



# Mill Burn Flood Alleviation Scheme

The Highland Council Major Applications Meeting

17<sup>th</sup> August 2011

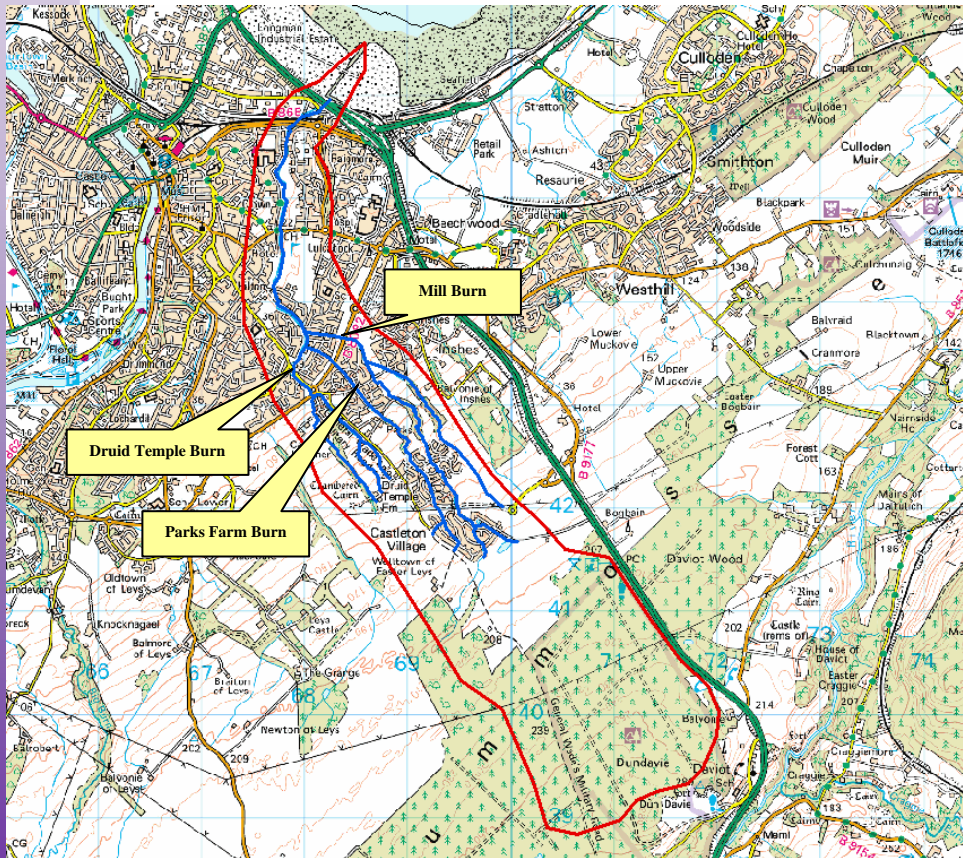
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# Location Plan & Catchment



- Catchment Area: 8.97km<sup>2</sup>
- Steep catchment
- Significant urban influence
- Heavily modified (i.e. man-made in places with many structures)
- Three main tributaries
- Urbanisation accounted for in hydrological modelling
- 1:200 Year RP Flow: 12.81 m<sup>3</sup>/s
- Hydrology approved by SEPA
- According to the RBMP Mill Burn is a heavily modified water body at moderate ecological potential (objective: 'good status' by 2027)

