

# Climate Risk Management Plan

to assess historic places for climate change impacts and associated adaptation planning

Singular historic place

Name of place

Ballinskelligs Castle



*Figure 1 Aerial photograph of Ballinskelligs Castle, County Kerry Ireland*

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Assessment details	
Names and affiliations of assessors	Michael Connolly (Kerry County Council) Carsten Hermann & Vanessa Glindmeier (Historic Environment Scotland)
Version number of assessment	V1.0 DRAFT
Date of completion of assessment	29 May 2020
Assessment type	<input checked="" type="checkbox"/> Advanced Level <input type="checkbox"/> Standard Level
Comments on assessment process	Thank you to all attendees of the workshops in Ballinskelligs in the summers 2018 and 2019 and all other contributors to and reviewers of this Climate Risk Management Plan.

# EXECUTIVE SUMMARY

## Overview Historic Place/Group of Historic Places/Place Categories

Name of historic place / place category to be analysed	
Ballinskelligs Castle	
Description of historic place / place category and its wider surroundings	
Brief description of historic place / place category	Ruin of tower house dating from 15 <sup>th</sup> /16 <sup>th</sup> century; upstanding masonry, unroofed
Brief description of place's immediate surroundings	beach west and towards historic Ballinskelligs Abbey/Priory to south, sea and water to north and east.
Brief description of places' wider environs	<p>The place is situated on an isthmus stretching out into Ballinskelligs bay on its western shoreline, which opens in the southwest to the Atlantic Ocean. The direct view of the place to the ocean is obstructed by Horse Island, forming a barrier to south-westerly storms.</p> <p>Erosion prompted excavation of the site in 1988 and 1991, uncovering some archaeological finds.</p> <p>The place lies within a Special Area of Conservation, namely Ballinskelligs Bay and Inny Estuary.</p>
Cultural heritage designations	
Designation	Title
Special Area of Conservation (SAC)	Ballinskelligs Bay and Inny Estuary SAC
Key cultural significance values	
Key value	Rating
The origins of the current settlement at Ballinskelligs are linked to Ballinskelligs Castle (McCarthy Castle) which still survives.	3

## Overview Risk Assessment

<b>Summary of Risk Register (incl. Advanced Level)</b>		<input type="checkbox"/> Standard level: Risks ratings are 0-16 (inherent risk)		
		<input checked="" type="checkbox"/> Advanced level: Risk ratings are 0-64 (heritage risk)		
<b>List of unacceptable risks</b>				
state risks consider as unacceptable at the respective time horizons ranked by decreasing risk rating				
Impact				
ID	Description	Risk rating		
		Time horizon 1	Time horizon 2	Time horizon 3
		Today	2070	2100
3	Erosion and washing out of soil underneath Castle walls and foundation	36	36	64
2	Washing out of mortar core	27	27	36
1	Saturated core of masonry wall	18	27	48
<b>Highest-ranked acceptable risks</b> (state multiple if of the same rating at time horizon #1)				
Impact				
ID	Description	Risk rating		
		Time horizon 1	Time horizon 2	Time horizon 3
		Today	2070	2100
5	Vegetation growth on upstanding remains of Castle	9	9	4
4	Freeze-thaw spalling of masonry surfaces of upstanding remains of buildings	6	6	0
<b>Summary of increasing risks</b>				
Risk of damage from coastal erosion, wave action and wind & rain weathering is increasing due to increase in storm intensity and precipitation.				
<b>Summary of decreasing risks</b>				
Risk of damage from frost weathering and growth of plant roots is decreasing as the number of days with frost occurrence are decreasing and general rise in temperatures throughout the year.				

Effect of occurrence of impacts on key cultural heritage values			
Key values	Current rating	Revised rating	Comments
The origins of the current settlement at Ballinskelligs are linked to Ballinskelligs Castle (McCarthy Castle) which still survives.	3	2 1	If castle ruins are damaged significantly If castle ruins are damaged substantially
<b>Conclusions</b>			
<p>Today, three risks are considered as unacceptable, namely</p> <ul style="list-style-type: none"> <li>• #3 Erosion and washing out of soil underneath Castle walls and foundation</li> <li>• #2 Washing out of mortar core</li> <li>• #1 Saturated core of masonry wall</li> </ul> <p>By 2100, the above mentioned three risks will rise even higher.</p>			

## Overview Adaptation Planning

Summary of Adaptation Measures Register				
Impact / Measure ID	Adaptation measure (short title)	Adaptation type	Location where measure would be installed	Potential effect on cultural significance including mitigation example
<b>Impact investigated</b>	Erosion and washing out of soil underneath Castle walls and foundation			<b>Impact ID</b> 3
3/P1	Soft coastal protection	Protect	Surrounding castle remains along shoreline	beneficial
3/S1	Repoint and repair masonry in key locations	Strengthen	Masonry walls of castle ruins	beneficial
3/D1	Rebuilding	Respond to Damage	Castle ruins	acceptably adverse without mitigation
3/L1	Recording + damage documentation	Managing Loss	Castle ruins	neutral
3/I1	Survey + feasibility study	Manage Uncertainty	Castle remains	neutral
<b>Impact investigated</b>	Washing out of mortar core			<b>Impact ID</b> 2
2/P1	Hard coastal protection by installing a wall or gabions	Protect	On coastline around castle remains	beneficial
2/S1	Rendering	Strengthen	Castle ruins	beneficial
2/D1	Repair response + budget	Respond to Damage	Not applicable	beneficial
2/I1	Survey + feasibility study	Manage Uncertainty	Castle remains	neutral

# APPENDED ASSESSMENTS

## Historic Places and Cultural Significance

Singular place, group of places or place categories

Singular historic place

Geographic information (singular historic place)		
Name of place	Place's address	Place's extent
Ballinskelligs Castle	Ballinskelligs, County Kerry, Ireland	Upstanding remains of a towerhouse

