



National Framework for Regional Coastal Monitoring Programmes

Complex risk scenarios

High quality data required for coastal management:

Strategic planning

Operational management

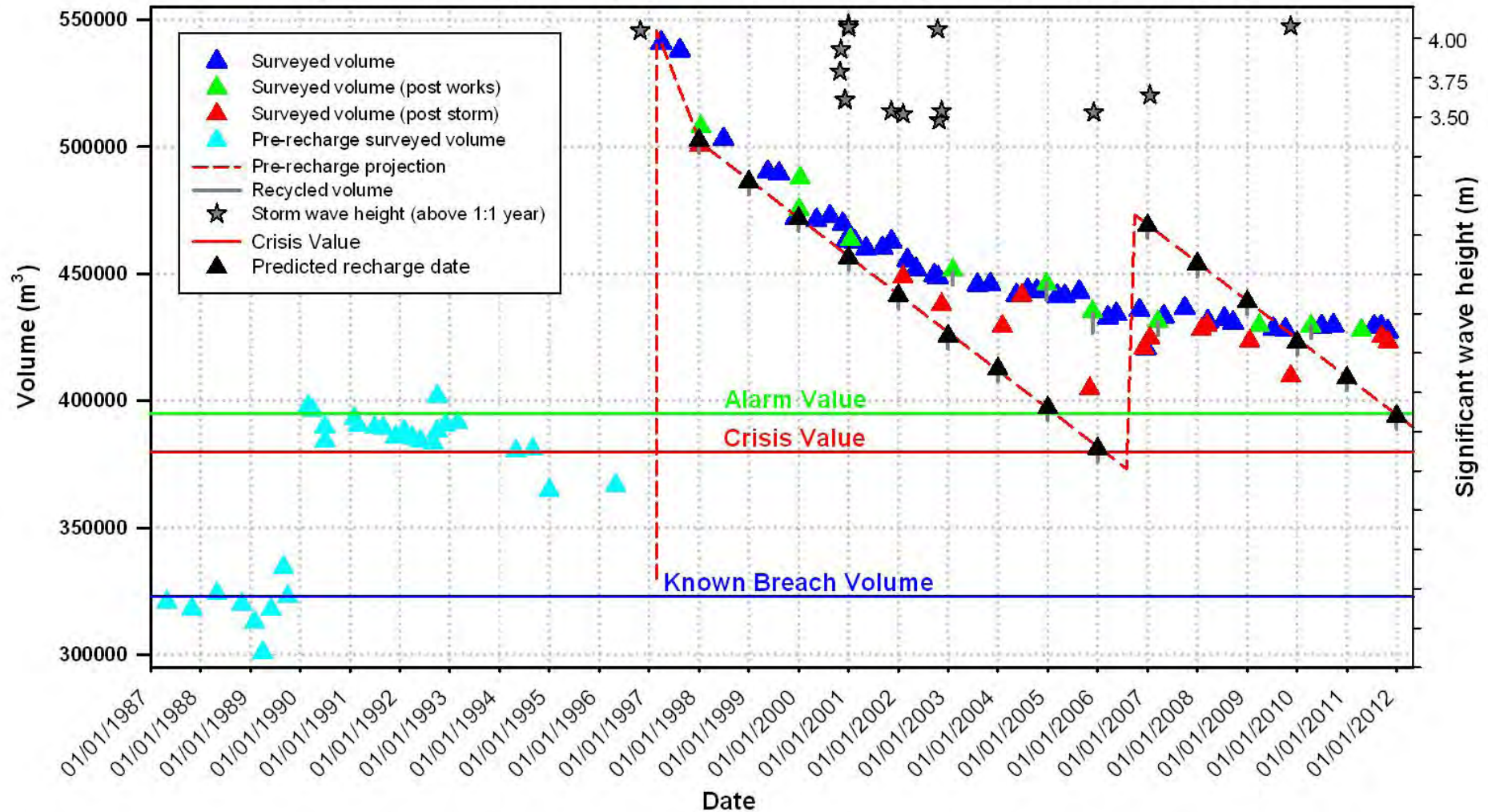
Planning new schemes

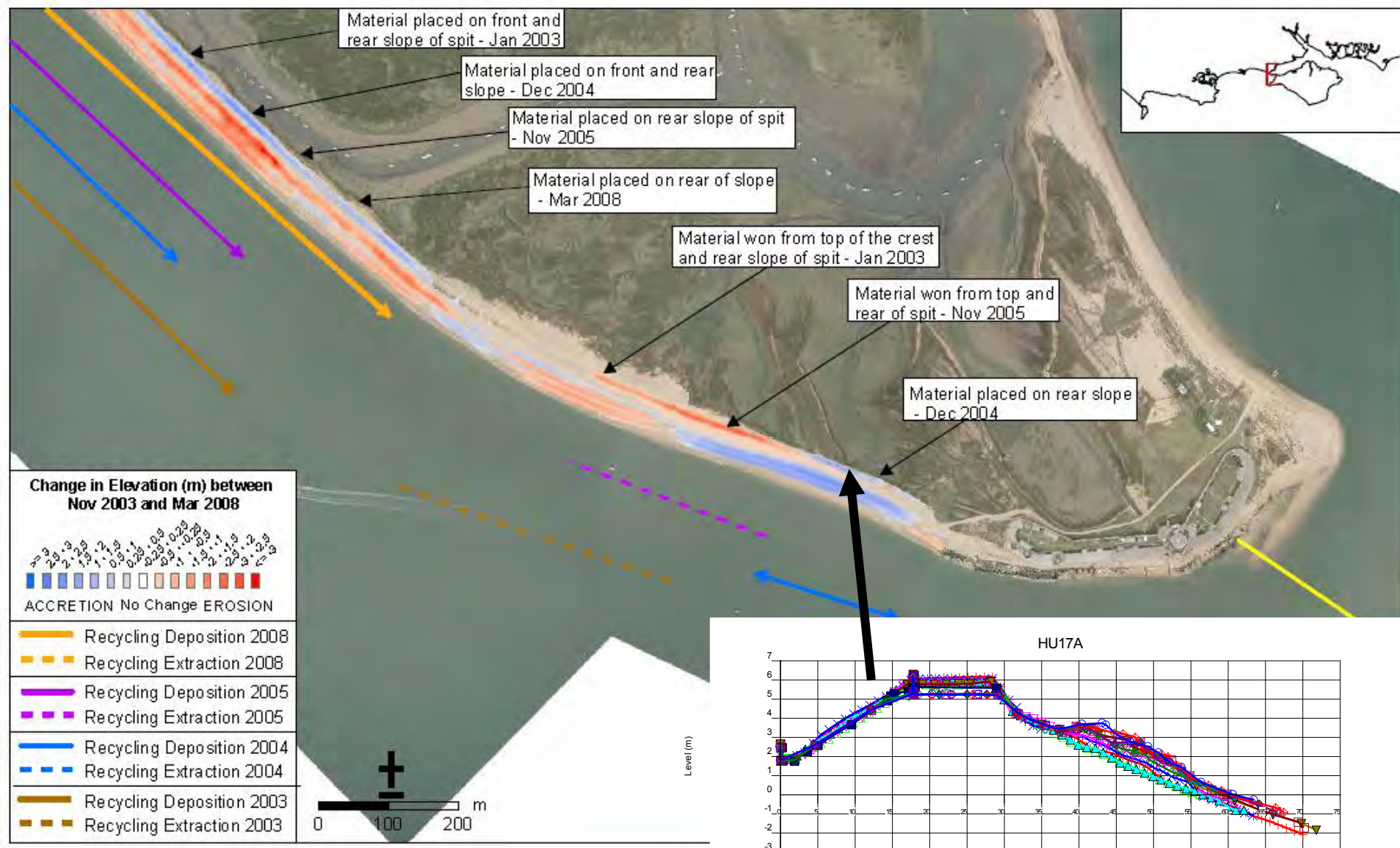
Performance evaluation

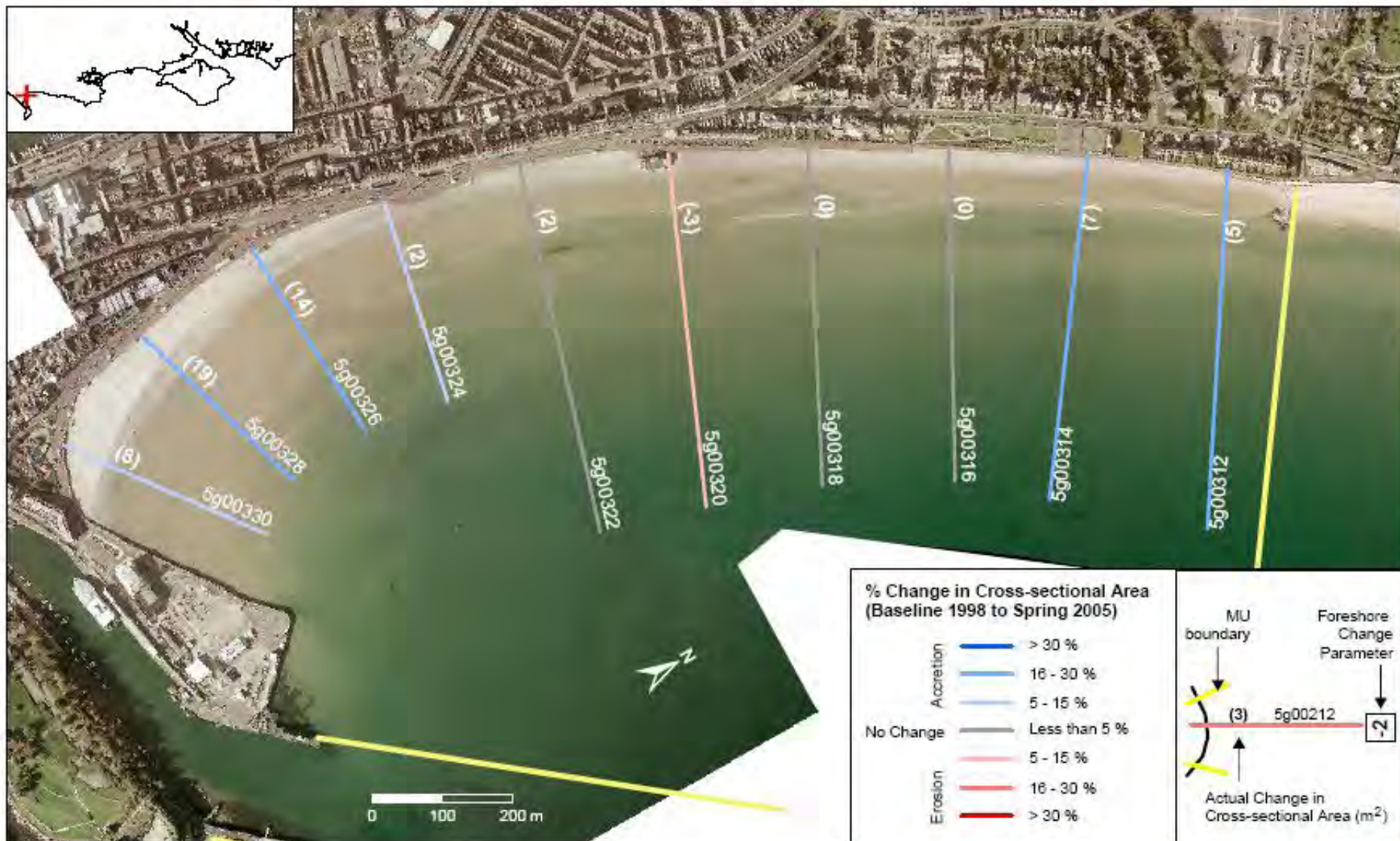


Hurst Spit (HU20-HU6)

Comparison of surveyed and projected volumetric change above MLWS (-1.13m OD)







Benefits of national network of Regional Coastal Monitoring Programmes – page 1

- Standard specifications & data management (INSPIRE responsibilities)
- Consistency of data collection, whilst leaving room for local adaptation
- Closer collaboration amongst coastal engineers

Benefits of national network of Regional Coastal Monitoring Programmes *continued*

- *Procurement Frameworks?*

Benefits of national network of Regional Coastal Monitoring Programmes *continued*

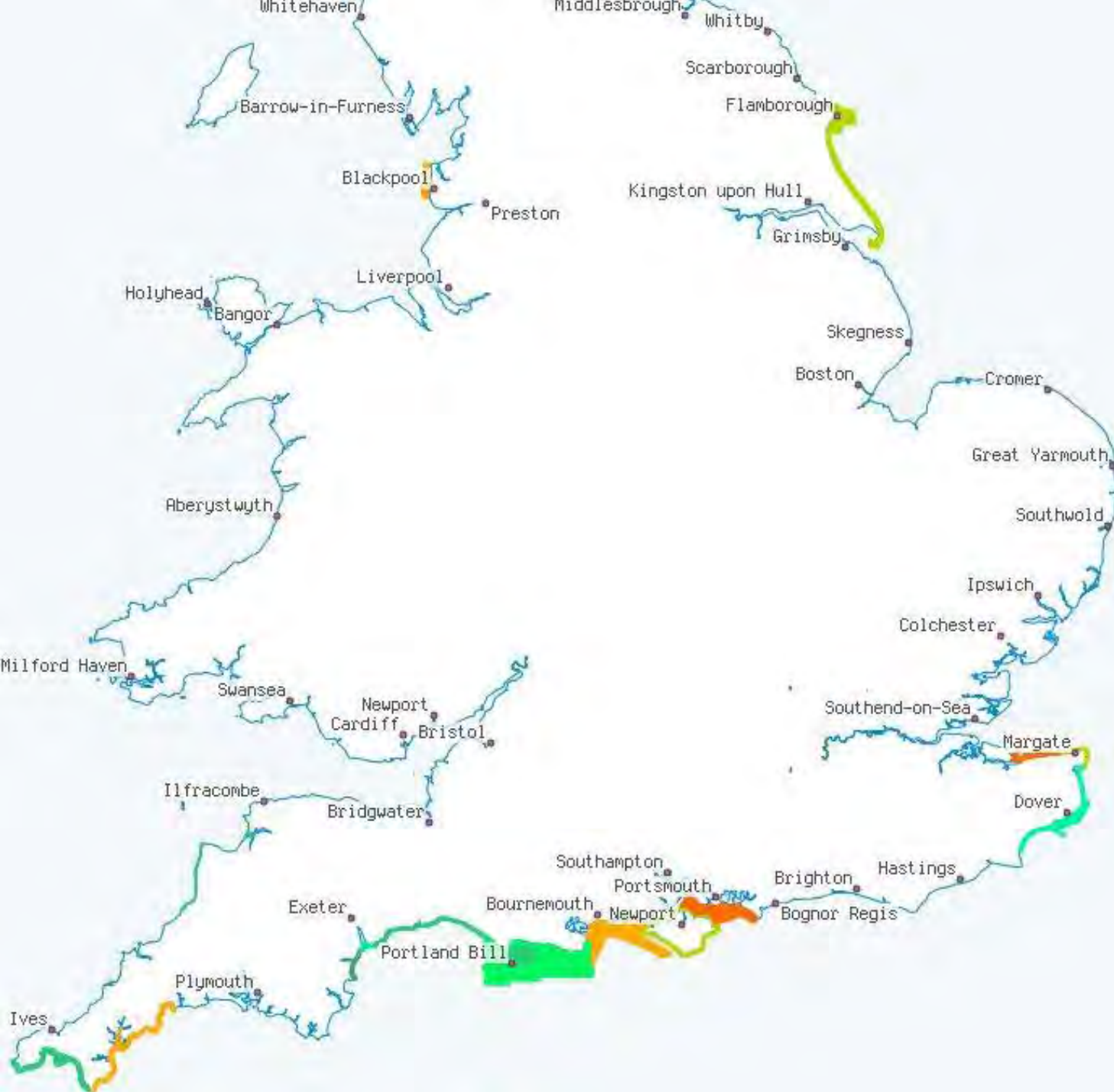
- *Procurement Frameworks?*
- Economies of scale e.g. Waverider spares



