

Case Study 4 – Winery Incident

Background

Wirra Wirra is a South Australian winery, located in the McLaren Vale. In early 2008, Wirra Wirra installed six new 30,000-litre fermentation tanks to prepare for the approaching peak production period.

At the time, Wirra Wirra was operated by RG & RT Trott who engaged A&G Engineering to design and manufacture the tanks, which were erected on-site by a local subsidiary, A&G Engineering (SA).

The Incident

On March 8th, the new tanks were filled to capacity during normal production. The weight of the product caused the supporting structure to collapse which caused a cascading failure of the surrounding structures and equipment due to a “domino” type-effect. The entire production facility collapsed in less than 20 seconds.

A cellar-hand sustained serious injuries including a torn aorta, broken ribs, punctured lung and fractured vertebrae. Several other people present escaped, uninjured.

The court convicted and issued large fines to A&G Engineering, A&G Engineering (SA) and RG & RT Trott.

The majority of Wirra Wirra’s 2008 product was lost, making ongoing production impossible.

Figure 1 Wirra Wirra Production Facility Post-Incident



Engineering Management Systems: Learning from experience

Incident Review

SafeWork SA investigation of the incident concluded that:

- The tanks had been installed on an existing foundation slab in the production facility.
- There was no assessment of whether the foundation slab was suitable to support the new structure.
- The load applied by the tanks to the slab was five times greater than the slab was rated to withstand.
- The companies involved had failed to use a licensed building works supervisor for the installation.

SafeWork SA Acting Executive Director Bryan Russell said: *“There are serious lessons to be learned here by all parties that jointly undertake a complex construction project such as this. Extensive consultation and a clear understanding of the partners’ respective duties and responsibilities on safety is a must. What began as an oversight on the suitability of the foundations for the new tanks by all parties ended with the most catastrophic of outcomes. As these companies have found out, safety cannot be delegated away or treated as an optional extra, because the consequences can be tragic, disastrous and costly.”*

In relation to this incident, the Magistrate found the defendants had:

- No policies or procedures to ensure their structures had adequate foundations, and
- Adopted an extremely casual approach to the project, stating; *“the very poor assumptions ... right up to Board level is surprising in the context of such a large addition of plant to the winery.”*

Table 1 Activities (process/es) within an engineering management system, in relation to incident causation

Event	Applicable Engineering Process(es)	Discussion
Change of Use	Change Management	The change of use of the facility resulted in a change to the loading applied to the foundation. The tank loads were likely not considered during the original foundation design and as such the foundations were not fit-for-purpose. Change management would have identified that the foundations were not designed to support the type of loading that would occur due to the operation of the tanks.
Design	Design Process	The lack of a design process resulted in important design development tasks not being performed ; the design was not subjected to any review which may have identified the inadequate footing design / foundation capacity.
	Technical Authorisation	Those involved in the specification and manufacture of the tanks did not have the relevant skills to undertake the design. A technical authorization process would have identified that those involved did not have the required qualification, competence or experience to undertake the design.

Figure 2 What engineering management activities may have prevented this incident?

