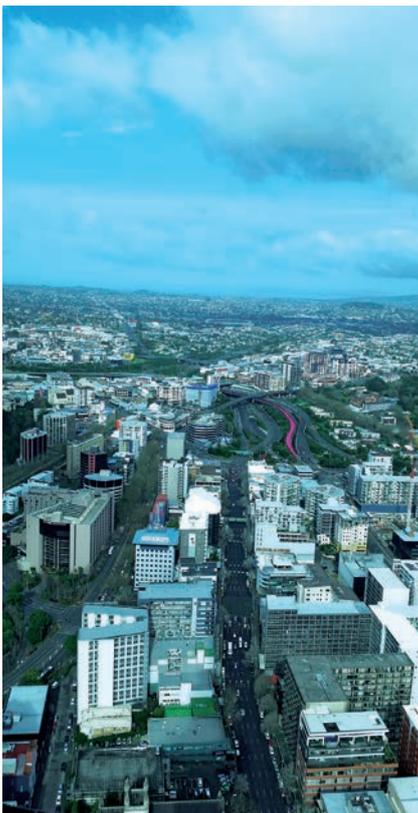




## Step 5: Evaluate pathways

After potential pathways have been identified (Step 4) it is time to evaluate them further.



The purpose of Step 5 is to evaluate possible pathways to provide enough information to make an informed decision, drawing on all the work and information gathered previously.

### Step 5

Marae-opoly (Step 4) provided a method to contemplate the multitude of possible pathways available, and some preferred pathways (or at least common components) may have emerged to provide a long-list for further consideration.

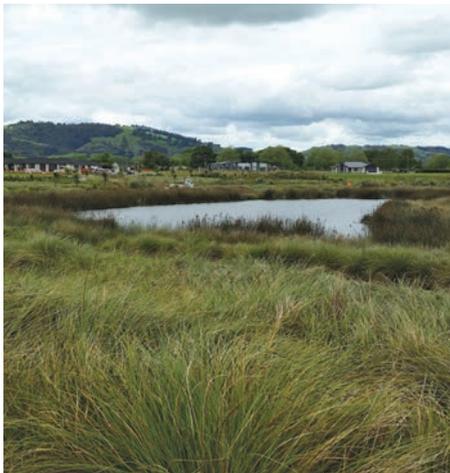
Once a long-list of pathways is identified, it is likely that further investigation will be needed to evaluate them properly and reduce the number being considered. The type of further investigation needed will depend on the options and could include:

- concept or preliminary design investigations
- discussions with key stakeholders including Territorial Local Authorities (TLAs)
- seeking property advice
- discussions with external funding agencies.

Working through a series of questions may influence the pathway (particularly sequence and timing) and help narrow down the number of pathways further. Key questions to consider when short-listing and formulating your preferred pathway include:

- Does it deliver on the identified priorities (Step 1)?
- Is it affordable?
- Does the pathway support making just-in-time decisions?
- Can it be staged?
- How robust is the pathway? Can it hold up to different climate change futures?
- What are the impacts if part of the pathway is wrong?
- Is it flexible to changing information or circumstances?
- Does the pathway transfer risk to neighbours and/or future generations? Is that acceptable?
- What risk does the pathway not manage (residual risk)? is this acceptable?

A more comprehensive set of questions is available at [www.niwa.co.nz/te-kuwaha/tools-and-resources](http://www.niwa.co.nz/te-kuwaha/tools-and-resources)



The process of evaluating each pathway against the key questions might result in some changes to the short-listed pathways or new pathways. As part of the evaluation it is important to decide if you:

- need to gather extra information e.g., the cost and location of land to help inform the decision
- have enough information now to choose one pathway and move to the next step in the decision-making process.

Once you have enough information and have firmed up your short-list of potential pathways you can evaluate them further. The most appropriate evaluation method will depend on several factors including:

- the target audience and purpose of engagement
- who is making the decisions on the pathway
- the risks and financial implications of the decisions.

There are many established methods available to evaluate different options, including pros/cons, cost/benefit analysis and MCA (Multi-Criteria Analysis). The comprehensive set of questions available on the website provide a useful starting point for any of the evaluation methods noted here. Irrespective of the method used, it is important that the overall pathway is evaluated, rather than the individual options that make up the pathway.

## Tangoio experience

Initial rounds of Marae-opoly (Step 4) identified several common elements to the pathways being formed as well as several key differences.

Common features across all pathways	Differences
<b>Short-term</b> Options to protect the existing marae complex. Investment in deposits and/or land. Upgrading the existing marae. Maintaining insurance to protect existing marae complex.	Sequence and timing of interventions.  Level of investment of the \$4,000,000 over the next 100 years in: a) the existing marae b) deposits and/or land.
<b>Long-term</b> Maintaining insurance to protect assets. Investment in deposits and/or land to provide continued income.	Tolerance to adverse impacts of flooding.  Transition to new site vs upgrading at the existing site.

The hapū of Tangoio Marae are in the process of further investigation to evaluate options and pathways. All options, except Earth Ark, identified in Step 3 are being considered in more detail.