## Historic place overview

Name of historic place to be analysed	
<b>Ballinskelligs Castle</b>	
Description of historic place and its wider surroundings	
Brief description of historic place	Ruin of tower house dating from 15 <sup>th</sup> /16 <sup>th</sup> century; upstanding masonry, unroofed
Brief description of place's immediate surroundings	Beach west and towards historic Ballinskelligs Abbey/Priory to south, sea and water to north and east.
Brief description of places' wider environs	<p>The place is situated on an isthmus stretching out into Ballinskelligs bay on its western shoreline, which opens in the southwest to the Atlantic Ocean. The direct view of the place to the ocean is obstructed by Horse Island, forming a barrier to south-westerly storms.</p> <p>Erosion prompted excavation of the site in 1988 and 1991, uncovering some archaeological finds.</p> <p>The place lies within a Special Area of Conservation, namely Ballinskelligs Bay and Inny Estuary.</p>

## Place elements

Place elements (Advanced Level)		
Identify place elements e.g. walls, roof, bridge, woodland, building	Principal material / matter e.g. live organic matter, peat, stone, timber	Description / comments if required
Walls of tower house remains	stone masonry	mortar-bedded
Foundations	stone	Undercut by eroding peninsula
Pier	concrete	Nearly gone

## Cultural significance

Conservation policies				
ID	Document title	Author(s)	Version	Date
1				
Cultural heritage designations				
Designation	Title	Reference	Comments	
Special Area of Conservation (SAC)	Ballinskelligs Bay and Inny Estuary SAC	Site code 335 / Natura 2000 code IE0000335	for wildlife conservation	
Rating of key cultural significance values				
Key value	Rating	Comments / reasons		
The origins of the current settlement at Ballinskelligs are linked to Ballinskelligs Castle (McCarthy Castle) which still survives.	3			

Implications of cultural heritage designations (Advanced Level)		
Designation	Title	Conferred management implications
SAC	Ballinskelligs Bay and Inny Estuary SAC	No implications for the historic place itself, but restrictions might apply to the implementation of conservation measures
Cultural significance ratings of place elements (Advanced Level)		
Place elements	Rating	Reasoning for rating
Walls of tower house remains	3 outstanding	Walls of tower house make up structure, if structure vanishes, there will be no more historic place
Foundations	4 exceptional	Foundations carry the historic place
Pier	0 neutral	No apparent cultural significance

## Climate, hazards and impacts

### Site observations, hazards and climate drivers (optional)

Observed damages and deterioration			
Damage and deterioration observed at historic place	Impact type	Environmental hazard associated with observations	Climate drivers
Saturated core of masonry wall	<input type="checkbox"/> damage <input checked="" type="checkbox"/> deterioration	Wave action, wind & rain weathering Wind & rain weathering	Water currents, precipitation, wind speed
Washing out of mortar core	<input type="checkbox"/> damage <input checked="" type="checkbox"/> deterioration	Wind & rain weathering	Wind speed, precipitation
Erosion and washing out of soil underneath Castle walls and foundation	<input type="checkbox"/> damage <input checked="" type="checkbox"/> deterioration	Coastal erosion	Water currents
Freeze-thaw spalling of masonry surfaces of upstanding remains of buildings	<input type="checkbox"/> damage <input checked="" type="checkbox"/> deterioration	Frost weathering	Precipitation, temperature fluctuations at freezing point
Vegetation growth on upstanding remains of Castle	<input checked="" type="checkbox"/> damage <input type="checkbox"/> deterioration	Physical damage by growth of plant roots	Precipitation, temperature

Hazard register

Hazard Register							(Advanced Level)				
Climate drivers <i>Description of variables</i>	Climate trends		Environmental hazards <i>Description of observed or potential hazard</i>	Change in relevance		Impact on historic place <i>Description of observed or potential impacts</i>	Impact types	Affected location	Length of exposure to impact	Intensity of impact	Likelihood of impact to occur
	<i>Observed trends</i>	<i>Projected trends</i>		<i>observed</i>	<i>projected</i>						
Water currents, precipitation, wind speed	<ul style="list-style-type: none"> <li>mean annual precipitation increased, with greater increase in west of country</li> <li>wet days (rainfall greater than 0.2mm) and very wet days (rainfall greater than 10mm) increased in west</li> <li>Storm events seem to have got stronger.</li> <li>No evidence of sustained long-term trend of storminess over North Atlantic in the past, however, study spanning last four to six decades indicates increased storm activity north over North Atlantic, with negative tendency southward</li> </ul>	<ul style="list-style-type: none"> <li>mean annual precipitation projected to decrease</li> <li>drier summers</li> <li>wetter winters</li> <li>increase in frequency of heavy precipitation events projected during winter and autumn</li> <li>maximum wind gusts are increasing</li> <li>frequency of storms is projected to decrease, but intensity increasing</li> <li>indication of increase in winter storm intensity over North Atlantic by 2100</li> <li>projected increase in number of high magnitude storms, generating bigger associated surges (&gt;1m)</li> </ul>	Wave action, wind & rain weathering	<input checked="" type="checkbox"/> increase <input type="checkbox"/> decrease <input type="checkbox"/> no change	<input checked="" type="checkbox"/> increase <input type="checkbox"/> decrease <input type="checkbox"/> no change	Saturated core of masonry wall	<input checked="" type="checkbox"/> damage <input type="checkbox"/> deterioration	Walls of tower house remains	<input checked="" type="checkbox"/> decreasing <input type="checkbox"/> increasing <input type="checkbox"/> no change	<input type="checkbox"/> decreasing <input checked="" type="checkbox"/> increasing <input type="checkbox"/> no change	<input type="checkbox"/> decreasing <input checked="" type="checkbox"/> increasing <input type="checkbox"/> no change
Wind speed, precipitation	See above	See above	Wind & rain weathering	<input checked="" type="checkbox"/> increase <input type="checkbox"/> decrease <input type="checkbox"/> no change	<input checked="" type="checkbox"/> increase <input type="checkbox"/> decrease <input type="checkbox"/> no change	Washing out of mortar core	<input checked="" type="checkbox"/> damage <input type="checkbox"/> deterioration	Walls of tower house remains	<input checked="" type="checkbox"/> decreasing <input type="checkbox"/> increasing <input type="checkbox"/> no change	<input type="checkbox"/> decreasing <input checked="" type="checkbox"/> increasing <input type="checkbox"/> no change	<input type="checkbox"/> decreasing <input checked="" type="checkbox"/> increasing <input type="checkbox"/> no change
Water currents	See above	See above	Coastal erosion	<input checked="" type="checkbox"/> increase <input type="checkbox"/> decrease <input type="checkbox"/> no change	<input checked="" type="checkbox"/> increase <input type="checkbox"/> decrease <input type="checkbox"/> no change	Erosion and washing out of soil underneath Castle walls and foundation	<input checked="" type="checkbox"/> damage <input type="checkbox"/> deterioration	Foundations	<input checked="" type="checkbox"/> decreasing <input type="checkbox"/> increasing <input type="checkbox"/> no change	<input type="checkbox"/> decreasing <input checked="" type="checkbox"/> increasing <input type="checkbox"/> no change	<input type="checkbox"/> decreasing <input checked="" type="checkbox"/> increasing <input type="checkbox"/> no change

