Triabunna

Pathway 1

Let nature take its course

Description

This pathway allows natural coastal processes to happen with minimal, if any, intervention or resistance. Under this pathway there would be very little new development or modification to existing development in the coastal zone and no erosion or flood protection works.

Where erosion or inundation threatens structures, they would be removed if they cannot withstand the hazard. Property owners could take some action to protect their property from coastal hazards, but only where it does not affect adjacent properties.

How things might happen*

In some areas, erosion would continue, but eventually stop, once it hits hard bedrock such as at Double Creek and Louisville. In other areas, such as at the mouth of Vicary's Rivulet and Maclaines Creek erosion may continue, unstopped by hard bedrock. Flooding would become more frequent both with storms, and for some properties, during high tides.

Some coastal properties may be at risk. Owners might be permitted to protect their own private property, for example by lifting them onto piles or other waterproofing methods, but only so long as it does not impact adjacent properties. Vegetation and wetland management would be permitted to help stabilise erosion prone areas.

Some things to think about:

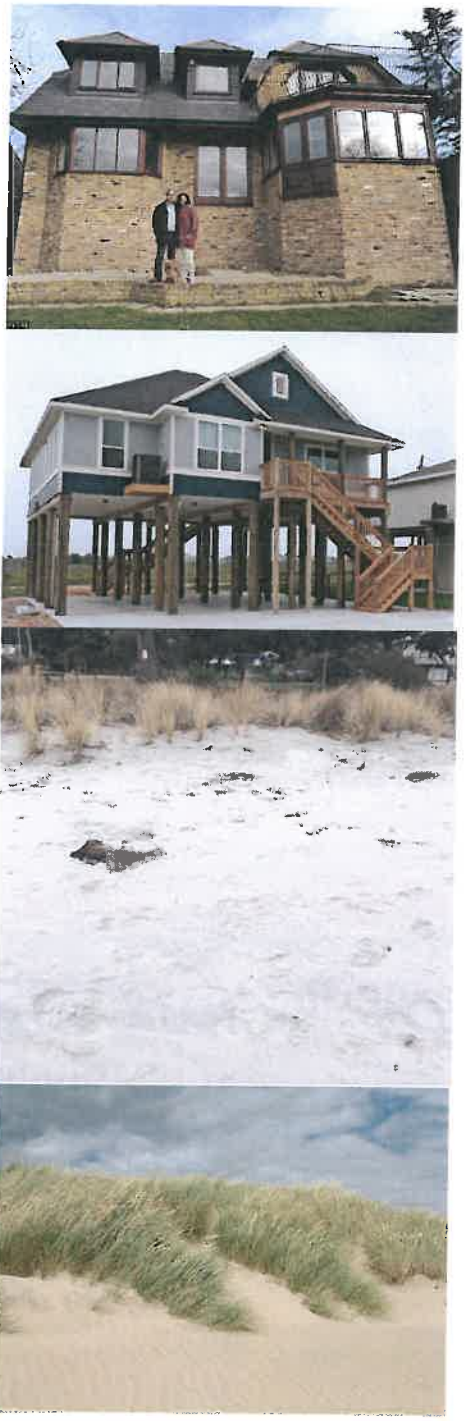
- What does this adaptation pathway mean for the Triabunna Community? Is it realistic?
- What would be the specific impacts? What are the positives and negative of this pathway?
- Would this work in Triabunna? How would it work?
- What about emergency management? What if there is a major storm and part of the main access road is cut off?
- Who pays for this pathway?

*This is a scenario only, designed to show how the pathways work. Further investigation would be required for future actions.

Pathway 1

Potential options under this pathway

Major erosion or flood control works would not be undertaken under this pathway. Most work would involve 'soft' options such as vegetation management and managing retreat/impacts. Protecting private property is allowed if it does not impact neighbours/coastal processes. The table below gives indicative costs for options under this pathway.



