

RAINGAIN



Torbay – Flood Risk Management

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Overview



- Catchment Description and Drainage Responsibilities
- Historic Flooding Problems
- Drainage Legislation Affecting Local Authorities
- Schemes/Actions to Reduce Flood Risk
- Future Measures to Reduce Flood Risk

Catchment Description: Torbay

Location of Torbay



Drainage Responsibilities



Source of Flooding in Torbay:

Combined Sewers

Main Rivers

Ordinary Watercourses

Surface Water Run Off

Highway Drainage

The Sea

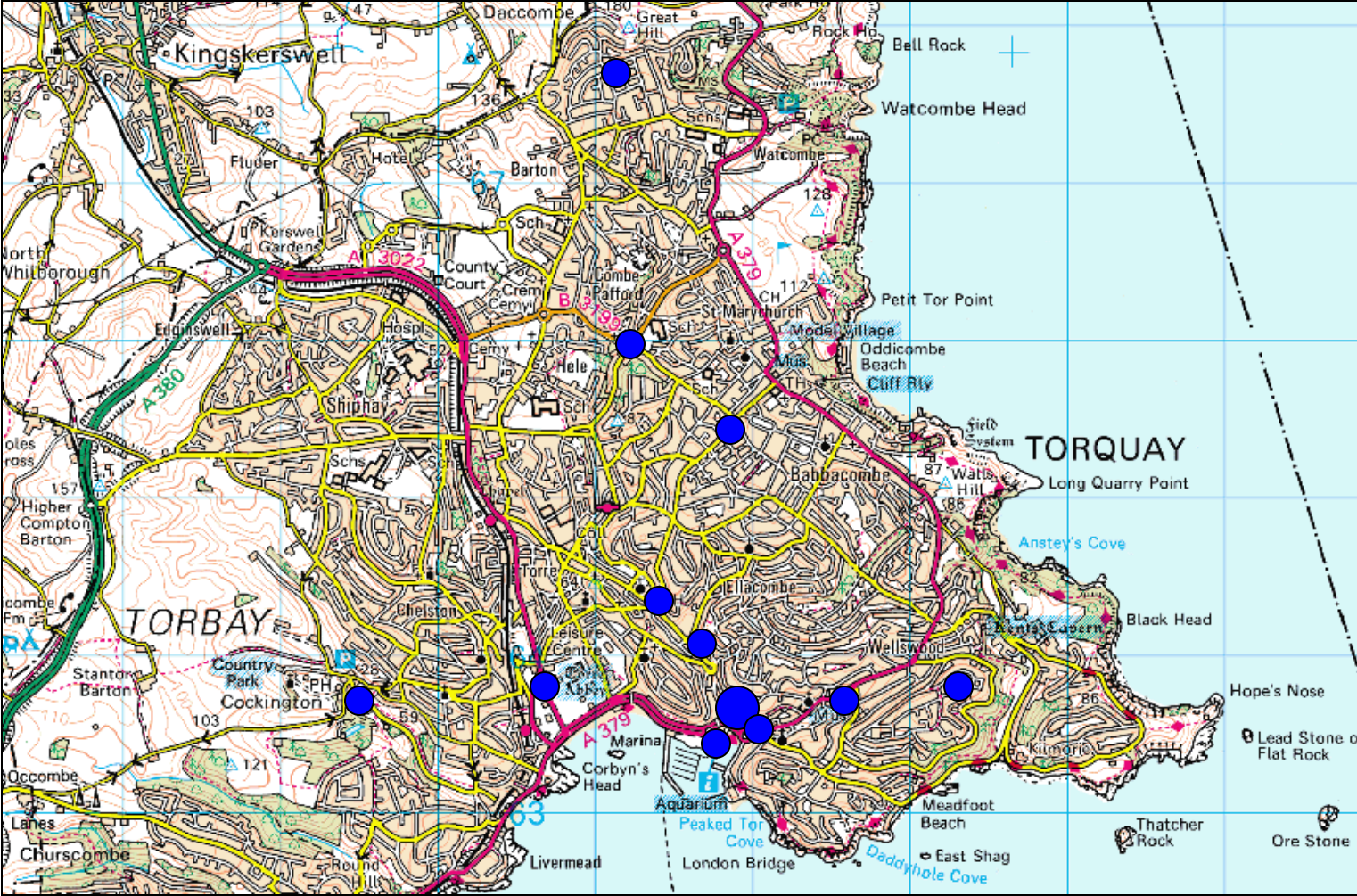
Groundwater

Drainage Responsibilities



- Flooding mechanisms are complex with floodwater from a variety of sources.
- Responsibilities fall across a range of stakeholders:
 - Individual Property Owners
 - Water Companies
 - Highway Authority
 - Local Authority
 - Riparian Owners

Historic Flooding Locations in Torquay



Historic Flooding Locations in Torquay

Market Street, Combined Sewer Surcharging - 1984



Historic Flooding Locations in Torquay

Upton Area, Combined Sewer & Surface Water Run Off - 1991



Historic Flooding Locations in Torquay

John Menzies Basement Flooded, Union Street, -1986



Historic Flooding Locations



Recent Flooding Events

- 29th May 1999
- 24th October 1999
- 19th August 2000
- 20th August 2007
- 29th October 2012

Historic Flooding Locations

Flooding 20th August 2007




