

water

NEW ZEALAND

The New Zealand Water & Wastes Association Wairoa Aotearoa



Development of Rainfall and Runoff Standards For New Zealand

Water NZ Modelling SIG – Evening Meeting 18th

October 2011

Evening's Format

- **Current State of Approaches to Rainfall & Runoff in the Country**
- **The need for National Standards**
- **Discussion – Potential future actions**

Current State of Rainfall / Runoff Approaches in NZ

- **Definitions**
- **Application**
- **Approaches**
- **Regional 'drift'**
- **Issues**

Definitions

- **Rainfall-** Single rainfall events or series of events which are used in conjunction with runoff approaches to do things
- **Runoff** – The algorithms to transpose rainfall into flows

Application

- **Prediction of a flow or volume of a certain frequency of occurrence – Big & Small**
- **Natural Rivers & Streams**
 - **Large catchments**
 - **Small catchments**
- **Urban (& hence modified) Stormwater**
- **Wastewater Networks**

Approaches - Rainfall

- **Rainfall Intensity with Frequency**
- **HIRDS**
- **Design Storms – To generate Peaks**
 - Chicago – “Invented” in 1957
 - Regional or City ‘standard storms’
 - European profiles
- **Real Rainfall Events – e.g. Event 39**
- **Historical Rainfall Time Series – Concept of Retrospective Compliance**
- **Synthetically Generated Rainfall Time Series**
- **Climate Change Modification**

Approaches – Runoff

- Rational Formula - 1899
- Building Code
- SCS Method
- Fixed Runoff Rates
- European Runoff Models
 - Scandinavian
 - Uk
 - French
 - A R R
- Others – Many, Many, Many others

Absence of Guidance - Regional Drift

- **Many part of the country don't have any guidance !**
- **Many parts of the country don't have any data !**
- **Some parts of the country are using approaches that have drifted over the border**
- **Dunedin inputs generated from scratch based on**
 - **Historical Rainfall Data**
 - **Chicago Nested Storm**
- **MFE CC modifiers appropriate to drift situation**

Issues

- **Developers, utilities, irrigation companies, consultants, regulators don't know what to do !**
- **Approaches can be challenged – Who's got the fattest wallet?**
- **Danger that what we build might be too big or too small – That's inefficient – Either Way !**
- **We don't do enough monitoring of outcomes and when we do the approach of the day has been superseded**
- **We need to do better than this !**