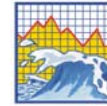




UCC

Coláiste na hOllscoile Corcaigh, Éire
University College Cork, Ireland



HMRC

HYDRAULICS & MARITIME RESEARCH CENTRE



Coastal & Marine Resources Centre
Ionad Acmhainní Cósta is Mara



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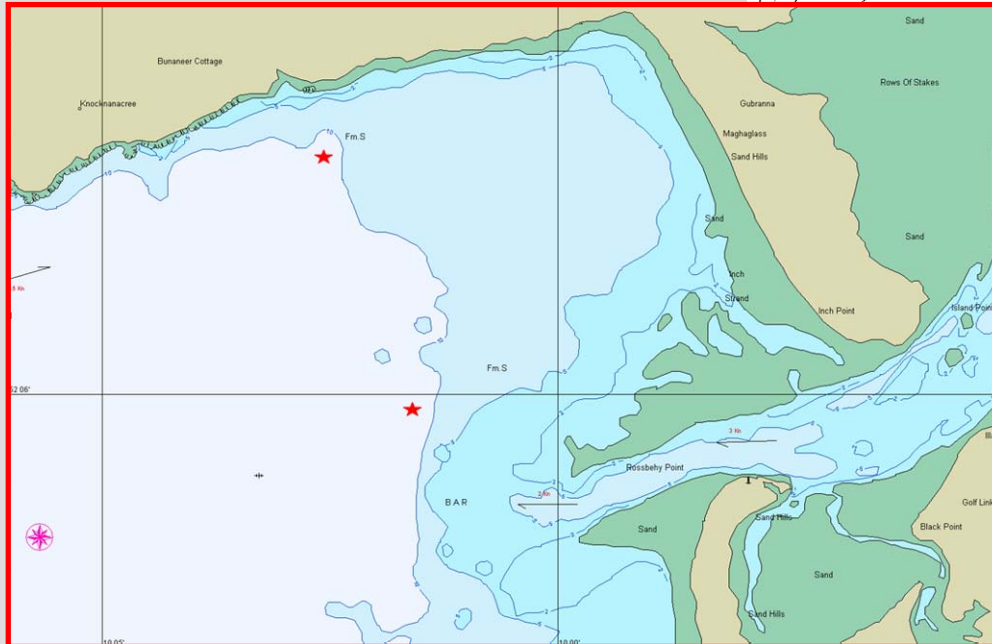
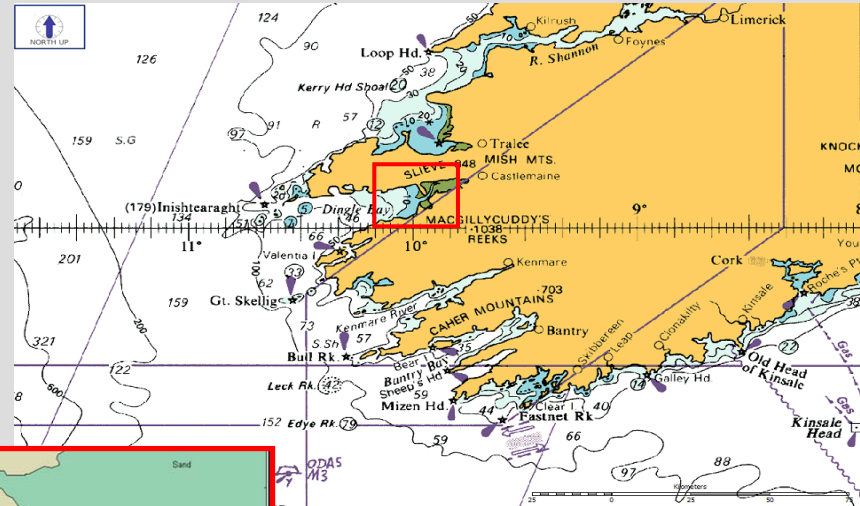
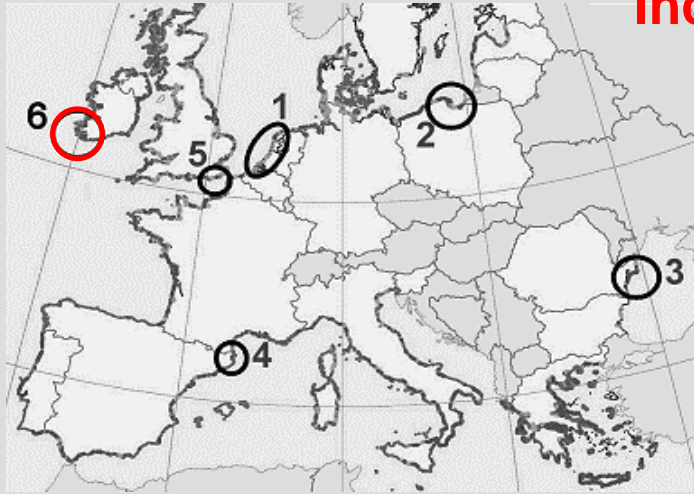
Concepts and Science for Coastal Erosion Management