DRAINAGE LEGISLATION AFFECTING LOCAL AUTHORITIES



- 1963 Water Resources Act
- 1973 Water Act
- 1989 Water Act
- 1995 Environment Act
- 2009 Flood Risk Regulations
- 2010 Flood and Water Management Act

DRAINAGE LEGISLATION AFFECTING LOCAL AUTHORITIES

- Flood & Water Management Act 2010



Flood and Water Management Act
2010

CHAPTER 29

CONTENTS

PART 1

FLOOD AND COASTAL EROSION RISK MANAGEMENT

1. Key concepts and definitions

1 "Flood" and "coastal erosion"
2 "Risk"
3 "Risk management"
4 "Flood risk management function"
5 "Coastal erosion risk management function"
6 Other definitions

2. Strategies, co-operation and funding

7 National flood and coastal erosion risk management strategy: England
8 National flood and coastal erosion risk management strategy: Wales
9 Local flood risk management strategies: England
10 Local flood risk management strategies: Wales
11 Effect of national and local strategies: England
12 Effect of national and local strategies: Wales
13 Co-operation and arrangements
14 Power to request information
15 Civil sanctions
16 Funding
17 Levies

3. Supplemental provisions and duties

18 Environment Agency: reports

SECTIONS AFFECTING LEAD LOCAL FLOOD AUTHORITIES



- Designation of Lead Local Flood Authority
- Local flood risk management strategies
- Duty to investigate flooding
- Duty to maintain an asset register
- Designation of assets
- Issuing of consents and enforcement on ordinary watercourses