Precipitation, temperature fluctuations at freezing point	See above for precipitation <ul style="list-style-type: none"> <li>• mean annual temperature increased</li> <li>• seasonal temperatures increased</li> <li>• number of frost days (temperature below 0C) decreased</li> </ul>	See above for precipitation <ul style="list-style-type: none"> <li>• mean annual temperature projected to rise</li> <li>• mean seasonal temperatures projected to rise</li> <li>• winter night-time min temperature projected to increase</li> </ul>	Frost weathering	<input checked="" type="checkbox"/> increase <input type="checkbox"/> decrease <input type="checkbox"/> no change	<input type="checkbox"/> increase <input checked="" type="checkbox"/> decrease <input type="checkbox"/> no change	Freeze-thaw spalling of masonry surfaces of upstanding remains of buildings	<input checked="" type="checkbox"/> damage <input type="checkbox"/> deterioration	Walls of tower house remains	<input checked="" type="checkbox"/> decreasing <input type="checkbox"/> increasing <input type="checkbox"/> no change	<input checked="" type="checkbox"/> decreasing <input type="checkbox"/> increasing <input type="checkbox"/> no change	<input checked="" type="checkbox"/> decreasing <input type="checkbox"/> increasing <input type="checkbox"/> no change
Precipitation, temperature	See above	See above	Physical damage by growth of plant roots	<input checked="" type="checkbox"/> increase <input type="checkbox"/> decrease <input type="checkbox"/> no change	<input checked="" type="checkbox"/> increase <input type="checkbox"/> decrease <input type="checkbox"/> no change	Vegetation growth on upstanding remains of Castle	<input checked="" type="checkbox"/> damage <input type="checkbox"/> deterioration	Walls of tower house remains	<input type="checkbox"/> decreasing <input checked="" type="checkbox"/> increasing <input type="checkbox"/> no change	<input type="checkbox"/> decreasing <input checked="" type="checkbox"/> increasing <input type="checkbox"/> no change	<input type="checkbox"/> decreasing <input checked="" type="checkbox"/> increasing <input type="checkbox"/> no change

Risk register

Risk Register											(Advanced Level)									
Impact			Place elements			Time horizon #1: Today					Time horizon #2: 50 years from today 2070					Time horizon #3: 80 years from today 2100				
Impact ID	Impact description	Environmental hazard	Place element affected	Significance rating	Vulnerability rating	Intensity rating	Likelihood rating	Severity rating	Inherent risk rating	Heritage risk rating	Intensity rating	Likelihood rating	Severity rating	Inherent risk rating	Heritage risk rating	Intensity rating	Likelihood rating	Severity rating	Inherent risk rating	Heritage risk rating
1	Saturated core of masonry wall	Wave action, wind & rain weathering	Walls of tower house remains	3	2	2	3	2	6	18	3	3	3	9	27	3	3	4	12	48
2	Washing out of mortar core	Wind & rain weathering	Walls of tower house remains	3	2	3	3	3	9	27	3	3	3	9	27	3	3	4	12	36
3	Erosion and washing out of soil underneath Castle walls and foundation	Coastal erosion	Foundations	4	3	2	3	3	9	36	3	4	3	12	36		4	4	16	64
4	Freeze-thaw spalling of masonry surfaces of upstanding remains of buildings	Frost weathering	Walls of tower house remains	3	1	1	2	1	2	6	1	2	1	2	6	1	0	1	0	0
5	Vegetation growth on upstanding remains of Castle	Physical damage by growth of plant roots	Walls of tower house remains	3	1	1	3	1	3	9	2	3	1	3	9	2	2	4	8	24

## Summary of risk register

<b>Summary of Risk Register (incl. Advanced Level)</b>		<input type="checkbox"/> Standard level: Risks ratings are 0-16 (inherent risk)		
		<input checked="" type="checkbox"/> Advanced level: Risk ratings are 0-64 (heritage risk)		
<b>List of unacceptable risks</b>				
state risks consider as unacceptable at the respective time horizons ranked by decreasing risk rating				
Impact				
ID	Description	Risk rating		
		<i>Time horizon 1</i>	<i>Time horizon 2</i>	<i>Time horizon 3</i>
		Today	2070	2100
3	Erosion and washing out of soil underneath Castle walls and foundation	36	36	64
2	Washing out of mortar core	27	27	36
1	Saturated core of masonry wall	18	27	48
<b>Highest-ranked acceptable risks</b> (state multiple if of the same rating at time horizon #1)				
Impact				
ID	Description	Risk rating		
		<i>Time horizon 1</i>	<i>Time horizon 2</i>	<i>Time horizon 3</i>
		Today	2070	2100
5	Vegetation growth on upstanding remains of Castle	9	9	4
4	Freeze-thaw spalling of masonry surfaces of upstanding remains of buildings	6	6	0
<b>Summary of increasing risks</b>				
Risk of damage from coastal erosion, wave action and wind & rain weathering is increasing due to increase in storm intensity and precipitation.				
<b>Summary of decreasing risks</b>				
Risk of damage from frost weathering and growth of plant roots is decreasing as the number of days with frost occurrence are decreasing and general rise in temperatures throughout the year.				

