Tabert Flood Study

Public Consultation– 23rd October 2019

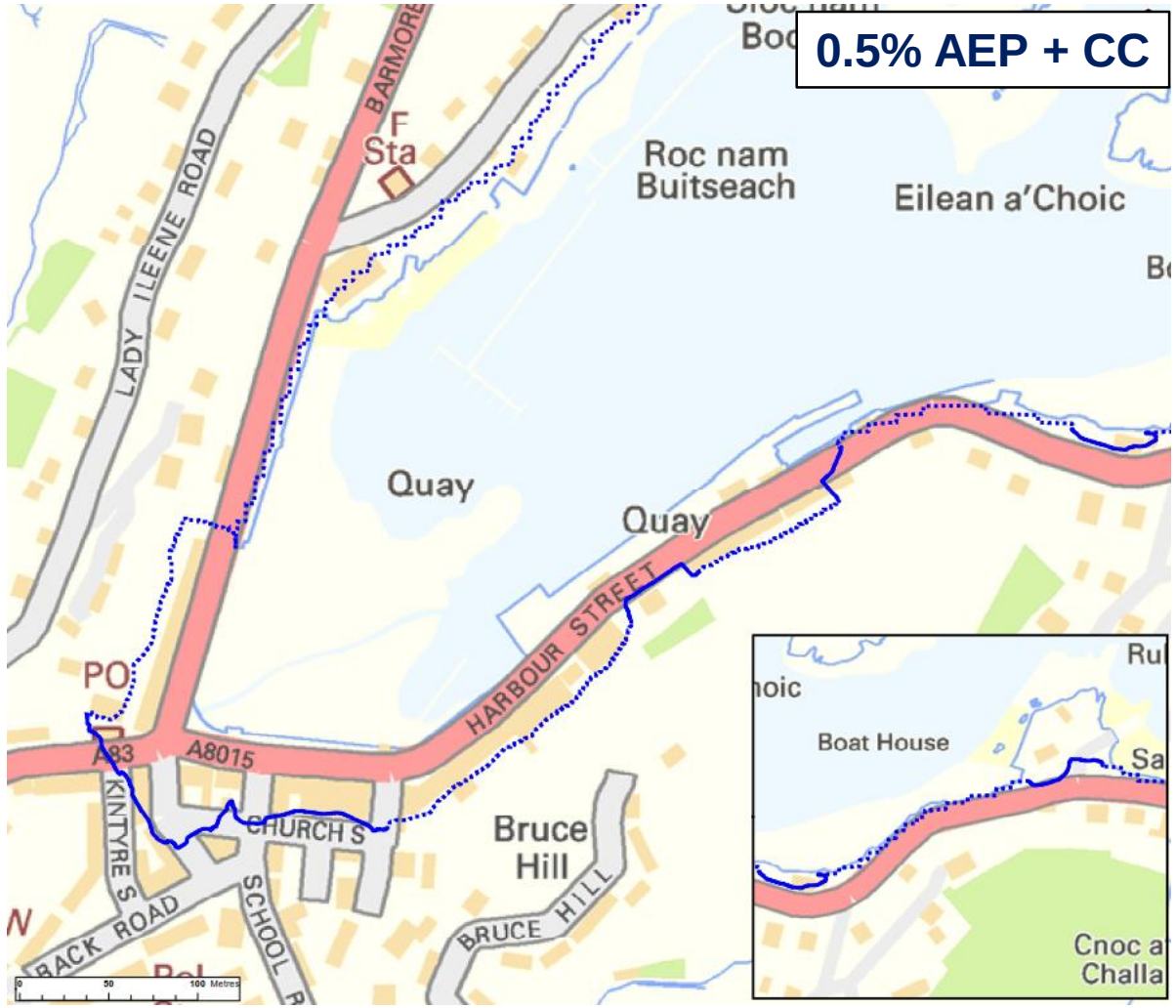
Argyll Bute COUNCIL

AECOM

Public Consultation - Structure

- Background and why we are here today
- Summary of work to date?
- What options were considered?
- How did we appraise and prioritise the options?
- What is our preferred solution?
- What are the next steps?
- Questions

