



# DRAINS In-Person Workshops PROGRAM

**Dr Benjamin Kus**  
Watercom

**Hossein Ansari**  
Watercom

## Options for Attendance:

- **[3 DAYS] Attend *full* DRAINS In-Person Workshop, covering DRAINS Fundamentals and DRAINS Extension**  
All the fundamentals and latest features of DRAINS, plus Urban Drainage & On-Site Detention Systems. Our most popular workshop.
- **[2 Days] Attend DRAINS Fundamentals *only***  
Just the basics for new users or a refresher of the latest features for experienced users.
- **[1 Day] Attend DRAINS Extension *only*\*** (prerequisites apply)  
For experienced users only. Offers a deep dive into our two most popular modules: Urban Street Drainage case studies and Complex On-Site Detention Systems.

*\*Participants **must** have attended or completed a DRAINS Fundamentals or Core Training Course in the last five years (either in-person or live online).*

## Mandatory Pre-Work (Online, 3 hours)

Duration	Content
0.5 hours	<b>Getting Started:</b> Downloading resources and installing DRAINS
2.5 hours (split across 4 parts)	<p><b>Introduction to ARR</b></p> <ul style="list-style-type: none"> <li>• Why do we have a new set of guidelines?</li> <li>• Overview of past editions of ARR, ARR Online &amp; overview of each Book</li> <li>• Refresh: Hydrology, loss models and routing models</li> <li>• ARR Temporal Pattern Regions and Rural Loss Model Zones</li> <li>• New ARR Probability Terminology</li> <li>• Ensembles of Storms</li> <li>• Understanding ARR catchment terminology (TIA, DCIA, ICIA, EIA, RA)</li> <li>• Watercom DRAINS application of ARR catchment terminology using Effective Impervious Areas (EIA), Remaining Impervious Areas (RIA), Pervious Areas (PA)</li> <li>• ARR Data Hub</li> <li>• Initial Loss Continuing Loss Data</li> <li>• Understanding Rural Initial Loss vs Urban Initial Loss</li> <li>• NSW OEH Specific Requirements (Probability Neutral Burst Initial Loss)</li> <li>• Median Pre-burst Depths</li> <li>• Understanding Initial Loss Storm versus Initial Loss Burst</li> <li>• Modelling Climate Change</li> <li>• Bureau of Meteorology 2016 IFD Rainfall Data</li> <li>• Comparing ARR 87 IFD to 2016 IFD at the location of the workshop</li> <li>• Challenges with ARR</li> <li>• Demonstration of ARR Regional Flood Frequency Estimation (RFFE) Model</li> <li>• Overview of Design Objectives: Safe Widths, Hazard Classifications, Freeboards</li> <li>• Overview of applying ARR procedures using DRAINS software</li> </ul>
0.5 hours	<p><b>Chapter 1: Introduction to DRAINS</b></p> <p>Workshop materials and the DRAINS interface</p>

## DAY 1: DRAINS Fundamentals

Covers DRAINS and ARR introductory content, modelling piped drainage systems, assembling a DRAINS model and working on a DRAINS database.