Effect of occurrence of impacts on key cultural heritage values			
Key values	Current rating	Revised rating	Comments
The origins of the current settlement at Ballinskelligs are linked to Ballinskelligs Castle (McCarthy Castle) which still survives.	3	2 1	If castle ruins are damaged significantly If castle ruins are damaged substantially
Conclusions			
<p>Today, three risks are considered as unacceptable, namely</p> <ul style="list-style-type: none"> <li>• <b>#3</b> Erosion and washing out of soil underneath Castle walls and foundation</li> <li>• <b>#2</b> Washing out of mortar core</li> <li>• <b>#1</b> Saturated core of masonry wall</li> </ul> <p>By 2100, the above mentioned three risks will rise even higher.</p>			

## Adaptation Planning

Impact to be investigated	
Impact description	Erosion and washing out of soil underneath Castle walls and foundation
Associated hazard	Coastal erosion
Risk rating	36
Impact ID	3
Longlist of adaptation measures	
PROTECT	
P1	Soft coastal protection
STRENGTHEN	
S1	Repoint and repair masonry in key locations
RELOCATE	
R1	Not feasible
RESPOND TO DAMAGE	
D1	Rebuilding
MANAGING LOSS	
L1	Recording + damage documentation
MANAGE UNCERTAINTY	
I1	Survey + feasibility study

Adaptation measure appraisal			
Impact / Measure ID	3/P1		
Adaptation measure (short title)	Protection from erosion		
Details of measure (brief description)	Soft coastal protection through beach accretion – build up of sediment, large operation, pending model survey work		
Adaptation type	Protect		
Location where measure would be installed (If working at Advanced Level, use <i>place elements</i> .)	Surrounding castle remains along shoreline		
<i>If adaptation type is Protect, Strengthen, Relocate or Respond to Damage, use below table:</i>			
Adaptation measure appraisal: Adjustment of ratings (Advanced Level)			
Change to	Scale of change using refined responses of <b>Error! Reference source not found.</b>	Adjusting intensity / vulnerability rating using data from <b>Error! Reference source not found.</b>	Adjusting heritage risk rating
exposure duration of place to impact	Substantially reduced	Reduced by 25 points	
magnitude of impact on place	Left unchanged	Not applicable	
vulnerability of the place to impact	Left unchanged	Not applicable	
<i>Regardless of adaptation type, continue with the table below:</i>			
Potential effects on cultural significance			
Descriptive rating of effect on cultural significance of the place	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input type="checkbox"/> acceptably adverse without mitigation <input type="checkbox"/> neutral <input checked="" type="checkbox"/> beneficial		
If the response above was “subject to mitigation”, name examples for how this might be achieved.	n.a.		
<i>If the answer to the first query was unacceptably adverse or was acceptably adverse subject to mitigation, with no suitable example identified in the second query, top the appraisal of the measure concerned.</i>			

<i>Regardless of adaptation type, continue with the table below, if assessing at Advanced Level:</i>	
<b>Potential economic, environmental and social effects (Advanced Level)</b>	
<b>Descriptive rating of economic effects</b>	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input checked="" type="checkbox"/> acceptably adverse without mitigation <input type="checkbox"/> neutral <input type="checkbox"/> beneficial
<b>Descriptive rating of environmental effects</b>	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input type="checkbox"/> acceptably adverse without mitigation <input type="checkbox"/> neutral <input checked="" type="checkbox"/> beneficial
<b>Descriptive rating of social effects</b>	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input type="checkbox"/> acceptably adverse without mitigation <input checked="" type="checkbox"/> neutral <input type="checkbox"/> beneficial
<b>If any of the responses above was “subject to mitigation”, name examples for how this might be achieved.</b>	n.a.
<i>If the answer to the first query was unacceptably adverse or was acceptably adverse subject to mitigation, with no suitable example identified in the second query, stop the appraisal of the measure concerned.</i>	

Adaptation measure appraisal			
Impact / Measure ID	3/S1		
Adaptation measure (short title)	Masonry repair		
Details of measure (brief description)	Repoint and repair masonry in key locations – doable and would extend life		
Adaptation type	Strengthen		
Location where measure would be installed (If working at Advanced Level, use <i>place elements</i> .)	Masonry walls of castle ruins		
<i>If adaptation type is Protect, Strengthen, Relocate or Respond to Damage, use below table:</i>			
Adaptation measure appraisal: Adjustment of ratings (Advanced Level)			
Change to	Scale of change using refined responses of <b>Error! Reference source not found.</b>	Adjusting intensity / vulnerability rating using data from <b>Error! Reference source not found.</b>	Adjusting heritage risk rating
exposure duration of place to impact	Left unchanged	Not applicable	
magnitude of impact on place	Left unchanged	Not applicable	
vulnerability of the place to impact	Slightly reduced	Reduced by 10 points	
<i>egardless of adaptation type, continue with the table below:</i>			
Potential effects on cultural significance			
Descriptive rating of effect on cultural significance of the place	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input type="checkbox"/> acceptably adverse without mitigation <input type="checkbox"/> neutral <input checked="" type="checkbox"/> beneficial		
If the response above was “subject to mitigation”, name examples for how this might be achieved.	n.a.		
<i>If the answer to the first query was unacceptably adverse or was acceptably adverse subject to mitigation, with no suitable example identified in the second query, top the appraisal of the measure concerned.</i>			