# Tributaries



Park Burn



Temple Burn



Mill Burn

# Scheme Background



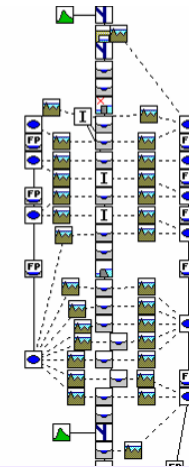
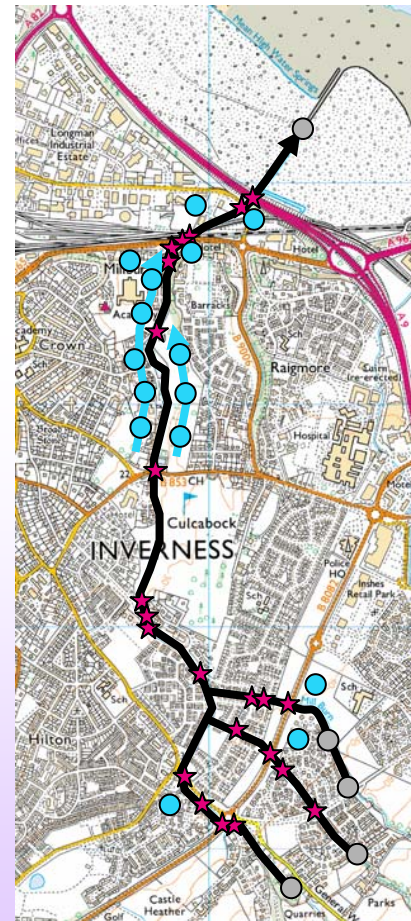
- Long history of flooding
- Most notable events 1989, 1997, 1998, 1999, 2000, 2002, 2003, 2006, Aug 2011
- Originally considered as part of SWIFRS but decided to develop as separate scheme due to design flows
- Scheme approved by TECS committee during 2007
- Currently in THC Capital Programme (programme and budget tbc)
- To be promoted under Flood Risk Management (Scotland) Act 2009
- Requires CAR license (SEPA prefers twin-tracked process)



# Hydraulic Modelling



- 1-D Isis Model
- 2005 model extended to upstream of SD Road and downstream of Mill Burn Road
- All structures included and cross sections verified
- Modelling approach and results accepted by SEPA
- No calibration data but robust sensitivity analysis undertaken

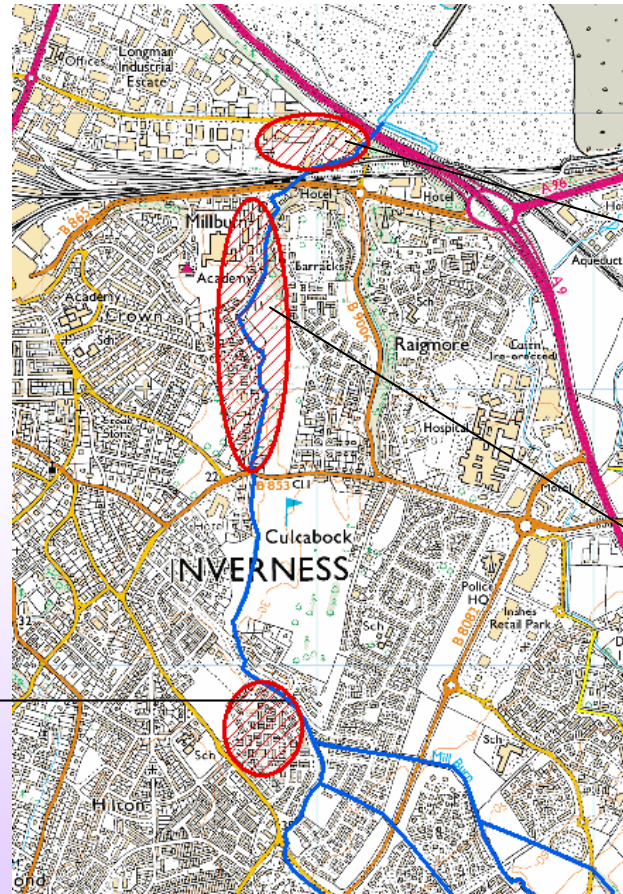


# Hydraulic Modelling Results



Model predicts 3 main areas of flood risk:

1. Castle Heather Area
2. Diriebught Road
3. Harbour Road



Flood Risk predicted at 4% AEP (1 in 25 RP)