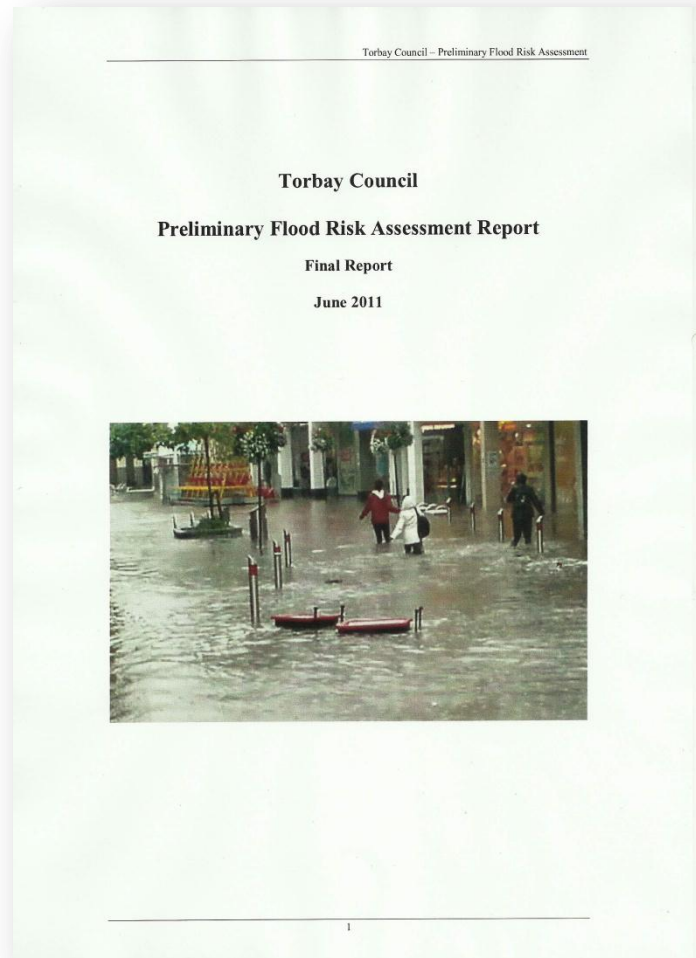
Sections of FWMA 2010 Awaiting Commencement



- Sustainable drainage systems provisions under Schedule 3 of FWMA 2010. Consultation closed on 13th March 2012 over 300 responses. No date has been confirmed for the commencement of this section of the Act.