<i>Regardless of adaptation type, continue with the table below, if assessing at Advanced Level:</i>	
<b>Potential economic, environmental and social effects (Advanced Level)</b>	
<b>Descriptive rating of economic effects</b>	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input type="checkbox"/> acceptably adverse without mitigation <input checked="" type="checkbox"/> neutral <input type="checkbox"/> beneficial
<b>Descriptive rating of environmental effects</b>	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input type="checkbox"/> acceptably adverse without mitigation <input checked="" type="checkbox"/> neutral <input type="checkbox"/> beneficial
<b>Descriptive rating of social effects</b>	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input type="checkbox"/> acceptably adverse without mitigation <input type="checkbox"/> neutral <input checked="" type="checkbox"/> beneficial
<b>If any of the responses above was “subject to mitigation”, name examples for how this might be achieved.</b>	n.a.
<i>If the answer to the first query was unacceptably adverse or was acceptably adverse subject to mitigation, with no suitable example identified in the second query, stop the appraisal of the measure concerned.</i>	

Adaptation measure appraisal			
Impact / Measure ID	3/D1		
Adaptation measure (short title)	Recondition		
Details of measure (brief description)	Rebuilding – costly, but possible partially		
Adaptation type	Respond to Damage		
Location where measure would be installed (If working at Advanced Level, use <i>place elements</i> .)	Castle ruins		
<i>If adaptation type is Protect, Strengthen, Relocate or Respond to Damage, use below table:</i>			
Adaptation measure appraisal: Adjustment of ratings (Advanced Level)			
Change to	Scale of change using refined responses of Error! Reference source not found.	Adjusting intensity / vulnerability rating using data from Error! Reference source not found.	Adjusting heritage risk rating
exposure duration of place to impact	Left unchanged	Not applicable	
magnitude of impact on place	Left unchanged	Not applicable	
vulnerability of the place to impact	Substantially reduced	Reduced by 25 points	
<i>Regardless of adaptation type, continue with the table below:</i>			
Potential effects on cultural significance			
Descriptive rating of effect on cultural significance of the place	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input checked="" type="checkbox"/> acceptably adverse without mitigation <input type="checkbox"/> neutral <input type="checkbox"/> beneficial		
If the response above was “subject to mitigation”, name examples for how this might be achieved.	n.a.		
<i>If the answer to the first query was unacceptably adverse or was acceptably adverse subject to mitigation, with no suitable example identified in the second query, top the appraisal of the measure concerned.</i>			

<i>Regardless of adaptation type, continue with the table below, if assessing at Advanced Level:</i>	
<b>Potential economic, environmental and social effects (Advanced Level)</b>	
<b>Descriptive rating of economic effects</b>	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input checked="" type="checkbox"/> acceptably adverse without mitigation <input type="checkbox"/> neutral <input type="checkbox"/> beneficial
<b>Descriptive rating of environmental effects</b>	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input type="checkbox"/> acceptably adverse without mitigation <input checked="" type="checkbox"/> neutral <input type="checkbox"/> beneficial
<b>Descriptive rating of social effects</b>	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input type="checkbox"/> acceptably adverse without mitigation <input type="checkbox"/> neutral <input checked="" type="checkbox"/> beneficial
<b>If any of the responses above was “subject to mitigation”, name examples for how this might be achieved.</b>	n.a.
<i>If the answer to the first query was unacceptably adverse or was acceptably adverse subject to mitigation, with no suitable example identified in the second query, stop the appraisal of the measure concerned.</i>	

Adaptation measure appraisal	
Impact / Measure ID	3/L1
Adaptation measure (short title)	Documenting damage
Details of measure (brief description)	Recording + damage documentation – going hand in hand with any investigative measures
Adaptation type	Managing Loss
Location where measure would be installed (If working at Advanced Level, use <i>place elements</i> .)	Castle ruins
<i>If adaptation type is Managing Loss, use below table:</i>	
Managing Loss appraisal	
How would the measure support communities?	
Which specific communities would be supported?	
Are the answers to the two questions above considered sufficiently relevant to explore measure further?	<input type="checkbox"/> Yes, explore this adaptation measure further <input type="checkbox"/> No, file this idea of an adaption measure and proceed to next measure on long-list
<i>If the answer to the last question was no, stop the appraisal of the measure concerned.</i>	
<i>Regardless of adaptation type, continue with the table below:</i>	
Potential effects on cultural significance	
Descriptive rating of effect on cultural significance of the place	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input type="checkbox"/> acceptably adverse without mitigation <input checked="" type="checkbox"/> neutral <input type="checkbox"/> beneficial
If the response above was “subject to mitigation”, name examples for how this might be achieved.	n.a.
<i>If the answer to the first query was unacceptably adverse or was acceptably adverse subject to mitigation, with no suitable example identified in the second query, top the appraisal of the measure concerned.</i>	

<i>Regardless of adaptation type, continue with the table below, if assessing at Advanced Level:</i>	
<b>Potential economic, environmental and social effects (Advanced Level)</b>	
<b>Descriptive rating of economic effects</b>	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input type="checkbox"/> acceptably adverse without mitigation <input checked="" type="checkbox"/> neutral <input type="checkbox"/> beneficial
<b>Descriptive rating of environmental effects</b>	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input type="checkbox"/> acceptably adverse without mitigation <input checked="" type="checkbox"/> neutral <input type="checkbox"/> beneficial
<b>Descriptive rating of social effects</b>	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input type="checkbox"/> acceptably adverse without mitigation <input checked="" type="checkbox"/> neutral <input type="checkbox"/> beneficial
<b>If any of the responses above was “subject to mitigation”, name examples for how this might be achieved.</b>	n.a.
<i>If the answer to the first query was unacceptably adverse or was acceptably adverse subject to mitigation, with no suitable example identified in the second query, stop the appraisal of the measure concerned.</i>	

