

# Sustainable Flood Risk Management

Kat Ball (Senior Policy Officer)



© PA

Flood Risk Management Act

# Overview

- Responsibilities
  - Flood Risk Management Act
  - Coast Protection Act
- Coastal Processes, examples at West Bay
- Importance vegetated shingle habitat

# Flood Risk Management (Scotland) Act 2009

- Promote sustainable flood risk management
- Manage flood risk in a sustainable way
- Contribute to sustainable development

# Sustainable Management

Avoid increasing  
flood risk

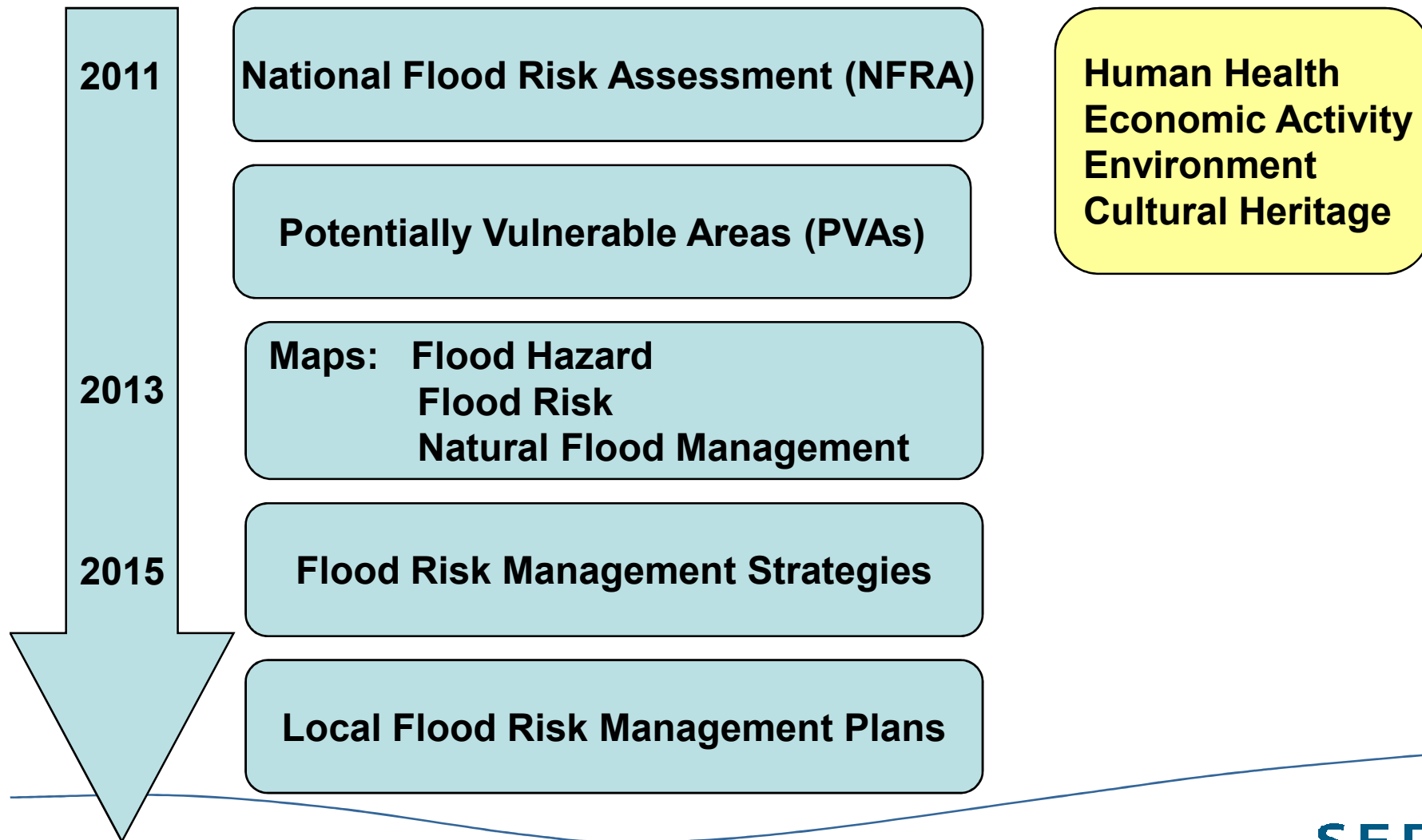
Prepare to reduce  
impacts of flooding

Sustainable Flood  
Risk Management

Protect to reduce  
