



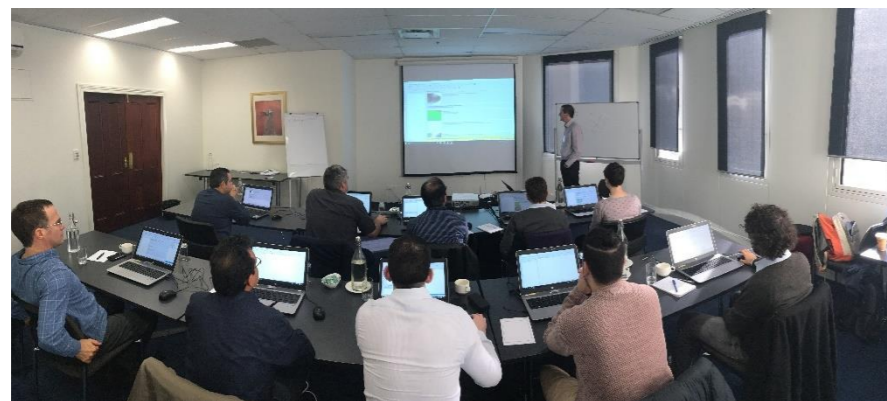
## Australia & New Zealand TUFLOW 2019 Training Sessions

TUFLOW is a world-leading, powerful 1D and 2D computational engine for simulating floods, tides and pipe network hydraulics. It has been successfully applied world-wide to a diverse range of applications, scaling from coastal storm tide inundation to regional whole-of-catchment flooding to fine-scale integrated catchment modelling including urban flooding with complex pipe networks.

This year the TUFLOW team will be offering four types of training: a 2-day hands-on introductory training; several 1-day hands-on advanced sessions on various topics; a 1-day workshop and 1-day hands-on training focusing on our 2019 release features, including the new quad-tree mesh solver.

The training courses offer something for all user levels; from core 2D modelling theory and model setup for new users, use of our new QGIS TUFLOW Viewer (TUVIEW), to advanced topics such as the latest integration tools for Australian Rainfall & Runoff 2016, HPC, and even utilising Python for those who wish to learn how to greatly increase workflow efficiency through automation of repetitive tasks including report charts/maps, calibration checking, and model health analysis. Managers and reviewers will also find useful material and value in our 2019 new release workshop which will get 'inside the black box' in our new quad-tree engine and discuss best modelling practices.

We will be visiting most major centres throughout Australia and Auckland, NZ. Dates for each session for 2019 are listed in the right-hand column of this sheet. To register, please fill out the form at the back.



Phillip Ryan – TUFLOW Development Lead facilitating a Training Day

### Introductory TUFLOW Training

This computer-based training is aimed at new TUFLOW modellers or those who have not previously received formal training. The course includes content on TUFLOW theory, followed by practical model creation and result viewing exercises using TUVIEW. The introductory training is run over two-days to allow attendees to consolidate the core hydraulic modelling concepts whilst providing a wide range of practical applications essential for new modellers.

### Advanced TUFLOW Training

These computer-based training days are tailored for existing TUFLOW modellers combining advanced model theory with new approaches to common challenges that we face as modellers. We are offering 3 stand-alone advanced days. Users may register for a single day, or multiple days. The advanced day topics are scheduled as follows:

- Topic 1: Integrated Catchment Urban Flood Modelling**  
 Users will learn how to apply direct rainfall, use event / scenario management, undertake urban stormwater pipe modelling, and use the latest integration tools developed to help with ARR2016
- Topic 2: Workflow Efficiencies (QGIS tools, plugins, and Python)**  
 Users will learn how to use the latest tools in QGIS 3 and advanced use of the new TUFLOW Viewer (TUVIEW); including exporting high quality animations and how to batch export flood maps. Users will also be introduced to the basics of Python and how to automate plot creation from TUFLOW results for reports and model health review.
- Topic 3: HPC and Dam Break Modelling**  
 Users will learn best modelling practices when using the TUFLOW HPC solver, including checking model health, gaining an understanding of the inner workings of the solver, and how to model dam breaks.

