

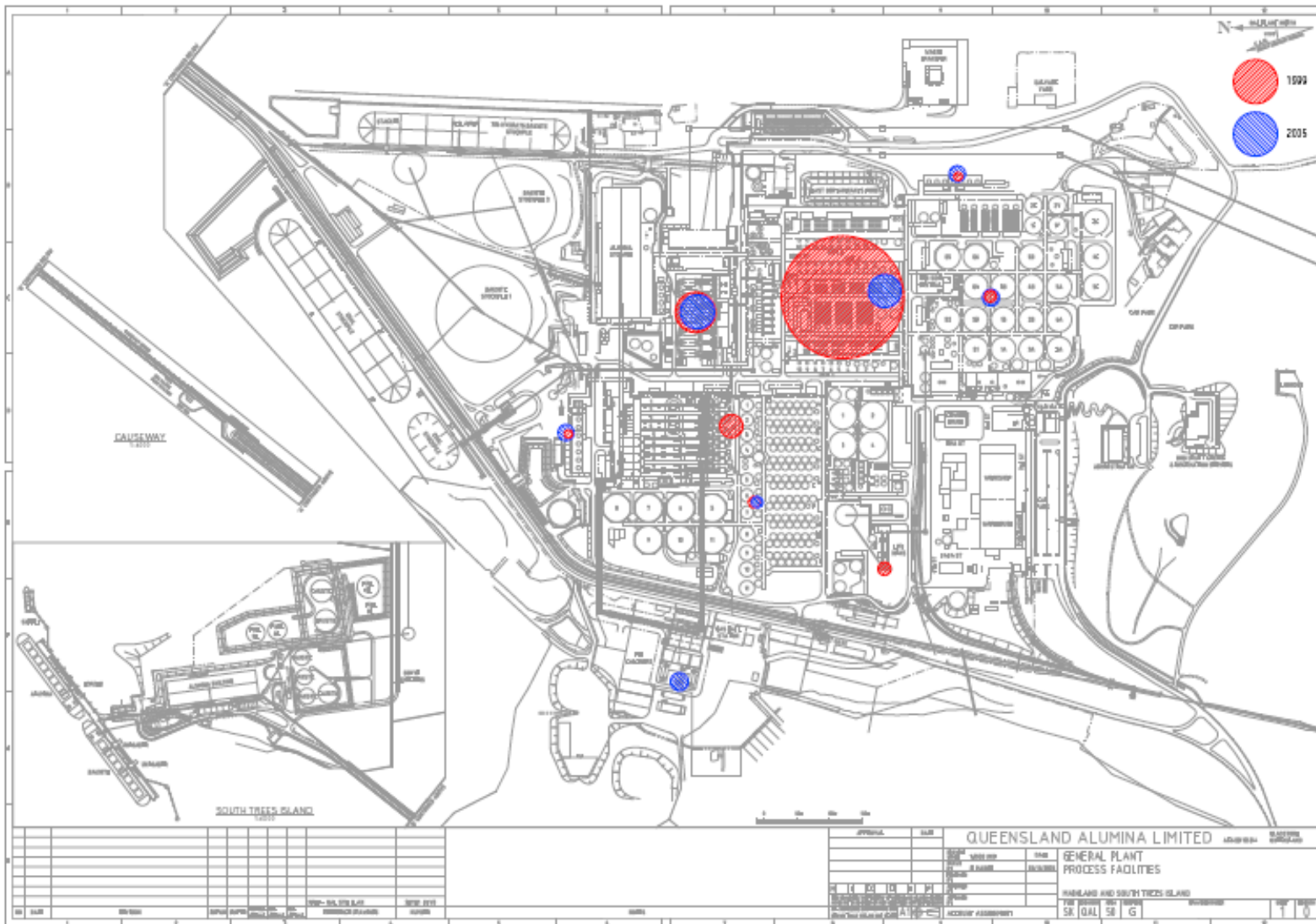


Odour survey update

- 1999 Conducted original QAL odour survey
- 2003 Installed Thermal oxidiser - 99.9% destruction of ~40% of plant odour
- 2005 Odour survey to reconfirm 1999 sources and identify next target emissions
- 2006 Hedonic Tone and Olfactometry survey combined with odour source modelling



QUEENSLAND ALUMINA LIMITED



1999

2005

Safer. Cleaner. Better.



Hedonic tone assessment

- Odour sources of the same concentration can have different levels of offensiveness
- Hedonic Tone is a measure of the offensiveness or un-pleasantness of an odour
- Scale:
 - +4 is a very pleasant odour (maybe a certain type of perfume to someone),
 - 0 is neutral and
 - - 4 is very unpleasant/offensive (possibly the smell of a dead animal.)



Modelling

- Mathematical model of dispersion of air emissions from QAL into the surrounding areas, including Gladstone city.
- Key characteristics of main emission sources are input to model, to allow prediction of ground level concentrations under a range of meteorological conditions.



Sources

Source	Source height (m)	OU / sec	Hedonic tone @ 10U	Hedonic tone @ 50U
Boilers	92	6,000,000	-1.0	-3.2
Calciners (FFE)	55	900,000	-0.8	-3.4
Precip Cooling towers	15	1,400,000	-0.3	-3.1
Evap Cooling towers	15	1,800,000	-0.4	-2.8
Digestion Relief tanks	24	2,400,000	-0.7	-3.6



Timeframe

- Complete model *July 2006*

- Feasibility study *in progress*
 - Prioritise emission sources for control *in progress*

 - Identify potential engineering controls *Dec 2006*

 - Cost/benefit analysis *Dec 2006*