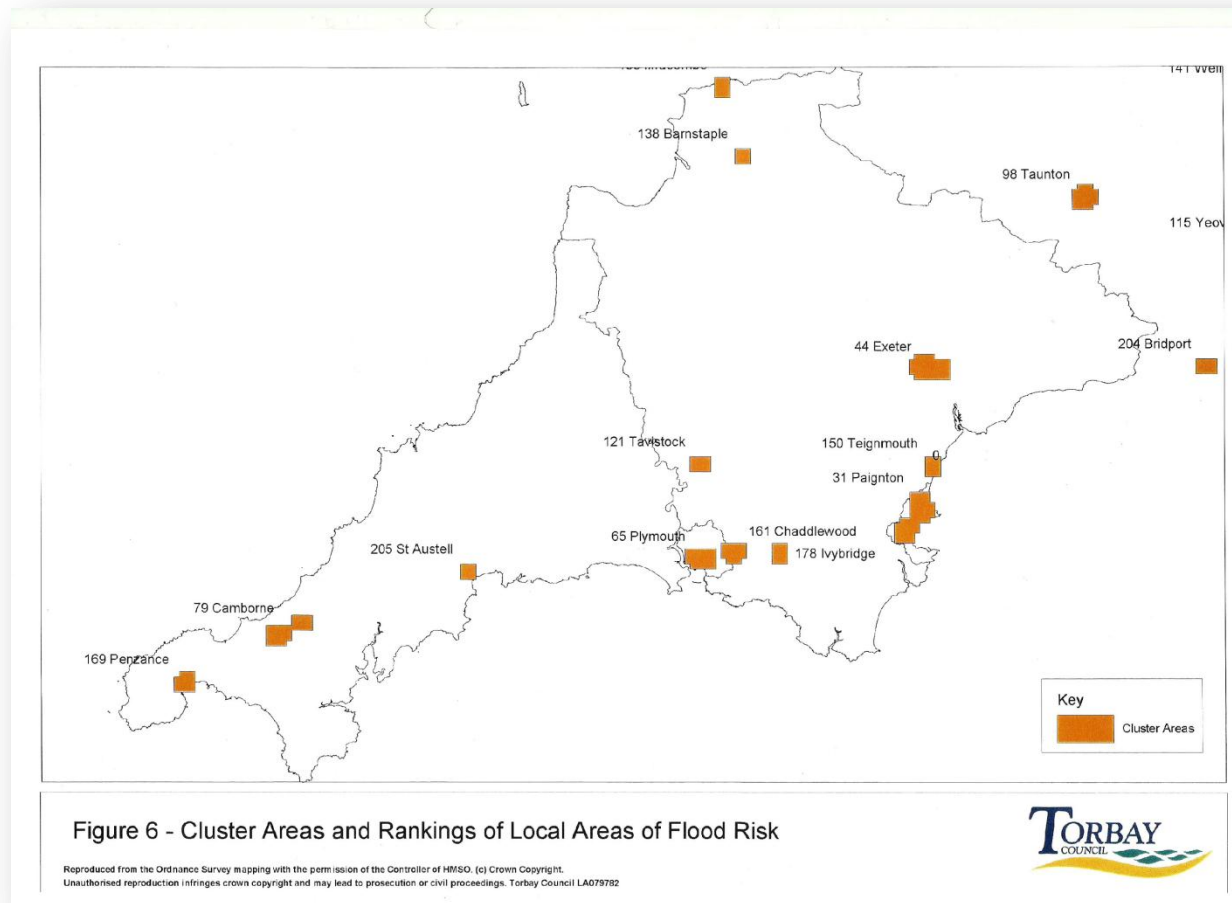
Flood Risk Regulations 2009

Torbay Council Preliminary Flood Risk Assessment



Flood Risk Regulations 2009

Torbay Council Preliminary Flood Risk Assessment



Flood Risk Regulations 2009

Torbay Council Preliminary Flood Risk Assessment

Torbay Council – Preliminary Flood Risk Assessment

Table 5

Number of locally significant flood events within Torbay for a range of threshold levels

Significant Threshold Level – Number of Properties Flooded	Number of Locally Significant Flood Events
5 or more	17
10 or more	12
20 or more	10
30 or more	7
50 or more	3
100 or more	1

Table 6

Summary of Torbay's Significant Flood Events

Event Number	Location	Date	Properties Flooded	Main Source	Secondary Source
1	Torquay & Paignton	24/10/99	162	Surface run-off	Ordinary watercourse
2	Torquay	23/6/91	74	Surface run-off	Combined sewers
3	Torquay & Paignton	20/8/07	64	Surface run-off	Ordinary watercourse
4	Torquay & Paignton	22/9/92	46	Surface run-off	Ordinary watercourse
5	Torquay	19/8/00	41	Surface run-off	Combined sewers
6	Brixham	24/12/99	37	Ordinary watercourse (now designated as main river)	Surface run-off
7	Torquay	29/5/99	30	Surface run-off	Combined sewers