A detailed program of the advanced days session content will be published closer to the event date.

### TUFLOW 2019 New Release Workshop and Training

A 1-day workshop focusing on our new release features is aimed at all TUFLOW users from modellers to managers. The day will cover new features in the 2019 release, introduce attendees to topics such as the new TUFLOW HPC quad-tree solver; with discussion around software and hardware benchmarking, how it compares with our existing solvers, best modelling practices, and when and how to use it.

A 1-day hands-on session will follow the workshop and can be attended separately or in conjunction with the workshop. This computer-based training is tailored toward existing modellers who want to learn, and have a hands-on experience using the 2019 release features.

A detailed program of the 2019 release session content will be published closer to the event date.

### Dates and Locations

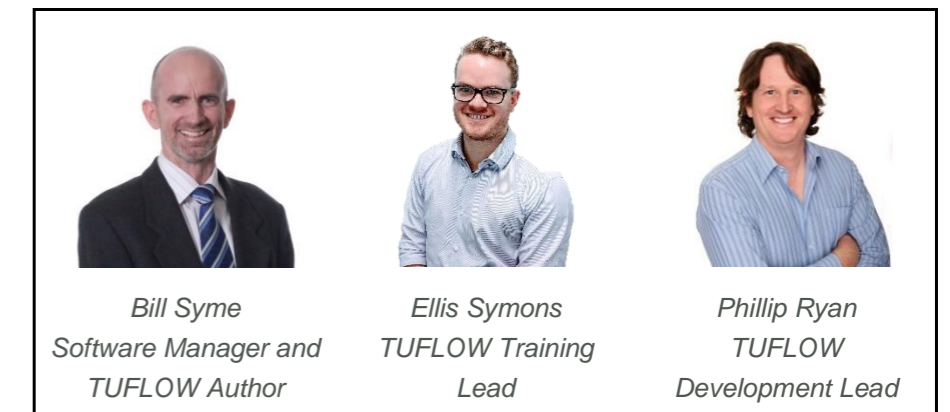
Location	Introductory Training	Advanced Training	2019 Release Workshop	2019 Release Training
Sydney	May 21 – 22 FULL  Nov 5 - 6	ALL TOPICS ONLY A FEW SPOTS LEFT Topic 1: Jul 16 Topic 2: Jul 17 Topic 3: Jul 18	Nov 12 HALF FULL	Nov 13 FILLING FAST
Brisbane	May 8 – 9 FULL  Oct 15 - 16	FULL Topic 1: Jul 2 Topic 2: Jul 3 Topic 3: Jul 4	Oct 22 FILLING FAST	Oct 23 FILLING FAST
Melbourne	May 29 – 30 A FEW SPOTS LEFT  Nov 26 - 27	ALL TOPICS FILLING FAST Topic 1: Jul 30 Topic 2: Jul 31 Topic 3: Aug 1	Dec 3 FILLING FAST	Dec 4 FILLING FAST
Perth	TBC (please register your interest at training@tuflow.com)			
Auckland NEW	September 24 - 25	-	-	September 26

### Preparation

All required training material, including laptops, provided for training days.

### Trainers and Presenters

The sessions will be conducted by three of Australia's leading hydraulic modelling experts: Bill Syme, Ellis Symons, and Phillip Ryan. Collectively the trio have over 50 years' TUFLOW modelling experience!



### Costs

Costs for each training day are outlined below.

Introductory TUFLOW Training	AUD \$1,650/person (excl. GST)
Advanced TUFLOW Training / 2019 New Release Training	AUD \$880/person (excl. GST)
2019 New Release Workshop	AUD \$500/person (excl. GST)

## Introductory Training

### Day One

8:45

#### TUFLOW Introduction

- Technical overview of TUFLOW.
- TUFLOW, GIS, 3<sup>rd</sup> Party providers and text control files.