Raising houses for flood protection

Vegetation management

Option	Indicative cost*	Time period
Emergency management planning	-	Ongoing
Individual protection of dwellings	$5K to 10K /m	50+ years
Coastal erosion and loss of beach amenity	-	Episodic
Loss of land and property resumptions	-	Ongoing
Managed retreat	-	50+ years
No new subdivision or intensification of intensification	-	50+ years
Vegetation management	$200/m	Episodic
Wetlands development/management	$150/m^2	
Emergency management planning	-	Ongoing

*All costs are indicative only. Further investigation would be required to obtain accurate costing for each action.

Other implications and costs

As seen in the table above, some costs are difficult to quantify at present, but should be considered when thinking about future adaptation pathways. Other costs considerations might also include:

- Land values.
- Direct and indirect damage expenses to private and public property.
- Cost of emergency services expenditure.
- Impact on availability of community, commercial and social services, unless replaced with development on higher ground.
- Psychological impact and potential community decline.
- Regional structure.
- Relocation of some services or assets.

Pathway 2

Protect existing development while protecting natural and community values

Description

This pathway protects property as long as practical and only where that protection does not impact on the natural, recreational and other values the community consider important to the area for example: the beach, recreational areas, habitat in coastal vegetation and dunes.

This pathway tries to balance protecting natural and shared community assets and private property. Intensification of development in hazard areas would be discouraged, but allowed if it, and other protection measures, do not have a negative effect on natural and community values or could have a positive effect on these values.

How things might happen*

Vegetation and wetland management would be key measures for erosion-prone areas such as the mouths of the Vicary Rivulet and Maclaines Creek. When these measures are no longer effective to protect areas from flooding and erosion, there would be a shift to managedretreat.

Properties within the hazard zone may require some protective works to reduce their susceptibility to erosion or inundation. New developments would be required to be built to withstand the risk of inundation and erosion over its lifetime. The Tasman Highway could be raised to mitigate inundation and erosion risk.

Some things to think about:

- What does this adaptation pathway mean for the Triabunna Community? Is it realistic?
- What would be the specific impacts? What are the positives and negative of this pathway?
- Would this pathway work in Triabunna? How would it work?
- What about emergency management? What if there is a major storm and part of the main access road is cut off?
- Who pays for this pathway?

*This is a scenario only, designed to show how the pathways work. Further investigation would be required for future actions.

Potential options under this pathway

This pathway allows for the use of protection measures that do not interfere with the natural and social values of the area. Vegetation and erosion management and protection of private property would be permitted, before eventual retreat once these measures can no longer protect the area.

Sediment management: Groyne

Vegetation management

Filling land

Beach nourishment

Option	Indicative cost*	Time period
Emergency management planning	-	Ongoing
Hardening river banks/foreshore	$5K to 10K /m	50+ years
Individual protection of dwellings	$5K to 10K /m	50+ years
Coastal erosion and loss of beach amenity	-	Episodic
Loss of land and property resumptions	-	Ongoing
Managed retreat	-	50+ years
No new subdivision or intensification of intensification	-	50+ years
Raising land and infrastructure and hardening	$5K to 10K /m	50+ years
Quasi Permanent Seawall (geobags)	$4K to 7K /m	25 years
Sediment management structures (groynes)	$2K to 5K /m of beach	50+ years
Storm water outlet upgrades	$50K each	50+ years
Vegetation management	$200/m	Episodic
Wetlands development/ management	$150/m^2	Episodic

*All costs are indicative only. Further investigation would be required to obtain accurate costing for each action.

Other implications and costs

As seen in the table above, some costs are difficult to quantify at present, but should be considered when thinking about future adaptation pathways. Other costs considerations might also include:

- Land values.
- Direct and indirect damage expenses to private and public property.
- Cost of emergency services expenditure
- Impact on availability of community, commercial and social services, unless replaced with development on higher ground.
- Relocation of some services or assets.

AECOM

Pathway 3

Protect existing development and permit new development to the maximum extent possible

Description

The main focus of this pathway is protecting the existing and future community and its property, assets and infrastucture. It assumes that the rate and extent of change will be manageable using any protection and adaptation options necessary.