likelihood of flooding

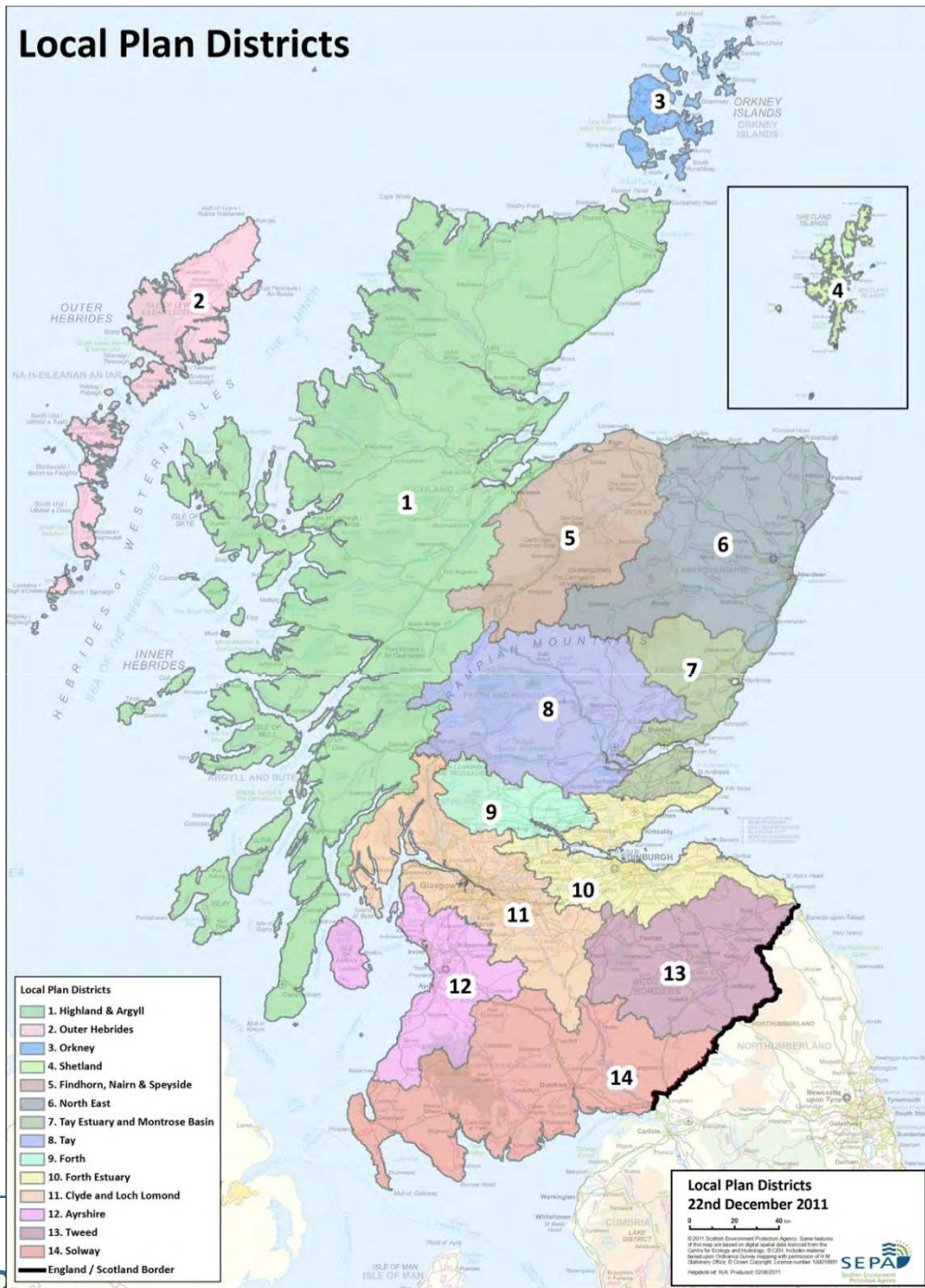
Accept all or part of  
flood risk

# FRM Planning Process



Flood Risk Management Act

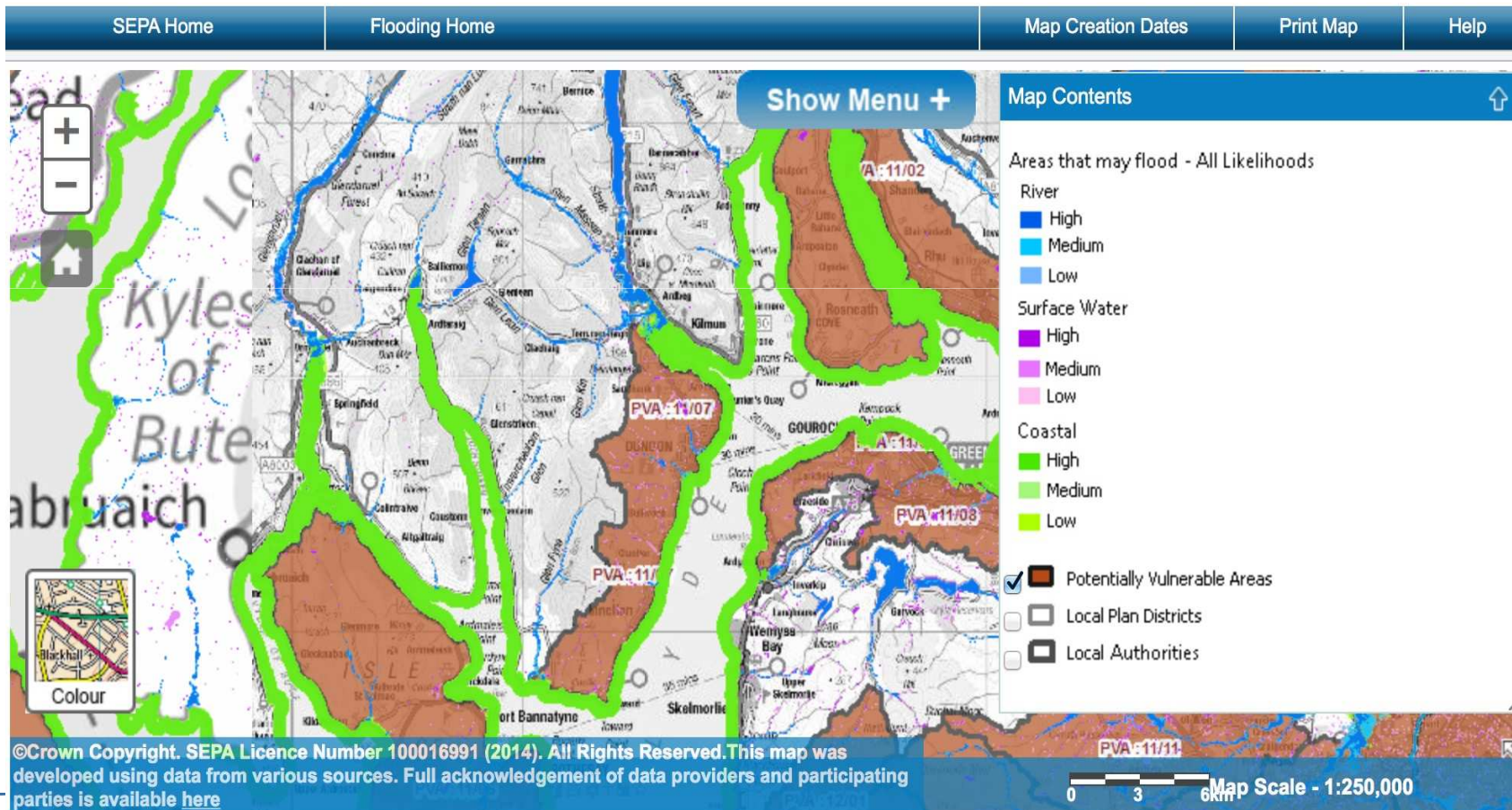
# Local Plan Districts



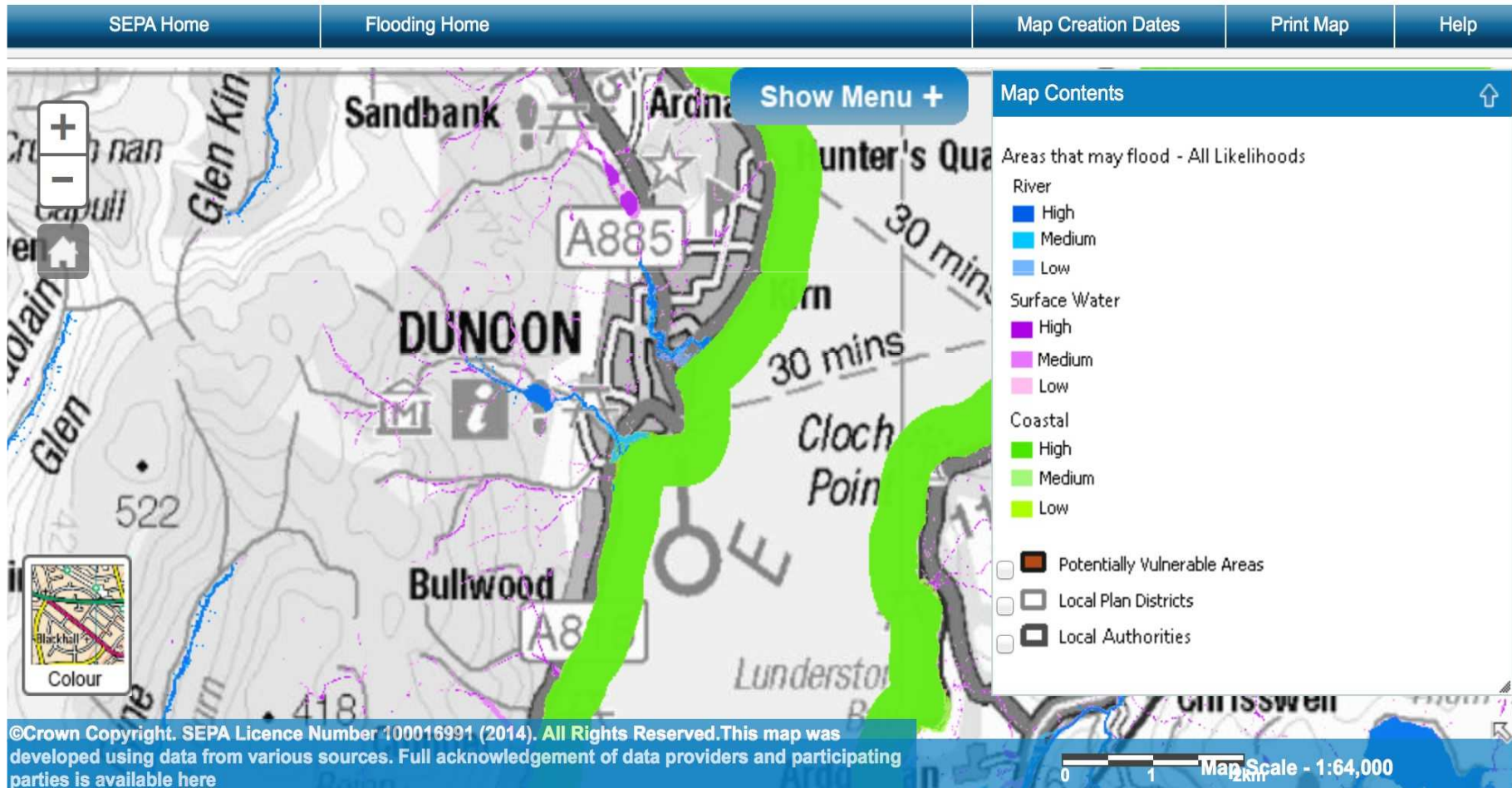
- Clyde and Loch Lomond Local Plan District (11)