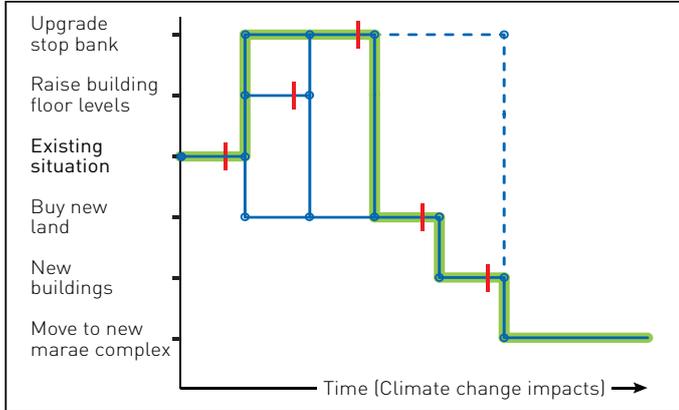


## Example short-list of adaptation pathways for Tangoio Marae

To demonstrate the adaptation pathway approach, we have developed a “short list” of options that draws on the common features of the pathways formulated through the Marae-opoly game. **These options are provided for illustrative purposes only and have not been developed or agreed by the whānau of Tangoio Marae or the Maungaharuru-Tangitū Trust.**

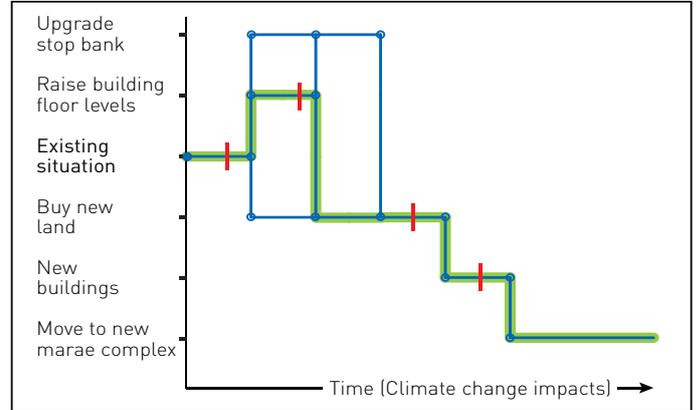
Four possible pathways (highlighted with green line) are shown below. Each of the options start with the existing situation. They all include investing a portion of the available funds, and some upgrades of the existing marae facilities but to keep things simple, these elements are not included in the diagrams.

### Option 1



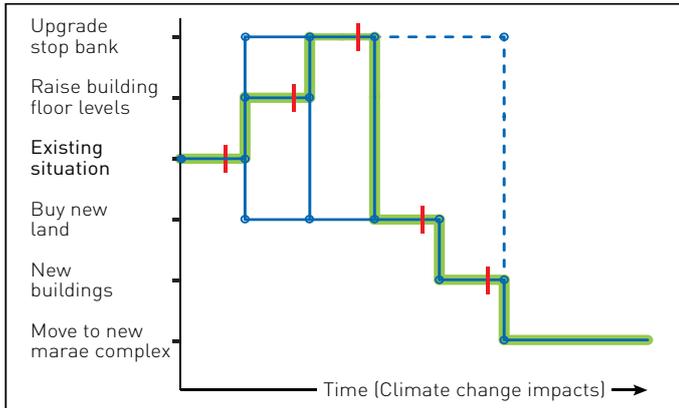
Option 1 involves monitoring until a pre-defined trigger is reached following which the stop banks will be upgraded to increase the flood protection to the marae. Subsequent actions (when the associated triggers are reached) are to purchase land to relocate the marae, develop the new site and finally moving.

### Option 2



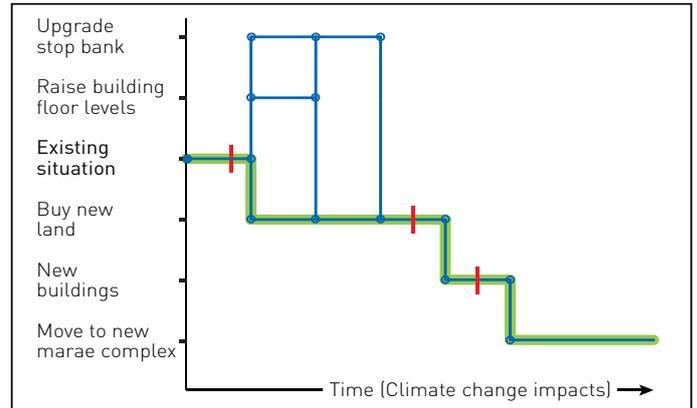
Option 2 involves monitoring until a pre-defined trigger is reached following which the building floor levels will be raised to increase the level of flood protection to the marae. Subsequent actions (when the associated triggers are reached) are to purchase land to relocate the marae, develop the new site and finally moving.

### Option 3



Option 3 involves monitoring until a pre-defined trigger is reached following which the building floor levels will be raised to increase the level of flood protection to the marae. Subsequent actions (when the associated triggers are reached) are to upgrade the stopbanks; purchase land to relocate the marae, develop the new site and finally moving.

### Option 4



Option 4 involves monitoring until a pre-defined trigger is reached following which land will be purchased to relocate the marae. Subsequent actions (when the associated triggers are reached) are to upgrade the stopbanks; purchase land to relocate the marae, develop the new site and finally moving.

— Blue Lines show the possible pathways that could be implemented.  
 - - - Dashed Blue Line represents the option to maintain the stop bank protection while the new marae (or an alternative action) is being developed. In this case, the level of protection provided by the stop bank will be reduced but still offers some protection worth maintaining.

— Green Line shows the preferred pathway associated with each option.  
 — Red Tick represents the trigger point that signals that work required to make the next move needs to start. Defining the trigger points and ongoing monitoring is described in Steps 6 and 7.

Find resources and more information at [www.niwa.co.nz/te-kuwaha/tools-and-resources](http://www.niwa.co.nz/te-kuwaha/tools-and-resources)

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