

**CoastAdapt: How to undertake a climate change risk assessment** (<http://coastadapt.com.au/how-to-pages/how-to-conduct-a-climate-change-risk-assessment>)

**Table 2:** Summary overview of the three levels of risk assessment in CoastAdapt

	Step-1: Establish the context	Step-2: Identify existing risk (past and current)	Step-3: Identify future risk and opportunities	Step-4: Analyse and evaluate risk
<b>1<sup>st</sup> pass Risk Assessment</b>	<ul style="list-style-type: none"> <li>Objective/goal</li> <li>Scale</li> <li>Time frame</li> <li>Climate change scenario (for most climate variables and sea level)</li> </ul>	<ul style="list-style-type: none"> <li>Identify whether any record of occurrence of climatic hazard in the past in the area?</li> <li>Are there any risk management strategies in place to tackle any future occurrence of that hazard?</li> </ul>	<ul style="list-style-type: none"> <li>Explore climate change projections for the selected time frame/s and emission scenario/s and identify potential hazards</li> <li>For each hazards, can any existing risk (from step-2) get worse under future projected changes?</li> <li>Can any new risk emerge under future projected changes?</li> </ul>	<ul style="list-style-type: none"> <li>Identify a set of decision areas or systems (e.g. geographical areas, business operation, assets, ecosystems etc.) that has the potential to be at-risk in future</li> </ul>
<b>2<sup>nd</sup> pass Risk Assessment</b>	<ul style="list-style-type: none"> <li>Objective/goal</li> <li>Time frame and climate change scenario (for variables that are relevant to the decision areas under investigation)</li> <li>System under analysis (e.g. public infrastructure, private properties, ecosystems)</li> <li>Scale of analysis (e.g. entire council, a single beach community, a single infrastructure etc.)</li> <li>Identify relevant stakeholders and establish mechanisms to involve them in the process.</li> </ul>	<ul style="list-style-type: none"> <li>Identify whether any record of occurrence of climatic hazard in the past in the area? Use findings of 1<sup>st</sup> pass screening to narrow down the list of hazards (relevant to your decision area)</li> <li>What was the consequence of that event (i.e. identify systems that were affected)?</li> <li>Are there any risk management strategies in place to protect previously affected systems from future occurrence of that hazard?</li> <li>Understand and identify residual risk of a given system (i.e. risk that remains even after putting a risk management strategy in place)</li> </ul>	<ul style="list-style-type: none"> <li>Explore climate change projections for the selected time frame/s and emission scenario/s</li> <li>Understand whether a change in climate variable or sea level in future will lead to hazards that can pose risks to any systems (i.e. assets).</li> <li>Investigate whether any existing risk (from step 2) can increase under future climate change projections?</li> <li>Identify new risks that can emerge under future climate change projections.</li> <li>Identify possible consequences of a given risk and the likelihood of that occurring (also consider system interdependencies).</li> </ul>	<ul style="list-style-type: none"> <li>Identify your risk evaluation criteria (e.g. maintain public infrastructure, protect private properties, minimise impact on environment, ensure business continuity etc.)</li> <li>Adopt scales for rating consequence of a risk (i.e. impact of a risk on risk evaluation criteria) and likelihood of that happening</li> <li>Take one risk at a time and using adopted scales, rate the consequence of climate change impact for your area. Also rate the likelihood of that happening. Repeat this step for each risk evaluation criteria</li> <li>Adopt a risk rating scale (e.g. high, medium, low etc.)</li> <li>Using information generated above, identify the rating of the risks</li> </ul>
<b>3<sup>rd</sup> pass Risk Assessment (detailed)</b>	<ul style="list-style-type: none"> <li>Objective/goal</li> <li>Time frame</li> <li>Climate change scenario (for relevant variables and sea levels only but with further details)</li> <li>System under analysis (e.g. public infrastructure, private properties, ecosystems)</li> <li>Scale of analysis (e.g. entire council, a single beach community, a single infrastructure etc.)</li> </ul>	<ul style="list-style-type: none"> <li>Using information derived from a first-pass or second-pass assessment on past hazard in your area list the system component/s (e.g. assets) that was/were affected in the past events.</li> <li>What was the consequence of those events? (qualitative or quantitative estimation)</li> <li>Are there any risk management strategies in place to tackle any future occurrence of that risk?</li> <li>Understand and identify residual risk of a given system (i.e. risk that remains even after putting a risk management strategy in place)</li> </ul>	<ul style="list-style-type: none"> <li>Identifying relevant climate change and sea level rise projections of your area (for your selected scenarios in step 1) and assess further data needs.</li> <li>For the hazards that you have shortlisted in second-pass assessment, commission detailed studies to identify the exact nature, rate and extent of identified risks under future climate and sea level change.</li> <li>Using the output of these detailed studies identify your system components that are at-risk (exposure)</li> <li>Understand how sensitive your system components (e.g. assets) are to the identified risk exposures. This might need to use information generated in the detail site specific analysis and modelling (also consider system interdependencies, see guideline for detail).</li> <li>You should also explore and understand the capacity of your system components or organization managing them to respond to any future exposures.</li> <li>Using information generated above determine vulnerability of your system component</li> </ul>	<ul style="list-style-type: none"> <li>Identify risk evaluation criteria (e.g. maintain public infrastructure, protect private properties, minimise impact on environment, ensure business continuity etc.)</li> <li>Adopt <i>scales</i> for rating consequence of a risk (<i>catastrophic, moderate, low etc.</i>) and likelihood of a given consequence happening (<i>rare, unlikely, possible etc.</i>)</li> <li>Take one system component at a time and using adopted scales, rate the consequence of their identified risk occurring in future. Also rate the likelihood of that happening.</li> <li>Repeat the above step for each risk evaluation criteria</li> <li>Adopt a risk rating scale (e.g. high, medium, low etc.)</li> <li>Using information generated above, identify the risk rating of the system components</li> <li>Using the risk ratings along with vulnerability ratings (step-3) identify the system components whose risk need to be addressed in priority (e.g. high vulnerability-high risk)</li> </ul>