Jeremy Gault
Jimmy Murphy
Anne Marie O'Hagan
Val Cummins

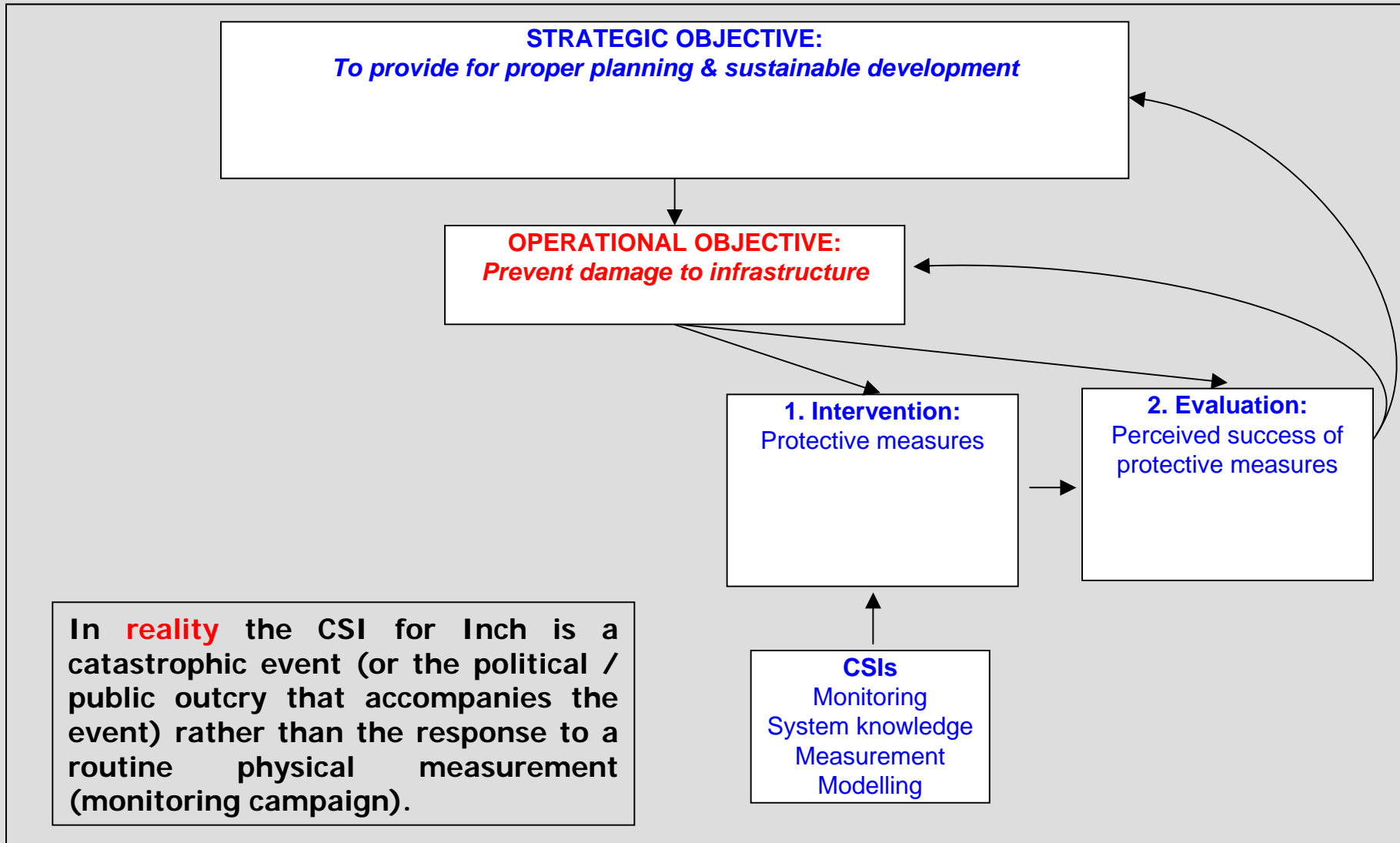
Inch Beach – Pilot Site

27th April 2009

Inch Beach – Location



Frame of Reference - application



Inch Beach – Background



- length: 5.5 km
- large barrier-dune system
- dissipative shore-face (slope 1:100 nearshore)
- spring tidal range 3.2 m
- embayment (30 km²) constrained by resistant headlands
- fixed sediment volume
- ebb tidal delta: sink and source of sediment