Tor Bay Waverider, on Chesil Beach © Fugro EMU

Benefits of national network of Regional Coastal Monitoring Programmes *continued*

- *Procurement Frameworks?*
- Economies of scale *e.g.* Waverider spares
- Links with UK-wide institutions *e.g.* MCA, BGS



Order 1a coverage

*(HI 1438
Newhaven to
Dungeness to
be added)*

National analysis 5 year baselines

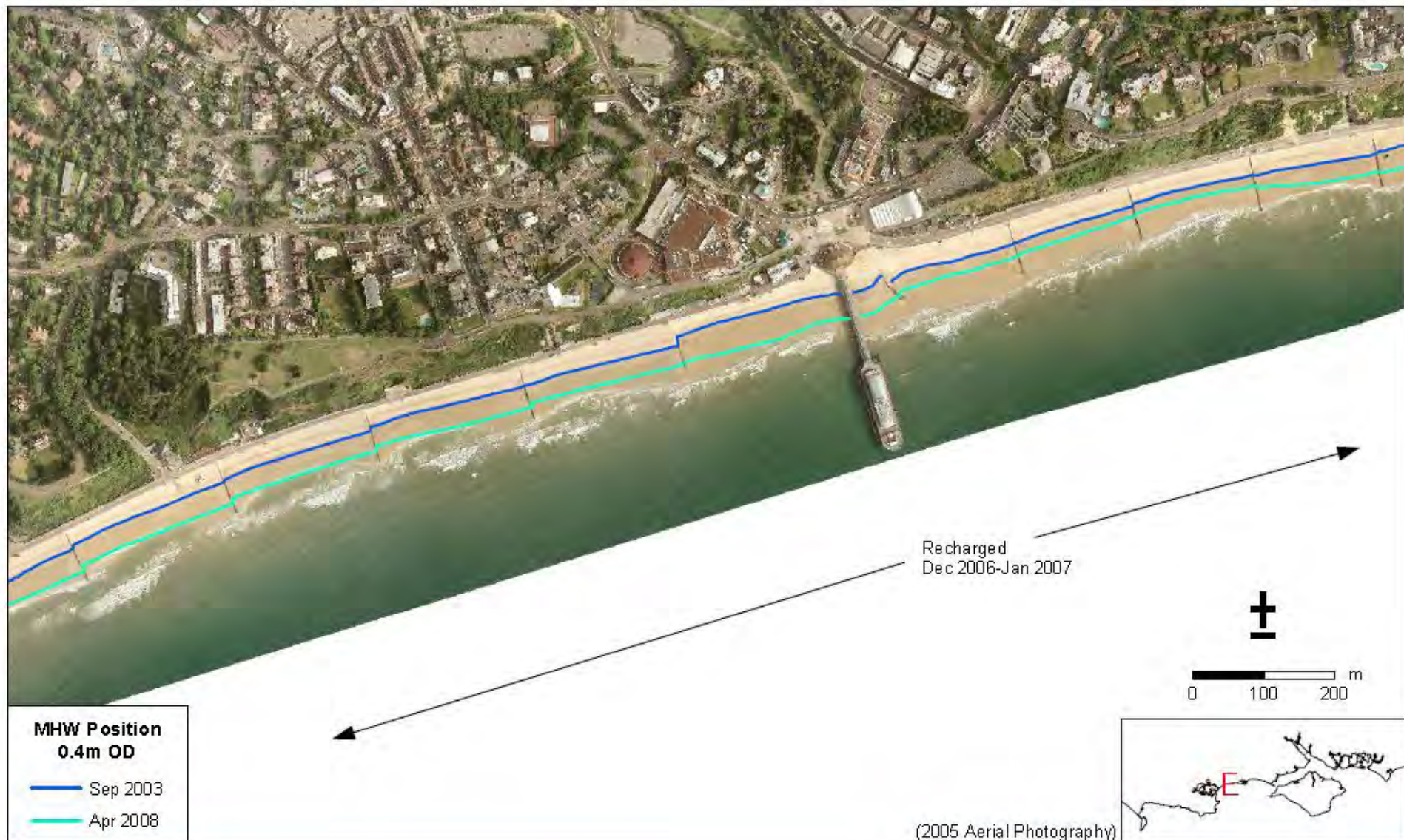
Extend FutureCoast framework

Mean High Water contour

Mean Low Water

Back of beach

Cliff top



5-year difference models



Design of next phase

- Review data usage
- Review requirements systematically
- Reduce (or increase) programme where required
- Base reductions on minimum performance period of 10 years
- Target cost reduction overall approx. 20%

Topographic surveys

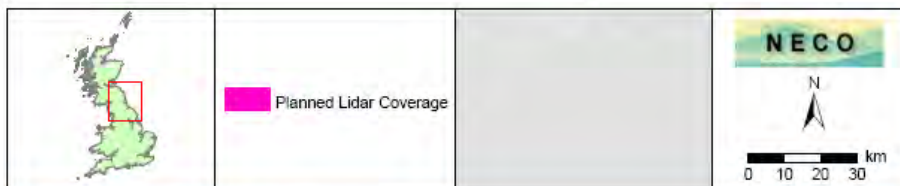
Review change per profile over time (10 years +)

Reduce survey frequency if little change

Move to lidar for un-managed frontages?

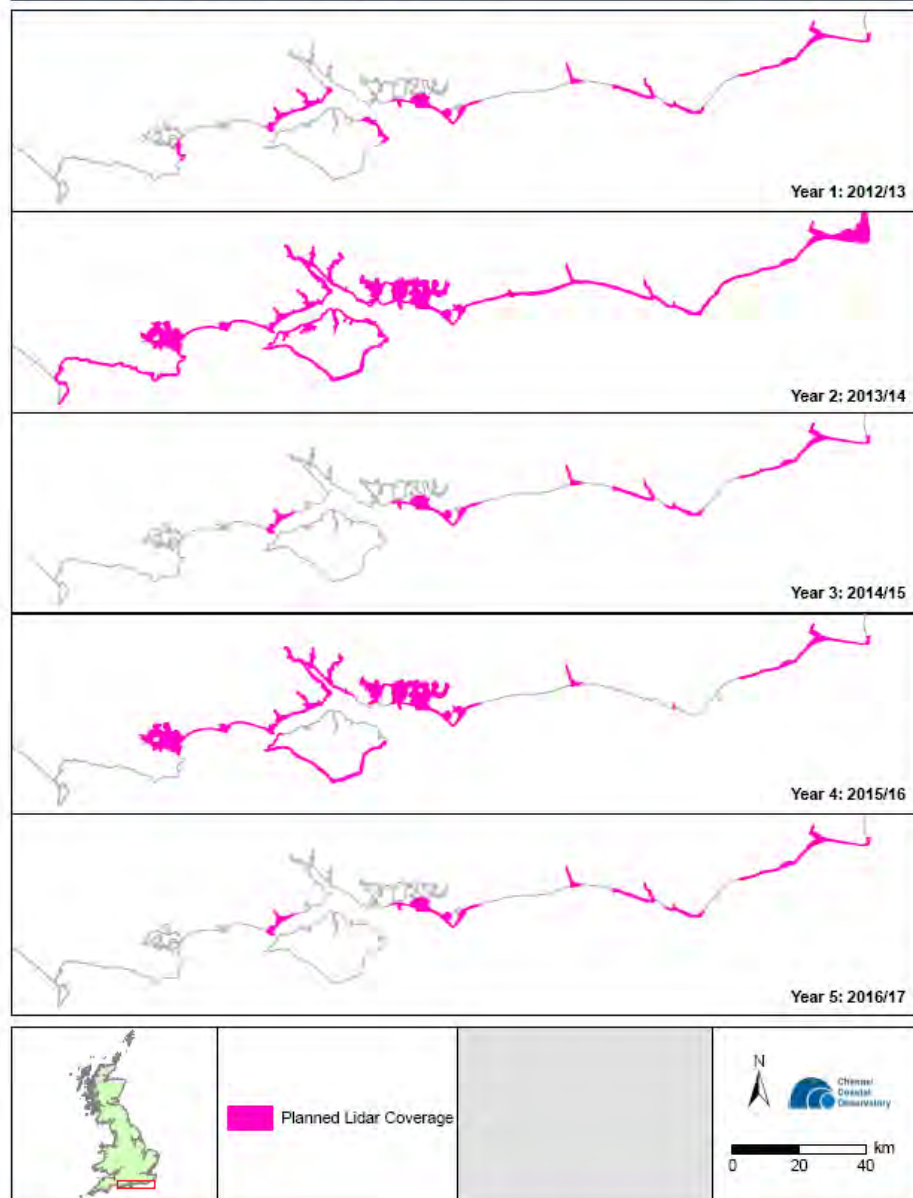
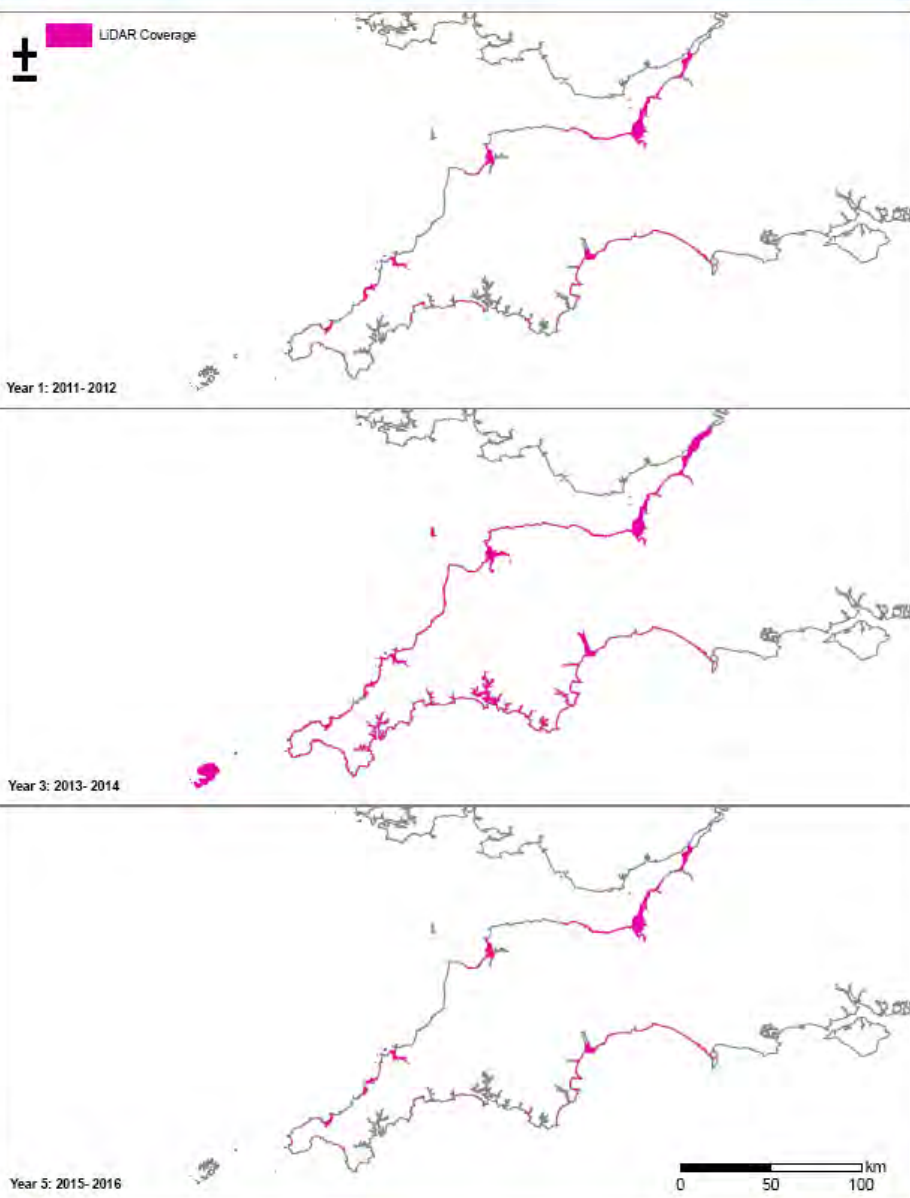