Flood Risk Regulations 2009

Torbay Council Preliminary Flood Risk Assessment

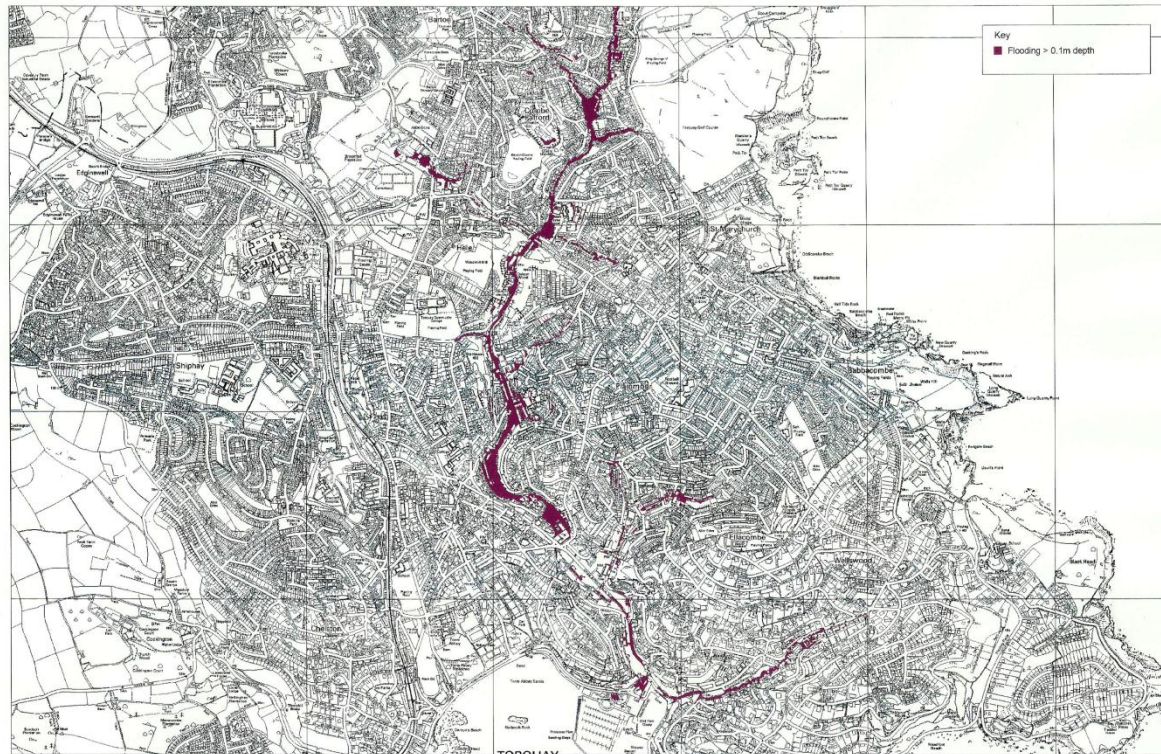


Figure 8 - Torquay Surface Water Flooding

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SCHEMES/ACTIONS TO REDUCE FLOOD RISK



- Construction of attenuation tanks
- Making Space for Water Pilot Study
- Torquay flood study
- Level 1 & 2 Strategic Flood Risk Assessments
- Surface water flood risk mapping
- Installation of depth monitors and raingauges
- Torquay town centre highway scheme
- Watercourse improvements

Construction of Attenuation Tanks in Torquay



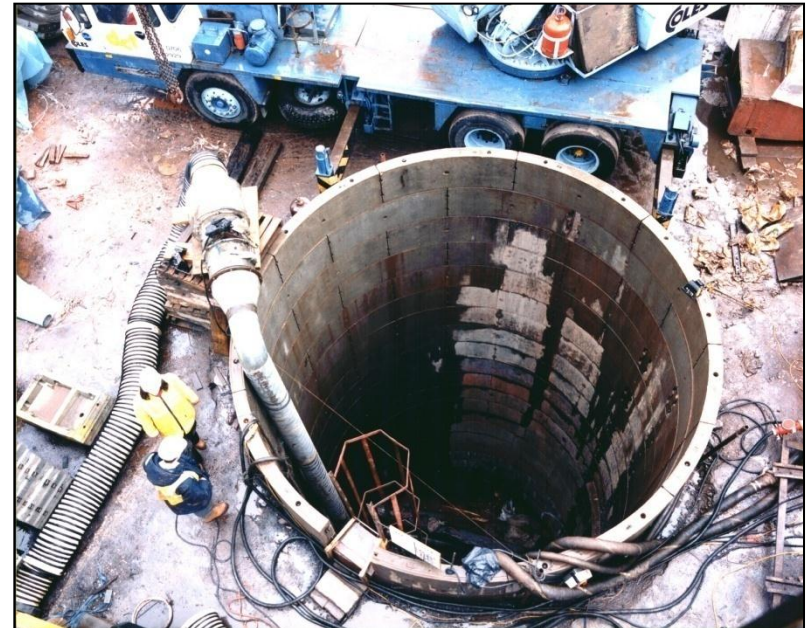
Construction of Attenuation Tanks in Torquay

