



VULNERABILITY ASSESSMENT TABLE

Subsurface archaeological deposits

This table highlights some of the ways subsurface archaeological deposits may be vulnerable to the effects of climate change. It is not intended to be comprehensive and the examples of possible management approaches will not be appropriate in all cases. Qualified and experienced heritage specialists should be consulted in undertaking any climate vulnerability or risk assessment of your place or object.




EXPOSURE — GENERAL

Climate change variables	Key climate change impacts	Sensitivity of the place to climate change impacts	Examples of impacts on the place or object and its values	Examples of possible management approaches
 Change in seasonal rainfall (chronic)	Increase in rainfall events and their intensity leading to soil degradation	Directly related to the condition and integrity of archaeological deposits and the nature of the sediment matrix	<ul style="list-style-type: none"> ○ Archaeological material (e.g. wood, brick, metal, stone, ceramic, faunal remains, plant remains) will be affected differently ○ Increase in rainfall: more frequent and prolonged saturation of archaeological deposits and erosion of soils and deposits ○ Increase in rainfall: increased water erosion, movement and destabilisation of soils causing exposure of archaeological deposits, with loss of integrity and archaeological material ○ Decrease in rainfall: drying, cracking of soils and increased wind erosion leading to destabilisation of soils and exposure of archaeological deposits, with loss of integrity and archaeological material 	<ul style="list-style-type: none"> ○ Re-engineer drainage ○ Monitor erosion or degradation ○ Plan for rescue excavation and off-site conservation of material, if appropriate and possible
 Increase in mean temperature				



EXPOSURE — GENERAL *continued*

Climate change variables	Key climate change impacts	Sensitivity of the place to climate change impacts	Examples of impacts on the place or object and its values	Examples of possible management approaches
<i>continued from previous page</i>	Increased frequency, duration and intensity of drought events	Directly related to the condition and integrity of archaeological deposits and the nature of the sediment matrix Soils susceptible to drying and cracking	<ul style="list-style-type: none"> ○ Archaeological material (e.g. wood, brick, metal, stone, ceramic, faunal remains, plant remains) will be affected differently ○ Loss of ground cover, drying, cracking and movement of soils with exposure of archaeological deposits, causing loss of integrity and archaeological material ○ Increased wind erosion exposing archaeological deposits, causing loss of integrity and archaeological material 	<ul style="list-style-type: none"> ○ Increase monitoring and maintenance regime ○ Increased monitoring and/or targeted education around the illegality of disturbing archaeological sites ○ Introduce additional protection in the form of vegetation or other wind/weathering protection
 More hotter days (>35°C and >40°C)	Increased frequency and intensity of bushfires	Directly related to proximity and/or connectivity to bush	<ul style="list-style-type: none"> ○ Loss of vegetation cover, heating and cracking of soils, increased water and wind erosion following bushfire event impacting on different types of materials (e.g. wood, brick, metal, stone, ceramic, faunal remains, plant remains) ○ Exposure of archaeological deposits, with loss of integrity and archaeological material ○ Increased visibility of archaeological material leading to increased susceptibility to looting 	<ul style="list-style-type: none"> ○ Increase maintenance regime (e.g. vegetation management) ○ Importation of additional protective fill material if appropriate and possible
	Heatwaves and extreme temperatures	Directly related to the condition and integrity of archaeological deposits and the nature of the sediment matrix Soils susceptible to drying and cracking	<ul style="list-style-type: none"> ○ Drying, cracking and movement of soils impacting on different types of materials (e.g. wood, brick, metal, stone, ceramic, faunal remains, plant remains) ○ Exposure of archaeological deposits with loss of integrity and archaeological material ○ Increased visibility of archaeological material leading to increased susceptibility to looting 	<ul style="list-style-type: none"> ○ Increase monitoring and maintenance regime ○ Plan for recording, excavation and off-site conservation if risk is unacceptable, and if appropriate and possible



