Property Level Flood Protection

Andrew McLachlan
Flood Risk Strategy Manager
East Riding of Yorkshire

Building Better Buildings
Guildhall, Hull
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Flood Risk in East Yorkshire

- 2\textsuperscript{nd} Most at flood risk area in UK
- Risk from:
  - Tidal
  - Fluvial
  - Pluvial
  - Groundwater
Flood Risk in East Yorkshire

- Entirely reliant on manmade drainage systems
- Dutch Model
  - Ditches (Cuttings)
  - Dykes (River Hull)
  - Sluices (Cloughs)
  - Pumps
Options for Managing Flood Risk

- Avoid (Sequential Approach)
- Community Level Flood Defence
- Land Raising
- Water Compatible Design
- Protection (PLFP)
- Resilient Design
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When is PLFP Appropriate?

• Existing Development
  • No other solution available
  • No other solution affordable
  • Last line of defence
• New Development
  • Where there are wider sustainability issues
  • Where the development is necessary
  • To meet the requirements of the Strategic Flood Risk Assessment
East Riding Experience

• Defra sponsored pilot scheme
  • Town of Hedon and Village of Bilton
  • 1000 properties flooded in 2007
  • Successful bid for 3 grants
  • Total of £600K
  • 150 properties
  • Ring-fenced for protection at the property level
  • Tight timescales for delivery
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East Riding Experience

• Procurement
  • Dozens of unaccredited products
  • No “real world” deployment or testing
  • Price / Quality Assessment

• Testing
  • Build “test rig house”
  • Test products in different combinations
  • Test “install-ability” of products
Assessment and Engagement

• Test Rig
  • Simulate building style and local conditions
  • Built in “simulated poor workmanship”
  • Controlled environment

• Stakeholder engagement
  • Open days
  • Kinaesthetic and physical handling of products
  • Aesthetic and storage considerations
PLFP Product Types

• Passive
  • No requirement for householder to be present
  • Very effective
  • Very expensive to install (labour costs)

• Active
  • Requirement for householder to be present
  • Storage issues
  • Deployment issues for the less able
“There’s a hole in my bucket”

• Consider
  • Building materials
  • Floor construction
  • Build quality
  • Flood depth and duration
  • Ground conditions
  • Age of property
  • Structural characteristics (600mm +FFL)
  • Below ground drainage
  • WC / Shower / Wet Room / Utility
  • Utilities
  • Displacement
A Comprehensive Solution

• Consider
  • Door and window guards
  • Airbrick cover/device and/or
  • Concrete floor and tanking
  • Ventilation
  • Non return / Isolation valves on waste
  • Seal around incoming utility pipes
  • Seal under thresholds
  • Floor covering
  • Lime plaster
  • Sockets and utilities
  • Pumps
  • Don’t forget the building regs!
PLFP Standards

• **BSI Standards**

• **Useful Links**
  • www.eastriding.gov.uk/flooding
  • www.nationalfloodforum.org.uk/bluepages/
  • www.gov.uk/floodsdestroy
Consider Professional Advice and Independent Project Management
Future Standards

- Improved NPPF Technical Guidance?
- Improved SFRA guidance?
- Building regulations?
- LLFA Technical Approval?