# Dunoon PVA 11/07



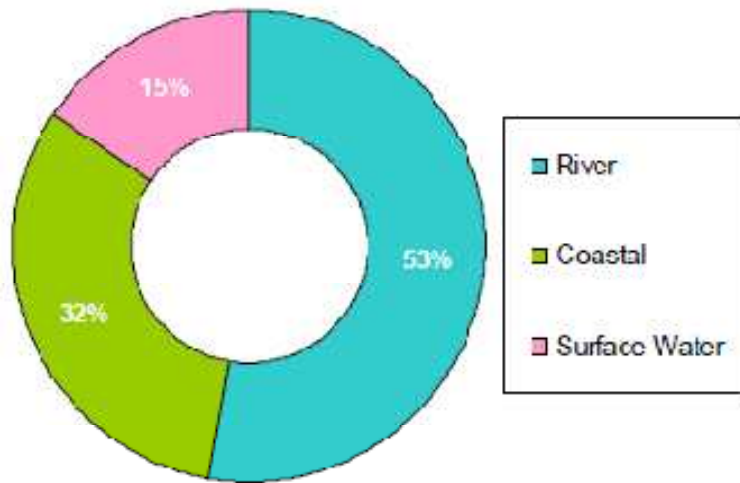
# SEPA Flood Hazard Maps



Flood Risk Management Act



# PVA 11/07



## Coastal Flood Risk

**High Likelihood** (1 in 10 yr): 0 homes, >10 businesses

**Medium Likelihood** (1 in 200yr): >20 homes, ~ 20 businesses

**Low Likelihood** (1 in 1000yr): ~ 40 homes, ~ 40 businesses



Scottish Environment  
Protection Agency

# Summary flooding impacts (all sources) PVA 11/07

	1 in 10 year	In 200 year	1 in 1000 year
	High likelihood	Medium likelihood	Low likelihood
No. of residential properties	40	140	240
No. of people	90	300	530
No. of non-residential properties	40	80	140
Total community facilities	3	3	3
Community facilities - education	1	1	1
Community facilities - emergency	1	1	1
Community facilities - care	1	1	1
Total utilities	4	11	16
Utilities - energy	4	11	16
Transport links - road (km)	4.0	5.9	7.3
Environmental designated areas (km <sup>2</sup> )	0	0	0
No. of cultural heritage sites	3	4	5
Agricultural area (km <sup>2</sup> )	0.3	0.5	0.7