Intensification of development could enable more parties to contribute to the costs of protection works. Intensification might be permitted where it does not compromise community values. While natural areas may be affected, they will adapt in their own way or become modified in ways that the community accepts.

How things might happen

Where vegetation and wetland management is no longer enough to slow recession around the mouth of Vicary's Rivulet or Maclaines Creek, the creek banks would be hardened by a revetment or other protective structure, to prevent ongoing erosion. Hardening an eroding river bank may have some effect on vegetation and wildlife habitat, but could protect the community from shoreline erosion and recession for a long time (although not indefinitely). The Tasman Highway may be raised or hardened as appropriate.

There would be some costs of hardening the shoreline, but this may reduce the individual need for properties to address erosion hazards. Intensification of development would help cover some of the cost but may change the character of the town. Low lying land would be filled to allow for intensification of development

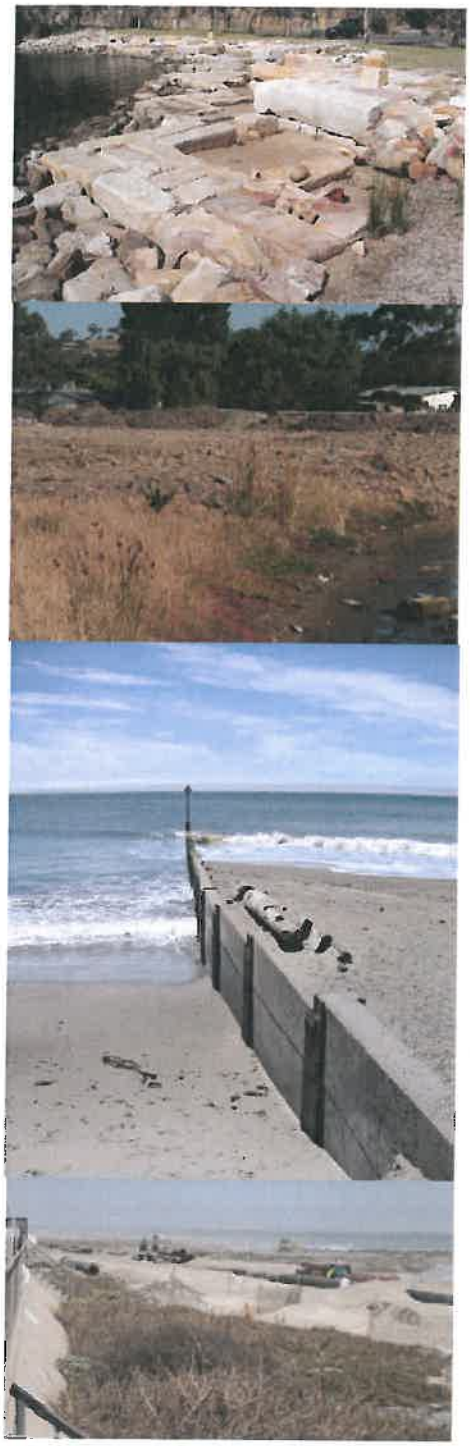
Some things to think about:

- What does this adaptation pathway mean for the Triabunna Community? Is it realistic?
- What would be the specific impacts? What are the positives and negative of this pathway?
- Would this work in Triabunna? How would it work?
- What about emergency management? What if there is a major storm and part of the main access road is cut off?
- Who pays for this pathway?

*This is a scenario only, designed to show how the pathways work. Further investigation would be required for future actions.

Potential options under this pathway

This pathway allows for protection measures as required to protect the community and its property from hazards now and in the future. Options under this pathway would likely start with vegetation management and beach nourishment and move to a revetment and raising land as erosion and inundation continues.