Inch Beach – Activities

- Introduction of the frame of reference and problem description
- Delineation and quantification of coastal cells
- Data set inventory (active)
- Extreme wave analysis
 - Input 40 year time series (WAM generated)
- Series of post storm coastline position / topographic surveys
- Sediment grain size analysis
- Wave modelling with MIKE21
 - Input from 40 year time series
 - Calibration from in-situ wave gauges
 - Map derived bathymetry
- Simulation of storm episodes
- Modelling of erosion processes nearshore (LITPACK)
 - Input from MIKE21 model
- [Ongoing analysis of historical change (using GIS)]

Inch Beach – Frame of Reference

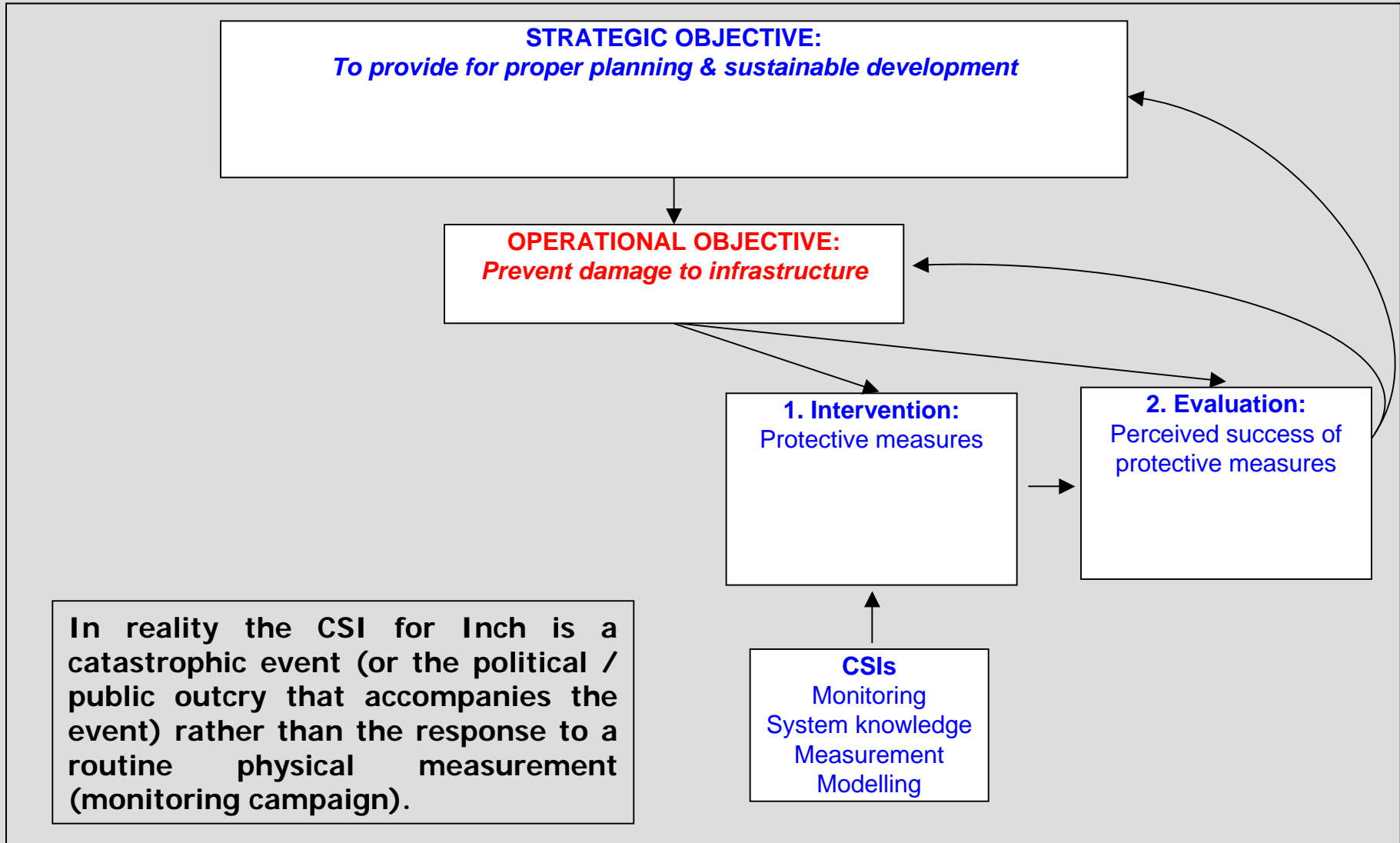
How it contributes to the Process Description