# Coastal Area 11-01

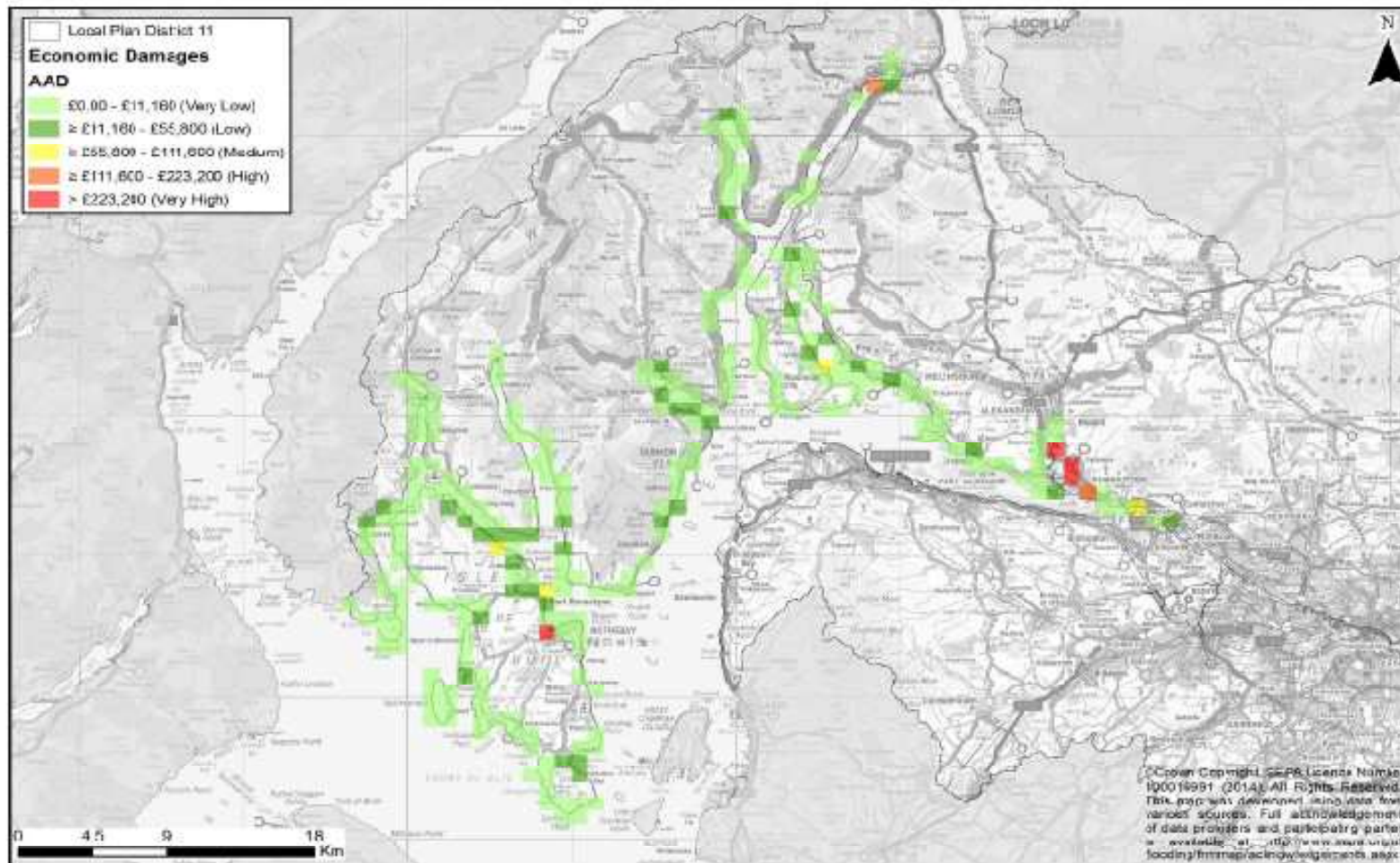


Figure 3: Annual Average Damages from coastal flooding

## Flood Risk Management Act



# Dunoon Pier FWTA

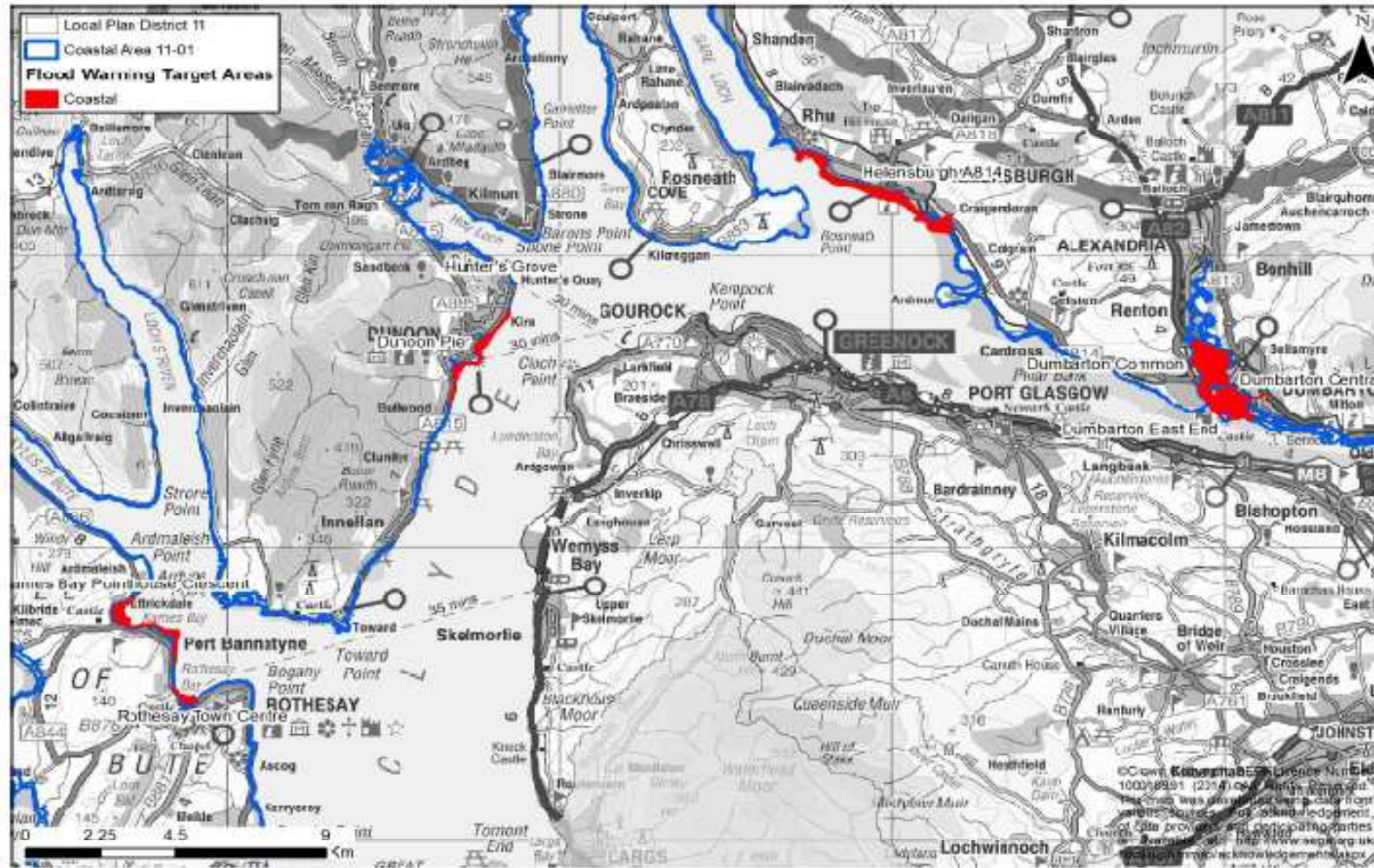


Figure 4: Flood Warning Target Areas

Flood Risk Management Act