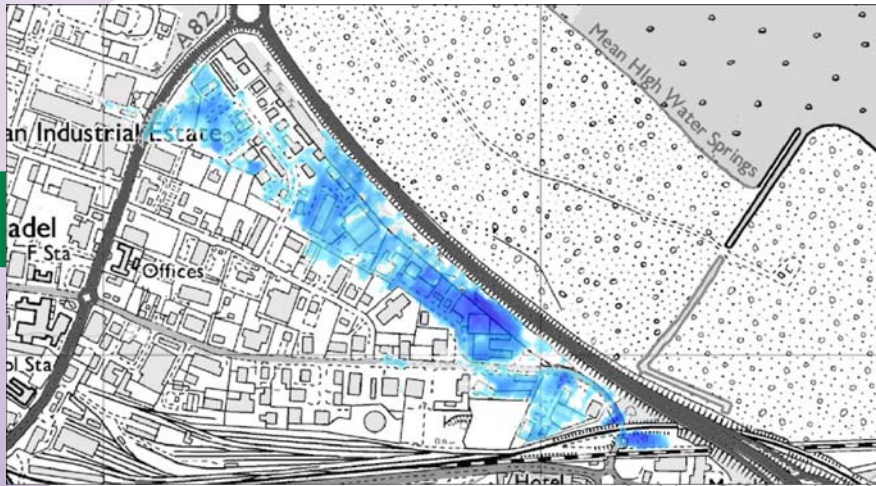


Flood Risk predicted at 20% AEP (1 in 5 RP)

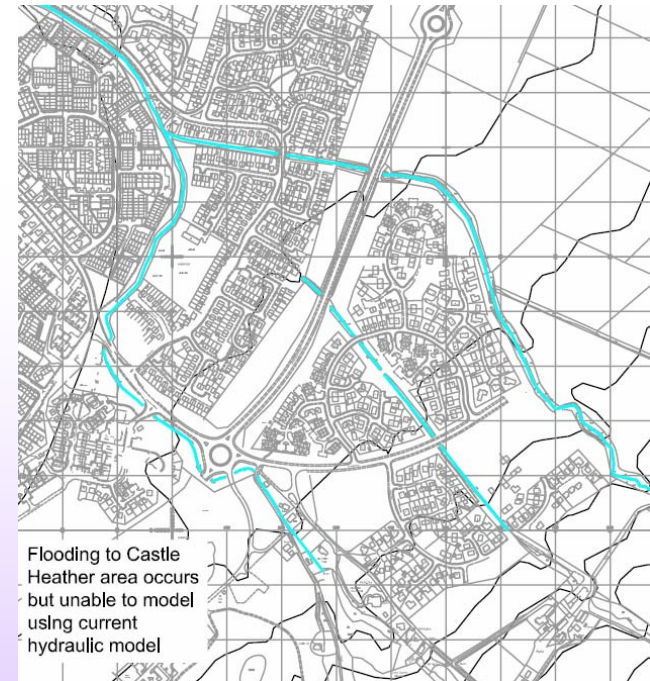


Flood Risk predicted at 50% AEP (1 in 2 RP)

