/Uses-of-Heritage/Smith/p/book/9780415318310?srsltid=AfmBOory6BQGghh6HUpNp-szHUe1sRUQSkr5QkttXYQWy4nMqvXAtHmr

[72] Inadequate legal frameworks sources

https://www.unesco.org/en/underwater-heritage/2001-convention

https://uclpress.co.uk/book/heritage-futures/

[73] Institutional neglect sources

Type of Risk	High risk	Medium risk	Low risk	*Information available up to July 2025*
				Legal neglect: Absence or poor enforcement of protective legislation. *Financial neglect:* Insufficient allocation of funding or resources for conservation. *Administrative neglect:* Lack of institutional capacity, expertise, or coordination. *Symbolic neglect:* Failure to acknowledge or include certain communities' heritage, often tied to marginalised groups.
Cyber-attacks[74]				Cyberattacks on cultural heritage institutions—such as museums, libraries, and archives—have surged in recent years, posing significant threats to digital collections and public trust. In 2023, the British Library experienced a major ransomware attack that disrupted its digital services for months and exposed sensitive staff data, including passport scans, which were later offered for sale on the dark web. Leeds Armouries was likewise compromised.

https://www.tandfonline.com/doi/full/10.1080/13533312.2025.2481470?src=

https://www.fireriskheritage.net/analysis-of-risks-and-solutions-for-cultural-heritage/safeguarding-cultural-heritage-in-the-face-of-global-challenges-a-brief-examination-of-the-main-risks-in-2023/

[74] Cyber-attacks sources

https://blog.degruyter.com/cyberattacks-on-cultural-heritage-institutions/

Predictive Models

https://www.allstarsit.com/blog/ai-in-developing-predictive-models-for-cyber-threats

https://www.sciencedirect.com/science/article/pii/S0957417423021012

https://brandefense.io/blog/sector-analysis/how-to-use-predictive-analytics-to-thwart-cyber-attacks/

6. Conclusions

This document has sought to identify both historical and emerging threats to cultural heritage within the United Kingdom, and to assess their potential impact on the preservation of tangible and intangible assets. Through a comprehensive analysis of environmental, social, political, and institutional risks, it provides a framework for understanding the evolving challenges that affect heritage sites and narratives across the country.

The purpose of this assessment is to support the development of targeted strategies aimed at the effective protection and sustainable management of cultural heritage. The findings presented here offer critical insights for informing risk management policies, guiding mitigation priorities, and reinforcing long-term conservation efforts. Special attention has been given to issues such as educational gaps, the underrepresentation of minority histories, symbolic neglect, and the effects of climate change and development pressures.

These have been the main conclusions drawn from the research, which together form a basis for action to safeguard the UK's cultural heritage now and for future generations:

- **Environmental vulnerability is increasing.** Climate-related risks such as flooding, erosion, and extreme weather events are on the rise. The UK experienced 12 named storms between 2023–2024, and over 28% of the coastline is retreating at rates greater than 10 cm per year. Historic buildings and landscapes are increasingly exposed to such hazards, including the Museum of Making in Derby, which sustained severe flood damage in 2023.
- **Indirect human activity poses persistent threats.** Military training, development, and tourism contribute to landscape change and potential damage to archaeological and historic sites, particularly when planning does not incorporate cultural property protection. Heritage is also at risk during civil unrest and protests, as seen in the targeting of monuments during the Black Lives Matter movement.
- **Deliberate human actions are a growing concern.** Heritage crime, including theft, vandalism, looting, and arson, continues to threaten protected assets. Over 70,000 listed buildings in the UK were affected by crime last year, with nearly 30,000 suffering substantial damage. Metal detecting and illicit trade in artefacts have become semi-professional criminal activities.
- **Institutional and legal gaps undermine heritage protection.** Inadequate funding, enforcement gaps, and lack of preparedness, such as failure to plan emergency responses for disasters, leave heritage sites vulnerable. Although the UK has strong legal frameworks for listed sites, it has yet to ratify the 2001 UNESCO Convention on the Protection of the Underwater Cultural Heritage, signalling a gap in international alignment.
- **Cultural erasure and narrative distortion persist.** Educational curricula often overlook diverse historical perspectives, with limited coverage of global histories and the contributions of marginalised communities. As a result, dominant narratives continue to shape public understanding, contributing to the symbolic neglect and exclusion of minority voices from the broader national story.
- **Global pressures amplify risks.** Urbanisation, mining, pollution, and speculative land practices threaten both tangible and intangible heritage. The UK's heritage infrastructure faces cumulative pressure from economic, political, and social instability, ranging from

insufficient local authority funding (down 47% since 2010) to cyber-attacks like the 2023 British Library ransomware breach.