9:45

#### 2D Model Theory

- Template files.
- Model geometry.
- Boundaries.
- Running TUFLOW simulations.

10:15

Tea break

10:45

#### 2D Model Development

- Using GIS with TUFLOW for efficient workflows.
- Hands on model development.
- Model troubleshooting.

12:30

Lunch (provided).

13:15

#### 2D Model Development cont.

- Running a TUFLOW model.
- Viewing results.
- Model health / performance.

14:15

#### Topography Modification

- How to use break lines.
- How to modify topography using cut/fill regions.
- Using model check files.

#### Impact Assessment Case Study

- Tools for flood impact assessment.
- Assessing flood afflux and changes in flow behaviour.
- Developing flood impact mapping.

15:30

Afternoon tea and networking.

16:00 – 17:00

- Training day recap.
- Q&A session.

### Day Two

8:45

#### Data Requirements, Checking and Reviewing Models

- When are 1D, 2D and 1D/2D models appropriate?
- How to build and check if a model is healthy?
- What data do I need for my modelling project?

9:45

#### Modelling Hydraulic Structures

- 1D model theory.
- 1D/2D linking mechanisms.
- How to embed 1D structures in a 2D model.

10:15

Tea break.

10:45

#### Modelling Hydraulic Structures – continued

- How to review structure performance and stability?
- Overview of hydraulic structures available in TUFLOW.

12:30

Lunch (provided).

13:15

#### Modelling Bridges

- 2D layered form losses.
- Using structure reporting locations.

14:15

#### User Support Resources

- TUFLOW Online Resources.
- How to get help?

14:45

#### Australian Rainfall & Runoff 2016

- Integration with AR&R Datahub.
- Automatic boundary setup.
- AR&R culvert blockage.
- GIS Tools for AR&R.

15:30

Afternoon tea and networking.

16:00 – 17:00

- Training day recap.
- Q&A session.

## **Advanced Training**

### **Topic 1 Integrated Catchment Urban Flood Modelling**

8:45

#### **TUFLOW Underground Drainage Theory**

- Pits, pipes, manholes overview in TUFLOW.
- Manhole loss calculation
- 1D / 2D linking mechanisms
- Pit inlet types
- Data integrity checking

9:30

#### **Hands-on Urban Model Build**

- Importing data into TUFLOW format
- Checking integrity of underground pipe data
- Boundaries

10:15

Tea break

10:45

#### **Hands-on Urban Model Build continued**

- Scenario management in TUFLOW
- Running and reviewing results
- Applying a road cross fall
- Blockages

12:30

Lunch (provided).

13:15

#### **Direct Rainfall in TUFLOW**

- Global rainfall boundary
- Rainfall polygons
- Gridded rainfall
- Rainfall losses
- Infiltration losses

#### **Australian Rainfall & Runoff 2016**

- Getting data from the BOM and Datahub websites
- Event management
- Matrix blockages
- Other utilities

15:30

Afternoon tea and networking.

16:00 – 17:00

- Training day recap.
  - Class exercise
- Q&A session

### **Topic 2 Workflow Efficiencies (QGIS tools and Python)**

8:45

#### **Latest Tools in QGIS 3**

- The latest mesh integration in QGIS
- TUFLOW Viewer
- Other tools and future tools

9:30

#### **Hands-on With the Latest Tools**

- Advanced use of the TUFLOW Viewer

10:15

Tea break

10:45

#### **Exporting Animations**

- Learning the basics of creating an animation
- Advanced animations

#### **Exporting Flood Maps**

- Adding plots to flood maps
- Batch exporting flood maps

12:30

Lunch (provided).

13:15

#### **Introduction to Python**

- What is Python?
- Installation, versions
- Integrated Development Environment

#### **Python Hands-on**

- Hello World!
- Building a function
- Data manipulation and plotting
- TUFLOW library and automating TUFLOW result plotting
- Automating TUFLOW model health checks

15:30

Afternoon tea and networking.

