



# BEST

(Bridge Evaluation Scouring Technology)

CIE/WSU

**WESTERN SYDNEY**  
**UNIVERSITY**

# Background:

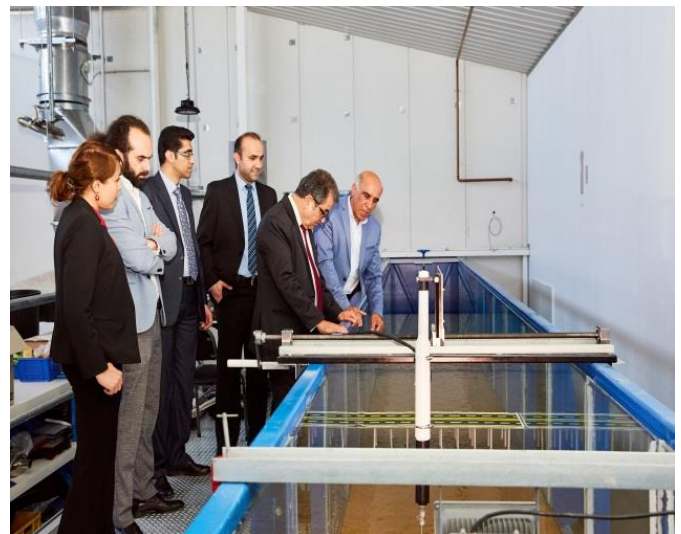
**BEST established in 21 May 2019 with the opening ceremony of**

## **Advanced Research Laboratory for Hydraulic Engineering**

at WESTERN SYDNEY UNIVERSITY. The unique facility laboratory with the professional team is the best team in bridge scouring in Australia. We have stated to make this facility from the scratch including design, fabrication and setup in the laboratory. This facility values is over \$1m but cost us with \$100k. We were very happy to received two projects in last few months which covered the total cost of the flume. It was our pleasure that Prof. Deborah Sweeney accepted our invitation for opening and ribbon cutting.



Large Experimental Flume with the dimension of 1m (width), 0.8m (height) and 16 m (length). The slope of the bed is also adjustable. It is a recirculating flume with the capacity of 120 lit/sec flow rate and can be upgraded to 240 lit/sec. The flow rate is measured using Electromagnetic Flow meter with high accuracy. The floor and wall are built with glass to enable a visualisation of flow and sediment particles transport. It is unique in Australian universities in terms of the dimensions and the adjustable bed slope.



BEST team at centre for Infrastructure Engineering (CIE) at Western Sydney University is a world class team of individuals at the leading edge of civil infrastructure. BEST delivers precise professional engineering consultant including field investigation of the problem and laboratory study to identify problems and propose cost effective solutions. BEST enables to deliver services in the following capacities:

- **Physical modelling of hydraulic structures**
- **CFD Modelling of flow structure around bridge piers and abutments**
- **Prevention of current and existing bridge collapse using FDS structure**
- **Proposing a new guidelines for bridge pier design spacing to increase bridge life cycle**
- **Evaluation scouring condition of Bridges**
- **Using smart technology like Artificial Neural Network, Fuzzy logic and Vector Machine to predict current and future bridge scouring and asset management**
- **Scour Monitoring using Drone Technology**
- **Laser scanning of bridge structure**
- **The Physical Modelling of Bridge Pier Scouring**
- **Introducing Prevention method for Bridge Collapse due to scouring and hydraulic Problems**
- **Bridge monitoring and evaluation during flood events.**

The BEST at CIE/WSU with the following research facilities is one of the professional team in bridge scouring and water engineering in Australia. The facilities include testing and laboratory apparatus:

- Large Experimental Glass Wall Flume with the dimension of 16 m Length × 1m Width × 0.8 m height and adjustable slope. This Flume is unique in Australia.
- The above Flume enables to run unsteady flow and simulate a flood hydrograph
- PIV Dual time lapsed Laser
- ADV (Acoustic Doppler Velocimetry)
- ADVP (Acoustic Doppler Velocity profiler)
- Advanced Research Laboratory for Hydraulic Engineering
- Intel Falcon 8 + Drone
- Phantom 4 Drone
- Elios (confined space inspection) Drone
- Z+F laser scanner



## THE “BEST” TEAM OF VERY PROFESSIONAL EXPERTISE

BEST TEAM has strong professional experience and applied skill, including

### Our Team:

- **A/Prof. Alireza Keshavarzy (Team Leader)**  
Expertise: Water Engineering and Bridge Scour Managing, Flow-structure interaction
- **Prof. Bijan Samali**  
Expertise: Bridge Structural and Fluid Engineering
- **DR Mohsen Askari**  
Expertise: Mechanical Engineering and Structural Health monitoring
- **Mr ALI GHARIZADEH**  
Expertise: Mechanical Engineering and Structural Health monitoring
- **DR Mohsen Ranjbar**  
Expertise: Erosion and scouring



From left: Mohsen Askari, Mohsen Ranjbar, Ali Gharizadeh, Bijan Samali, Alireza Keshavarzy

## Recent Projects with industry:

- **Windang Bridge scouring evaluation and prevention (RMS, NSW)**



- **Flow capacity is NCL and Expanda pipes (Interflow, Australia)**



## Selected private industry and government clients



### CONTACT DETAILS:

Centre for Infrastructure Engineering  
Western Sydney University  
Locked Bag 1797  
Penrith NSW 2751 Australia  
Web: [westernsydney.edu.au/cie](http://westernsydney.edu.au/cie)

Consulting Enquiries:

A/Prof. Alireza Keshavarzy

Phone: +61 2 4736 0563

Email: [A.keshavarzy@westernsydney.edu.au](mailto:A.keshavarzy@westernsydney.edu.au)