Option	Indicative cost*	Time period
Emergency management planning	-	Ongoing
Hardening foreshore	$5K to 10K /m	50+ years
Individual protection of dwellings	$5K to 10K /m	50+ years
Coastal erosion and loss of beach amenity	-	Episodic
Loss of land and property resumptions	-	Ongoing
Managed retreat	-	50+ years
No new subdivision or intensification of intensification	-	50+ years
Raising land and infrastructure and hardening	$5K to 10K /m	50+ years
Sediment management structures (groynes)	$2K to 5K /m of beach	50+ years
Storm water outlet upgrades	$50K each	50+ years
Vegetation management	$200/m	Episodic
Wetlands development	$150/m^2	
Emergency management planning	-	Ongoing

*All costs are indicative only. Further investigation would be required to obtain accurate costing for each action.

Other things to consider

As seen in the table above, some costs are difficult to quantify at present, but should be considered when thinking about future adaptation pathways. Other costs considerations might also include:

- Reduced direct and indirect damage expenses from flood and erosion impacts.
- Much less property lost or abandoned.
- Reduced emergency services expenditure.

AECOM

Orford

Pathway 1

Let nature take its course

Description

This pathway allows natural coastal processes to happen with minimal, if any, intervention or resistance. Under this pathway there would be very little new development or modification to existing development in the hazard zone and no erosion or flood protection works.

Where erosion or inundation threatens structures, they would be removed if they cannot withstand the hazard. Property owners could take some action to protect their property from coastal hazards, but only where it does not affect adjacent properties.

How things might happen*

Some areas, such as Raspins, Millingtons and Shelly Beaches, would eventually start to recede. Flooding would become more frequent both with storms, and for some properties, during high tides.

The Tasman Highway will be subject to more frequent temporary inundation and erosion from storm events by 2050. The future of this access point would need to be strongly reconsidered if it cannot withstand hazards from erosion and inundation.

Some coastal properties may be at risk, owners would be permitted to protect their own private property for example, by lifting them onto piles or other waterproofing) but only so long as it does not affect adjacent properties. Vegetation management would be permitted to help stabilise dunes or foreshore areas.

Some things to think about:

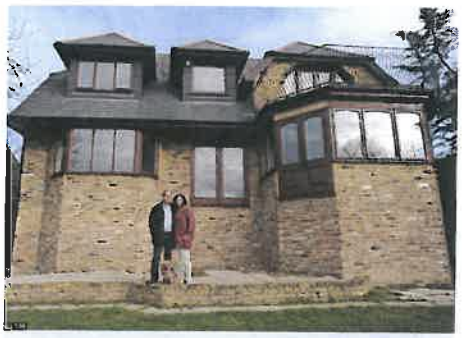
- What does this adaptation pathway mean for the Orford community? Is it realistic?
- What would be the specific impacts? What are the positives and negative of this pathway?
- Would this pathway work in Orford? How?
- What about emergency management? What if there is a major storm and part of the main access road is cut off?
- Who pays for this pathway?

*This is a scenario only, designed to show how the pathways work. Further investigation would be required for future actions.