Survey Unit	Profile	Start Date	End Date	Onshore		Offshore	
				Average elevation change per m of profile length	Std dev	Average elevation change per m of profile length	Std dev
5fSU11	5f00383	15/04/2008	24/02/2014	0.000	0.107	-0.030	0.383
5fSU11	5f00384	16/01/2008	24/02/2014	-0.007	0.146	-0.002	0.251
5fSU11	5f00386	15/04/2008	05/11/2013	0.058	0.437	-0.084	0.275
5fSU11	5f00387	16/01/2008	24/02/2014	-0.035	0.164	0.018	0.163
5fSU11	5f00389	11/04/2008	04/11/2013	-0.036	0.130	-0.031	0.149
5fSU11	5f00390	16/01/2008	24/02/2014	-0.035	0.122	-0.014	0.102
5fSU11	5f00392	16/01/2008	24/02/2014	-0.043	0.132	-0.019	0.119
5fSU11	5f00394	16/01/2008	24/02/2014	-0.026	0.155	-0.018	0.158
5fSU11	5f00395	11/04/2008	04/11/2013	-0.040	0.149	-0.006	0.107
5fSU11	5f00397	16/01/2008	24/02/2014	-0.018	0.152	-0.016	0.158
5fSU11	5f00398	11/04/2008	04/11/2013	-0.027	0.115	-0.003	0.135
5fSU11	5f00400	16/01/2008	24/02/2014	-0.027	0.118	-0.019	0.173
5fSU11	5f00402	16/01/2008	24/02/2014	-0.018	0.177	-0.016	0.228
5fSU11	5f00404	16/01/2008	24/02/2014	-0.056	0.289	-0.002	0.154
5fSU11	5f00405	11/04/2008	04/11/2013	-0.044	0.255	0.002	0.085
5fSU11	5f00407	16/01/2008	24/02/2014	-0.024	0.302	0.005	0.106
5fSU11	5f00409	11/04/2008	04/11/2013	-0.027	0.283	0.000	0.094
5fSU11	5f00410	16/01/2008	24/02/2014	-0.018	0.288	-0.019	0.216
5fSU11	5f00412	11/04/2008	04/11/2013	-0.007	0.191	-0.002	0.168
5fSU11	5f00413	16/01/2008	24/02/2014	-0.015	0.209	-0.001	0.131
5fSU11	5f00415	11/04/2008	04/11/2013	-0.048	0.213	-0.027	0.120
5fSU11	5f00417	16/01/2008	24/02/2014	-0.031	-0.363	0.002	0.185
5fSU11	5f00418	11/04/2008	04/11/2013	-0.023	0.216	-0.027	0.129
5fSU11	5f00420	16/01/2008	24/02/2014	-0.036	0.263	-0.001	0.132
5fSU11	5f00422	17/03/2008	04/11/2013	-0.015	-0.111	-0.012	0.127
5fSU11	5f00424	16/01/2008	24/02/2014	-0.022	0.185	-0.017	0.136
5fSU11	5f00427	16/01/2008	24/02/2014	-0.023	0.297	-0.012	0.138
5fSU11	5f00431	16/01/2008	24/02/2014	-0.027	0.176	-0.023	0.119
5fSU11	5f00434	16/01/2008	24/02/2014	-0.034	0.138	-0.011	0.121



Year 1: 2012/13

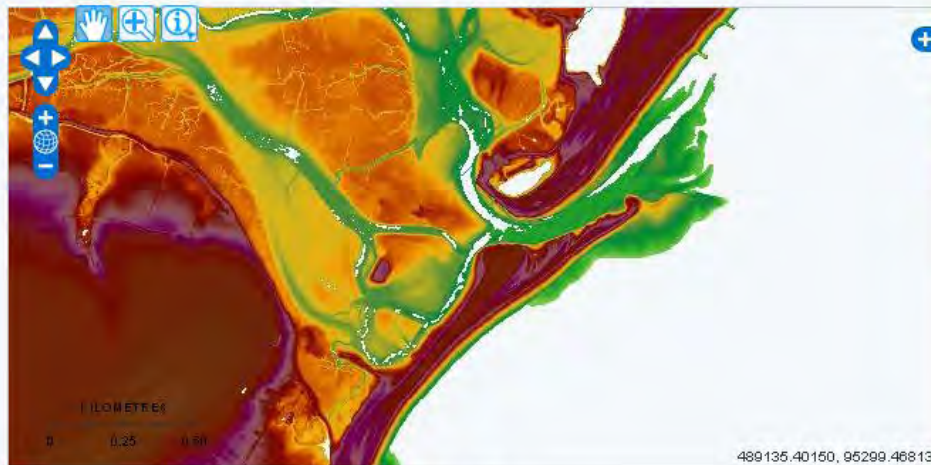




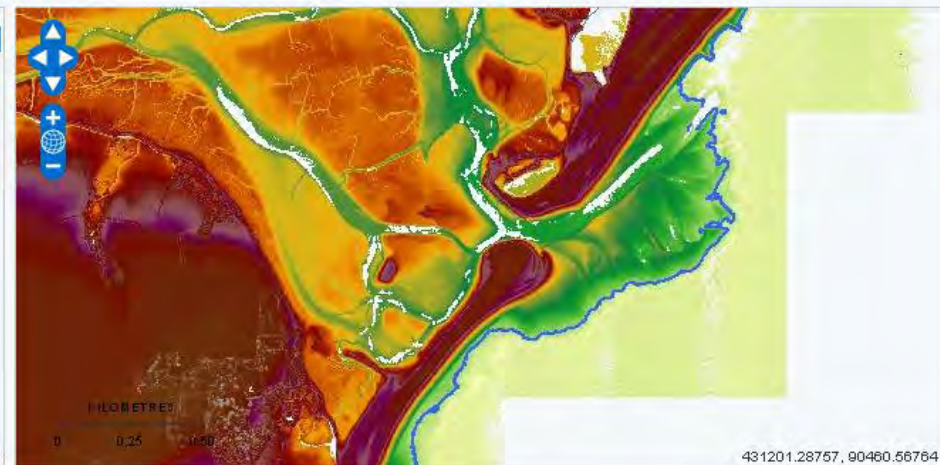
DUAL MAP VIEWER

Zoom to a region ▼

Lidar

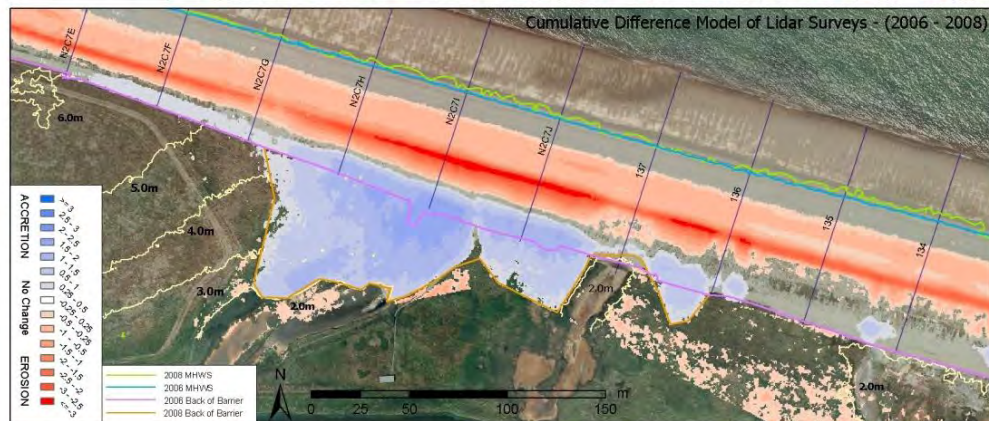
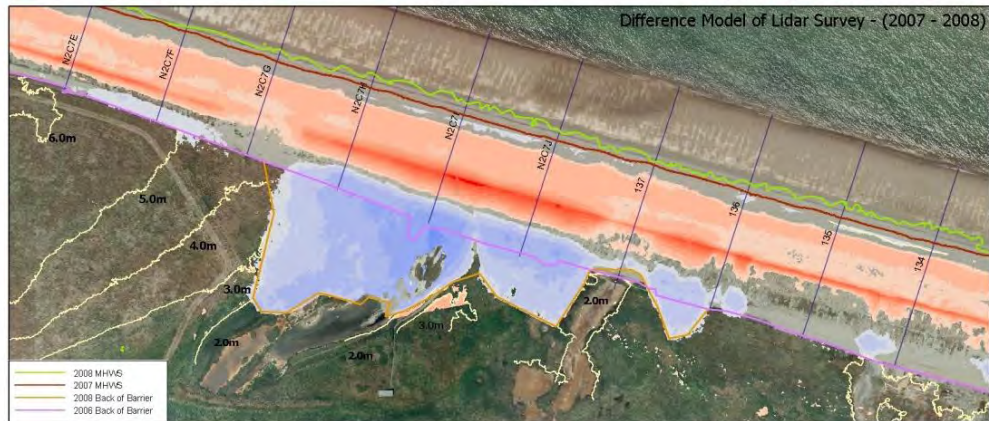
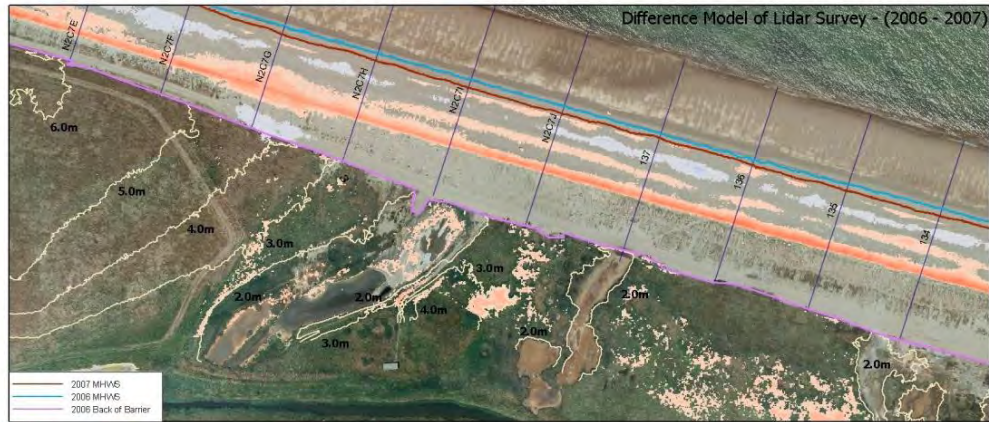


- ☒ Ortho-rectified photography
 - ☒ False colour infrared photography
 - ☒ Non-rectified photography
 - ☐ Lidar data
 - ☐ Photogrammetric data
 - ☐ Topographic ground model data
 - ☐ Hydrographic ground model data
 - ☐ Sediment distribution data
 - ☐ Beach profile cross section changes
 - ☐ Real time data
- 2008 (checked)
2007



- ☒ Ortho-rectified photography
 - ☒ False colour infrared photography
 - ☒ Non-rectified photography
 - ☐ Lidar data
 - ☐ Photogrammetric data
 - ☐ Topographic ground model data
 - ☐ Hydrographic ground model data
 - ☐ Sediment distribution data
 - ☐ Beach profile cross section changes
 - ☐ Real time data
- 2008
2007

- Increase usage on un-managed frontages to replace topo
- Widely-varying frequency nationally
- Review usage and changes measured during current phase
- Revise to reflect measured changes over previous years
- Provision of data will be via EA
- Maintain flexibility for alternative in case EA withdraw revenue funding



2006 Lidar: 09 September 2006, Start 14:00.
Finish 15:20. 0.5m Resolution.
2006 Aerial Photography

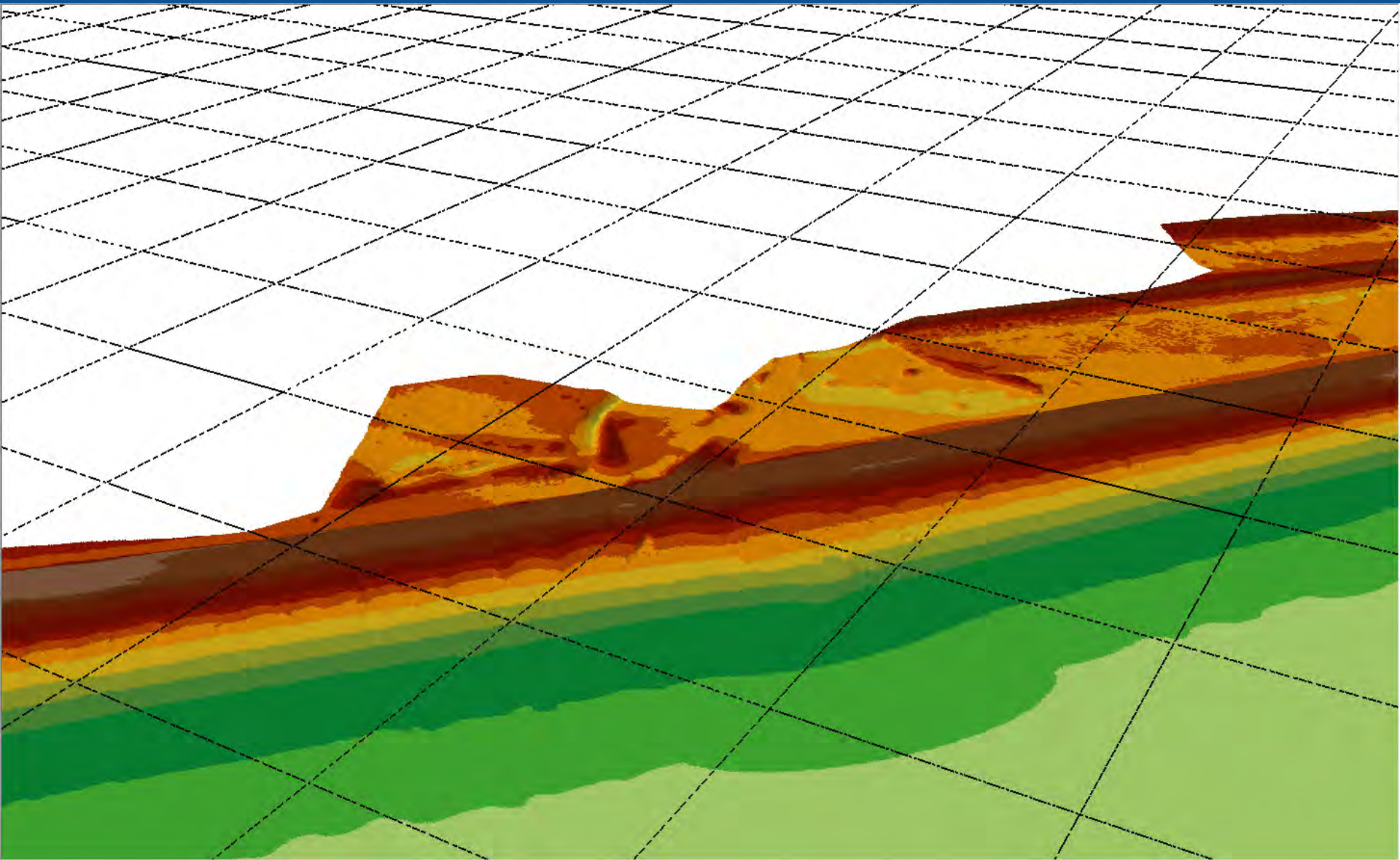
2007 Lidar: 11 April 2007, Start 17:40.
Finish 19:17. 0.25m Resolution. Tide Height -0.55 OD
2006 Aerial Photography