Project Background



- 3 significant tidal events; 1991, 2013 and 2014
- Village included in a PVA, that focusses around Tarbert
- Sea level rise as a result of climate change will significantly affect Tarbert

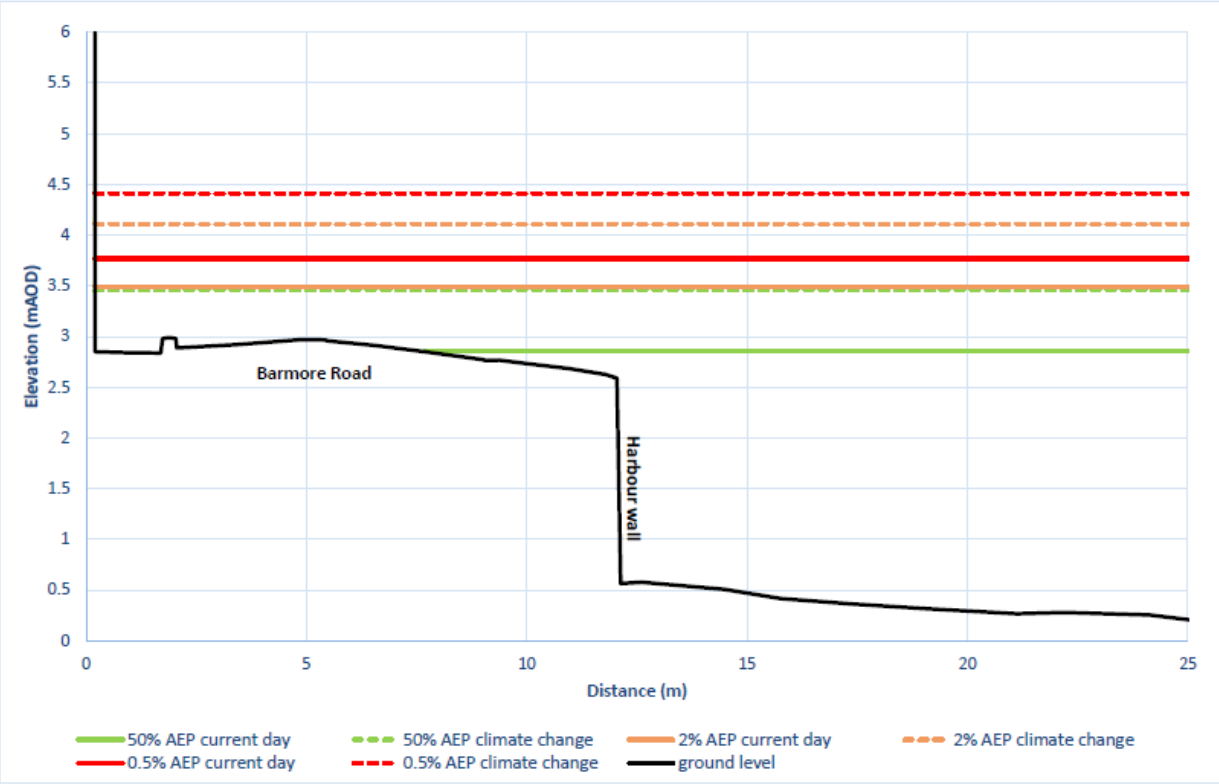
Summary of work to date

- Assessing the historic flood data and accounts
- Undertaking detailed coastal computer modelling
- Mapping the tidal flood contours within Tarbert
- Developing a long list of viable flood options
- Selecting a short list of options based on key criteria in consultation with stakeholders and the public
- Developing the shortlist options through economic, social and environmental appraisal to form a preferred option.

Argyll & Bute COUNCIL

AECOM

Defining coastal flood risk



- Current standard of protection – 20% AEP event
- Standard of protection in 80 years (0.65m sea level rise – <50% AEP event

- Computer modelling of harbour and Loch Fyne area undertaken
- The extreme sea levels (waves were not found to be significant) were applied to the ground surface, producing flood contour maps for all AEP flood events
- An indicative cross section of Barmore Road is shown, aiming to help visualize the range of flood depths over varying AEP events
- It is assessed that 76 properties are at risk of flooding in Tarbert at the 0.5% AEP present day event
- 87 properties lie within the 0.5% AEP event +climate change extent.