16:00 – 17:00

#### **Advanced Python Use**

- Working with gridded results
- Training day recap.

Q&A session

### **Topic 3 HPC and Dam Break Modelling**

8:45

#### **HPC Theory**

- How does it work?
- How does it compare with Classic?

9:45

#### **HPC Hands-on**

- Converting a Classic TUFLOW model
- Checking model health
- Breaking the model

10:15

Tea break

10:45

#### **HPC Hands-on continued**

- Class exercise

#### **HPC Advanced Theory**

- Software benchmarking and development
- Hardware performance
- On-going development

12:30

Lunch (provided).

13:15

#### **Introduction to Dam Break Modelling**

- Failure mechanisms
- Estimation techniques
- Solver selection

#### **Hands-on Dam Break Modelling in TUFLOW**

- UK Environment Agency benchmark model 5
- Different approaches in TUFLOW

#### **Non-Newtonian Flow**

- Development and benchmarking
- Hands-on modelling

#### **Dam Break Modelling in 1D**

15:30

Afternoon tea and networking.

16:00 – 17:00

#### **What's next for HPC?**

- Training day recap.
- Q&A session

Registration and Payment

Please complete and send this section to BMT. Scan and e-mail to [training@tuflow.com](mailto:training@tuflow.com), or post to:

BMT  
 Attn: TUFLOW Training  
 Level 8, 200 Creek Street  
 Brisbane, Queensland, 4000 Australia  
 ABN 54 010 830 421  
 Tel: + 61 7 3831 6744 (Amy Smith can help with enquires)

Title ..... First Name ..... Surname .....  
 Organisation.....  
 Address .....  
 .....  
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 Postcode..... Telephone.....  
 Email.....

Indicate which training session (please tick)

Location	Introductory Training	Advanced Training	2019 Release Workshop	2019 Release Training
Sydney	<input type="checkbox"/> May 21 <sup>st</sup> – 22 <sup>nd</sup> <input type="checkbox"/> Nov 5 <sup>th</sup> – 6 <sup>th</sup>	<input type="checkbox"/> Jul 16 <sup>th</sup> <input type="checkbox"/> Jul 17 <sup>th</sup> <input type="checkbox"/> Jul 18 <sup>th</sup>	<input type="checkbox"/> Nov 12 <sup>th</sup>	<input type="checkbox"/> Nov 13 <sup>th</sup>
Brisbane	<input type="checkbox"/> May 8 <sup>th</sup> – 9 <sup>th</sup> <input type="checkbox"/> Oct 15 <sup>th</sup> – 16 <sup>th</sup>	<input type="checkbox"/> Jul 2 <sup>nd</sup> <input type="checkbox"/> July 3 <sup>rd</sup> <input type="checkbox"/> July 4 <sup>th</sup>	<input type="checkbox"/> Oct 22 <sup>nd</sup>	<input type="checkbox"/> Oct 23 <sup>rd</sup>
Melbourne	<input type="checkbox"/> May 29 <sup>th</sup> – 30 <sup>th</sup> <input type="checkbox"/> Nov 26 <sup>th</sup> – 27 <sup>th</sup>	<input type="checkbox"/> Jul 30 <sup>th</sup> <input type="checkbox"/> Jul 31 <sup>st</sup> <input type="checkbox"/> Aug 1 <sup>st</sup>	<input type="checkbox"/> Dec 3 <sup>rd</sup>	<input type="checkbox"/> Dec 4 <sup>th</sup>
Perth	TBC (please register your interest at <a href="mailto:training@tuflow.com">training@tuflow.com</a> )			
Auckland	<input type="checkbox"/> September	-	-	<input type="checkbox"/> September

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Indicate if you, or your organisation is a member of one of the listed industry associations for a 20% discount:

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  - Stormwater Australia (SIA)
- Membership No.  
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