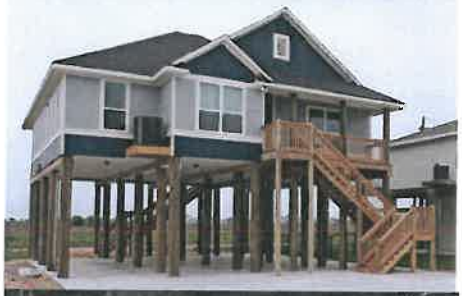
Pathway 1

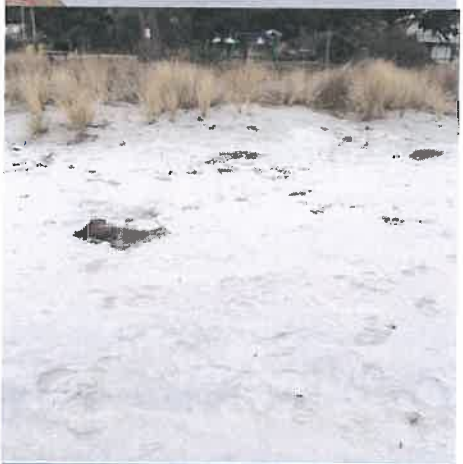
Potential options under this pathway

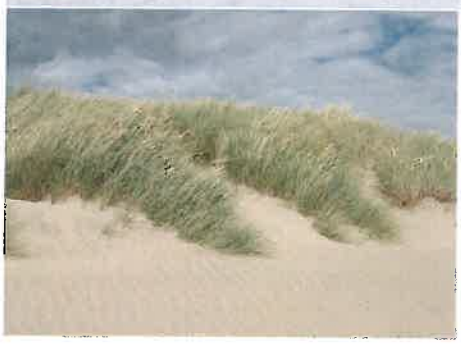
Major erosion or flood control works would not be undertaken under this pathway. Most work would involve 'soft' options such as vegetation management and managing retreat/impacts. Protecting private property is allowed if it does not impact neighbours/coastal processes. The table below gives indicative costs for options under this pathway.



Raising houses for flood protection







Vegetation management

Option	Indicative cost*	Time period
Emergency management planning	-	Ongoing
Individual protection of dwellings	$5K to 10K /m	50+ years
Coastal erosion and loss of beach amenity	-	Episodic
Loss of land and property resumptions	-	Ongoing
Managed retreat	-	50+ years
No new subdivision or intensification of intensification	-	50+ years
Vegetation management	$200/m	Episodic
Emergency management planning	-	Ongoing
Individual protection of dwellings	$5K to 10K /m	50+ years

*All costs are indicative only. Further investigation would be required to obtain accurate costing for each action.

Other implications and costs

As seen in the table above, some costs are difficult to quantify at present, but should be considered when thinking about future adaptation pathways. Other costs considerations might also include:

- Land values.
- Direct and indirect damage expenses to private and public property.
- Cost of emergency services.
- Impact on availability of community, commercial and social services, unless replaced with development on higher ground.
- Psychological impact and potential community decline.
- Regional structure.
- Relocation of some services or assets.

Pathway 2

Protect existing development while protecting natural and community values

Description

This pathway protects property as long as practical and only where that protection does not impact on the natural, recreational and other values the community consider important to the area, for example: the beach, recreational areas, habitat in coastal vegetation and dunes.

This pathway tries to balance protecting natural and shared community assets and private property. Intensification of development in hazard areas would be discouraged, but possibly allowed if it, and other protection measures, do not have a negative effect on natural and community values or could have a positive effect on these values.

How things might happen*

Beach nourishment could be a key measure. The introduction of sediment management structures, such as a groyne may be necessary to retain some sediment. Eventually, nourishing and sediment management may become impractical due to cost, environmental impact or other factors. At this point, there could be further progressive erosion and a shift to management retreat, although some other protection measures may still also occur.

Properties within the hazard zone may require some protective works to reduce their susceptibility to erosion or inundation. New developments would be required to be built to withstand the risk of inundation and erosion over its lifetime. The Tasman Highway could possibly be raised to mitigate inundation and erosion risk.

Some things to think about:

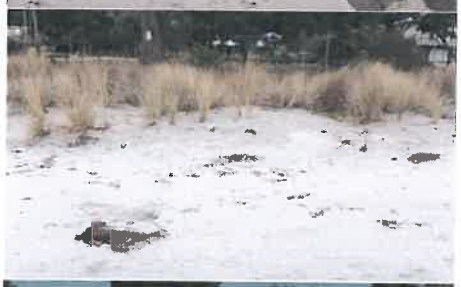
- What does this adaptation pathway mean for the Orford Community? Is it realistic?
- What would be the specific impacts? What are the positives and negative of this pathway?
- Would this pathway work in Orford? How?
- What about emergency management? What if there is a major storm and part of the main access road is cut off?
- Who pays for this pathway?

*This is a scenario only, designed to show how the pathways work. Further investigation would be required for future actions.

