



VULNERABILITY ASSESSMENT TABLE

Historical parks and gardens

This table highlights some of the ways historical parks and gardens 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.



EXPOSURE — GENERAL

Climate change variables	Key climate change impacts	Sensitivity of the place to climate change impacts	Examples of impacts on the place and its values	Examples of possible management approaches
 Change in seasonal rainfall (chronic)	Water availability, soil degradation, and change to ecosystems and species distributions over the short-term and long-term	Potentially non-native plants and some natives may disappear regionally	<ul style="list-style-type: none"> Gardens and botanic gardens may lose species and new pests and diseases may become prevalent 	<ul style="list-style-type: none"> Plan for transition to drought resistant plants that preserve character/heritage value Plan for alternative water collection/storage to be used to preserve the most valuable individuals Consider planting arrangements that create microclimates around valuable sensitive specimens
 Increase in mean temperature				
	Increased frequency, duration and intensity of drought events	Vegetation sensitivity heightened if no access to recycled water/captured stormwater	<ul style="list-style-type: none"> Water restrictions (long-term or permanent), impacts on landscapes and damage to structures through cracking or splitting 	





EXPOSURE — GENERAL *continued*

Climate change variables	Key climate change impacts	Sensitivity of the place to climate change impacts	Examples of impacts on the place and its values	Examples of possible management approaches
 <p>More hotter days (>35°C and >40°C)</p>	<p>Increased frequency and intensity of bushfires</p>	<p>Directly related to proximity and/or connectivity to the bush</p>	<ul style="list-style-type: none"> ○ Direct loss and damage 	<ul style="list-style-type: none"> ○ Prepare for fire season by managing fuel/vegetation ○ Prepare emergency/defence plan ○ Retreat: plan for site recording and accept loss or relocation of site where feasible, in consultation with local community ○ Prepare disaster recovery plan ○ Explore nature-based firebreak solutions
	<p>Heatwaves and extreme temperatures</p>	<p>Depends on micro-climate and ability to manage impacts in the short-term (e.g. through watering)</p>	<ul style="list-style-type: none"> ○ Plant damage from heat or sun exposure during heatwaves 	<ul style="list-style-type: none"> ○ Plan for transition into heat resistant plants that preserve character/heritage value ○ Assess potential damage to heritage infrastructure and buildings in the parks and gardens and risk mitigation options that preserve value (e.g. heat reflective roofs, etc.)
 <p>More extreme rainfall events (acute)</p>	<p>Flooding, erosion and landslips</p>	<p>Depends on terrain (local conditions)</p>	<ul style="list-style-type: none"> ○ Damage from the force of flood water, debris, sediments and mould 	<ul style="list-style-type: none"> ○ Flood mapping and plan for defence where possible and appropriate; defence may aim to simply reduce the worst impacts of the flood (e.g. flow velocity) rather than avoid flooding altogether ○ Post-flood recovery plan to manage mould/other negative impacts ○ Assess infrastructure including site drainage, and opportunities for harvesting water ○ Explore nature-based water attenuation system work




EXPOSURE — COASTAL

Climate change variables	Key climate change impacts	Sensitivity of the place to climate change impacts	Examples of impacts on the place 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 on heritage properties in coastal zones – 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"> ○ Retreat: plan for site recording and accept loss or relocation of site where feasible in consultation with local community ○ Protect: barriers/diversions where possible ○ Consider opportunities to create new coastal or intertidal habitats for threatened native species ○ Prepare nature-based barriers where possible (not hard ones) and maintain them
 <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 heritage properties in coastal zones, either through modification of soil (salinity ingress) or through direct damage (storms) 	<ul style="list-style-type: none"> ○ Increased monitoring and maintenance regime to identify growing hazards ○ Record for data sharing




EXPOSURE — URBAN

Climate change variables	Key climate change impacts	Sensitivity of the place to climate change impacts	Examples of impacts on the place 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"> Same impacts as above under ‘more hotter days’, but amplified and more frequent, with less recuperation time overnight 	<ul style="list-style-type: none"> Plan for transition into heat resistant plants that preserve character/heritage value Adapt infrastructure where possible and appropriate (e.g. use different paving materials, etc.)



EXPOSURE — ALPINE

Climate change variables	Key climate change impacts	Sensitivity of the place to climate change impacts	Examples of impacts on the place 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	Current distribution of native/non-native vegetation	<ul style="list-style-type: none"> Loss of local ecosystems and species Structural deterioration of buildings due to wet-frost Pest incursions 	<ul style="list-style-type: none"> Plan for transition to more resilient plants that preserve character/heritage value

© Heritage Council of Victoria 2023.
 ISBN 978-0-7311-9232-8 (pdf/online/MS word)
 Author: Extent Heritage. Design: Green Scribble.
 Photograph: GML Heritage.

Disclaimer This publication may be of assistance to you but the State of Victoria and its employees do not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequence which may arise from you relying on any information in this publication.