Scottish Environment  
Protection Agency



# Coast Protection Act 1949

- Local Authorities permissive powers to protect the coast from erosion

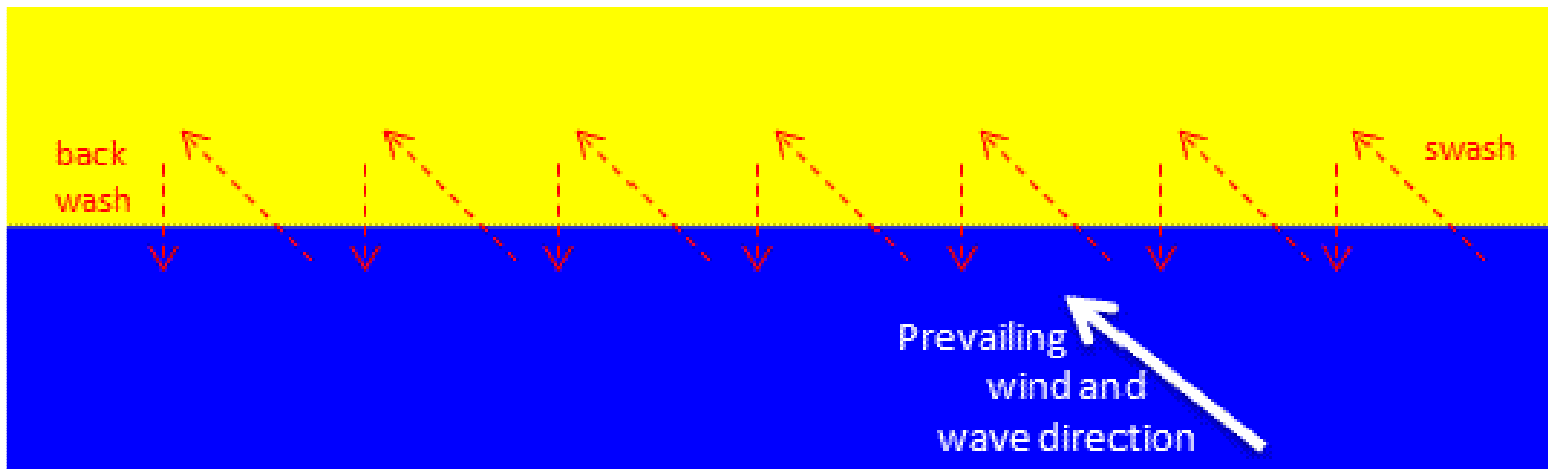
# Dynamic Coastline

Type of Coastline  
(natural features/  
geology)

