TUNRA Bulk Solids: Case Study Presentation and Tour of Laboratory Facilities

TUNRA Bulk Solids and the Centre for Bulk Solids and Particulate Technologies at the University of Newcastle welcome members of the Australian Society for Bulk Solids Handling to a case study presentation and laboratory tour on Wednesday 24th May 2017.

TUNRA Bulk Solids (TBS) is a key business unit of The University of Newcastle Research Associates Limited (TUNRA Ltd). TUNRA is the commercial arm of The University of Newcastle that was established in 1969 to promote expertise within the University to industry, both nationally and internationally.

TBSs primary function is to advance the bulk materials handling discipline globally through the provision of high-level professional consulting, education and contract research services to the resource and process industries. TBS in association with the Centre for Bulk Solids and Particulate Technologies (CBSPT) have comprehensive laboratory test facilities to aid research and consulting activities, which encompass storage, flow and handling, instrumentation and control, belt conveying and mechanical handling and industrial fluid mechanics.

A Case Study of Steel Silo Failure under Eccentric Discharge Conditions

Abstract: Despite the widespread use of silos for the storage and handling of bulk materials, prediction of their wall loads is poorly understood and, as a result, their structural analysis can be flawed – as emphasized by the number of silo failures that have occurred in the past. By way of example, the problems faced by silo designers are highlighted by a consulting project in which TUNRA Bulk Solids is involved. The project concerns the failure of a corrugated wall grain storage silo that was 12.5 m in diameter and 20m tall. The structural analysis was based on wall loads calculated from the Australian Standard – AS3774-1996 – and EUROCODE – EN 1991-4 – silo design Standards and used the finite element analysis method to determine the stresses present within the structure. Some of the novel features incorporated into the analysis will be presented but ultimately it will be shown that the differences in the circumferential load distribution between concentric and eccentric discharge regimes lead to the creation of substantial bending moments and high stress variations within the silo wall that ultimately destabilized the silo and allowed it to collapse.

DATE: Wednesday 24th May 2017

VENUE: The University of Newcastle, NIER (Newcastle Institute for Energy and Resources) See Attached Map

TIME: 5:45pm - 6:00pm: Finger food and refreshments
6:00pm - 6.15pm: Overview of TBS – Dr Tim Donohue
6.15pm - 6:45pm: Case Study – Dr Bin Chen and Dr Paul Munzenberger
6:45pm - 7:45pm: Laboratory Tour

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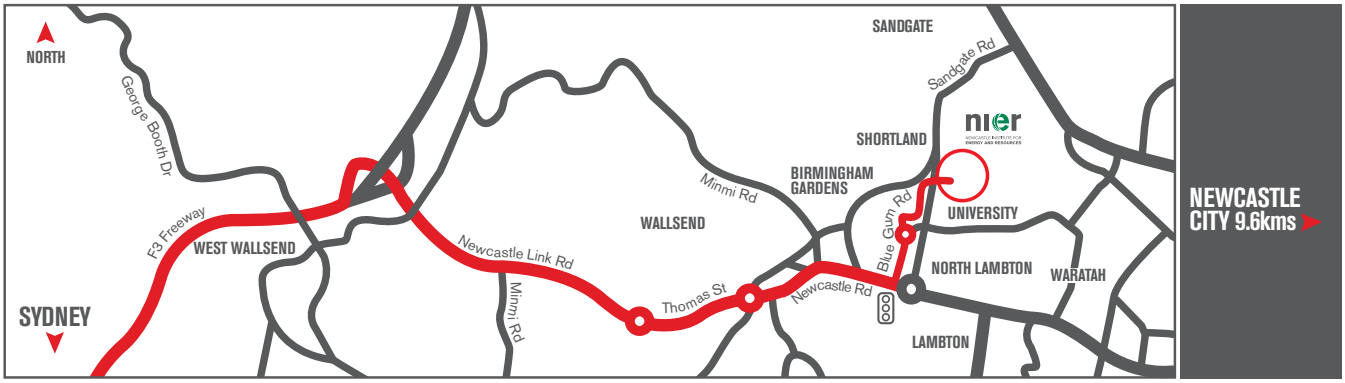
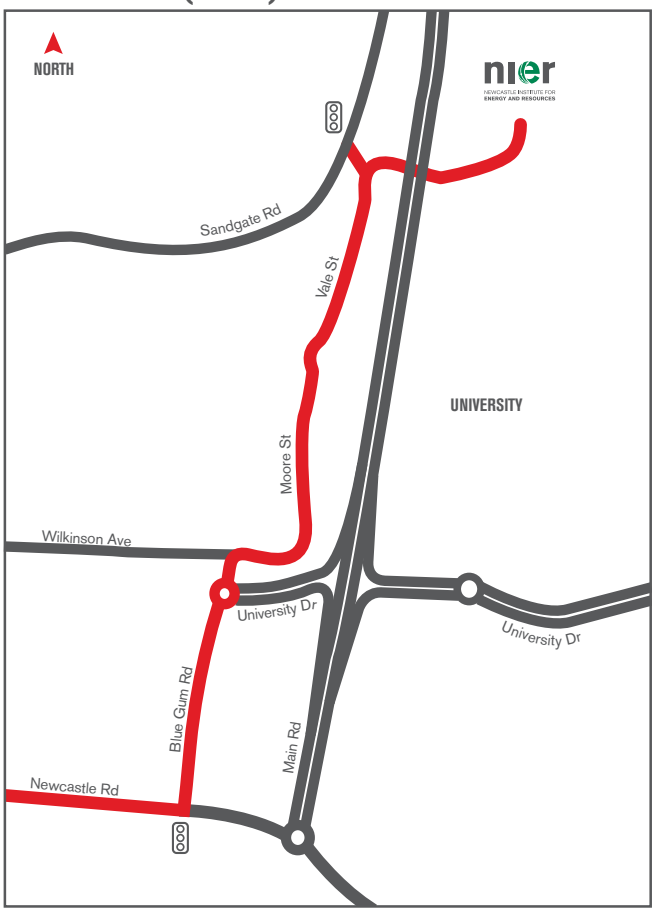
NEWCASTLE INSTITUTE FOR
ENERGY AND RESOURCES

THE UNIVERSITY OF
NEWCASTLE
AUSTRALIA

NEWCASTLE INSTITUTE FOR ENERGY AND RESOURCES (NIER)
The University of Newcastle
Off Vale Street, Shortland
(to the right of Shortland Waters Golf Course)



FROM SYDNEY (VIA F3)



FROM MAITLAND