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# HYDRAULICS

## DIMENSIONAL ANALYSIS AND HYDRAULIC SIMILARITY

# EXERCISE

### TOPIC 4.2

by

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Chapter 4: Dimensional Analysis and Hydraulic Similarity by N Adilah A A Ghani

Communitising Technology

## Exercise 4.4

A dam 15 m long is to discharge water at a rate of  $114 \text{ m}^3/\text{s}$  under a head of 3 m. Find the corresponding length and head of its model if the discharge in the laboratory is fixed at  $30 \text{ l/s}$ .

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### Exercise 4.5

A 1/30 model is built for a spillway. The actual discharge in the prototype is  $20.0 \text{ m}^3/\text{s}$  under a head of  $2.0\text{m}$ . Determine the head and discharge in the model. If the model dissipates  $0.05$  horsepower, what energy will be dissipated in the prototype?

### Exercise 4.6

The discharge through a weir is  $1.5\text{m}^3/\text{s}$ . Find the discharge through the model of weir if the horizontal dimensions of model to the horizontal dimension of prototype is  $1/50$ , and vertical dimension of model to vertical dimension to prototype is  $1/10$ .