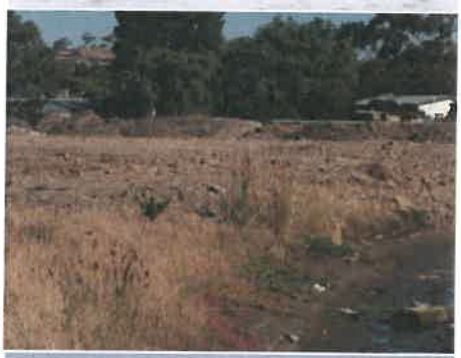
Potential options under this pathway

This pathway allows for the use of protection measures that do not interfere with the natural and social values of the area. Vegetation management, beach nourishment, construction of less intrusive forms of sediment management structures and protection of private property would be permitted, before eventual retreat once these measures can no longer protect the area.

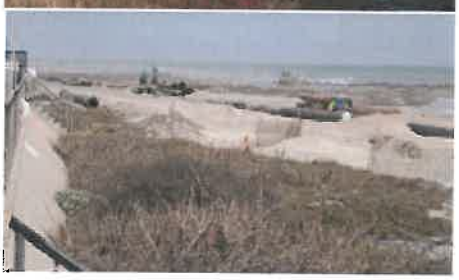
Sediment management: Groyne



Vegetation management



Filling land



Beach nourishment

Option	Indicative cost*	Time period
Beach nourishment	$500/m	Annual
Emergency management planning	-	Ongoing
Hardening river banks/foreshore	$3K to 6K /m	50+ years
Individual protection of dwellings	$5K to 10K /m	50+ years
Coastal erosion and loss of beach amenity	-	Episodic
Loss of land and property resumptions	-	Ongoing
Managed retreat	-	50+ years
No new subdivision or intensification of intensification	-	50+ years
Raising land and infrastructure and hardening	$5K to 10K /m	50+ years
Quasi Permanent Seawall (geobags)	$4K to 7K /m	25 years
Sediment management structures (groynes)	$2K to 5K /m of beach	50+ years
Vegetation management	$200/m	Episodic
Wetlands development/ management	$150/m^2	

*All costs are indicative only. Further investigation would be required to obtain accurate costing for each action.

Other implications and costs

As seen in the table above, some costs are difficult to quantify at present, but should be considered when thinking about future adaptation pathways. Other costs considerations might also include:

- Land values.
- Direct and indirect damage expenses to private and public property.
- Cost of emergency services expenditure
- Impact on availability of community, commercial and social services, unless replaced with development on higher ground.
- Relocation of some services or assets.

AECOM

Pathway 3

Protect existing development and permit new development to the maximum extent possible

Description

The main focus of this pathway is protecting the existing and future community and its property, assets and infrastructure. It assumes that the rate and extent of change will be manageable using any protection and adaptation options necessary.

Intensification of development could enable more parties to contribute to the costs of protection works. Intensification could be permitted where it does not compromise community values. While natural areas may be affected, they will adapt in their own way or become modified in ways that the community accepts.

How things might happen*

Sediment management structures such as groynes or artificial reefs and beach nourishment would be key management measures in the first instance. When these measures become impractical or costly, the shoreline at Raspins, Millingtons and/or Shelly's Beaches could be hardened by a revetment or other protective structure to prevent ongoing erosion. Hardening a coast that is eroding due to rising sea levels will eventually lead to a loss of beach and dunes, however it would protect the community from shoreline erosion and recession for a long time (although not indefinitely). The road could be raised or hardened as appropriate.

The cost of hardening the shoreline would be expensive, but would reduce the individual need for properties to address erosion hazards. Intensification of development would help cover some of the cost but may change the character of Orford. Low lying land would be filled to allow for intensification of development.

Some things to think about:

- What does this adaptation pathway mean for the Orford community? Is it realistic?
- What would be the specific impacts? What are the positives and negative of this pathway?
- Would this pathway work in Orford? How?
- What about emergency management? What if there is a major storm and part of the main access road is cut off?
- Who pays for this pathway?

*This is a scenario only, designed to show how the pathways work. Further investigation would be required for future actions.