Summary of the Wagerup Refinery Volatile Organic Compounds and Odour Monitoring and Modelling Plan (VOCOMMP) 2013 – 2015

Background

In 2012 the Department of Environment Regulation (DER) requested Alcoa's Wagerup Refinery to update odour and volatile organic compound (VOC) monitoring and modelling to reflect current operations. The monitoring and modelling results were to be assessed against the inputs in the current Wagerup Health Risk Assessment (HRA) and if found to be significantly different, Alcoa was to consider revising the HRA. The program is now complete.

From 2013 – 2015 VOCOMMP progress has been regularly communicated with the Wagerup Community Consultative Network (CCN). All reports and results of the plan have been communicated with the DER.

This document responds to a request from the Minister for Environment for a summary of the program results to be published on the Alcoa website.

Seven-step plan

In late 2012 Alcoa submitted a seven-step plan outlining the project elements to the DER:

1. Update the VOC and odour components of the 2008 Wagerup Emissions Inventory to include results of more recent emissions sampling to the end of 2012.
2. Review the Emissions Inventory to ensure all significant VOC and odour emissions sources in the southern part of the refinery are included.
3. If item #2 identifies any potentially significant additional sources of VOC or odour emissions, develop and implement a plan to quantify these emissions.
4. Define an appropriate monitoring and modelling methodology framework for fugitive and refinery emissions sources and present to the DER.
5. Update the 2008 Wagerup Refinery modelling with current operations data and communicate with the DER.
6. Undertake field odour surveys and present results to the DER.
7. Assess the updated VOC model (from item #4) against the Wagerup HRA and consider the need to revise the HRA if significant differences are identified.

Key outcomes

- All steps documented in the VOCOMMP are complete.
- Additional emissions sources identified in the southern part of the refinery have been added to the current 2014 Wagerup Emissions Inventory. This includes data obtained through ongoing monitoring as defined in the Part V Environmental Licence for the refinery administered under the *Environmental Protection Act 1986*.
- The 2014 air quality modelling, conducted using TAPM and CALPUFF air quality models with 2014 meteorological data, is representative of current refinery and residue operations.
- Most emissions were similar to those presented in the 2005 Environmental Review Management Plan. Changes in emission levels were predominantly due to updated model versions and updated data.
- The results of the air quality modelling are not significantly different to those presented in the 2005 Environmental Review Management Plan and would not significantly impact the overall assessment.
- As there was no significant change in the air quality model, there is no requirement to review the Wagerup HRA.

Conclusion

Results of the most recent Wagerup Refinery air quality modelling, using 2014 refinery and residue emissions data and improved model versions, demonstrate that there is no cause for concern about air quality at Wagerup.

Alcoa has commited to reviewing and updating the emissions inventory through regular ongoing monitoring and other individual project campaigns.

For more information, please contact:

Tom Busher
Wagerup Community Relations Manager
Phone: 08 9733 8768

Extract of air quality modelling plots from 'Wagerup Alumina Refining 2014 Air Quality Modelling" (Air Assessments, 2015)

Particulates PM10 – a general decrease in concentrations due to improved modelling data and improved dust management practices

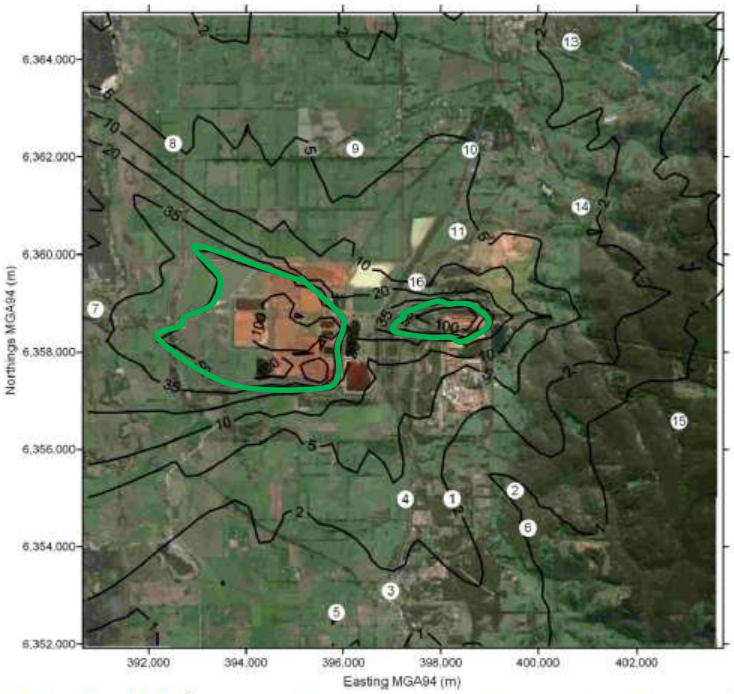

Figure 6-9 Predicted 99.5th percentile 24-hour average PM_{10} concentration (µg/m^3) from fugitive sources in the 2005 HRA

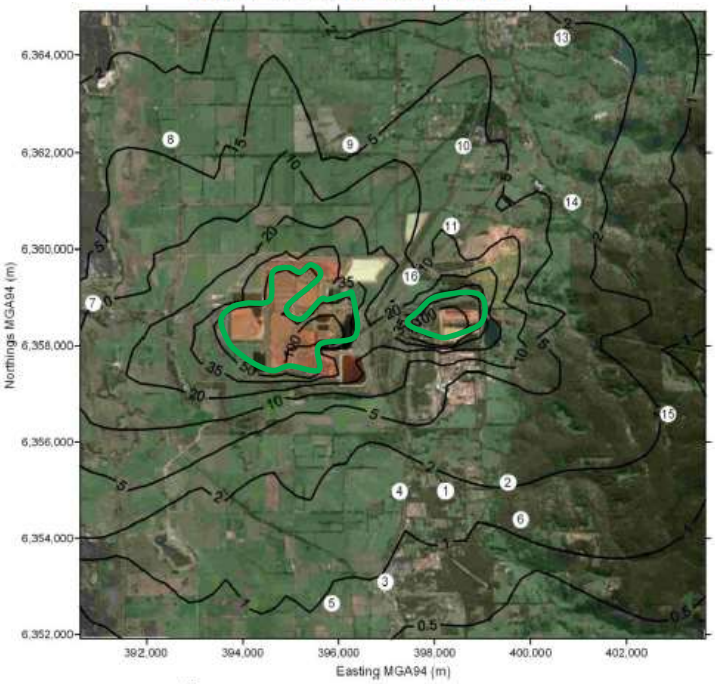

Figure 6-10 Predicted 99.5th percentile 24-hour average PM_{10} concentration (µg/m^3) from fugitive sources predicted for 2014

Key:

50 µg/m3 National Environmental Protection Measures PM_{10} 24 hour standard

µg/m3 contour

⑥ Receptor locations used for modelling and HRA