# Flood Maps



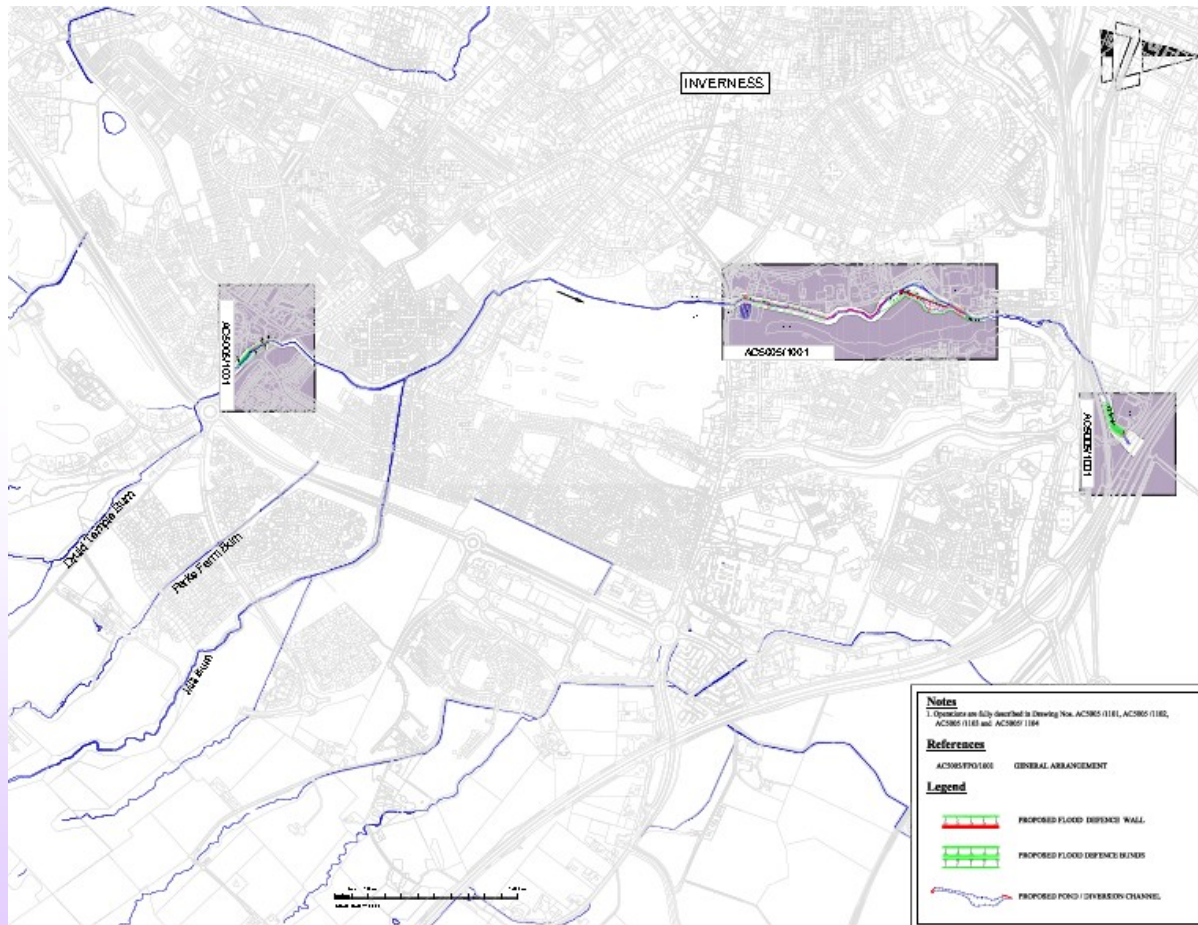
- Indicative in nature
- Flood extents at Castle Heather uncertain
- Other uncertainties include composition & bank levels of existing banks



Flooding to Castle Heather area occurs but unable to model using current hydraulic model