Hele Tank, Torquay



Construction of Attenuation Tanks in Torquay

Newton Road Tunnel

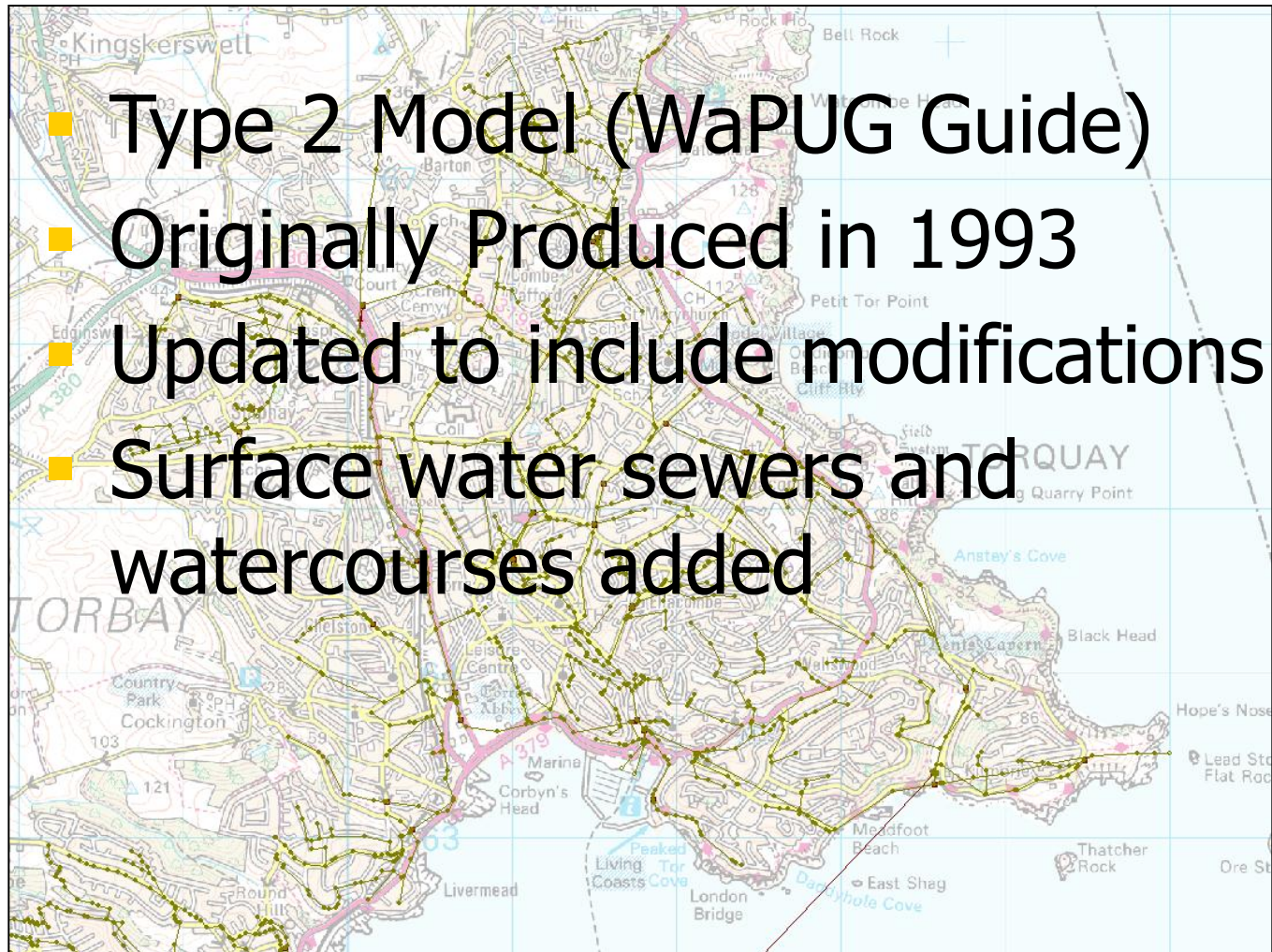


Torquay Flood Study: Data Collection



- Sewer Records
- Watercourse Surveys
- Mastermap Mapping Data
- Digital Terrain Data
- Aerial Photography
- Historic Flooding Records
- Rainfall Data
- Verified Hydraulic Model