Adaptation measure appraisal	
Impact / Measure ID	3/11
Adaptation measure (short title)	Survey analysis
Details of measure (brief description)	Survey + feasibility study – needed for any damage management/maintenance
Adaptation type	Manage Uncertainty
Location where measure would be installed (If working at Advanced Level, use <i>place elements</i> .)	Castle remains
<i>If adaptation type is Manage Uncertainty, use below table:</i>	
Manage Uncertainty appraisal	
How would the considered measure reduce uncertainty?	
How would the considered measure support other relevant measures?	
Are the answers to the two questions above considered sufficiently relevant to explore measure further?	<input type="checkbox"/> Yes, explore this adaptation measure further <input type="checkbox"/> No, file this idea of an adaption measure and proceed to next measure on long-list
<i>If the answer to the last question was no, stop the appraisal of the measure concerned.</i>	
<i>Regardless of adaptation type, continue with the table below:</i>	
Potential effects on cultural significance	
Descriptive rating of effect on cultural significance of the place	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input type="checkbox"/> acceptably adverse without mitigation <input checked="" type="checkbox"/> neutral <input type="checkbox"/> beneficial
If the response above was “subject to mitigation”, name examples for how this might be achieved.	n.a.
<i>If the answer to the first query was unacceptably adverse or was acceptably adverse subject to mitigation, with no suitable example identified in the second query, top the appraisal of the measure concerned.</i>	

<i>Regardless of adaptation type, continue with the table below, if assessing at Advanced Level:</i>	
<b>Potential economic, environmental and social effects (Advanced Level)</b>	
<b>Descriptive rating of economic effects</b>	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input checked="" type="checkbox"/> acceptably adverse without mitigation <input type="checkbox"/> neutral <input type="checkbox"/> beneficial
<b>Descriptive rating of environmental effects</b>	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input type="checkbox"/> acceptably adverse without mitigation <input checked="" type="checkbox"/> neutral <input type="checkbox"/> beneficial
<b>Descriptive rating of social effects</b>	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input type="checkbox"/> acceptably adverse without mitigation <input checked="" type="checkbox"/> neutral <input type="checkbox"/> beneficial
<b>If any of the responses above was “subject to mitigation”, name examples for how this might be achieved.</b>	n.a.
<i>If the answer to the first query was unacceptably adverse or was acceptably adverse subject to mitigation, with no suitable example identified in the second query, stop the appraisal of the measure concerned.</i>	

Impact to be investigated	
Impact description	Washing out of mortar core
Associated hazard	Wind & rain weathering
Risk rating	18
Impact ID	2
Longlist of adaptation measures	
PROTECT	
P1	Hard coastal protection by installing a wall or gabions
STRENGTHEN	
S1	Rendering
RELOCATE	
R1	Not feasible (see Impact/Measure #3/R1)
RESPOND TO DAMAGE	
D1	Repair response + budget
MANAGING LOSS	
L1	Rebuilding
MANAGE UNCERTAINTY	
I1	Survey + feasibility study (see Impact/Measure #3/I1)

Adaptation measure appraisal			
Impact / Measure ID	2/P1		
Adaptation measure (short title)	Structure installation		
Details of measure (brief description)	Hard coastal protection by installing a wall or gabions maybe in small areas, cost allowing limited, dependant on excavation, 5k-10k to create protection on one side, but would have affect and push down currents towards Abbey/Priory, which then in turn will require further protection (vicious circle!)		
Adaptation type	Protect		
Location where measure would be installed (If working at Advanced Level, use <i>place elements</i> .)	On coastline around castle remains		
<i>If adaptation type is Protect, Strengthen, Relocate or Respond to Damage, use below table:</i>			
Adaptation measure appraisal: Adjustment of ratings (Advanced Level)			
Change to	Scale of change using refined responses of Error! Reference source not found.	Adjusting intensity / vulnerability rating using data from Error! Reference source not found.	Adjusting heritage risk rating
exposure duration of place to impact	Significantly reduced	Reduced by 25 points	
magnitude of impact on place	Significantly reduced	Reduced by 25 points	
vulnerability of the place to impact	Left unchanged	Not applicable	
<i>Regardless of adaptation type, continue with the table below:</i>			
Potential effects on cultural significance			
Descriptive rating of effect on cultural significance of the place	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input type="checkbox"/> acceptably adverse without mitigation <input type="checkbox"/> neutral <input checked="" type="checkbox"/> beneficial		
If the response above was "subject to mitigation", name examples for how this might be achieved.	n.a.		

*If the answer to the first query was unacceptably adverse or was acceptably adverse subject to mitigation, with no suitable example identified in the second query, top the appraisal of the measure concerned.*

<i>Regardless of adaptation type, continue with the table below, if assessing at Advanced Level:</i>	
<b>Potential economic, environmental and social effects (Advanced Level)</b>	
<b>Descriptive rating of economic effects</b>	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input type="checkbox"/> acceptably adverse without mitigation <input checked="" type="checkbox"/> neutral <input type="checkbox"/> beneficial
<b>Descriptive rating of environmental effects</b>	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input checked="" type="checkbox"/> acceptably adverse without mitigation <input type="checkbox"/> neutral <input type="checkbox"/> beneficial
<b>Descriptive rating of social effects</b>	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input type="checkbox"/> acceptably adverse without mitigation <input type="checkbox"/> neutral <input checked="" type="checkbox"/> beneficial
<b>If any of the responses above was “subject to mitigation”, name examples for how this might be achieved.</b>	n.a.
<i>If the answer to the first query was unacceptably adverse or was acceptably adverse subject to mitigation, with no suitable example identified in the second query, stop the appraisal of the measure concerned.</i>	

