



Risk assessment

Step 2 - Establish hazards and impacts



Establish hazards and impacts

Now that a historic place is selected, environmental hazards and associated impacts which might affect the historic place have to be identified. Climate drivers influencing the hazards will also be examined, to help understand the effects of climate change on the historic place.

Climate change is understood as longer-term changes in geological, hydrological and meteorological patterns.



Establish hazards and impacts

Difference between hazard and risk





Establish hazards and impacts

Impacts



Defined
circumstances
=

Specific effect
the hazard
can cause



Example Threave Castle

Hazard
Fluvial flooding

Impact
Castle walls soaked
by flood water

Risk
very high



Example Threave Castle

Hazard
Fluvial flooding

Impact
Castle gets completely
washed away

Risk
very low



Group work – Conservation challenges past and future

Please discuss in your groups the following questions and note the answers in your workbook:

Which damage events and deterioration processes have affected the seminar's case study in the recent past?

Which environmental hazards are associated with these impacts or might affect the case study in future?

Which climate drivers do foremost influence the hazards / impacts?



Climate data

Sources for national climate information can be found listed in the Adapt Northern Heritage tool *Information Sources*.



Group work – Conservation challenges past and future

Reviewing the notes in your group workbook,

Please amend any hazards / impacts, based on the climate data just presented.



Risk assessment

Step 3 - Analyse and rate risks



Analyse and rate risks

Once environmental impacts and hazards are established, the risks to our historic place has to be analysed.

In order to establish inherent risks, likelihood of impacts occurring and their severity will be considered. Assigning numerical ratings, a risk matrix will be used to rank the risks.

All results will be captured in a *Risk Register*.



Analyse and rate risks

Inherent risk is...

Severity if impact occurred



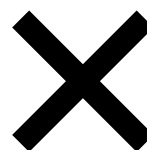
Impact likelihood



Analyse and rate risks

First, calculate severity as matrix of impact intensity and vulnerability.

Rating scale for impact intensity	
Rating	Description for damages and deterioration respectively <i>The impact can cause...</i>
0 Insignificant	<i>...only negligible deterioration, even over a period of several decades</i>
1 Minor	<i>...minor damage in one day ...minor deterioration in a year</i>
2 Moderate	<i>...moderate damage in a day or progressively minor damage in a few days ...moderate deterioration caused in a year</i>
3 Major	<i>...major damage in a day or progressively minor or moderate damage in a few days ...major deterioration in a year</i>
4 Extreme	<i>...extreme damage in a day or progressively moderate or major damage in a few days</i>



Rating scores for vulnerability	
Rating	Description
0 Negligible	Can withstand the impact
1 Slight	Can mostly withstand the impact, with only minor damage/deterioration
2 Moderate	Can withstand the impact, with some damage/deterioration
3 Severe	Can hardly withstand the impact, with major damage/deterioration and/or some collapse/destruction
4 Extreme	Cannot withstand the impact, with collapse/destruction/loss

Analyse and rate risks

Inherent risk can then be calculated as matrix of severity and likelihood.

Inherent risk rating matrix						
Severity rating	4	0	4	8	12	16
	3	0	3	6	9	12
	2	0	2	4	6	8
	1	0	1	2	3	4
	0	0	0	0	0	0
		0	1	2	3	4
		Likelihood rating				

Rating scores for impact likelihood		
Rating	Description of impact likelihood	Examples of damage and deterioration
0 Essentially impossible	Annual chance of less than 0.2%	Damage caused by 1000-year flood
1 Very likely	Annual chance of 0.2% or more	Damage caused by 200- or 500-year flood
2 Unlikely	Annual chance of 1% or more	Damage caused by 50- or 100-year flood
3 Likely	Annual chance of 5% or more	Damage caused by 10- or 20-year flood
4 Very likely	Annual chance of 20% or more	Damage caused by 2- or 5-year flood



Example Threave Castle

Hazard
Fluvial flooding

Impact
Castle walls soaked
by flood water

Risk
3 (severity) x 4
(likelihood) = 12



Example Threave Castle

Hazard
Fluvial flooding

Impact
Castle gets completely
washed away

Risk
3 (severity) x 1
(likelihood) = 3



Group work – Calculating and prioritising risk

Using the provided matrixes, please identify the place's vulnerability and impact intensity to a hazard to calculate its severity.

Using the resulting severity, please calculate the inherent risk rating.

Finally, please rank your risks, from high to low.

Considering the climate projections which have been presented to you, please re-calculate the risk for hazards chosen in the previous exercise, for 50 years from now.



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With support from



**Northern Periphery and
Arctic Programme**

2014–2020



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