2008 Lidar: 12 January 2008, Start 19:03.
Finish 20:23. 0.25m Resolution. Tide Height 1.35 OD to 2.55 OD
2008 Aerial Photography

Monitoring impacts of changing policy

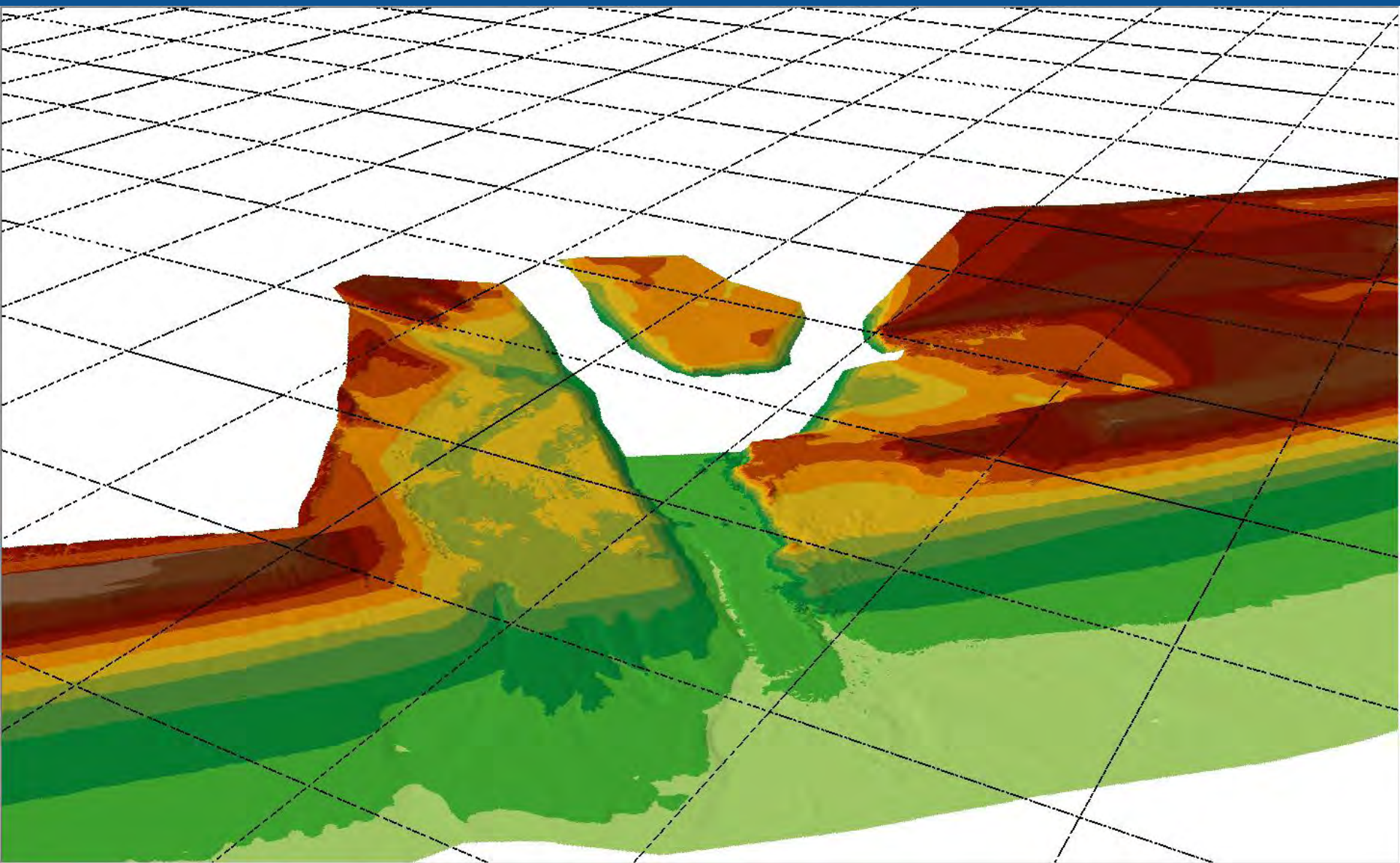


27/08/2013 Pre-Breach



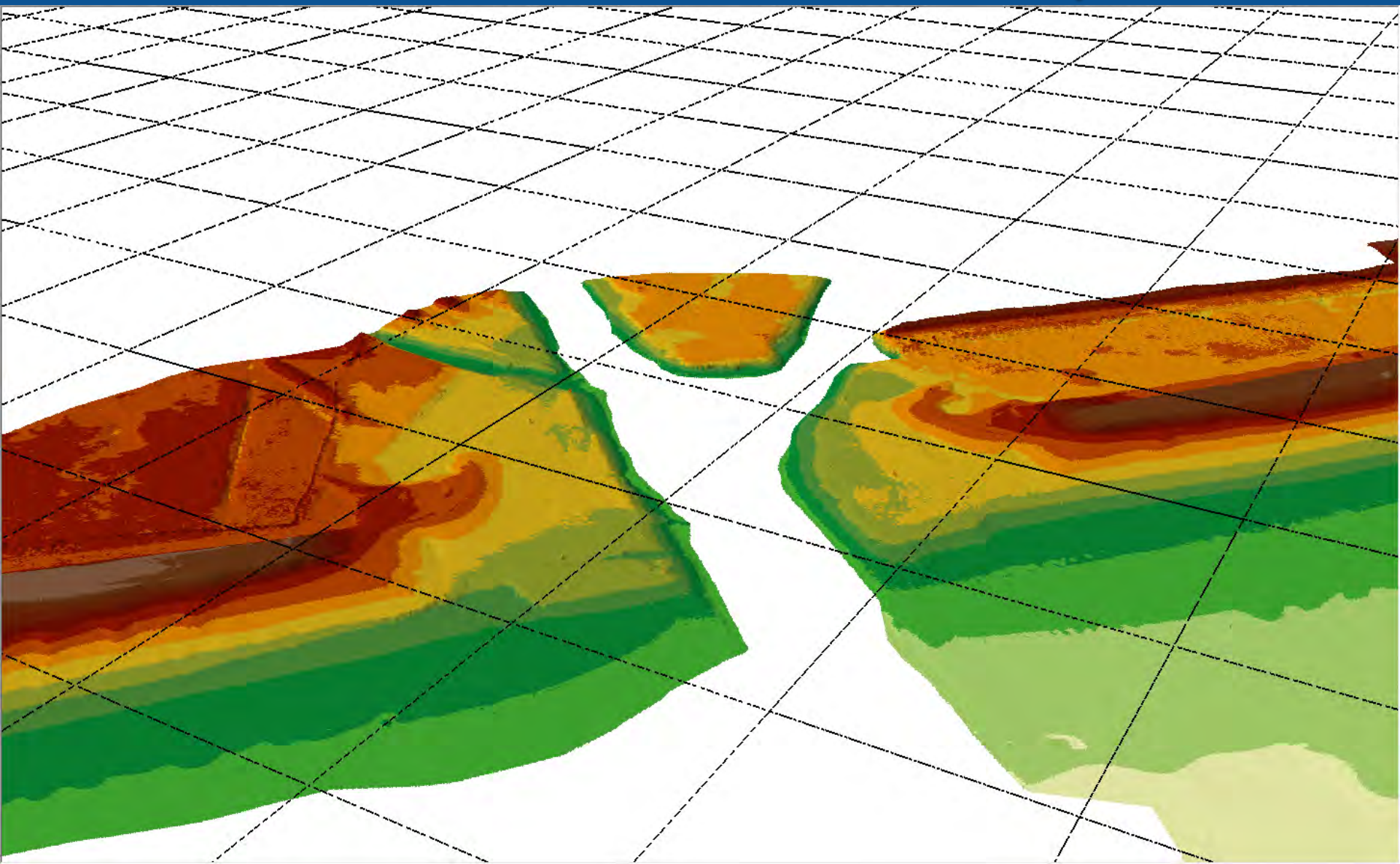


12/09/2013 – Mid-breach



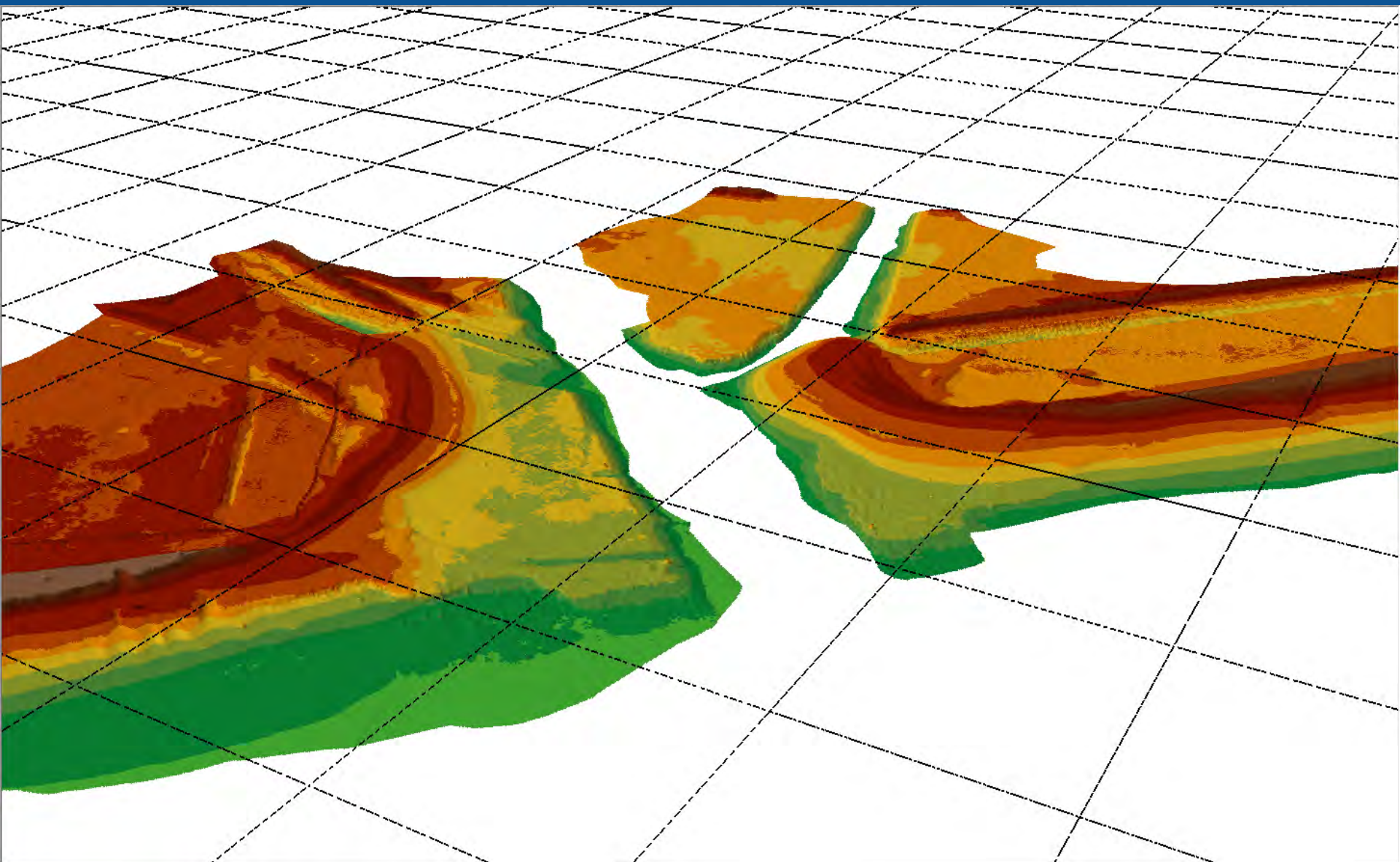


24/09/2013 – Breach + 3 days