The real-time wave data confirms the high energy nature of this system and this is backed by the sediment data which shows a largely uniform sediment type. The derived modelling data supported by the field GPS surveys has confirmed that the beach is eroded routinely under large storm conditions. However it tends to recover quickly even when several metres of coastline are lost to erosion. Sediment taken offshore is quickly re-deposited and subsequently colonised to replace lost dune structure. The sediment models appear to support this with the cross-shore transport being the pre-dominant direction of sediment movement. This all tends to support the literature collated which suggests that Inch only suffers larger scale erosions (100's of metres) during extreme conditions.

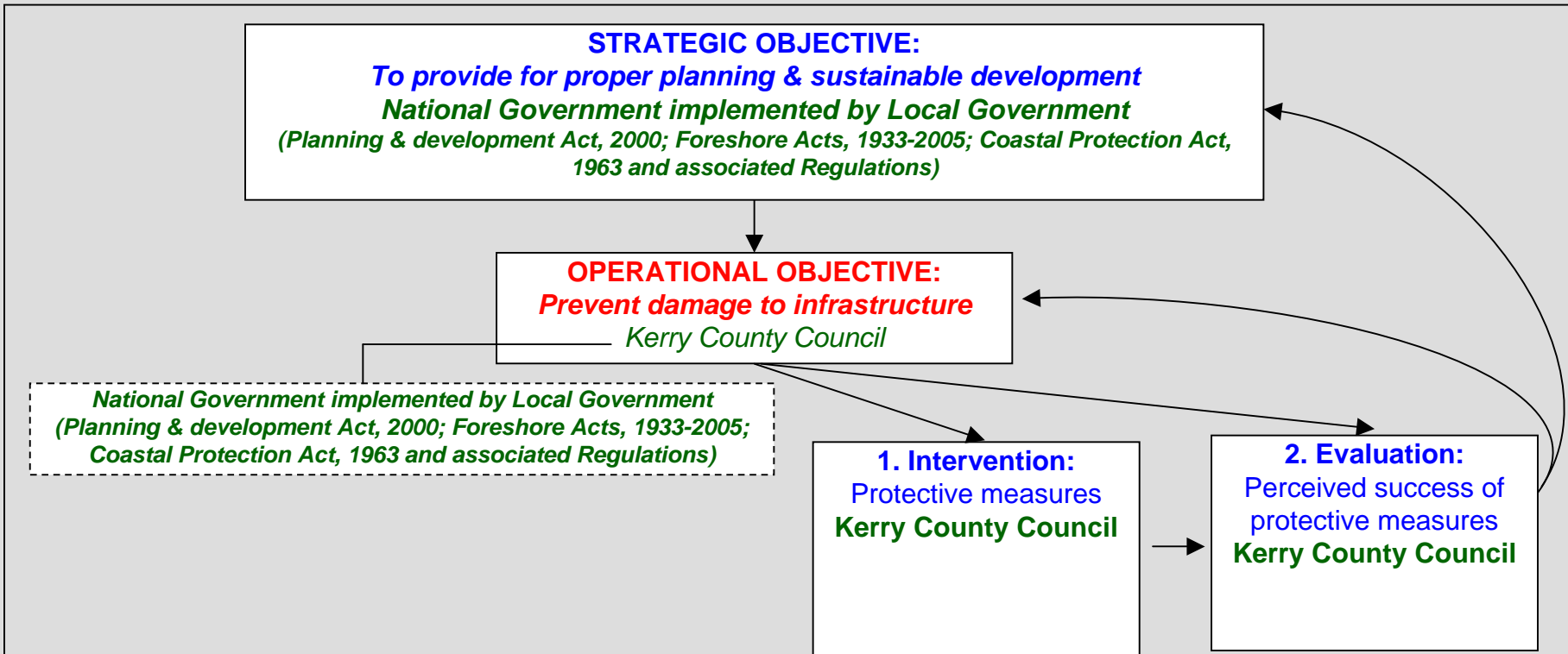
The Functions Affected (Problem Description)

As the main issue is protection of infrastructure / safety of life it would appear that the problem is being addressed. However at this site there is no monitoring and assessment of the four key erosion concepts is difficult as there is no driver (policy) and therefore no resources to carry out the research necessary to develop accurate physical CSI's. In terms of the frame of reference end-users see themselves as going from **Operational Objective** straight to **Intervention**.