Argyll & Bute COUNCIL

AECOM

Considered Long List options

Once we confirmed the existing coastal flood risk, we looked at potential ways to reduce this risk by creating a long list of options. Some of the options on the long list are below.

Raising of existing defence

- This would create a barrier to direct inundation from high sea levels
- Could incur significant costs, and be visually intrusive
- Demountable walls could reduce visual impact.

Setback coastal wall

- Installed on the landward side of the promenade to maintain recreational walkway
- Could incur significant costs, and be visually intrusive
- Demountable walls could reduce visual impact.

Property Flood Protection (PFP)

- Protects from flooding through pathways such as doors and sewage systems.
- Provides flood protection to properties up to 0.6m
- Upper limit exceeded in higher flood events

Breakwater

- Hard-engineered structure set out from harbour to reduce wave heights
- Unlikely to significantly reduce flooding in Tarbert, as wave heights were seen to be relatively low.

Argyll Bute COUNCIL

AECOM

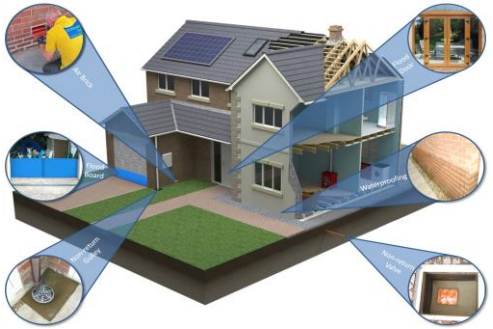
Considered Long List options

Natural Flood Management

- Salt marshes/ beach recharge create a natural buffer which can reduce wave heights
- Unlikely to significantly reduce flooding, as wave heights are relatively low.

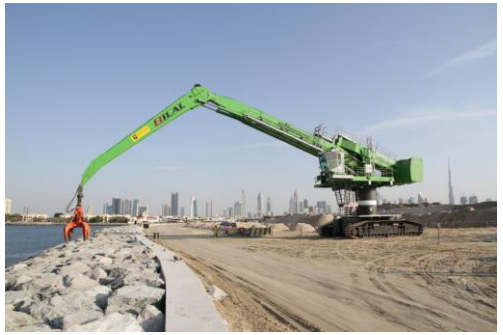
Flood resilient properties

- At risk properties retrofitted with resilience measures such as lifting sockets and floodproof paint/flooring
- Accepts the risk of flooding, and adapts properties to better withstand flooding



Land reclamation

- Infilling of area in front of harbour wall to provide more space for coastal defence
- Could be used to create amenity value
- Impacts on environmental and social receptors remain.



Tidal barrage

- Seeks to stop high sea levels entering harbour area
- Gated to allow access
- Extremely costly, and would significantly affect the character of area, the local environment and ecology.

Argyll Bute COUNCIL

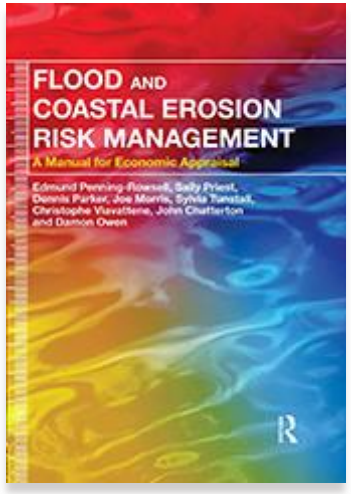
AECOM

How did we refine the options?

The long list of options was screened in terms of technical feasibility, legal constraints, financial constraints and environmental impacts to produce the short list of most viable options. These short list options were then appraised.