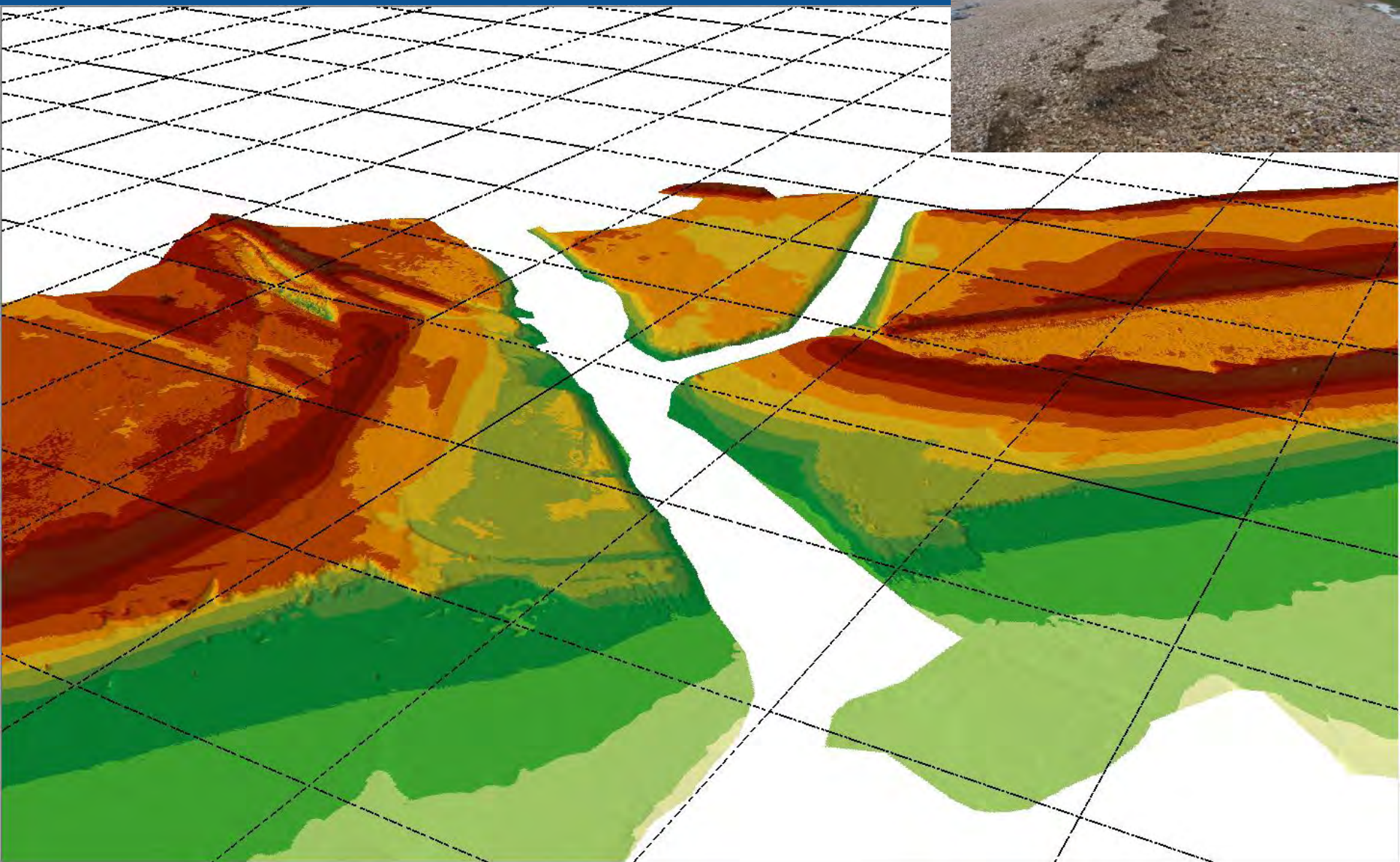


30/10/2013 – Breach + 1 month



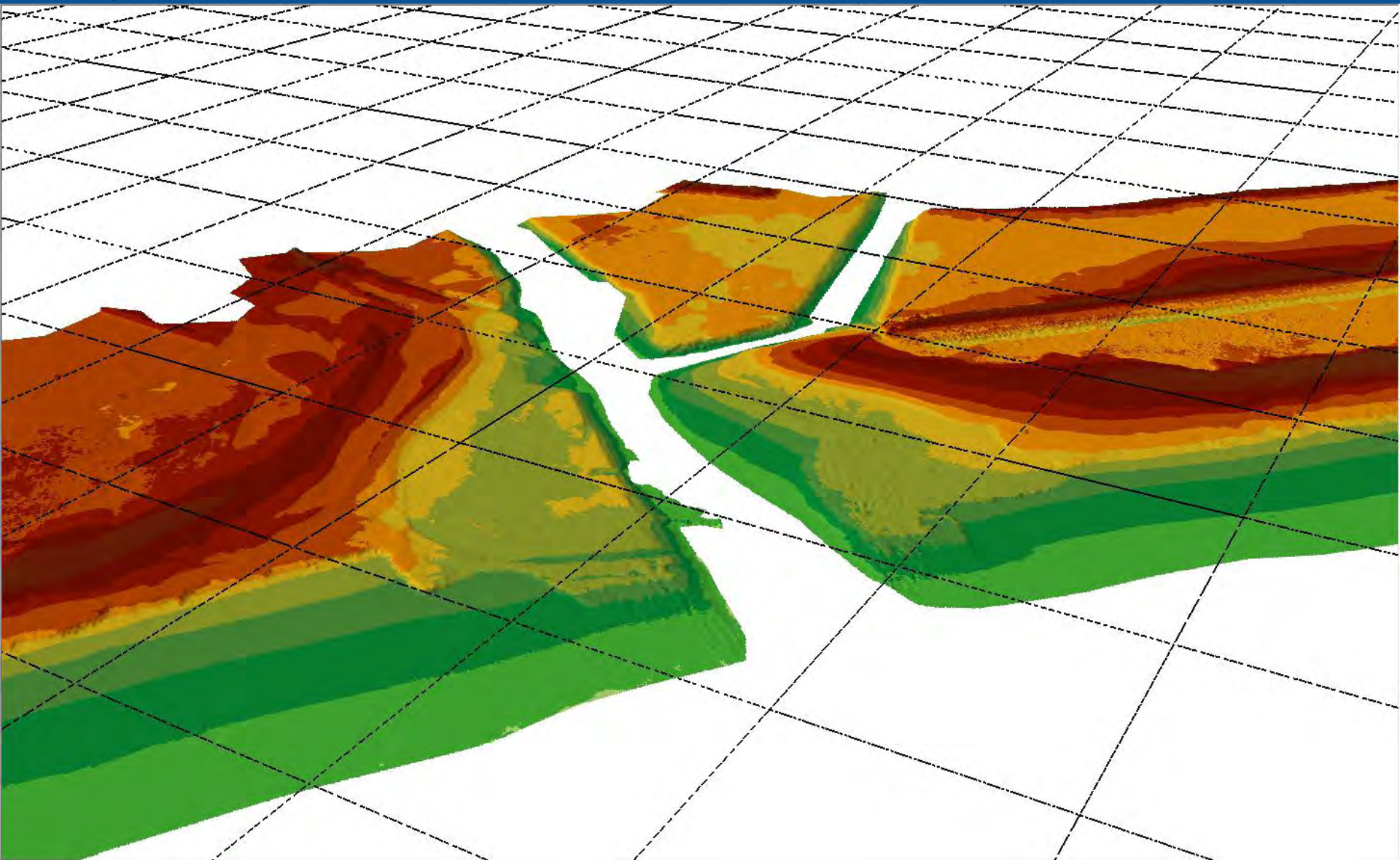


08/11/2013 – Post-storm



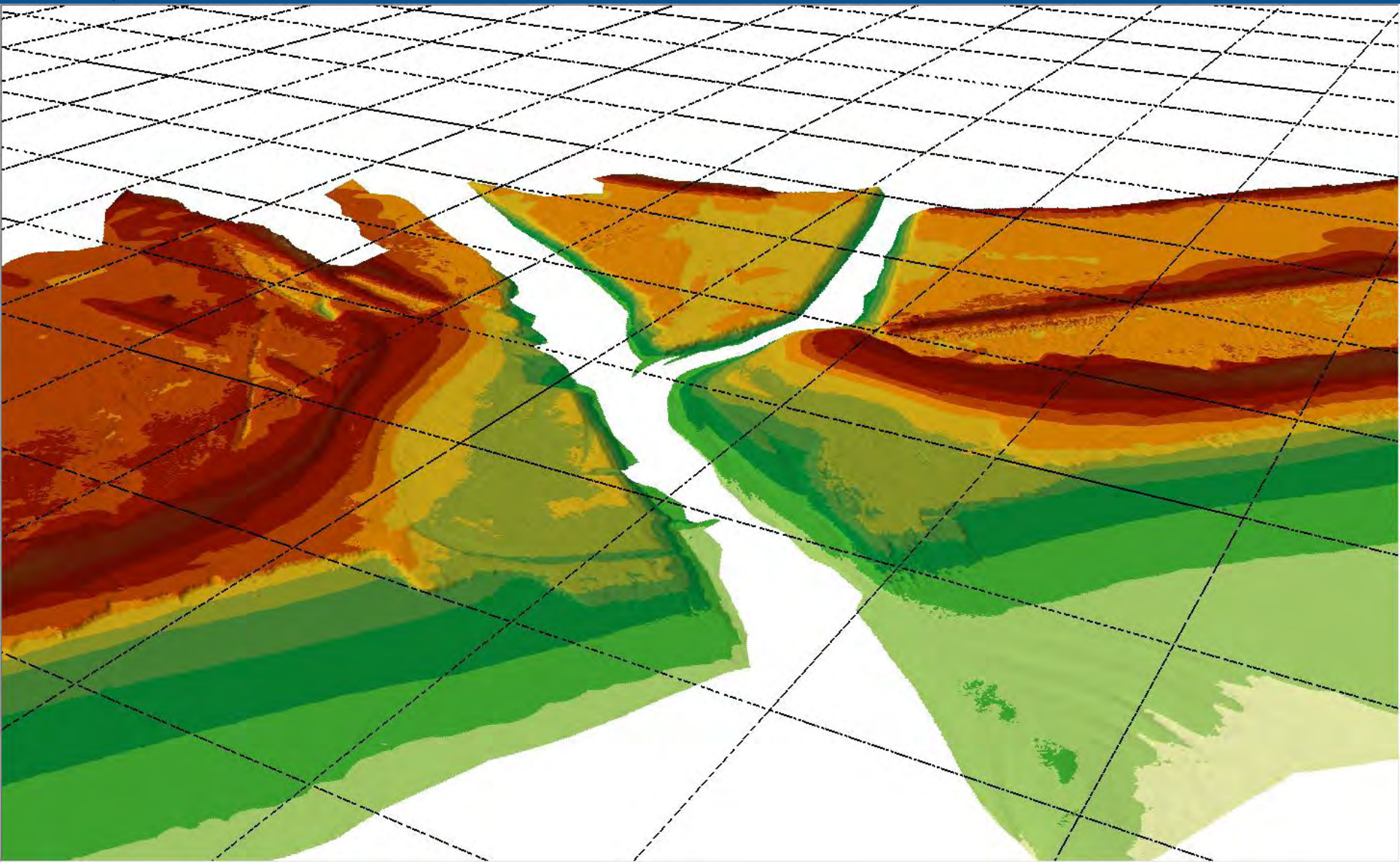


28/11/2013 – Breach + 2 months



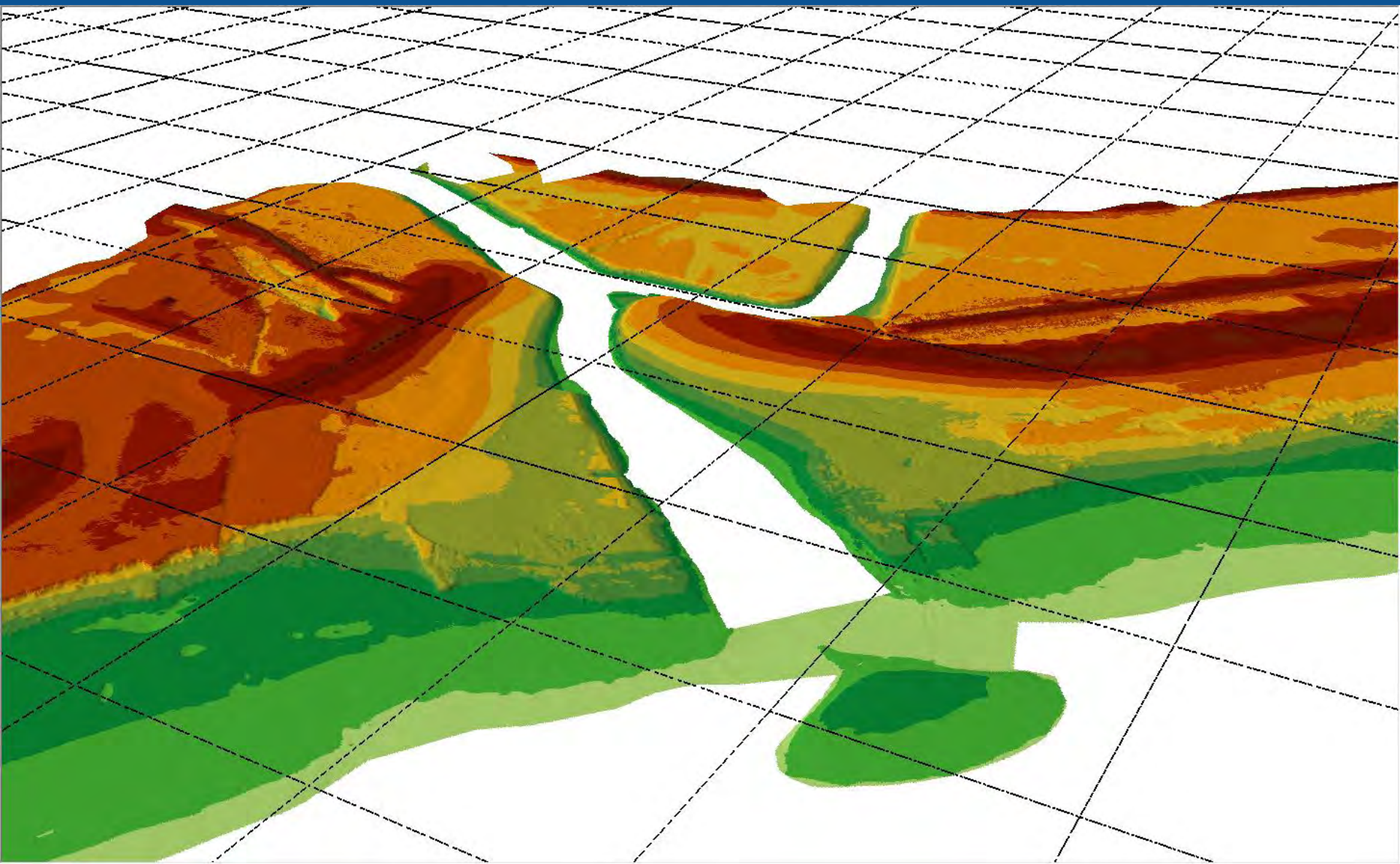


10/12/2013 – Breach + 2.5 months



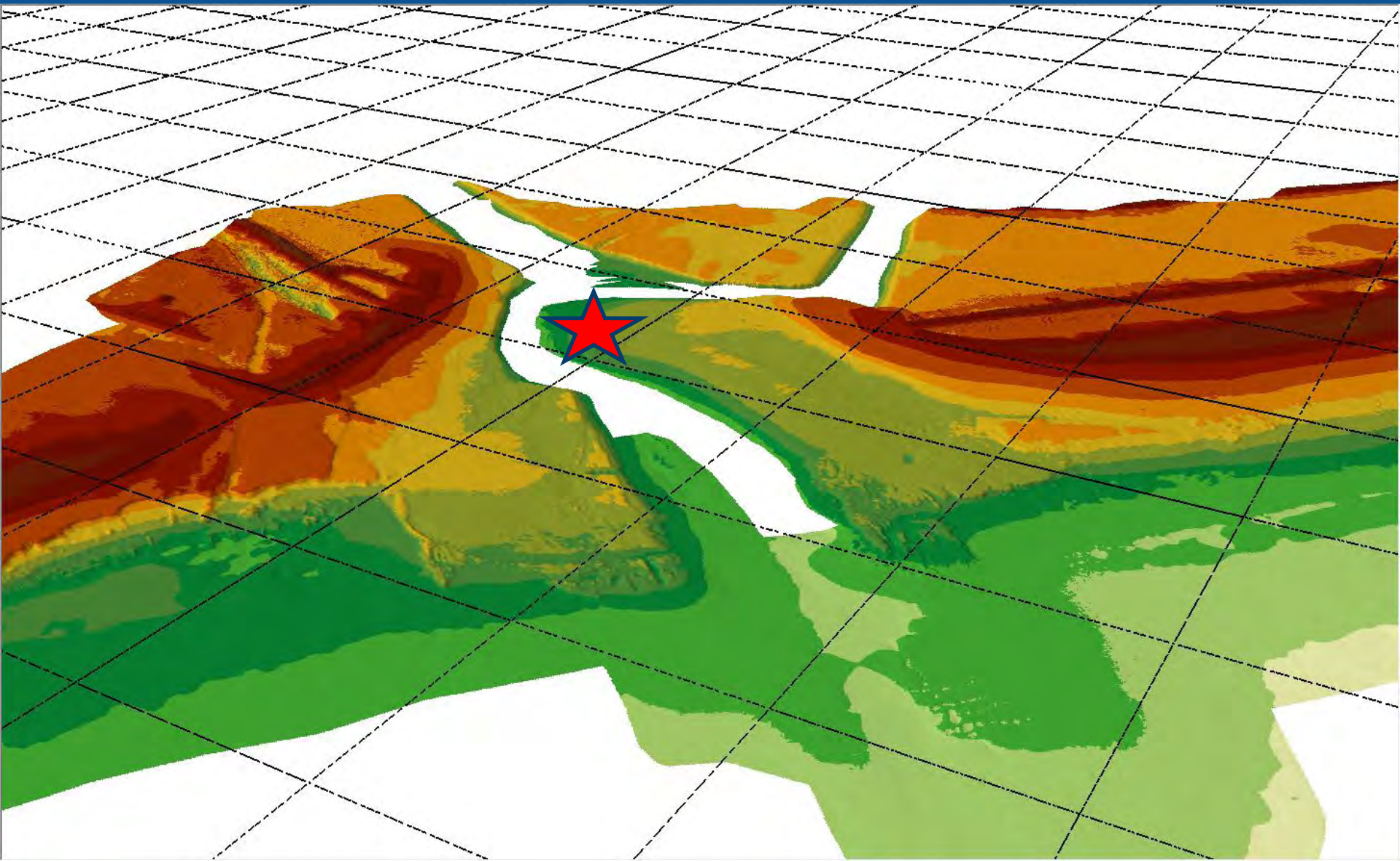


10/01/2014 – Post-storm