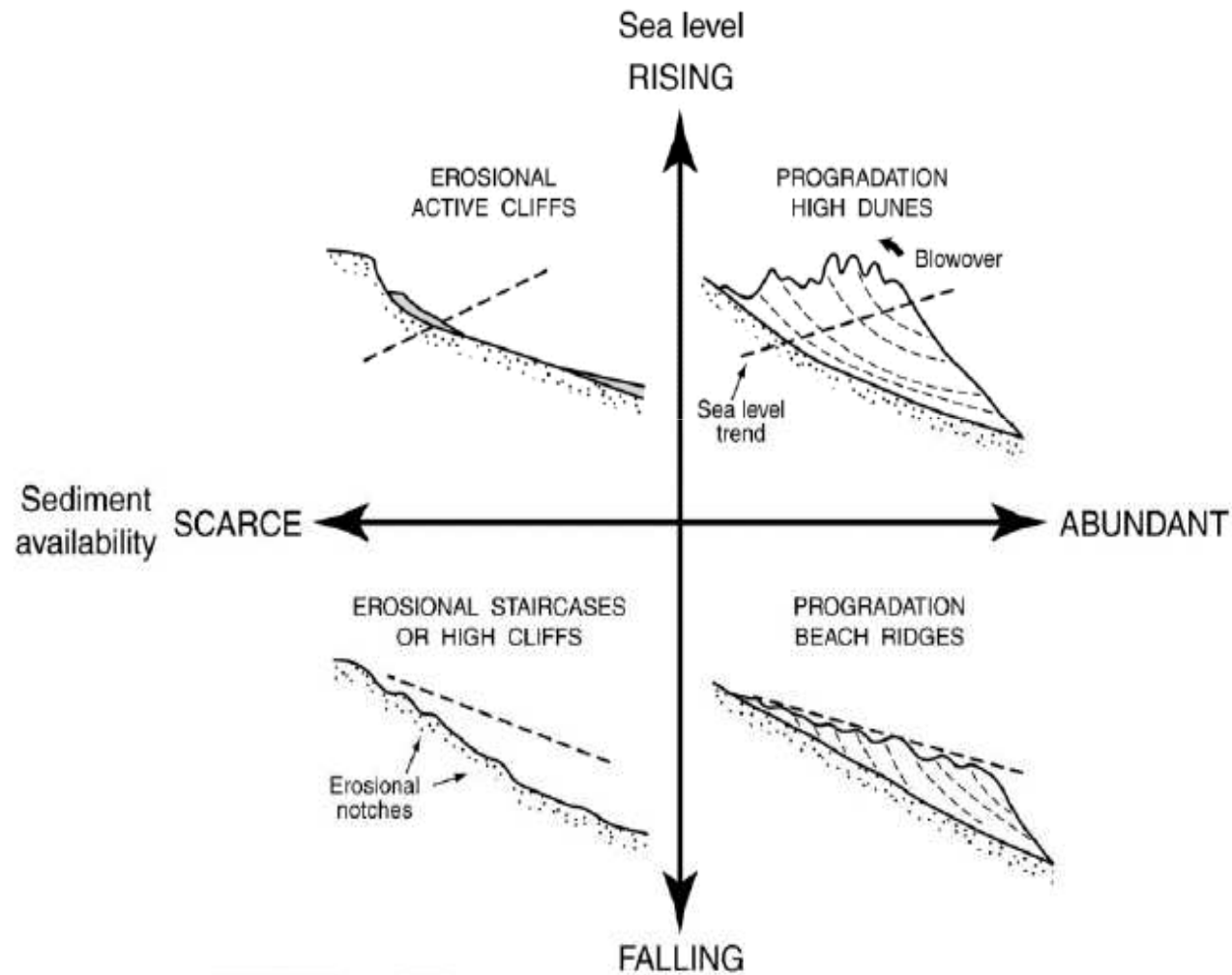
Presence & Condition  
of Structures

Wave Power &  
Wind Direction

Frequency / Intensity  
of Storms



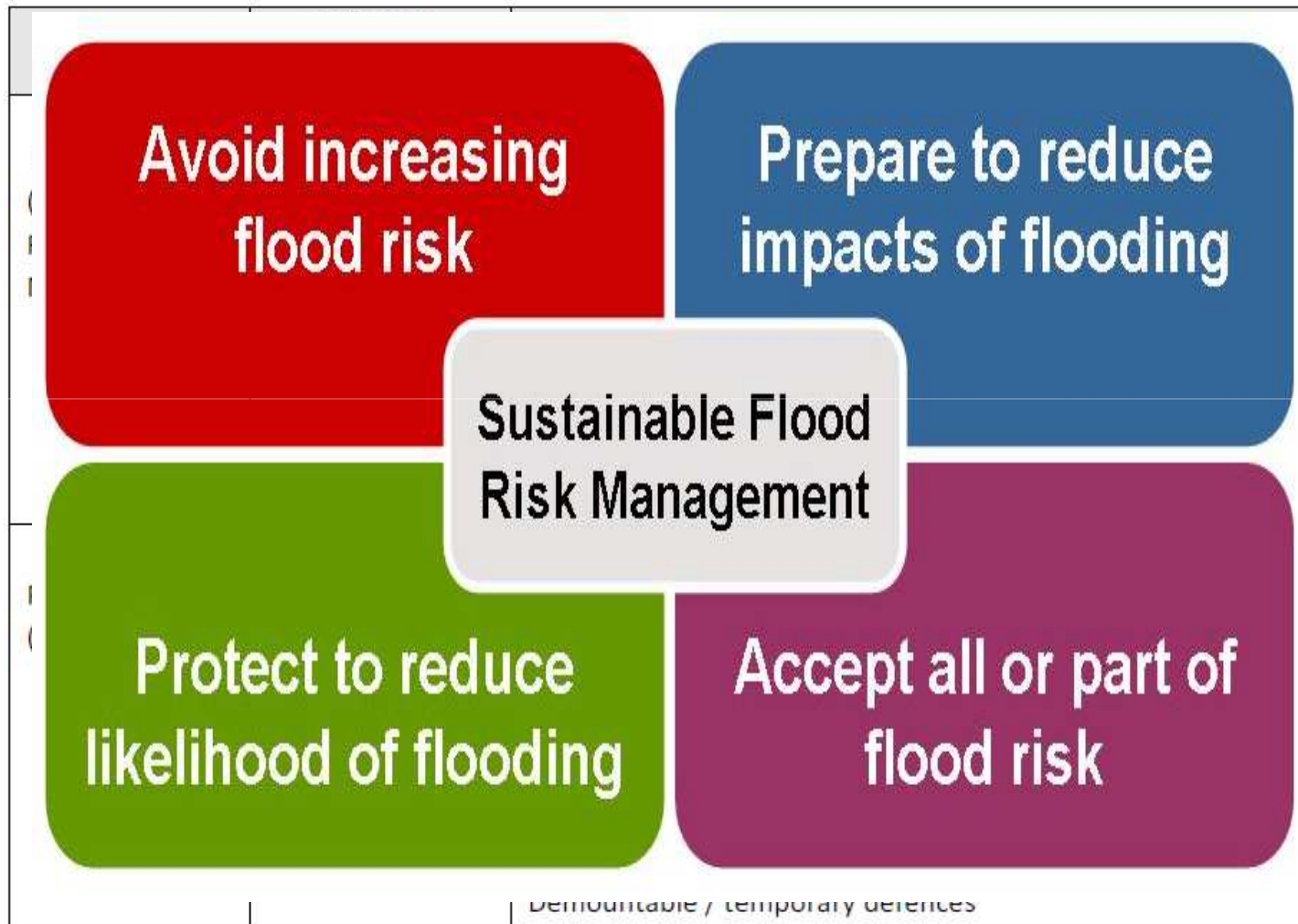
# Coastline Type



**Floo** Figure 7: Coastal responses to sea level and sediment supply changes, Taken from Carter (1988).

# Coastal Flooding Actions

Table 3: Coastal flooding measures relevant to the scope of this report



Flood Risk Management Act



# Victoria Parade, summer 2012



# Victoria Parade, West Bay, Dec 2014



Flood Risk Management Act



# Sea Wall, Pavillion West Bay Jan 2014



Floo

# Sea wall, Alexandra Parade Jan 2014





# Climate Change

- 2080 high emissions scenario sea level expected to rise by ~ 50cm
- More frequent and more intense storms

# West Bay, Sept 2013



Flood Risk Management Act