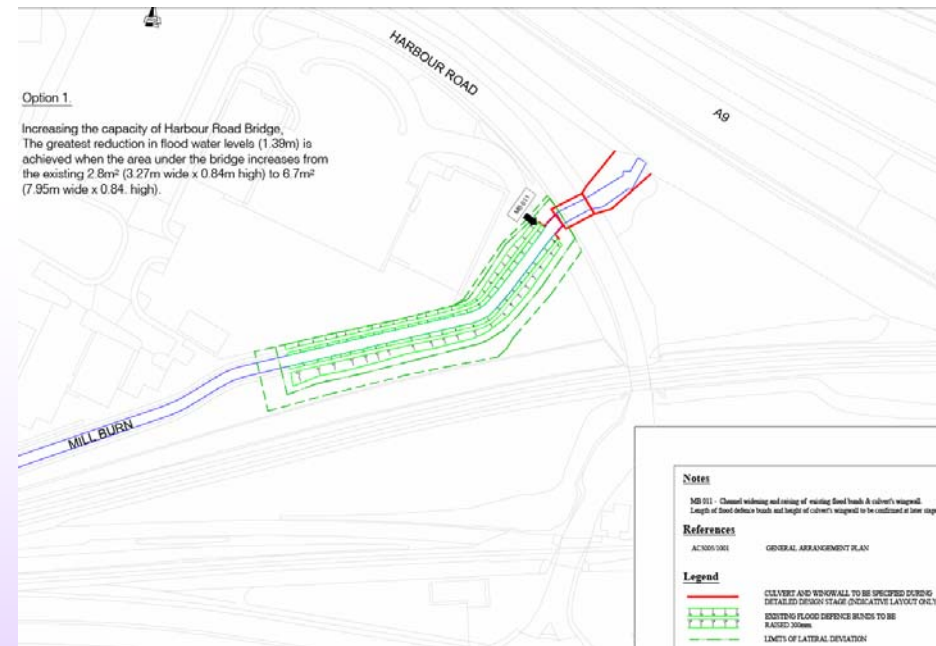
# Areas of Proposed Works



# Phase 1: Harbour Road



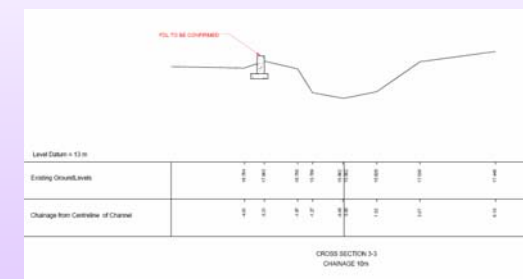
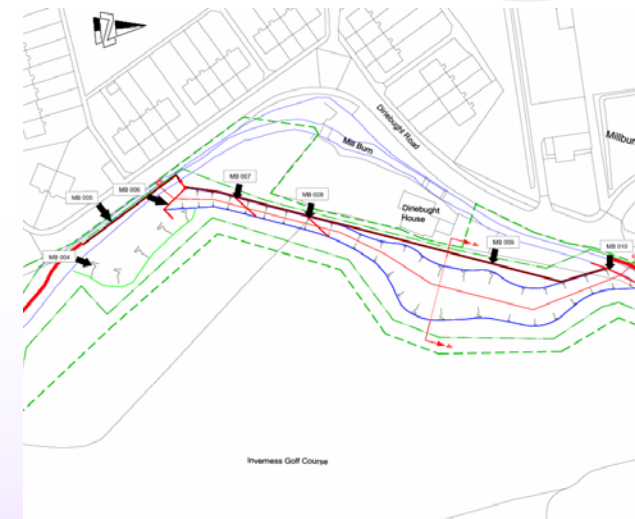
- Existing risk: 4% AEP (1 in 25 Year RP) due to restriction to flow at the Harbour Rd culvert
- It is proposed to upsize Harbour Rd culvert
- Due to A9 culvert being under-capacity the existing flood bunds will have to be raised by approximately 200mm
- Additional walls/bunds required between Harbour Rd and A9 culverts



# Phase 2: Diriebught Road



- Existing risk: 20% AEP (1 in 5 Year RP)
- Flood defence wall along the left bank is proposed from approximately 80m downstream of Culcabock Road bridge to Millburn Academy
- height range of between 0.54m and 0.99m
- A flood relief channel behind Diriebught House with control structure (SEPA prefers 'dry' channel)



# Phase 3: Castle Heather



- Existing risk: 50% AEP (1 in 2 Year RP)
- Flood bund/wall on the left bank is proposed
- Minimum height range between 0.34m and 0.89m above existing defence level

