AGENCY/DEPARTMENT: Commonwealth Scientific and Industrial Research Organisation (CSIRO)

TOPIC: Phase 2 Fugitive Emissions Report

REFERENCE: Question on Notice (Hansard, 3 June 2015, page 97)

QUESTION No.: BI-14

Senator WATERS: This is my last question. It is an important one. It goes to how much stock we can place in the report.
Senator Ronaldson: The officer just said to you before that this is part of an ongoing study, and therefore it is impossible for him to answer that question until that is resolved.
Senator WATERS: Phase 1 has been completed, so it is really in relation to phase 1.
Prof. Barrett: What I can say is that the mathematical technique of combining the information from different types of measurements reduces the overall uncertainty.
Senator WATERS: Sure. I understood that.
Prof. Barrett: That gives us the best possible outcome in terms of understanding definitively how much methane is coming from what sources.
Senator WATERS: How much confidence can we have in the combined approach?
Prof. Barrett: I cannot give you a number right now on what that confidence will be, whether it will be five per cent, 10 per cent or 20 per cent, but it will be world's best practice in terms of what we can achieve.
Senator WATERS: Could you take on notice to answer the confidence level question when you have the capacity. ---

ANSWER

CSIRO is using world's best practice methods to conduct the methane measurements and emissions estimates in the Department of the Environment 'methane fugitive emissions' study. When making measurements under highly controlled conditions and at the fine scale using inverse modelling methods, the confidence levels that can typically be achieved are of the order of ±10-30%[1]. This is consistent with CSIRO's controlled release experiments at Ginninderra[2] and Otway[3]. However, these levels of confidence pertain to quite specific, relatively small scale (of the order of 1km) situations with multiple measurement locations and a very limited number of sources (often only one).

CSIRO must caution that these confidence levels apply to fine scale measurements, and may not be achievable for regional scale measurements.

Phase 2 and 3 of the current GISERA study in the Surat Basin is conducting measurements at the regional scale. At this scale, the much greater complexity and variability resulting from factors such as multiple and time varying methane sources will reduce the confidence level. The strength of the GISERA study is that it combines ground based and atmospheric measurements, which increases the confidence in the data. It is not possible to quantify the confidence levels at this stage of the

[1] Ro, K.S. et al. 2013 *Atmospheric Environment*, 66, pp 101–6.
[2] Loh, Z. et al. 2009 *Atmospheric Environment* 43, pp 2602-11.
[3] Luhar, A. K et al. 2009. In: 19th International Clean Air Society of Australia and New Zealand 2009 Conference.

work, however, phase 3 of the research will provide longer term data from the monitoring stations which will in turn provide a clearer picture of the confidence levels.