Adaptation measure appraisal			
Impact / Measure ID	2/S1		
Adaptation measure (short title)	Reinforcement		
Details of measure (brief description)	Rendering – must be in relation to other works (e.g. repointing), bigger cost involved, may only be used on more exposed sites		
Adaptation type	Strengthen		
Location where measure would be installed (If working at Advanced Level, use <i>place elements</i> .)	Castle ruins		
<i>If adaptation type is Protect, Strengthen, Relocate or Respond to Damage, use below table:</i>			
Adaptation measure appraisal: Adjustment of ratings (Advanced Level)			
Change to	Scale of change using refined responses of <b>Error! Reference source not found.</b>	Adjusting intensity / vulnerability rating using data from <b>Error! Reference source not found.</b>	Adjusting heritage risk rating
exposure duration of place to impact	Slightly reduced	Reduced by 10 points	
magnitude of impact on place	Left unchanged	Not applicable	
vulnerability of the place to impact	Slightly reduced	Reduced by 10 points	
<i>Regardless of adaptation type, continue with the table below:</i>			
Potential effects on cultural significance			
Descriptive rating of effect on cultural significance of the place	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input type="checkbox"/> acceptably adverse without mitigation <input type="checkbox"/> neutral <input checked="" type="checkbox"/> beneficial		
If the response above was “subject to mitigation”, name examples for how this might be achieved.	n.a.		
<i>If the answer to the first query was unacceptably adverse or was acceptably adverse subject to mitigation, with no suitable example identified in the second query, top the appraisal of the measure concerned.</i>			

<i>Regardless of adaptation type, continue with the table below, if assessing at Advanced Level:</i>	
<b>Potential economic, environmental and social effects (Advanced Level)</b>	
<b>Descriptive rating of economic effects</b>	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input checked="" type="checkbox"/> acceptably adverse without mitigation <input type="checkbox"/> neutral <input type="checkbox"/> beneficial
<b>Descriptive rating of environmental effects</b>	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input type="checkbox"/> acceptably adverse without mitigation <input checked="" type="checkbox"/> neutral <input type="checkbox"/> beneficial
<b>Descriptive rating of social effects</b>	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input type="checkbox"/> acceptably adverse without mitigation <input checked="" type="checkbox"/> neutral <input type="checkbox"/> beneficial
<b>If any of the responses above was “subject to mitigation”, name examples for how this might be achieved.</b>	n.a.
<i>If the answer to the first query was unacceptably adverse or was acceptably adverse subject to mitigation, with no suitable example identified in the second query, stop the appraisal of the measure concerned.</i>	

Adaptation measure appraisal			
Impact / Measure ID	2/D1		
Adaptation measure (short title)	Damage analysis		
Details of measure (brief description)	Repair response + budget – maybe with community input		
Adaptation type	Respond to Damage		
Location where measure would be installed (If working at Advanced Level, use <i>place elements</i> .)	Not applicable		
<i>If adaptation type is Protect, Strengthen, Relocate or Respond to Damage, use below table:</i>			
Adaptation measure appraisal: Adjustment of ratings (Advanced Level)			
Change to	Scale of change using refined responses of Error! Reference source not found.	Adjusting intensity / vulnerability rating using data from Error! Reference source not found.	Adjusting heritage risk rating
exposure duration of place to impact	Left unchanged	Not applicable	
magnitude of impact on place	Left unchanged	Not applicable	
vulnerability of the place to impact	Slightly reduced	Reduced by 10 points	
<i>Regardless of adaptation type, continue with the table below:</i>			
Potential effects on cultural significance			
Descriptive rating of effect on cultural significance of the place	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input type="checkbox"/> acceptably adverse without mitigation <input type="checkbox"/> neutral <input checked="" type="checkbox"/> beneficial		
If the response above was “subject to mitigation”, name examples for how this might be achieved.	n.a.		
<i>If the answer to the first query was unacceptably adverse or was acceptably adverse subject to mitigation, with no suitable example identified in the second query, top the appraisal of the measure concerned.</i>			

<i>Regardless of adaptation type, continue with the table below, if assessing at Advanced Level:</i>	
<b>Potential economic, environmental and social effects (Advanced Level)</b>	
<b>Descriptive rating of economic effects</b>	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input checked="" type="checkbox"/> acceptably adverse without mitigation <input type="checkbox"/> neutral <input type="checkbox"/> beneficial
<b>Descriptive rating of environmental effects</b>	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input type="checkbox"/> acceptably adverse without mitigation <input type="checkbox"/> neutral <input checked="" type="checkbox"/> beneficial
<b>Descriptive rating of social effects</b>	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input type="checkbox"/> acceptably adverse without mitigation <input type="checkbox"/> neutral <input checked="" type="checkbox"/> beneficial
<b>If any of the responses above was “subject to mitigation”, name examples for how this might be achieved.</b>	n.a.
<i>If the answer to the first query was unacceptably adverse or was acceptably adverse subject to mitigation, with no suitable example identified in the second query, stop the appraisal of the measure concerned.</i>	

Adaptation measure appraisal			
Impact / Measure ID	2/L1		
Adaptation measure (short title)	Cost efficient rebuild		
Details of measure (brief description)	Rebuilding – costly, but possible partially		
Adaptation type	Managing Loss		
Location where measure would be installed (If working at Advanced Level, use <i>place elements</i> .)	Entire castle ruins		
<i>If adaptation type is Protect, Strengthen, Relocate or Respond to Damage, use below table:</i>			
Adaptation measure appraisal: Adjustment of ratings (Advanced Level)			
Change to	Scale of change using refined responses of <b>Error! Reference source not found.</b>	Adjusting intensity / vulnerability rating using data from <b>Error! Reference source not found.</b>	Adjusting heritage risk rating
exposure duration of place to impact	Left unchanged	Not applicable	
magnitude of impact on place	Left unchanged	Not applicable	
vulnerability of the place to impact	Substantially reduced	Reduced by 25 points	
<i>If adaptation type is Managing Loss, use below table:</i>			
Managing Loss appraisal			
How would the measure support communities?			
Which specific communities would be supported?			
Are the answers to the two questions above considered sufficiently relevant to explore measure further?	<input type="checkbox"/> Yes, explore this adaptation measure further <input type="checkbox"/> No, file this idea of an adaption measure and proceed to next measure on long-list		
<i>If the answer to the last question was no, stop the appraisal of the measure concerned.</i>			