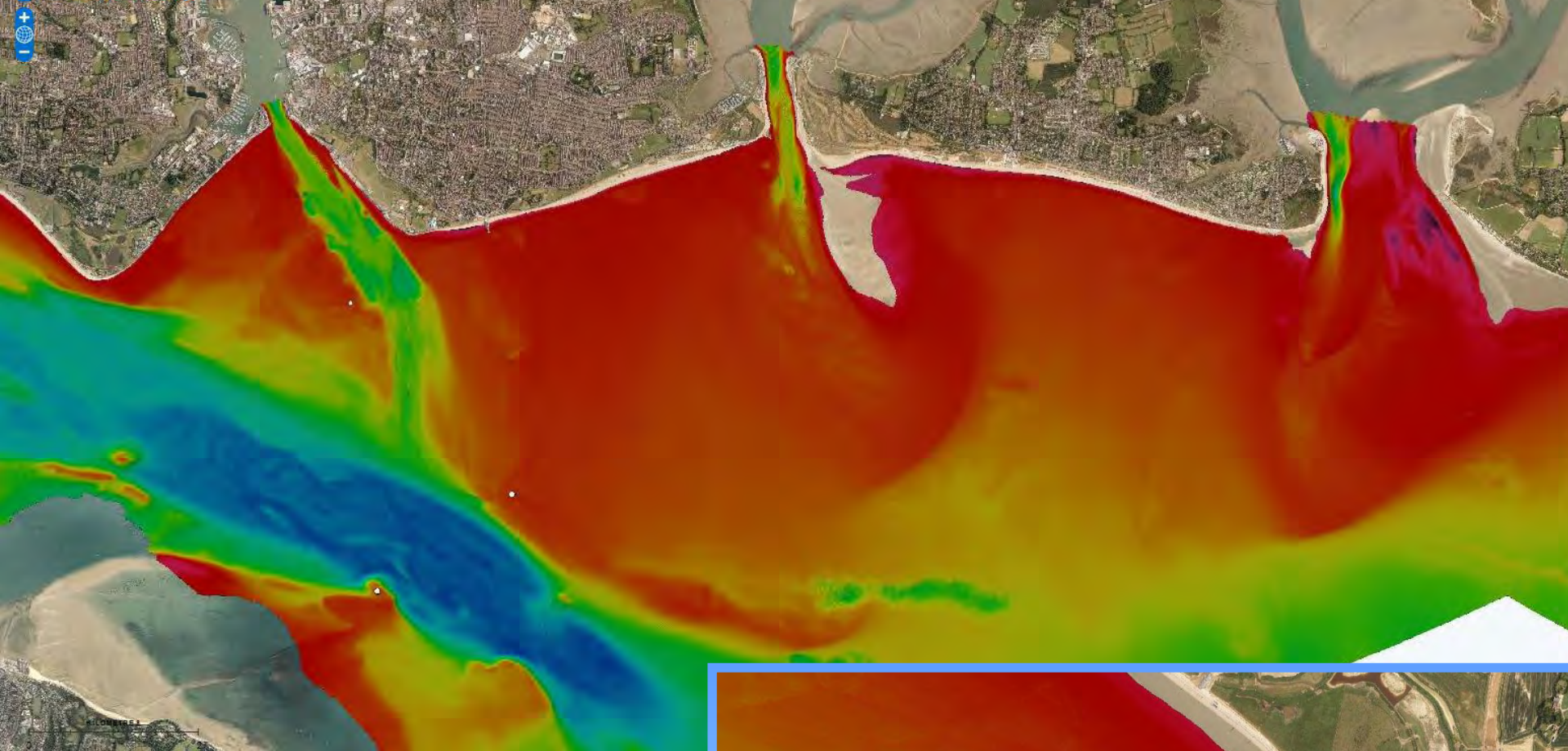


07/02/2014 – Breach + 5 months

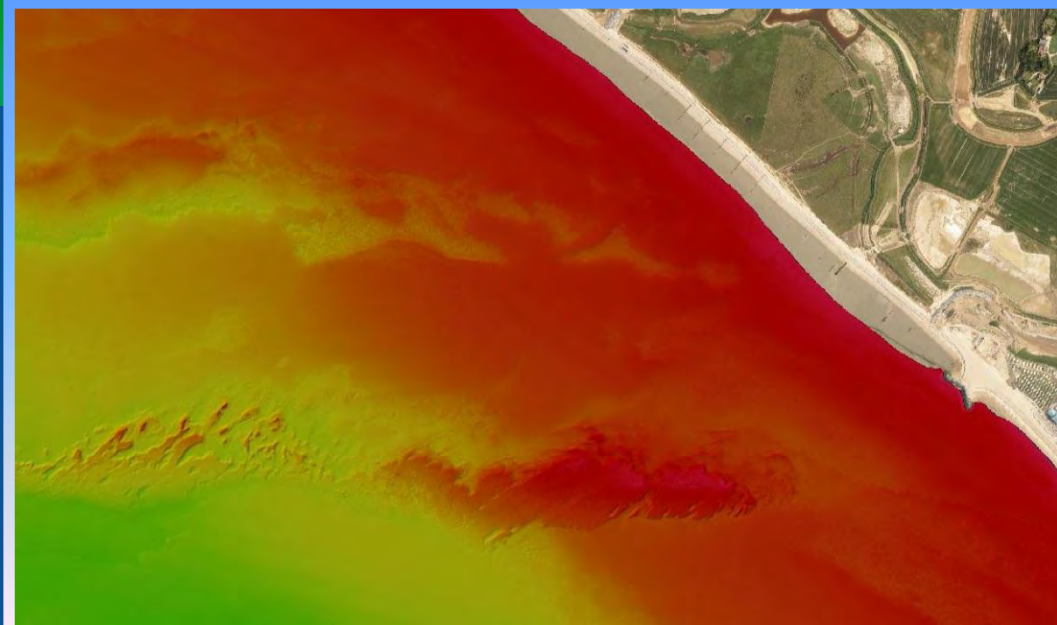


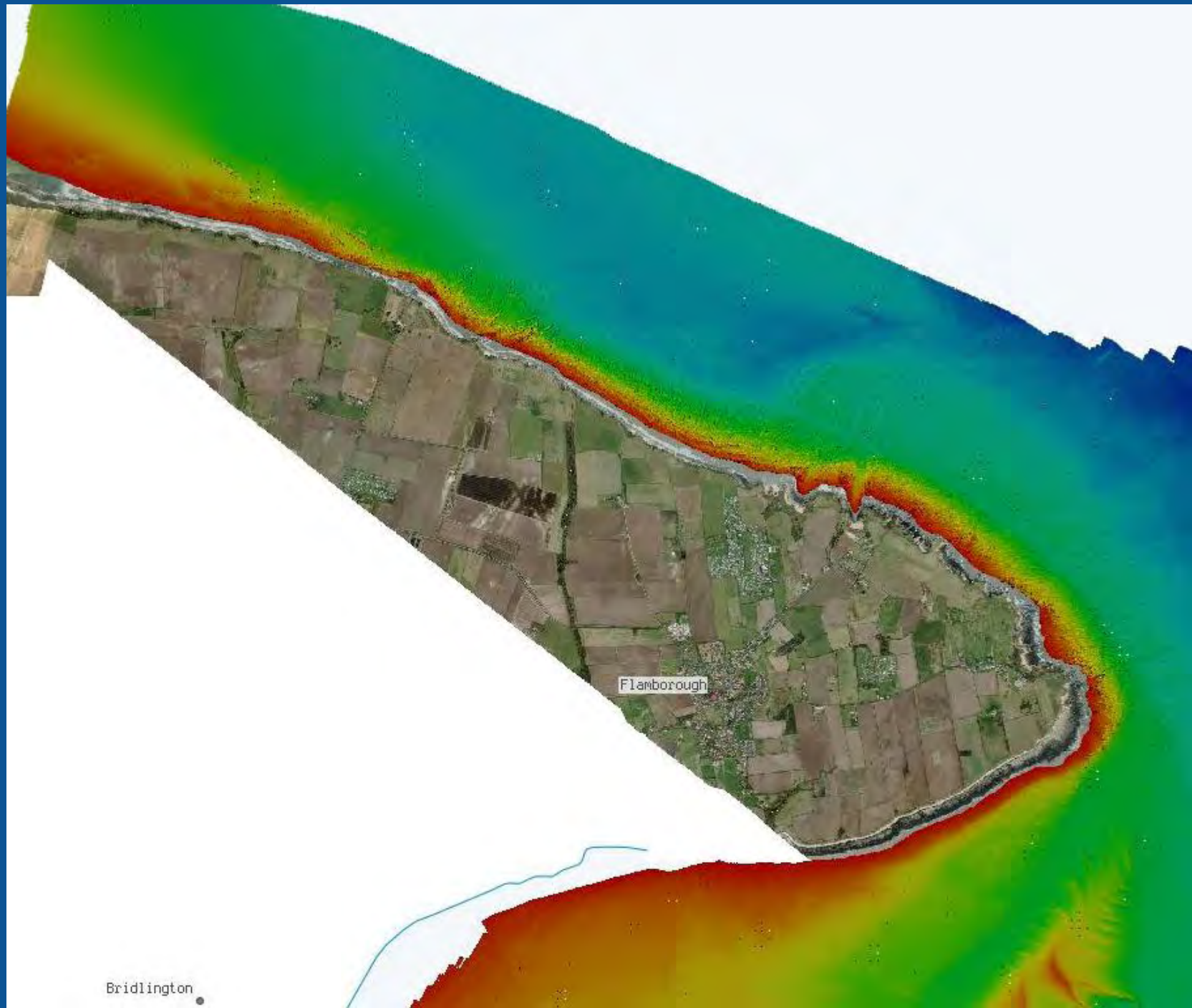


- Aerial surveys
- Widely varying frequency nationally
- (5 years SE & SW, annual Anglian)
- Revise to reflect measured changes over previous years
- *Examine possibility of DTMs from aerials*