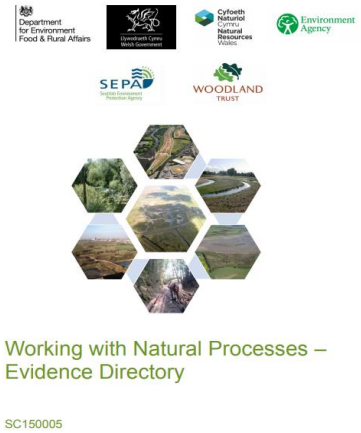
Economic appraisals:

- As any successful scheme would receive government funding - economic benefits of an option should be greater than the costs. Benefit Cost Ratio greater than 1.
- Our assessment included:
  - Property damages
  - Clean-up costs
  - Emergency services
  - Option costs



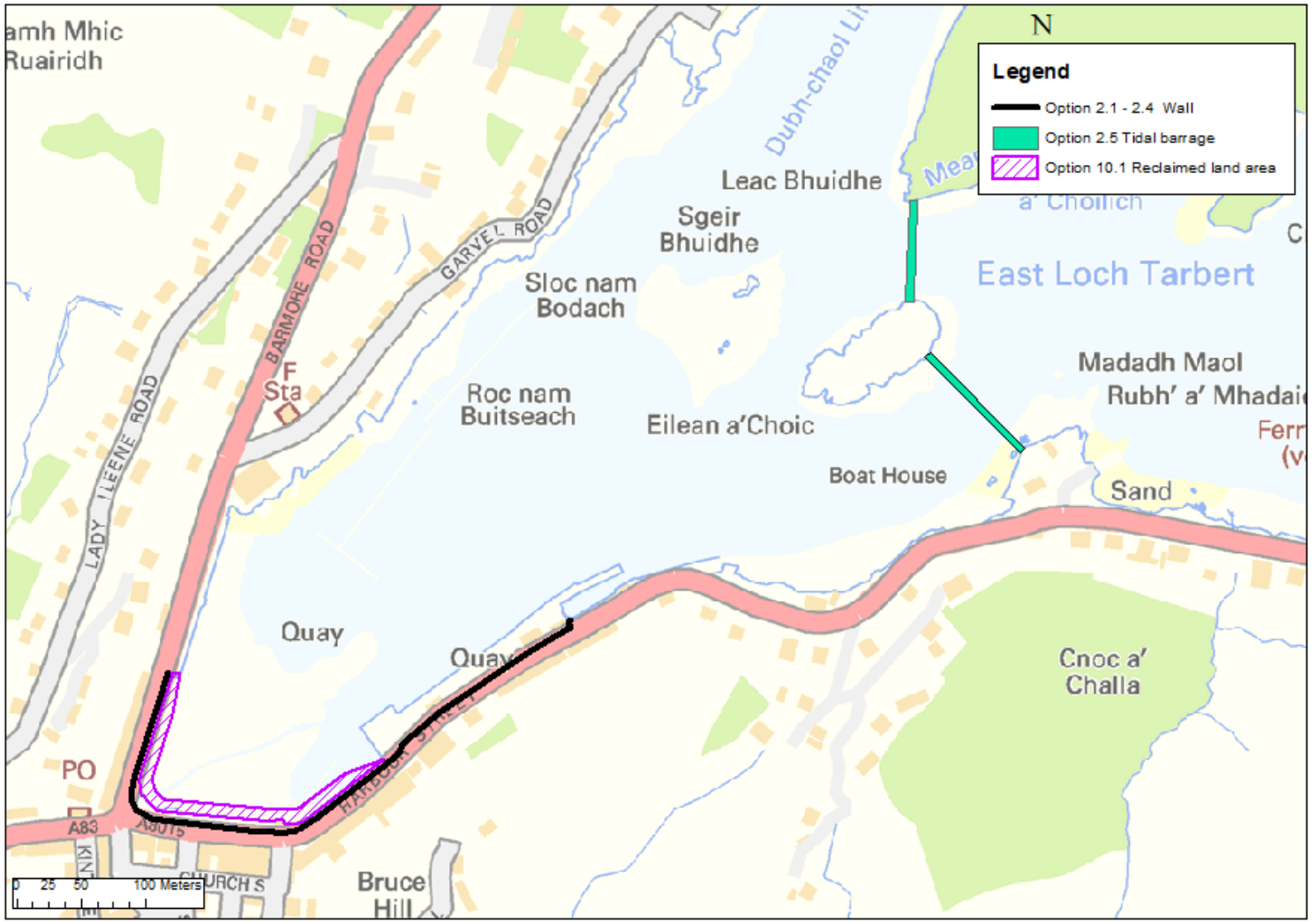
Social and environmental appraisals:

- Economically viable options should also show wider social and environmental benefits
- This may result in options being taken forward that do not show the best economics but are best when considering all factors or discounting options if very poor environmentally
- We looked at:
  - Health benefits, social vulnerability
  - Water, Ecological, heritage, etc.
  - Air, soil and climatic factors



Short list of options

- Option 2.1 – Wall around harbour boundary
- Option 2.2 – Set back wall
- Option 2.3 – Flip- up / demountable wall
- Option 2.4 – Combination of wall types
- Option 2.5 – Tidal barrage
- Option 3.1 – Property Flood Protection
- Option 6.1 – Self help
- Option 8.1 – Flood resilience
- Option 10.1 – Land reclamation and wall



Argyll Bute COUNCIL

AECOM

Prioritisation of Options

Based on the economic appraisal, a Benefit Cost Ration (BCR) for each option was calculated. This is the ratio of the total damages avoided as a result of the option vs. the cost. The short listed options were as follows:

Option 2.1 & 2.2 - Direct defences: Coastal flood wall - BCR 1.08 – 1.33

Option 2.3 - Direct defences: Demountable coastal flood wall - BCR 1.49

Option 2.4 - Direct defences: Traditional wall with demountable on top - BCR 1.05

Option 2.5 - Direct defences: Tidal Barrage - BCR 0.51

Option 3.1 – Property Flood Protection - BCR 7.71

Option 10.1 – Land reclamation and direct defences – BCR 0.9

Our preferred option is shown in green above. This was preferred over the other options as it provides a higher Standard of Protection (SoP), reduced visual intrusion and wider social benefits.

Argyll & Bute COUNCIL

AECOM

Preferred Option – Combination wall and PFP

Flood risk benefits

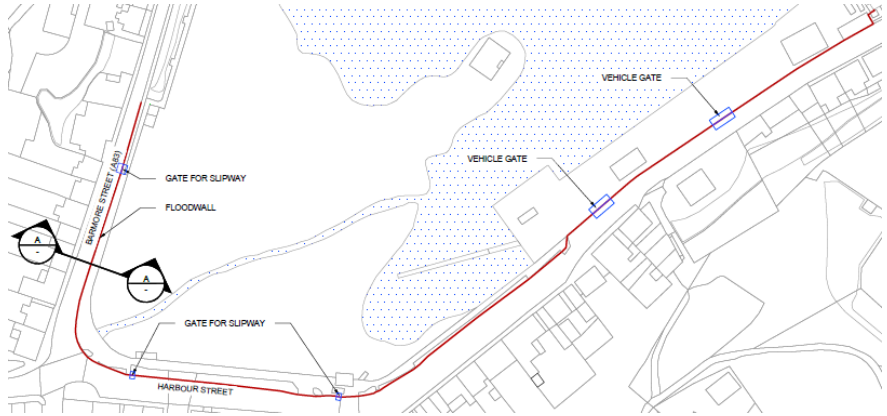
- Reduction in risk to A83 and A8015
- Preferred option provides good Standard of Protection (SoP)
  - 58 properties protected to 1 in 50 year standard with permeant wall
  - 73 properties protected to 1 in 200 year + climate change standard with demountable wall on top