EXPOSURE — GENERAL *continued*

Climate change variables	Key climate change impacts	Sensitivity of the place to climate change impacts	Examples of impacts on the place or object and its values	Examples of possible management approaches
<p>More extreme rainfall events (acute)</p>	Flooding, erosion and landslips	Depends on terrain (local conditions)	<ul style="list-style-type: none"> ○ Damage to buried deposits from the force of flood water, debris and sediments ○ Exposure of previously buried archaeological materials 	<ul style="list-style-type: none"> ○ Ensure drainage is adequate for managing extreme events ○ Cover sites if appropriate and their value warrants the resources required ○ Increased monitoring and/or targeted education around the illegality of disturbing archaeological sites





EXPOSURE — SUBMERGED / OCEANIC (SUBMERGED LANDSCAPES)

Climate change variables	Key climate change impacts	Sensitivity of the place to climate change impacts	Examples of impacts on the place or object and its values	Examples of possible management approaches
<p>Sea temperature rise</p>	Different and more rapid chemical and biological processes	Depends on the nature and context of deposits	<ul style="list-style-type: none"> ○ Degrading of archaeological materials that may characterise cultural deposits 	<ul style="list-style-type: none"> ○ Increase monitoring regime
<p>More intense or more frequent storms</p>	Scouring and increased erosion	Directly related to the condition and integrity of archaeological deposits, and the nature and depth of the overlying sediment matrix	<ul style="list-style-type: none"> ○ Loss of overlying and cultural deposits with exposure by currents ○ Loss of integrity and archaeological material 	<ul style="list-style-type: none"> ○ Increase monitoring regime ○ Plan for recording, excavation and off-site conservation if risk is unacceptable, and if appropriate and possible ○ Retreat: plan for site recording and accept loss or relocation of site where feasible, in consultation with local community




EXPOSURE — COASTAL

Climate change variables	Key climate change impacts	Sensitivity of the place to climate change impacts	Examples of impacts on the place or object and its values	Examples of possible management approaches
 <p>Sea-level rise</p>	<p>Worsened coastal flooding, storm surge and coastal erosion that over time can result in permanent inundation of low-lying areas</p>	<p>Depends on terrain and potential defences (e.g. sea wall) – refer to local information</p>	<ul style="list-style-type: none"> ○ Potential for inundation and flooding with damage to, or destruction of, subsurface archaeological deposits depending on their elevation; this could be intermittent during high tide and storm surge events (acute) and eventually permanent 	<ul style="list-style-type: none"> ○ Improve drainage ○ Plan for recording, excavation and off-site conservation if risk is unacceptable, and if appropriate and possible ○ Retreat: plan for site recording and accept loss or relocation of site where feasible, in consultation with local community
 <p>More intense or more frequent storms</p>	<p>Coastal erosion</p>	<p>Depends on terrain and potential defences (e.g. sea wall) – refer to local information</p>	<ul style="list-style-type: none"> ○ Potential for storm damage to buried archaeological deposits in coastal zones, either through modification of soil (salinity ingress) or through direct damage (storms) exposing, damaging and destroying buried deposits 	<ul style="list-style-type: none"> ○ Introduce coastal protection ○ Plan for recording, excavation and off-site conservation if risk is unacceptable, and if appropriate and possible ○ Retreat: plan for site recording and accept loss or relocation of site where feasible, in consultation with local community




EXPOSURE — URBAN

Climate change variables	Key climate change impacts	Sensitivity of the place to climate change impacts	Examples of impacts on the place or object and its values	Examples of possible management approaches
 <p>More hotter days</p>	Heat island effect in urban areas can increase local temperatures by several degrees compared to nearby rural areas	Local 'urban heat island' mapping determines specific micro-climate risks	<ul style="list-style-type: none"> Low potential for impact to subsurface archaeological deposits beneath built structures and roads 	<ul style="list-style-type: none"> Increase monitoring and maintenance regime



EXPOSURE — ALPINE

Climate change variables	Key climate change impacts	Sensitivity of the place to climate change impacts	Examples of impacts on the place or object and its values	Examples of possible management approaches
 <p>Higher daily minimum temperatures and changes in precipitation</p>	Changed freeze-thaw cycles, reduced snow cover and fewer cold days	Local distribution of native/non-native vegetation	<ul style="list-style-type: none"> Loss or change in ground cover may affect soil stability with potential to expose subsurface archaeological deposits 	<ul style="list-style-type: none"> Increase monitoring and maintenance regime

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