Bathymetry



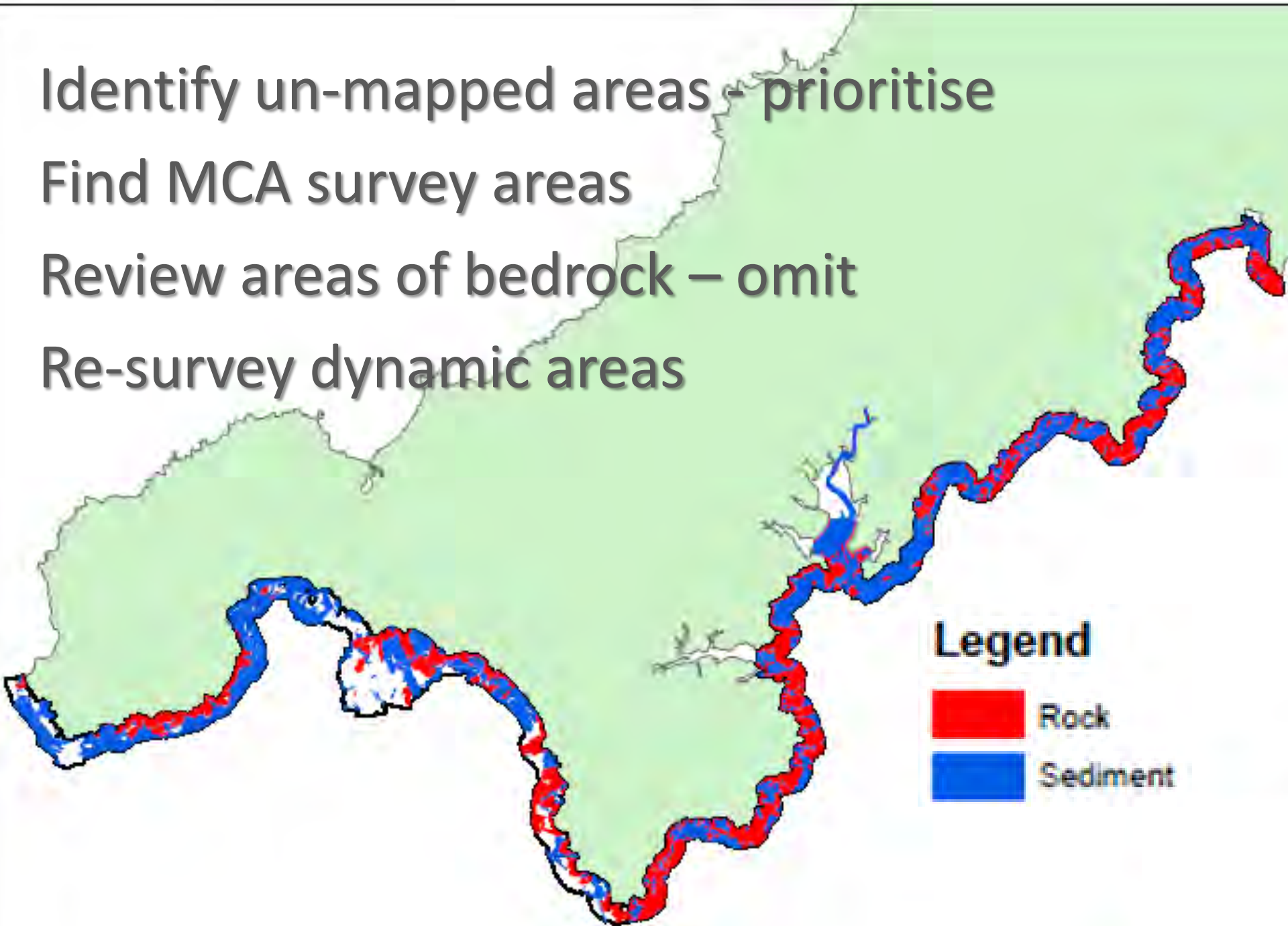


Identify un-mapped areas - prioritise

Find MCA survey areas

Review areas of bedrock – omit

Re-survey dynamic areas



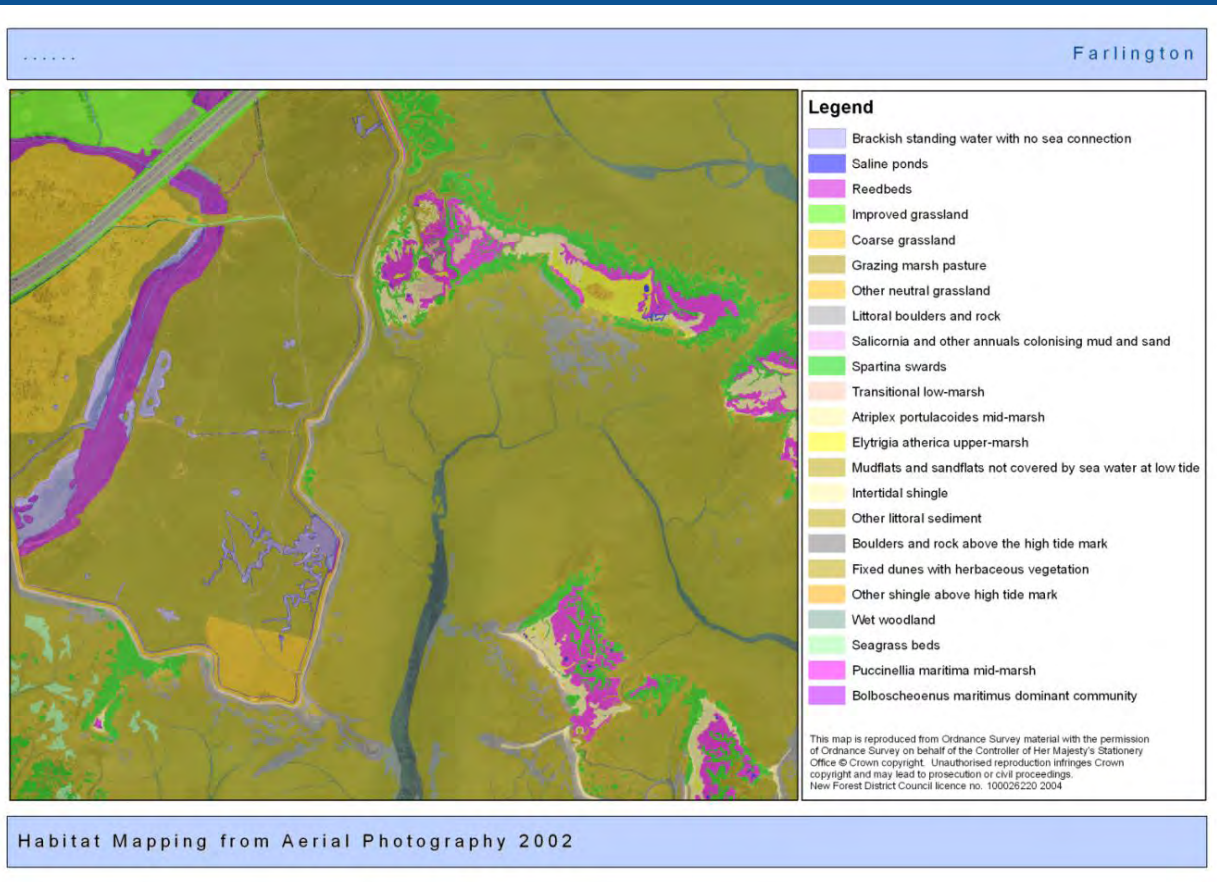
Habitat mapping

Current provision
of mapping to
BAP level

Proposed revision

Update areas where
schemes proposed

Provide photos for
others to map *e.g.*
regional habitat
programmes, Water
Framework Directive,
Natural England

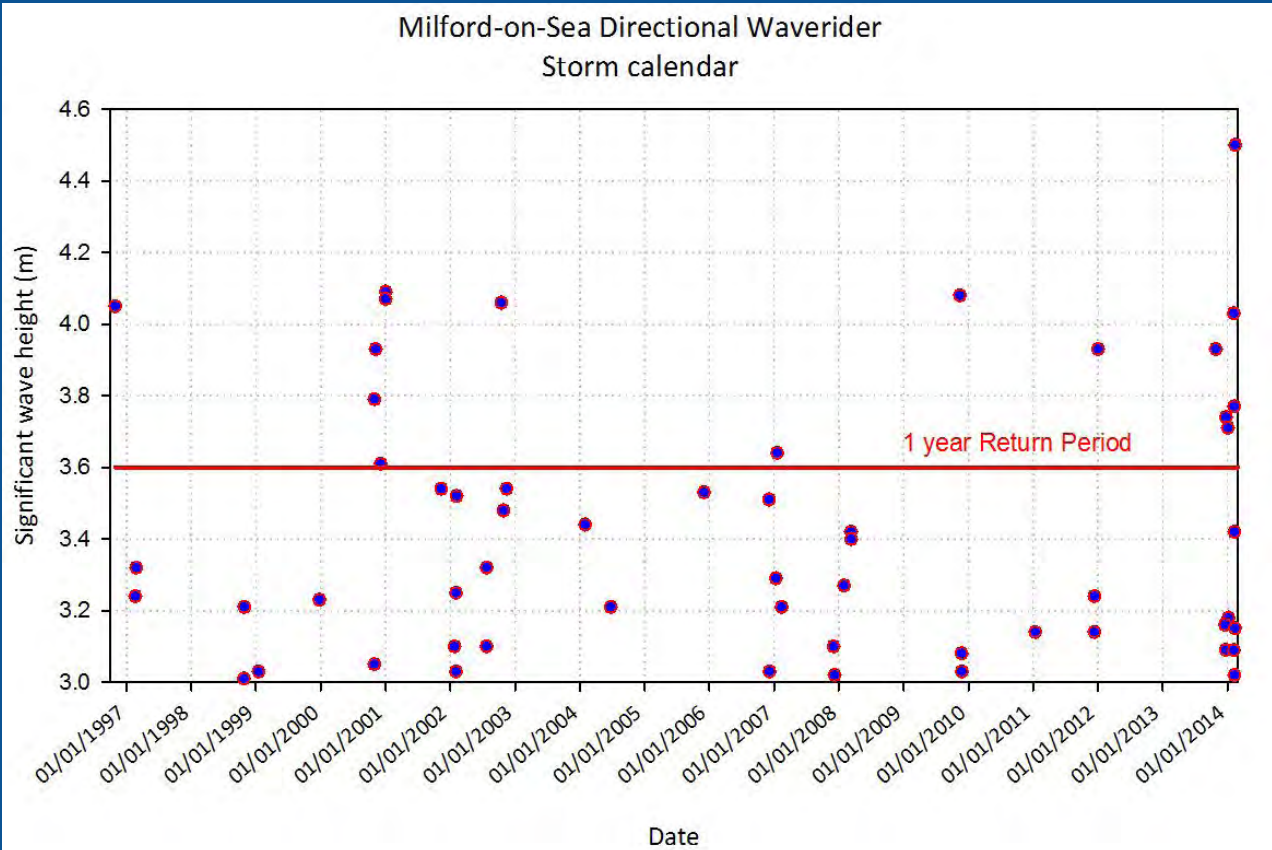
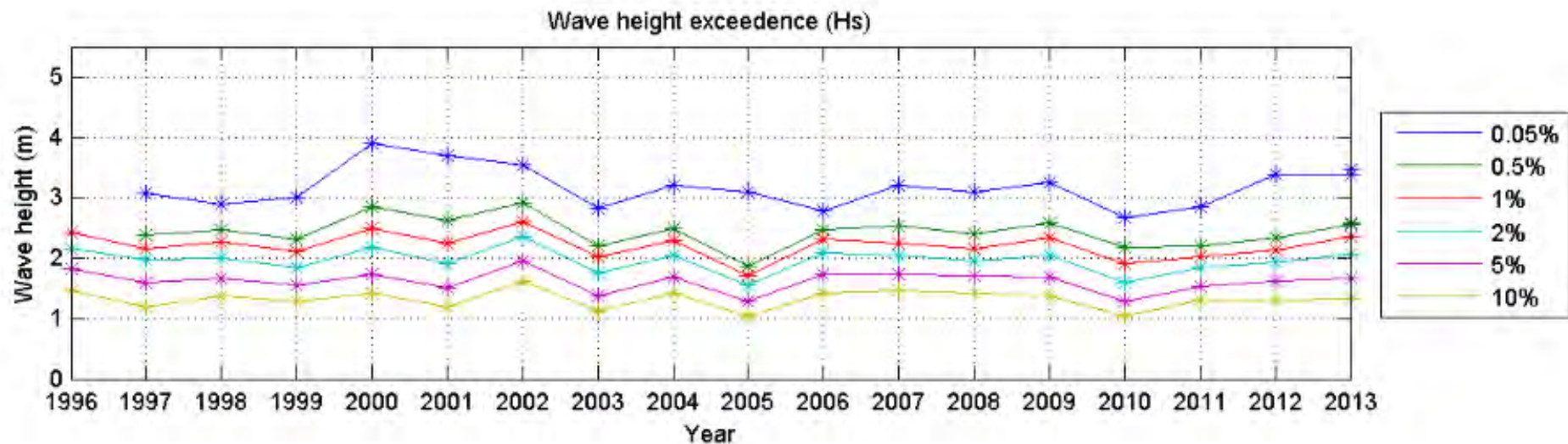


(national saving £1million)