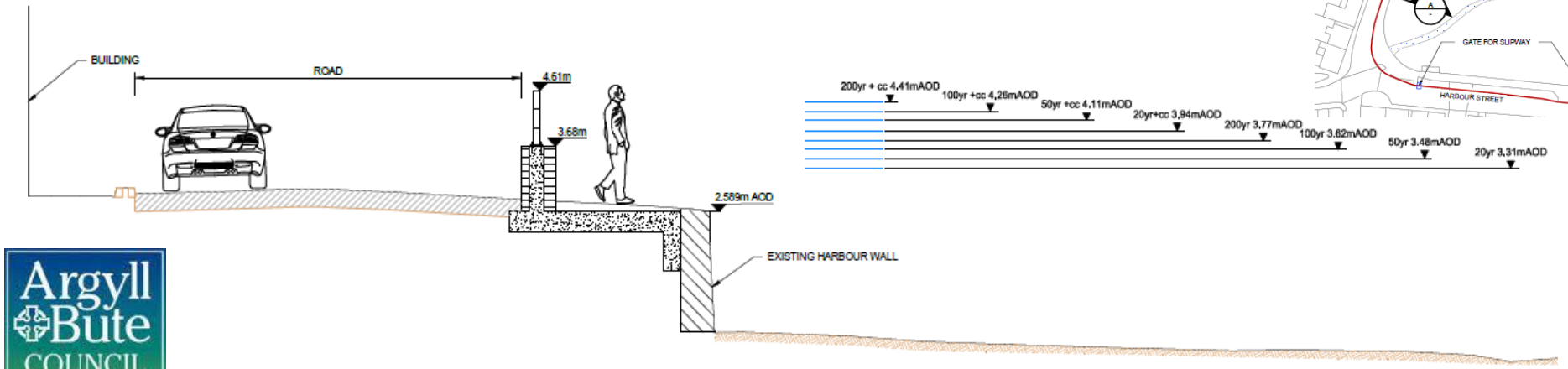
Economics

- Positive Benefit Cost Ratio of 1.05

Social and environmental impacts

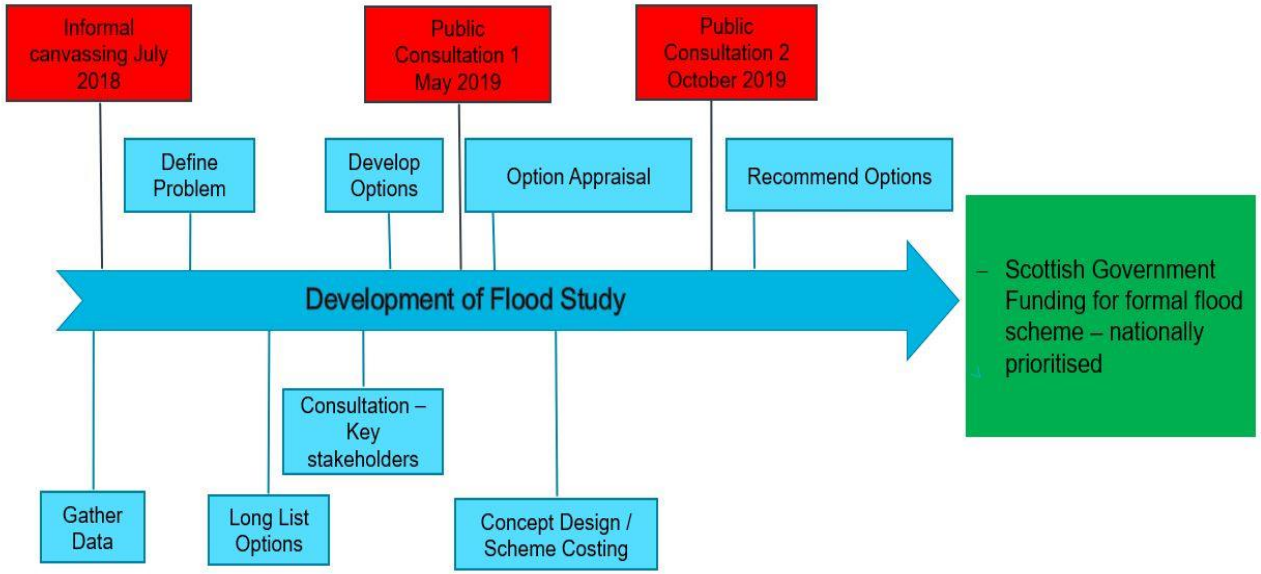
- Reduced stress due to flooding,
- Visual impact reduced as demountables will only be deployed for a short duration,
- Reduced pollution associated with flooding,
- Heritage of listed harbour walls impacted less than other options





Next Steps

- We will be available for further discussion here today until 8pm
- A comment card is available for you to leave your feedback at the back of the room.
- You can also email feedback to: morag.hutton@aecom.com
- Report will feed into SEPA National Prioritisation



Argyll & Bute COUNCIL

AECOM


AECOM
Imagine it.
Delivered.
HOTEL
TT76
TT25