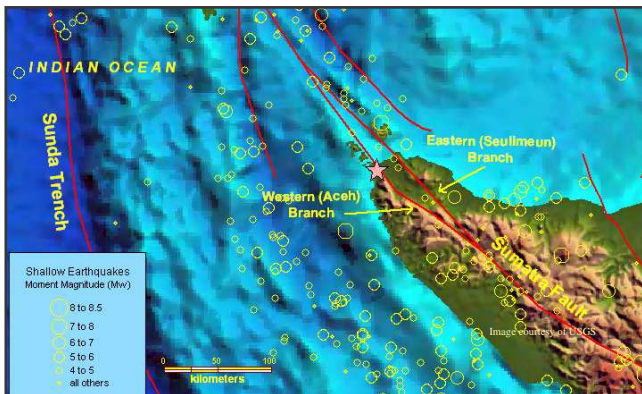


Tsunami Retrofit Guidance for a Cement Plant, Indonesia

Client – Lafarge

On 26th December 2004, an exceptionally strong earthquake provoked a tsunami, which caused serious and widespread damage to the Lafarge PT Semen Andalas cement plant. The plant is situated near Banda Aceh, 250 km from the epicentre of the quake. Serious and widespread damage was reported across the whole site. Lafarge's intention was to rebuild the site, which created the opportunity to re-build the damaged plant to reduce the potential loss of life and financial costs should a similar event occur again.

ABS Consulting were commissioned to assist Lafarge in developing a high level retrofit strategy, for the facility to mitigate the effects of further tsunamis, focusing on life safety and business interruption issues.



To this end a series complementary studies were performed;

- 1) Definition of the seismically induced hazards at the site to establish the relationships between event severity and return period.
- 2) Review the damage from the 26th December 2004 event to identify key damaging mechanisms, common vulnerabilities and identify any lessons which could be incorporated into subsequent design guidance for the re-building of the facility.



- 3) Provide guidance and recommendations for evacuation procedures and training requirements for the site personnel to minimise the loss of life.
- 4) Provide engineering design guidance to be considered in the rebuild of the facility to mitigate against seismic and tsunami load effects.
- 5) Investigate the potential to protect the site from further tsunamis by the construction of a tsunami wall between the plant and the sea to prevent or reduce the flood water levels within the plant.
- 6) Investigate other potential mitigation options which could significantly reduce further losses at the site and develop a tsunami risk mitigation strategy.