# Vegetated Shingle

- Most coastal shingle too mobile to support plant communities
- Rare habitat: listed Annex 1 of EC Habitats Directive
- Biodiversity Action Plans (BAPs) – Nature Conservation (Scotland) Act 2004

<https://www.buglife.org.uk/advice-and-publications/advice-on-managing-bap-habitats/coastal-vegetated-shingle>

# Conclude

- Coastline is dynamic
- Responsibility to manage flood risk sustainably in PVAs
- Shingle acts as natural barrier to dissipate wave energy



# Any Questions?

[Kat.ball@sepa.org.uk](mailto:Kat.ball@sepa.org.uk)

[www.sepa.org.co.uk](http://www.sepa.org.co.uk)

# Strategic Appraisal Process

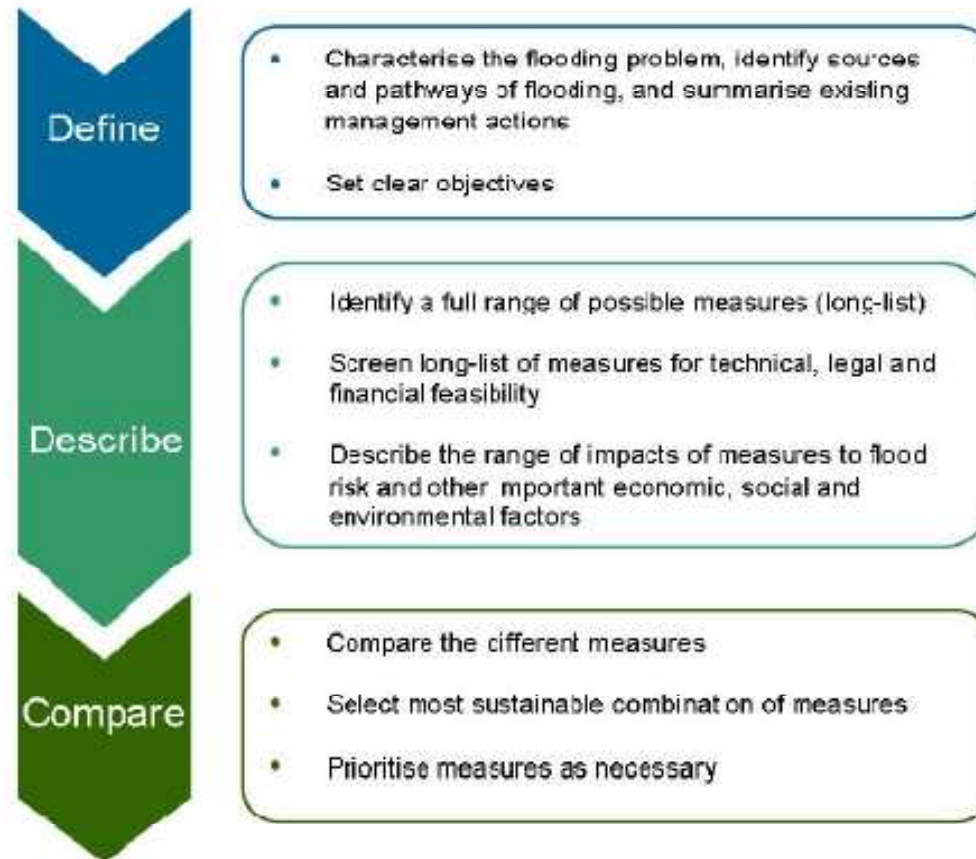


Figure 26: Stages in Strategic Appraisal (adapted from Scottish Government Guidance)<sup>3</sup>