Frame of Reference

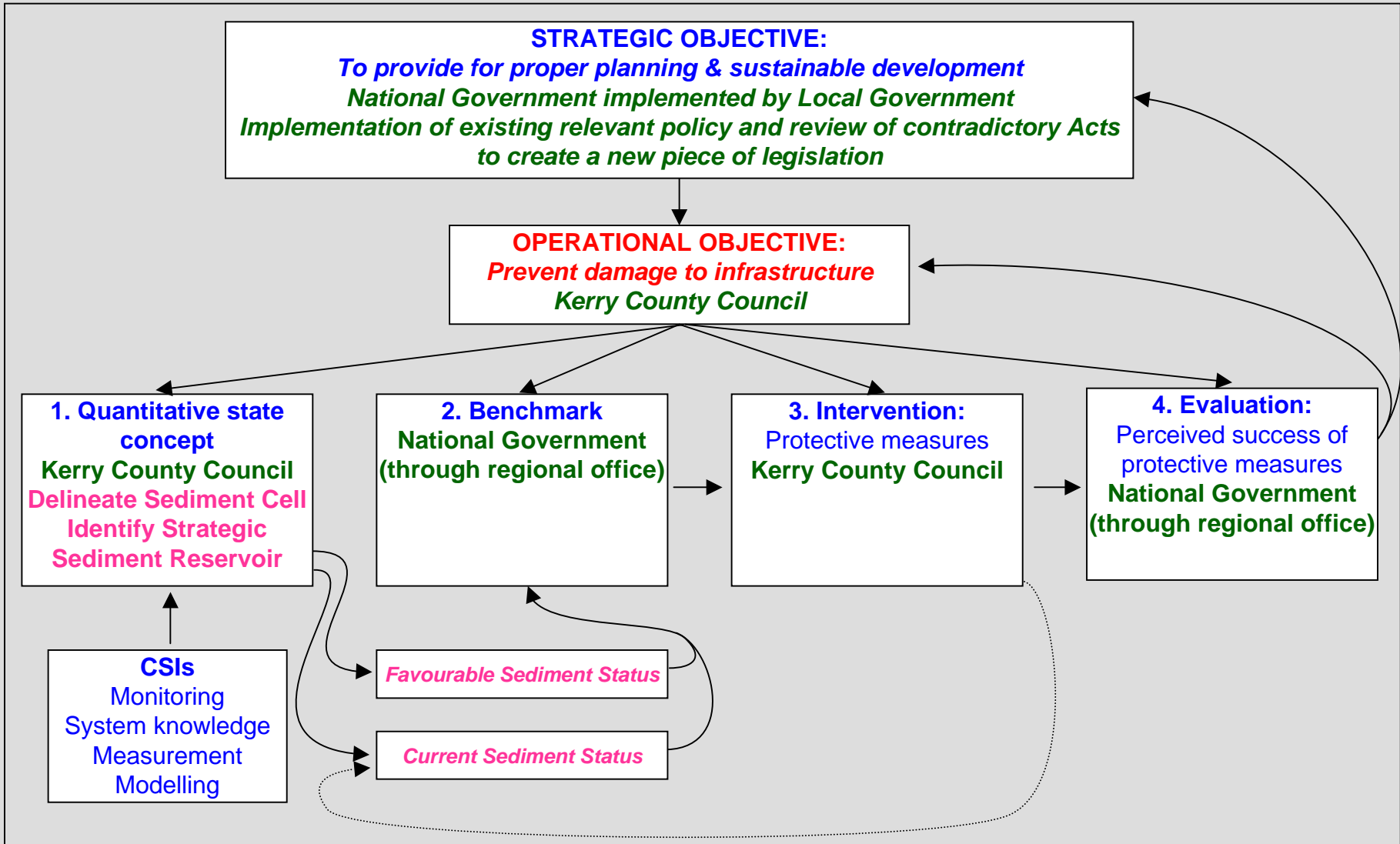


Frame of Reference - Real Institutional Framework



Need for integrated dedicated Act or Policy, current legislation is contradictory & therefore subject to interpretation (abuse?).

Frame of Reference - Idealised Institutional Framework



Inch Beach – Recent developments



Inch Beach – Recent developments



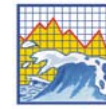
Inch Beach – Recent developments





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**Pilot Site
Inch Beach**



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Inch Beach – Recent developments



Inch Beach – Recent developments