9:00am	<b>Recap: Q&amp;A of Pre-Work (Introduction to ARR)</b> <b>Chapter 1: The DRAINS Interface</b>
10:15am	<i>Morning Tea</i>
10:30am	<b>Chapter 2: Modelling Piped Drainage Systems</b> <ul style="list-style-type: none"> <li>• Obtaining data from ARR Data Hub and BOM website</li> <li>• Configuring a Hydrological Model (IL-CL)</li> <li>• Import 2016 IFD Rainfall Data and Ensembles, Import Median Preburst / Transformational Burst Depths</li> <li>• Nominate Major and Minor Storms and Setting Project options</li> <li>• Quick Overview of DRAINS Databases (Pipe, Pit &amp; Overflow Routes) Importing DXF, Entering Pits, Pipes and Catchments data</li> </ul>
12:15pm	<i>Lunch</i>
1:15pm	<b>Chapter 2 (continued): Modelling Piped Drainage Systems</b> <ul style="list-style-type: none"> <li>• DRAINS Overflow Routes</li> <li>• DRAINS design, analysis, and interpretation of results</li> <li>• Full Unsteady Hydraulic Modelling</li> <li>• Customise Text Dialog Box, Long-section, Survey and Services</li> </ul>
3:00pm	<i>Afternoon Tea</i>
3:15pm	<b>Chapter 3: DRAINS Database</b> <ul style="list-style-type: none"> <li>• Pipe data base</li> <li>• Creating on-grade pits using the HEC-22 Wizard</li> <li>• Creating sag pits using the Table Wizard</li> <li>• Creating new pits using the Generic Pits Spreadsheet</li> <li>• Overflow routes Database – obtaining cross-section data from QGIS or spreadsheet.</li> </ul>
4:30pm	<b>Close of Workshop: Open for Questions &amp; Answers</b>

## DAY 2: DRAINS Fundamentals

Covers model design considerations, open channels & headwalls, Storage Network Routing Module (SNRM), introduction to On-Site Detention Systems and examples of infiltration systems.

<b>9:00am</b>	<b>Recap Day 1</b> <b>Chapter 2: Design Considerations – Extended Model</b> <ul style="list-style-type: none"> <li>• Flood Mapping with the DRAINS Full Unsteady Hydraulic Model</li> <li>• Spreadsheet Outputs</li> <li>• Estimation of pit pressure change coefficients</li> <li>• Splitting Flows</li> </ul>
<i>10:15am</i>	<i>Morning Tea</i>
<b>10:30am</b>	<b>Chapter 4: Open Channels and Headwalls</b>
<b>11:15am</b>	<b>Chapter 5: Storage Network Routing Module (SNRM)</b> <ul style="list-style-type: none"> <li>• Using the RORB, RAFTS &amp; WBNM Hydrological models in DRAINS</li> <li>• Horton ILSAX hydrology</li> </ul>
<i>12:15pm</i>	<i>Lunch</i>
<b>1:15pm</b>	<b>Chapter 6: Introduction to On-Site Detention Systems</b> <ul style="list-style-type: none"> <li>• Simple Examples of OSD systems</li> <li>• Small subdivision combined OSD and RWT</li> <li>• High Early Discharge systems</li> </ul>
<i>3:00pm</i>	<i>Afternoon Tea</i>
<b>3:15pm</b>	<b>Chapter 6 (continued): Introduction to On-Site Detention Systems</b>
<b>4:00pm</b>	<b>Chapter 7: Exploring Infiltration Systems Examples</b> <ul style="list-style-type: none"> <li>• Modelling infiltration basins</li> <li>• Modelling underground infiltration storages</li> </ul>
<b>4:30pm</b>	<b>Close of Workshop: Open for Questions &amp; Answers</b>

## DRAINS Extension: Street Drainage & Detention Systems

Completed as either a standalone one-day course\*, or immediately following a DRAINS Fundamentals Workshop as Day 3.

*\*Note: Participants **must** have attended or completed a DRAINS Fundamentals or Core Training Course in the last five years (either in-person or live online).*