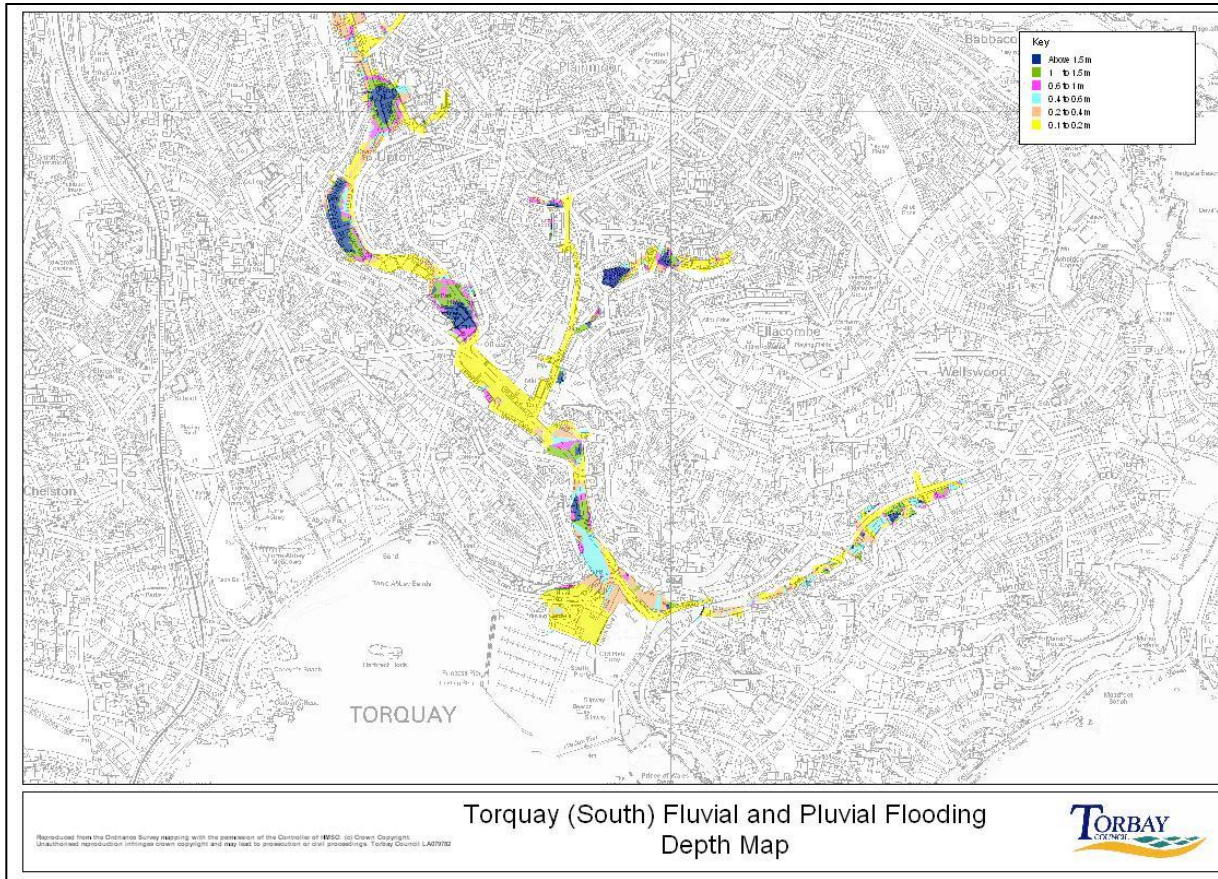
Torquay Flood Study: Integrated Hydraulic Model



