ON-SITE DETENTION SYSTEMS DESIGN WORKSHOP
(Australian Rainfall and Runoff)

Engineering Training Institute Australia

Livestreamed via ZOOM

KEN SUTHERLAND *BTech MIEAust CPEng*
- www.roof-gutter-design.com.au & www.waterpipesize.com.au
- Managed a Hydraulic Consultancy as well as the Hydraulic Department of a large Engineering Consultancy for over 25 years.
- Worked for Local Government in Water Supply & Sewage, State Governments, Building Companies, Consultants, & Developers.
- Expert witness for many court cases.
- Worked as a Project Manager for various types of buildings.

WORKSHOP SUMMARY 8 hours of CPD

The primary reason for on-site detention (OSD) is to reduce the peak stormwater runoff that may occur by development of a building site, or by constructing a subdivision.

The new Australian Rainfall and Runoff (ARR) guidelines has introduced another method of generating and analysing storms. We now have an ensemble of ten possible storm temporal patterns for each AEP and duration, and multiple durations to analyse.

Local Authorities and practitioners are being encouraged to adopt these new methods, and terminology.

During this workshop we will construct a spreadsheet to find the design storm, and another spreadsheet to design the OSD device.

PROGRAMME *(8.30am - Zoom invite will be emailed)*

9.00 - 11.00 Session 1
- The purpose of OSD
- Where it's required
- How it works.
- Reference documents
- Explanation of the new data
- Possible rainfall losses. (IL-CL method)
- How to convert the downloaded storm data to a hyetograph.
- How to get the new storm ensembles and rainfall depths.
- Information available from the local Authority. SSR, PSD.
- Where to get free spreadsheets to convert this data.

11.00 - 11.15 Morning Break

11.15 - 1.00 Session 2
- Converting a hyetograph to a hydrograph.
- Time of concentration and other storm characteristics.
- Directly connected, indirectly connected, and pervious catchments.
- Time Area method, Node link method, rainfall on grid method.
- Developing a spreadsheet for the Time area method.
- Finding the design storm from the ten possible storms. (This is not the worst case)
- Notes on subdividing the catchment area.
- Finding the design storm for all required durations.
- Comparison of commercial and free software.

1.00 - 1.30 Lunch Break

LAPTOPS & CALCULATORS REQUIRED

- One day course – **$855 pp**
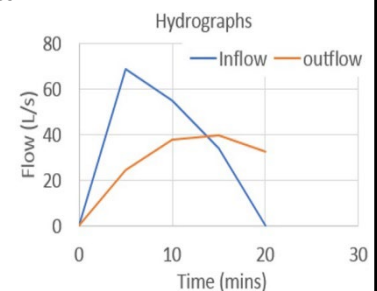
FURTHER INFORMATION
- (02) 9899 7447
- +61 413 998 031
- registrations@etia.net.au

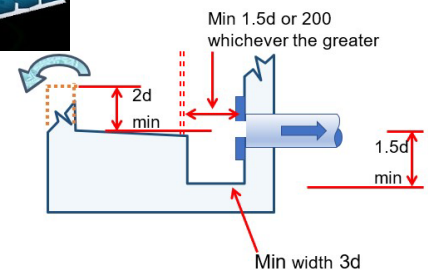- *To register, visit our website* www.etia.net.au *OR scan the QR Code.*

1.30 - 3.00 Session 3
- How to calculate the orifice plate size.
- How to calculate the output hydrograph from the OSD device.
- Creating a spreadsheet to calculate the unknowns.
- Calculating detention volume required, and detention volume available for all possible shapes.
- Typical above ground OSD arrangements
- Typical below ground OSD devices
- How to have a mixture of both.
- Spreadsheet formulas.
- Spreadsheet results.

3.00 - 3.15 Afternoon Break

Hydrographs — Inflow, outflow

Min 1.5d or 200 whichever the greater
2d min
1.5d min
Min width 3d

3.15 - 5.00 Session 4
- How to reduce the site storage requirements (SSR).
- Discharge control pits (DCP) and high early discharge pits (HED).
- Local Authority requirements for basins and tanks.
- Connections to the Council System.
- The hydraulic grade line effect on upstream piping.

Certificate of Attendance will be emailed

Manhole · Parking Lot · Inlet · Corrugated Metal Pipe · Concrete Control Structure · Weir Wall · Manifold · Corrugated Metal Pipe · Trash Rack · Lowflow Orifice · Outlet Pipe