Waves and tides



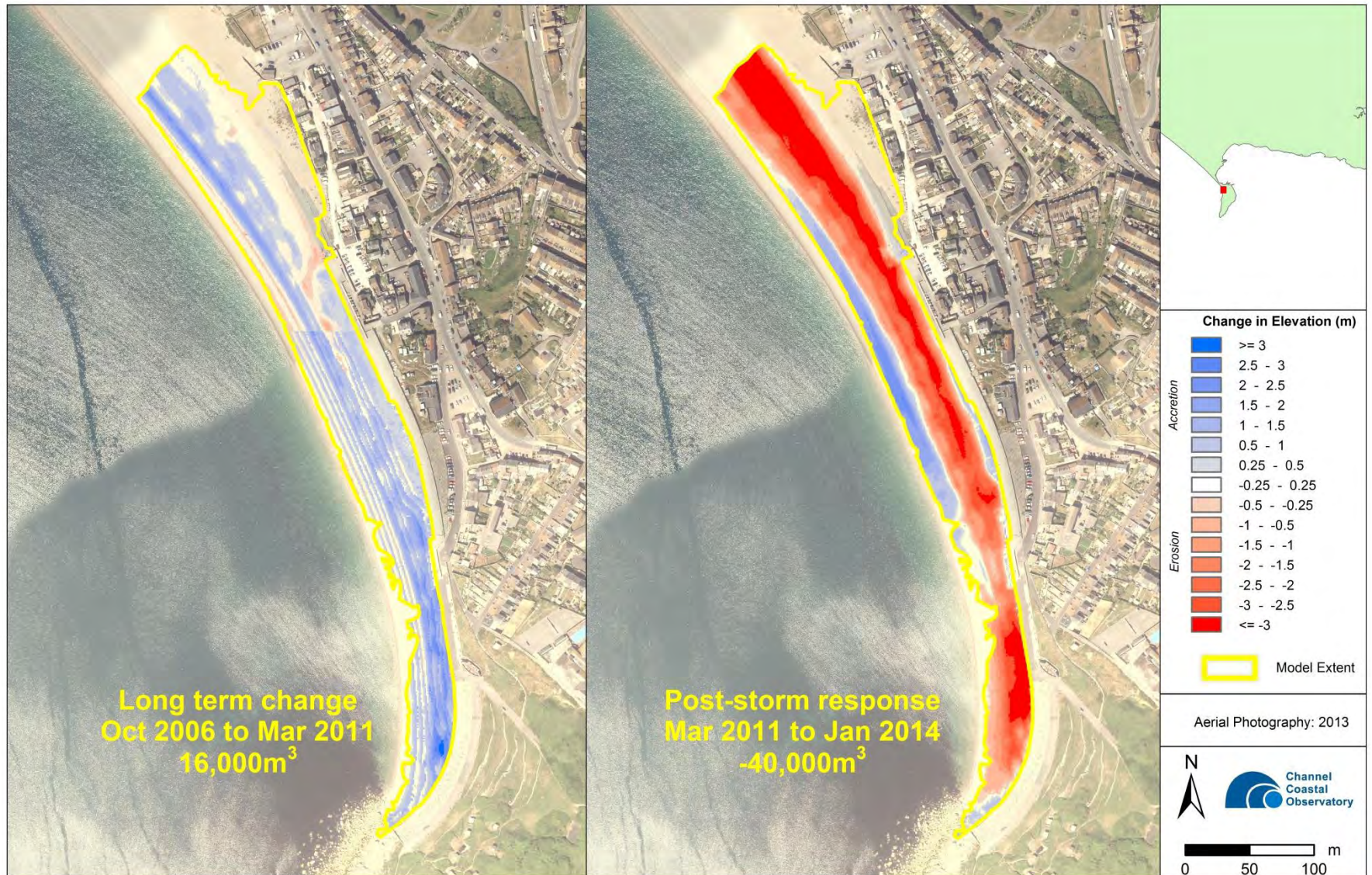
Review existing sites
Standard analysis



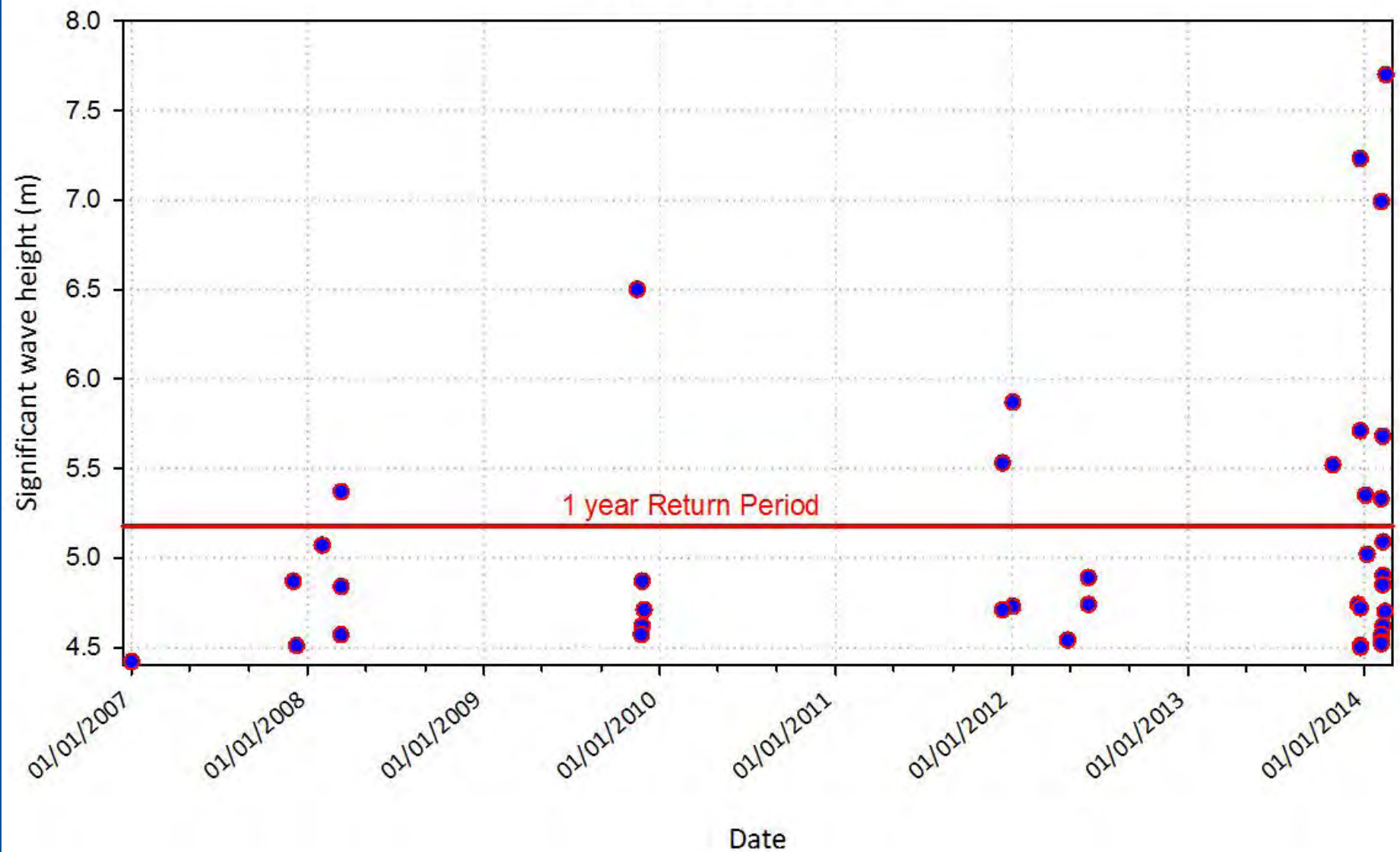
Lessons from recent storms

- Value of post-storm surveys (and of in-house survey and analysis teams)
- Laser scanning (H&S)
- Some duplication of services *e.g.* wave buoys provides redundancy
- Long-term wave and tide data needed

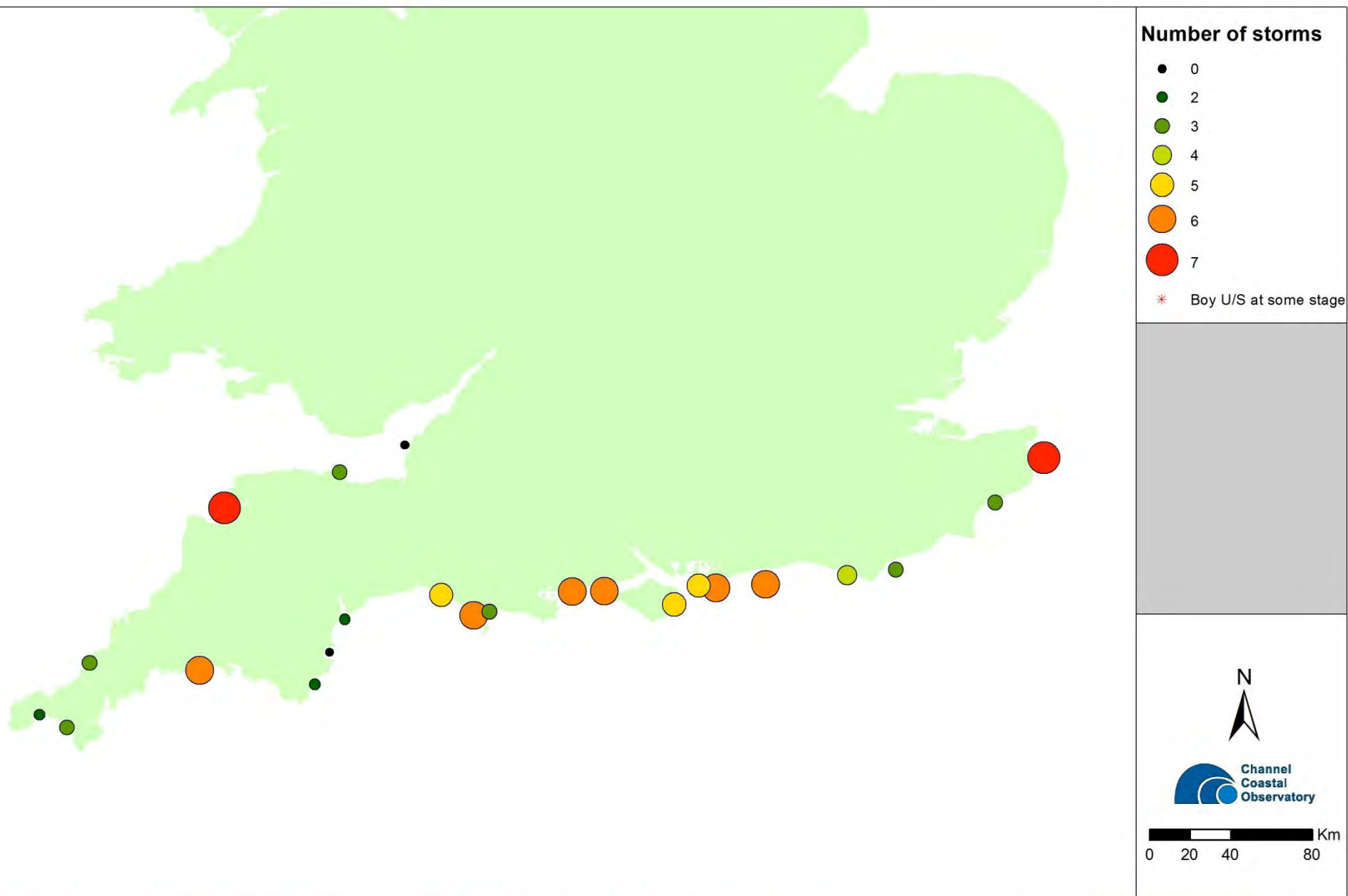
Chiswell post-storm survey



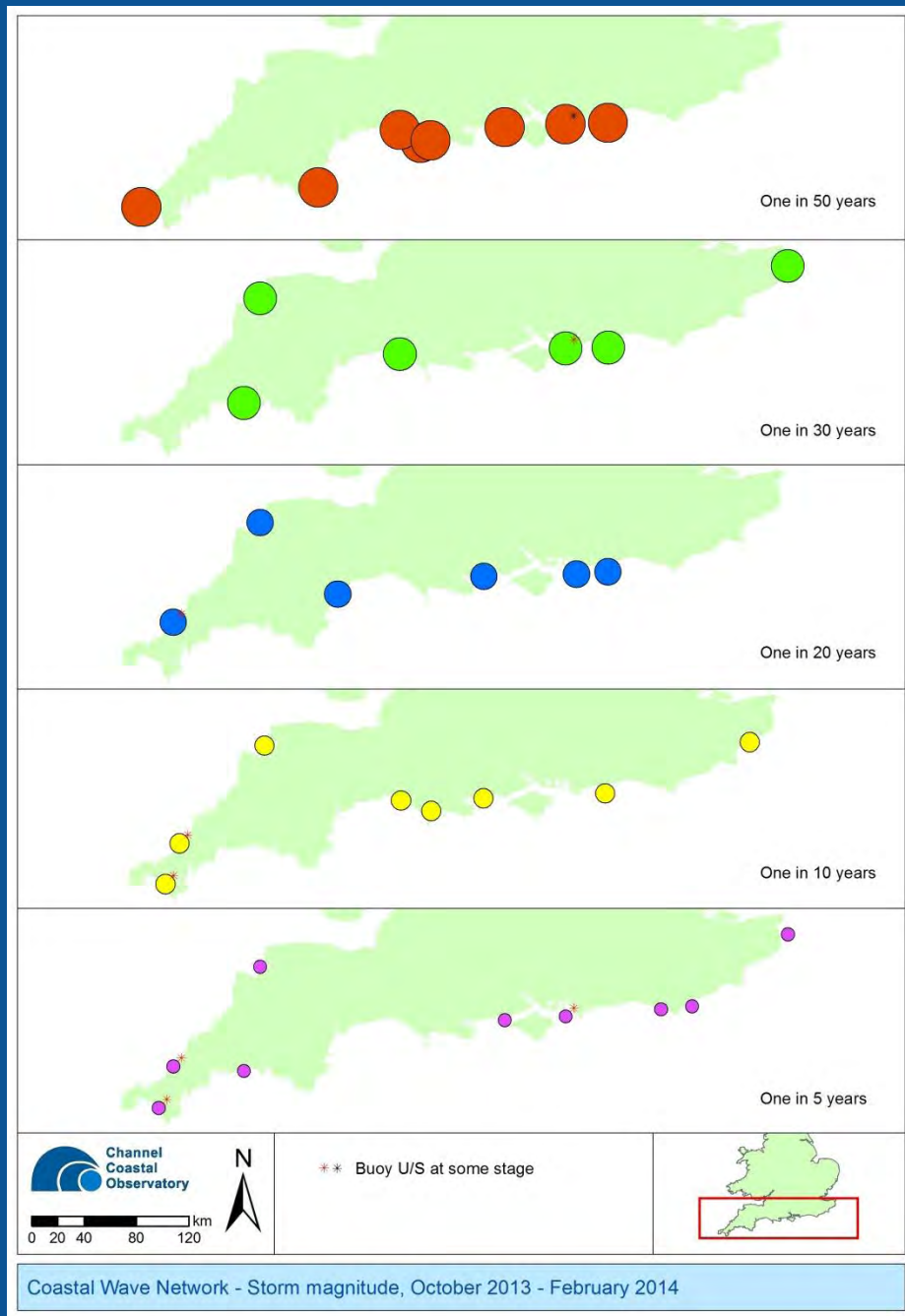
Chesil Directional Waverider Storm calendar



Storm frequency (no. storms > 1 in 1 year)



Coastal Wave Network - total number of storms exceeding 1 in 1 year Return Period, October 2013 to February 2014



1 in 50 years

1 in 30 years

1 in 20 years

1 in 10 years

1 in 5 years

Review new monitoring techniques and applications

- Wider use of laser scanning
- Cliff monitoring



Review new monitoring techniques and applications

- Coastal DTM – using combined bathy/
topo lidar (& aerial photography)
- Satellite aerial imagery
- Satellite bathymetry

Outline programme

Formation project board	Oct 2013	Complete
Detailed responses from partner organisations on programme content		May 2014
Review of current phase (technical/data usage)		May 2014
Programme design consultations		May 2014
Programme design	Mar 2014	May 2014
New programme elements - design and consultation	Apr 2014	Jun 2014
Local authorities democratic process for lead authorities	Jun 2014	Oct 2014
Develop procurement / delivery strategy	Aug 2014	Sep 2014

Activity	Start Date	Completion Date
Prepare PQQ - all services	Oct 2014	Dec 2014
Benefit cost analysis	Oct 2014	Nov 2014
STAR production	May 2014	Dec 2014
Environment agency consultations approvals	Dec 2014	Jan 2015
Local authority internal approvals	Dec 2014	Jan 2015
Submit STAR	Feb 2015	
Agree OJEU framework adverts with partners	Jan 2015	
LPRG meeting dates	11 Mar 2015	12 Mar 2015
LPRG recommendation	Mar 2015	
Contract Documentation & Award for 2016	01 Feb 2016	28 Feb 2016
Monitoring Programmes for 2016 - 2022	01 Apr 2016	31 Mar 2022