<i>Regardless of adaptation type, continue with the table below:</i>	
<b>Potential effects on cultural significance</b>	
Descriptive rating of effect on cultural significance of the place	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input checked="" type="checkbox"/> acceptably adverse without mitigation <input type="checkbox"/> neutral <input type="checkbox"/> beneficial
If the response above was “subject to mitigation”, name examples for how this might be achieved.	n.a.
<i>If the answer to the first query was unacceptably adverse or was acceptably adverse subject to mitigation, with no suitable example identified in the second query, top the appraisal of the measure concerned.</i>	
<i>Regardless of adaptation type, continue with the table below, if assessing at Advanced Level:</i>	
<b>Potential economic, environmental and social effects (Advanced Level)</b>	
Descriptive rating of economic effects	<input checked="" type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input type="checkbox"/> acceptably adverse without mitigation <input type="checkbox"/> neutral <input type="checkbox"/> beneficial
Descriptive rating of environmental effects	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input checked="" type="checkbox"/> acceptably adverse without mitigation <input type="checkbox"/> neutral <input type="checkbox"/> beneficial
Descriptive rating of social effects	<input type="checkbox"/> unacceptably adverse <input type="checkbox"/> acceptably adverse subject to mitigation <input checked="" type="checkbox"/> acceptably adverse without mitigation <input type="checkbox"/> neutral <input type="checkbox"/> beneficial
If any of the responses above was “subject to mitigation”, name examples for how this might be achieved.	n.a.
<i>If the answer to the first query was unacceptably adverse or was acceptably adverse subject to mitigation, with no suitable example identified in the second query, stop the appraisal of the measure concerned.</i>	

### Adaptation Measures Register

Adaptation Measures Register						(Advanced Level)		
Impact investigated		Erosion and washing out of soil underneath Castle walls and foundation		Impact ID		3		
Impact / Measure ID	Adaptation measure (short title)	Adaptation type	Location where measure would be installed	Potential effect on cultural significance including mitigation example	Include in summary	Potential economic effects including mitigation example	Potential environmental effects including mitigation example	Potential social effects including mitigation example
3/P1	Soft coastal protection	Protect	Surrounding castle remains along shoreline	beneficial	<input checked="" type="checkbox"/> include	acceptably adverse without mitigation	beneficial	neutral
3/S1	Repoint and repair masonry in key locations	Strengthen	Masonry walls of castle ruins	beneficial	<input checked="" type="checkbox"/> include	neutral	neutral	beneficial
3/R1	Not feasible	Relocate			<input type="checkbox"/> include			
3/D1	Rebuilding	Respond to Damage	Castle ruins	acceptably adverse without mitigation	<input checked="" type="checkbox"/> include	acceptably adverse without mitigation	neutral	beneficial
3/L1	Recording + damage documentation	Managing Loss	Castle ruins	neutral	<input checked="" type="checkbox"/> include	neutral	neutral	neutral
3/I1	Survey + feasibility study	Manage Uncertainty	Castle remains	neutral	<input checked="" type="checkbox"/> include	acceptably adverse without mitigation	neutral	neutral

Impact investigated		Washing out of mortar core			Impact ID	2			
Impact / Measure ID	Adaptation measure (short title)	Adaptation type	Location where measure would be installed	Potential effect on cultural significance including mitigation example	Include in summary	Potential economic effects including mitigation example	Potential environmental effects including mitigation example	Potential social effects including mitigation example	
2/P1	Hard coastal protection by installing a wall or gabions	Protect	On coastline around castle remains	beneficial	<input checked="" type="checkbox"/> include	neutral	acceptably adverse without mitigation	beneficial	
2/S1	Rendering	Strengthen	Castle ruins	beneficial	<input checked="" type="checkbox"/> include	acceptably adverse without mitigation	neutral	neutral	
2/R1	Not feasible	Relocate			<input type="checkbox"/> include				
2/D1	Repair response + budget	Respond to Damage	Not applicable	beneficial	<input checked="" type="checkbox"/> include	acceptably adverse without mitigation	beneficial	beneficial	
2/L1	Rebuilding	Managing Loss	Entire castle ruins	acceptably adverse without mitigation	<input type="checkbox"/> include	unacceptably adverse	acceptably adverse without mitigation	acceptably adverse without mitigation	
2/I1	Survey + feasibility study	Manage Uncertainty	Castle remains	neutral	<input checked="" type="checkbox"/> include	acceptably adverse without mitigation	neutral	neutral	

## Summarising the adaptation measures

Summary of Adaptation Measures Register				
Impact / Measure ID	Adaptation measure (short title)	Adaptation type	Location where measure would be installed	Potential effect on cultural significance including mitigation example
<b>Impact investigated</b>	Erosion and washing out of soil underneath Castle walls and foundation			<b>Impact ID</b> 3
3/P1	Soft coastal protection	Protect	Surrounding castle remains along shoreline	beneficial
3/S1	Repoint and repair masonry in key locations	Strengthen	Masonry walls of castle ruins	beneficial
3/D1	Rebuilding	Respond to Damage	Castle ruins	acceptably adverse without mitigation
3/L1	Recording + damage documentation	Managing Loss	Castle ruins	neutral
3/I1	Survey + feasibility study	Manage Uncertainty	Castle remains	neutral
<b>Impact investigated</b>	Washing out of mortar core			<b>Impact ID</b> 2
2/P1	Hard coastal protection by installing a wall or gabions	Protect	On coastline around castle remains	beneficial
2/S1	Rendering	Strengthen	Castle ruins	beneficial
2/D1	Repair response + budget	Respond to Damage	Not applicable	beneficial
2/I1	Survey + feasibility study	Manage Uncertainty	Castle remains	neutral