



## Information sheet

# Erosion Threshold Velocity testing

## What is Erosion Threshold Velocity (ETV) testing?

We test surface soils to determine whether they could possibly be eroded by overland water flows.

Testing locations are chosen based on several factors including proximity to the Inland Rail alignment, potential flood water flows predicted in the local flood model, soil type and test site accessibility.

## Why do we need to do this?

ETV testing helps us understand how soil reacts to water flows over land where Inland Rail will be built. This data, along with other hydrology technical studies and analysis, helps inform our designs, particularly for bridges and cross-drainage structures. Our goal is to design a safe and reliable rail line that minimises, wherever possible, the impact Inland Rail may have on local water flows and flood behaviour.

## What happens during the testing?

### Phase 1 – Initial soil testing

A small soil sample (approx. 10kg bag) is collected from the testing location. It is analysed on site and in a laboratory to determine soil classification, soil density and shear stress.

Two to four people (depending on site conditions) will access the testing location by light vehicle and on foot.



Sampling trench being dug.

## ETV glossary

- **Shear stress**  
Soil abrasion caused by the force of another material (water) slipping across it.
- **Velocity**  
Speed of movement.
- **Flume**  
A narrow water channel.
- **Scour**  
Removal of dirt or debris by another object.



Worker packing up full sampling frames, note the undisturbed surface in the left frame.



## Phase 2 – Flume sampling

We collect three samples for testing offsite in a laboratory flume. Each sample is collected in a custom-fabricated, reinforced metal sampling frame to provide an undisturbed section of soil, including any vegetation growing on it.

The total sampling area at each location will be about 1m long by 0.4m wide and 0.2m deep. A 'guide trench' is dug by hand and guide rails placed on each side of the trench before an excavator pushes the sampling frame through the soil to collect the undisturbed sample.

Three to five people (depending on site conditions) will attend this phase of testing. They will access the site via a light vehicle and a semi or rigid truck carrying small earthmoving equipment and a water tank.



## What happens after sampling?

After all three samples are collected we backfill the trench with the excavated soil and flatten with the excavator. Some minor subsidence will occur at the sampling area.

Collected samples are laboratory tested using a hydraulic flume. This will simulate different water depths, velocities and gradients so we can accurately calculate when erosion (or scouring) will occur for different soil types.

## Managing site access and biosecurity

Depending on the soil testing location and extent of excavation required, we may need to obtain permits from government agencies before any work can start. Our investigations will occur during daylight hours.

Permits may cover vegetation clearing, potential animal habitat disturbance or potential disturbance and management of cultural heritage artefacts.

All vehicles accessing private property from external road and rail corridors will be inspected to prevent the introduction of noxious weeds. Vehicle wash down facilities will be available as necessary. Weed and seed procedures are established relevant to specific areas of investigation.

The excavator and support vehicles are equipped with spill kits appropriate to the fuels, oils and chemicals used. Any spills will be promptly cleaned up and contaminated materials hauled to the appropriate disposal site as per regulatory requirements. Bins are provided at work sites for all waste types.

Thank you for your patience and cooperation while we complete these important soil tests. As always, if you have any questions, please contact your local **Stakeholder Engagement Advisor on 1800 732 761**.

## Want to know more?

Inland Rail is committed to working with property owners, communities, state and local governments as a vital part of our planning and consultation work, and we value your input. If you have any questions or comments, please let us know.

The information provided is a general guide only and should not be treated as legal or commercial advice.

✉ Inland Rail, 85 Maitland St, Narrabri NSW 2390

☎ 1800 732 761

@ inlandrailnsw@inlandrail.com.au

🌐 inlandrail.com.au