



## Services

### Stockpile Design

#### Stockpile Audits, Reviews and Conceptual Design

The design of gravity reclaim stockpile storage facilities requires knowledge of the bulk strength and flow properties of the bulk material under a range of different operating conditions. The latter includes the loading method and level of consolidation gained during time storage as well as environmental factors.

The procedures for the design of gravity reclaim stockpiles, hoppers and feeders are well established and follow these four basic steps:

- Determination of the strength and flow properties of the bulk solids for the worst likely flow conditions expected to occur in practice.

- Determination of the hopper and feeder parameters to give the desired capacity, to provide a flow pattern with acceptable characteristics and to ensure that discharge is reliable and predictable.
- Estimation of the loadings on the hopper walls and on the feeders under operating conditions.
- Design and detailing of the handling plant including structure and equipment.

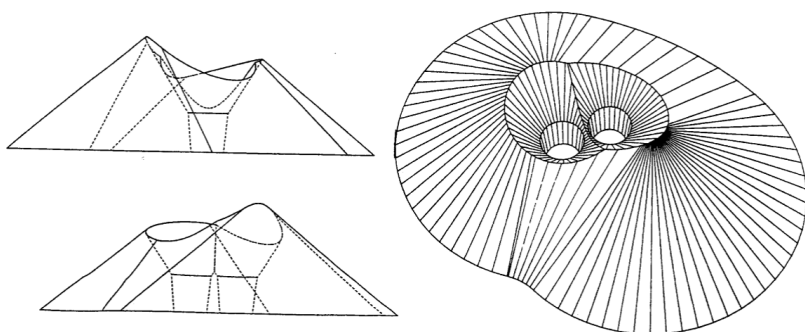


### Flow Properties Testing

TUNRA flow properties test work is required for the calculation of the optimum stockpile and rathole geometry in order to maintain the required live capacity, including the conceptual design of the hopper and feeder interface to ensure best performance under all operating conditions.

The materials testing services offered include, but are not limited to the following procedures:

- Determination of Worst Case Moisture Content
- Direct Shear Testing  
(low and high consolidation conditions)
- Testing with Undisturbed Storage Time
- Large Bulk Density / Compressibility Testing
- Wall Friction Testing





## What services for stockpiles are available?

- ▶ Design Audits & Reviews of new and existing gravity reclaim stockpiles
- ▶ Draw-down loads on trestle legs and buried columns
- ▶ Calculation of hopper wall pressures and feeder loads during filling and discharge conditions
- ▶ Stockpile draw-down and live capacity predictions
- ▶ Conceptual design:
  - Optimum feeder interface geometry
  - Effective hopper geometry and choice of wall liners to obtain mass flow
  - Optimisation of number of hoppers, geometry and location to obtain required/ maximum live capacity
- ▶ Stockpile Drainage Testing
- ▶ Scale modelling of stockpile discharge for flow mode and draw down



Upgrade of Iron Ore Gravity Reclaim Stockpile to increase Live Capacity. a) Rathole formation reducing live capacity; b) Post-modifications stockpile drawdown



### Why TUNRA Bulk Solids?

#### Experience and Expertise

We have provided expert solutions to industry for over 45 years and are the leading organisation for materials handling research and consulting in Australia and internationally

#### Research and Development

We have a proven track record in research and development through the close association with The University of Newcastle

#### Quality Service

We have highly qualified, well-trained and specialist staff that are committed to delivering excellence

#### First Class Facilities

Our laboratory is a state of the art facility located within the Newcastle Institute of Energy and Resources (NIER) at The University of Newcastle

#### Industry Standards

We are accredited to ISO 9001, ISO 45001 and ISO 14001

#### Independent

We are independent and not for profit



### Further information

- To access our Case Studies visit **[www.bulksolids.com.au](http://www.bulksolids.com.au)**
- To discuss your industry and business needs phone **02 4033 9055**