9:00am	<p><b>Chapter 1: Complex Applications of DRAINS</b></p> <p><b>Chapter 2: Existing System Problems</b></p> <ul style="list-style-type: none"> <li>• Steps to develop remedial work strategies</li> </ul>
10:15am	<i>Morning Tea</i>
10:30am	<p><b>Chapter 3: Refinement of a DRAINS Model</b></p> <ul style="list-style-type: none"> <li>• Configuring a Medium-sized Basin System with Multi-Staged Outlets in Series</li> </ul>
12:15pm	<i>Lunch</i>
1:15pm	<p><b>Chapter 4: Caboolture Detention System – Hands-on Example</b></p> <ul style="list-style-type: none"> <li>• Configuring a Medium-sized Basin System with Multi-Staged Outlets in Series, Parallel and HED pits for a subdivision project</li> </ul>
3:00pm	<i>Afternoon Tea</i>
3:15pm	<p><b>Street Drainage Case Studies</b></p> <ul style="list-style-type: none"> <li>• Other aspects of DRAINS and discussion on real project</li> <li>• Data exchange with Civil Site Design (XML)</li> <li>• Example of how to represent upstream drainage system by a large pit or Headwall</li> <li>• Importing gauged rainfall events into DRAINS</li> <li>• Estimation of Probable Maximum Precipitation PMP - Generalised Short-Duration Method</li> </ul>
4:15pm	<p><b>Data Exchange with GIS</b></p> <ul style="list-style-type: none"> <li>• Data exchange with QGIS (Shapefile)</li> </ul>
4:30pm	<b>Close of Workshop: Open for Questions &amp; Answers</b>

## INSTRUCTORS

### **Dr Benjamin Kus** Chief Executive Officer

Dr Benjamin Kus is an astute and accomplished engineer, business manager, academic and educator, with over 20 years of experience in urban development, stormwater design, on-site detention and flood studies.

He is a contributing author of the national Australian Rainfall and Runoff (ARR 2019) guidelines having authored Chapter 5 'Stormwater Conveyance', in Book 9 'Runoff in Urban Areas', has completed a PhD in Engineering – Membrane Technology and Water Harvesting, and is a published author of over a dozen journal papers.

Ben is guiding the nation's next generation of engineers as a guest lecturer at the University of Wollongong, Charles Darwin University and University of Technology Sydney.



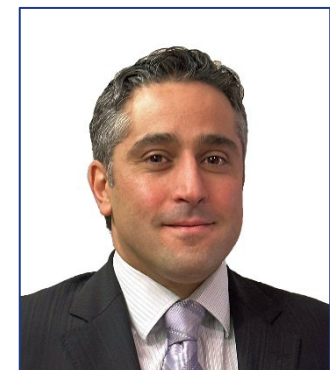
### **Hossein Ansari** Technical Manager & Principal Engineer

Hossein is a Civil Engineer with over 20 years of experience in both the public and private sectors, previously working as a Senior Design Officer at Sutherland Shire Council and as a Drainage Investigation Engineer at City of Botany Bay Council.

In his capacity as a consultant, Hossein has been providing services as a Civil / Hydraulic Engineer to a number of consulting firms since 2007.

Hossein's experience covers roads, drainage, overland flow path studies, and Water Sensitive Urban Design (WSUD) projects, from inception to detailed design and construction.

His major interests include hydrological and hydraulic modelling and design utilising various computer software programs including DRAINS, HEC-RAS, ILSAX, Civil 3D, AutoCAD, Civil Site Design, MapInfo, QGIS, ArcMap and other GIS software.



## MORE INFORMATION

### Training

We offer a range of DRAINS Training options, including In-Person Workshops, Self-Paced Online Training, Custom/Private Workshops as well as Corporate Online packages.

Discover our **range of training options** here: <https://watercom.com.au/training/overview/>

For support on workshop content or other enquiries, email us at [training@watercom.com.au](mailto:training@watercom.com.au) or call our office on (02) 6649 8005.

### Software Support

Please lodge a **software support ticket online**: <https://watercom.com.au/support/>

Or if you need more than just software support, we also **offer 1-on-1 DRAINS Model Consultations with a qualified specialist engineer**. You'll receive tailored advice and guidance for your specific project. Book now: <https://watercom.com.au/support/drains-model-consultations/>

DRAINS Quotes and Purchases are available by submitting a quote request on the Watercom Website: <https://watercom.com.au/pricing/>

Head Office: Level 11, 66 Clarence Street, Sydney, NSW 2000

Office Phone: +612 6649 8005

Postal Address: PO Box 199, Port Kembla, NSW 2505

Website: <https://watercom.com.au/>

*Copyright © Watercom 2025.  
All rights reserved.*

ABN 24 166 209 454

January 2025