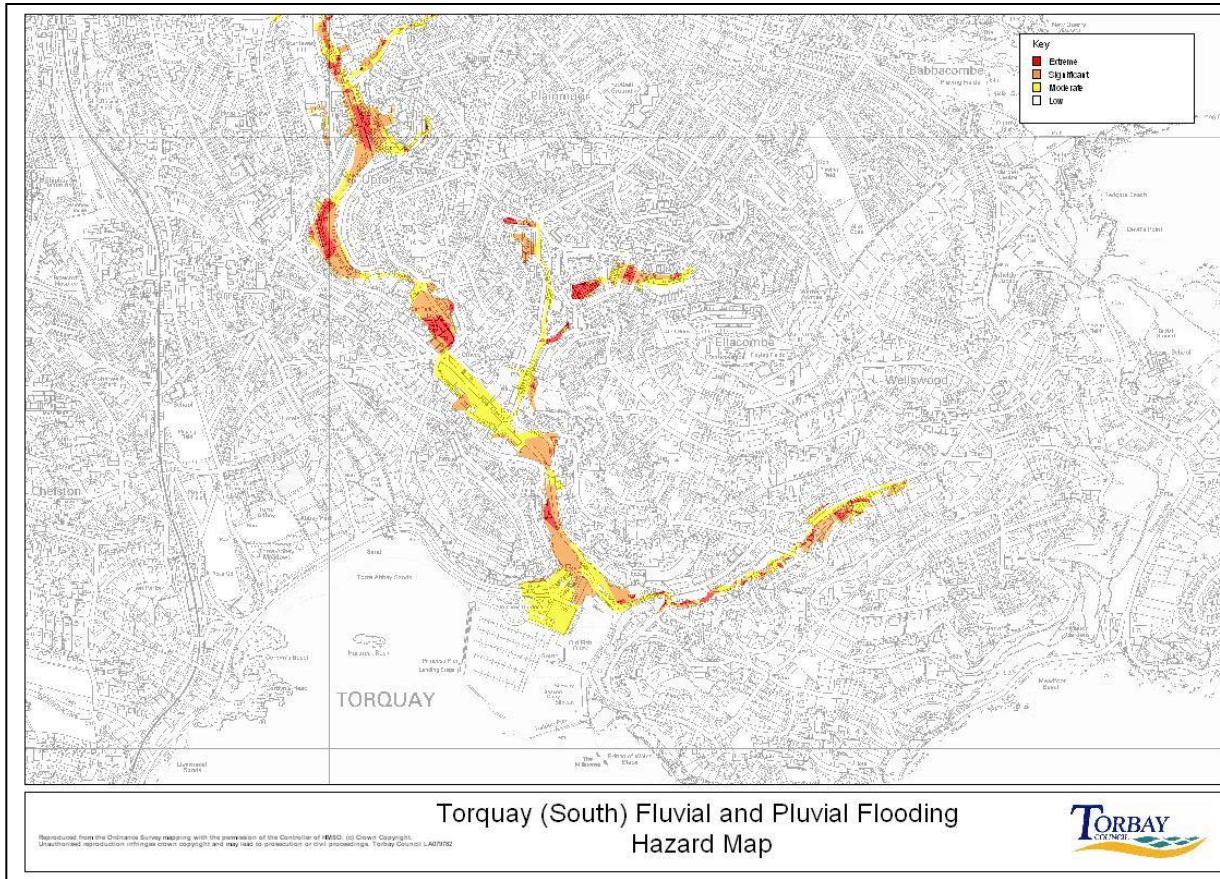
Torquay Flood Study – Infoworks 2D Results



Surface Water Flood Risk Mapping Torquay



Surface Water Flood Risk Mapping Torquay



Torquay Town Centre Highway Scheme



FUTURE MEASURES TO REDUCE FLOOD RISK



- Encourage use of sustainable drainage schemes in future development
- Torquay flood management plans
- Torquay town centre flood alleviation scheme
- Educate the public – Defra flood resilience community pathfinder project

RAINGAIN – TORBAY COUNCIL FLOOD RISK MANAGEMENT



Any Questions?