

Development and implementation of ETR138



Energy & Water Infrastructure Interdependencies Governance - Planning and Preparing for the Future

2 December 2014

Damien Culley – National Grid

Walham Substation 2007

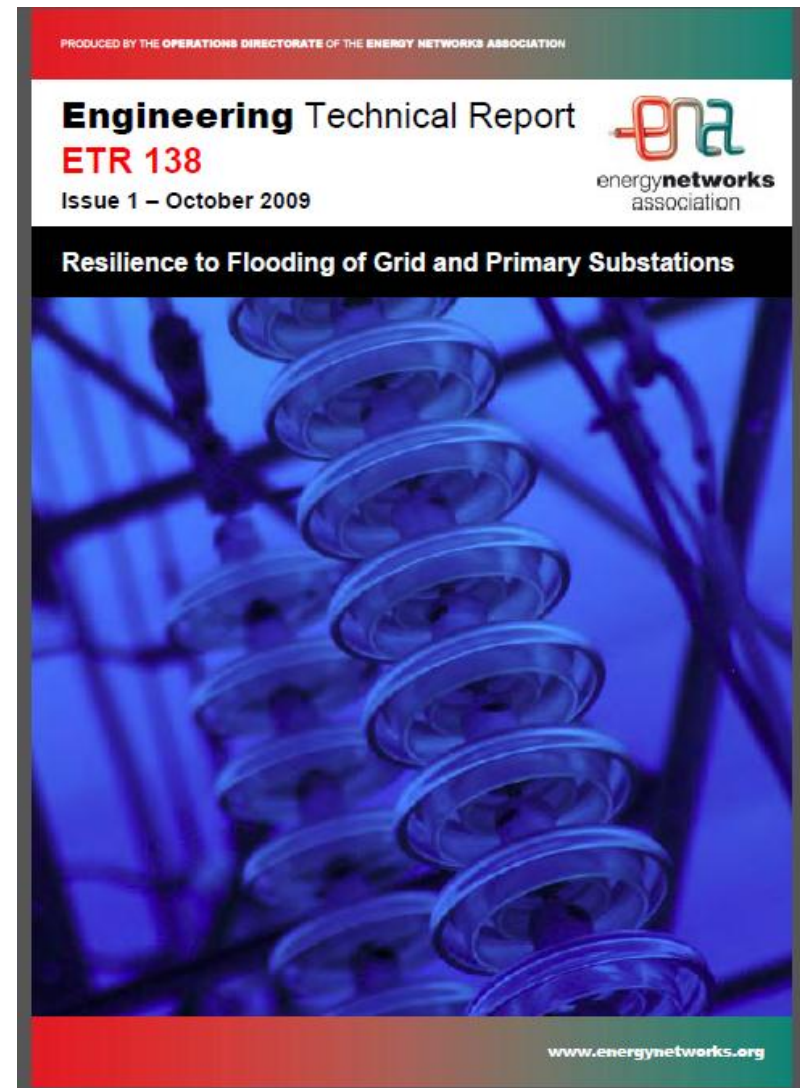


Neepsend Substation - 2007



Fallout of the 2007 floods

- In anticipation of expected recommendations coming from the Pitt Review a comprehensive assessment of the resilience to flooding of primary and higher voltage substations was initiated
- The Energy Networks Association (ENA) Substation Resilience to Flooding Task Group, reporting to the Energy Emergencies Executive Committee, (E3C) was asked to lead this work
- The Task Group Report was delivered in October 2009 in the form of Electricity Technical Report ETR 138 and included in its development and acceptance representation from DECC, Ofgem, Environment Agency, DNO's and UK transmission companies.



ETR138 topics

- Impact of Flooding on the UK Electricity Supply System and risks for Society.
- Flood Risk Information - Flood Defences and Planning Requirements.
- Systematic Approach to Flood Risk Assessment and Protection including the
 - establishment of Flood Risk Assessments for each Substation;
 - identification of the Flooding Impact for each particular site:
 - establishing if a site will be protected by a flood protection scheme and where necessary,
 - Identifying the most appropriate flood protection system for each site.
- Target resilience levels of acceptable flood risk and implications for investment including a Cost/Benefit assessment that takes into account Societal Risk
- Work Programmes for implementation of Substation Flooding Resilience which will be dependent on the availability of necessary funding.

Embedding flooding resilience into National Grid policy

- National Grid have embedded the principles of flood and natural hazards resilience into our policies and design standards
- For all existing and new substations National Grid resilience policy is
 - New sites - Target resilience to flooding from a 1:1000 year event
 - This is embedded into our policy and current legal planning requirements.
 - Existing sites - Target of resilience from a 1:1000 year event
 - Add an extra 300mm margin of error and/or wave over topping.
- The addition of the climate change and margin of error / freeboard give some extra resilience to any future changes in data

Risk	Number of sites	Completed works	Remaining
1:100	11	7	4
1:200	26	0	26
1:1000	65	0	65

Investment

- Investment is on a risk basis
 - targeting the highest risk sites first
 - all National Grid substations are resilient to flooding by the end of 2021
- Spending c.a. £140m between 2008-2021
- Also have 2km of demountable barrier at our disposal
- Investigating alternative flood mitigation techniques for low risk sites (i.e. 1:1000)



Walham Substation February 2014

