



EMISSION  
ASSESSMENTS

T +61 8 9494 2958

F +61 8 9494 2959

E [science@emissionassessments.com.au](mailto:science@emissionassessments.com.au)

A Unit 6, 35 Sustainable Avenue, Bibra Lake 6163

PO Box 1272, Bibra Lake DC 6965

[www.emissionassessments.com.au](http://www.emissionassessments.com.au)

Emission Assessments Pty Ltd ABN 88 133 000 049

**Toro Energy**  
**Lake Maitland Peer Review**  
**Background Ambient Air Quality**  
**Monitoring**  
**3 December 2014**



**Date:** 3/12/2014

**Client Address:**

Ecologia  
Level 8 Carillon City Office Tower,  
207 Murray Street,  
Perth WA 6000

**Prepared By:**

Emission Assessments Pty Ltd  
Unit 6  
35 Sustainable Avenue  
Bibra Lake WA 6163

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Authorised by

By: Giacomo Collica  
BSc. Chem., MRACI, MAIE, C.Chem.  
Managing Director



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**TORO ENERGY  
LAKE MAITLAND**

**PEER REVIEW – BACKGROUND AMBIENT AIR QUALITY  
MONITORING**

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## EXECUTIVE SUMMARY

The scope of work associated with the development and implementation of an Air Quality Monitoring Plan (AQMP) was met, with consideration to the limitation in resources, and plant operations experienced.

The data set which was developed from the monitoring conducted, may be considered representative of the conditions at the time of sampling. It is noted by the reviewer that that no supporting technical information was supplied with this report (no laboratory results or field notes supplied). Therefore all result data presented has not been interrogated for technical accuracy. ~~(no laboratory results or field notes supplied)~~.

The results for PM10 and PM2.5 dust were representative of seasonal variations. The TSP results although representative of the sampling period, may have been extended in terms of number of samples.

The Dust Deposition samples were deficient in terms of number of tests. The Dust Deposition samples should be revisited and further sampling conducted. The sampling should be considered in both wet and dry season where possible.

The background metals data presented was considered by the reviewer as a point of interest. The series of non-detects for ubiquitous metals (commonly occurring background) requires further investigation, this is especially so for Strontium, Aluminium and Iron.

It was also noted that sample TSP sample 10-2748, subsequently analysed for metals concentrations, had no supporting total dust results tabled.

The reviewer acknowledges that the Peer Review undertaken is based on a single report provided, and there has been no opportunity to interrogate raw field data in order to verify actual values used in the formulation of the final outputs.

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## 1 INTRODUCTION

Toro Energy Limited (Toro) acquired the Lake Maitland uranium deposit from Mega Uranium in August 2013 and plans to seek environmental approval for the mining of this deposit as well as the Millipede deposit. Toro plans to process ore from Centipede and Lake Way along with ore from Millipede and Lake Maitland at one central processing plant located adjacent to the Centipede deposit. Toro intends to refer the Millipede and Lake Maitland deposits to the Environmental Protection Authority (EPA) for assessment, which will require detailed surveys and studies across all proposed disturbance areas.

Mega Uranium undertook and completed environmental assessments and surveys across the Lake Maitland project sufficient to allow the proposal to be assessed under an Environmental Review and Management Programme (ERMP) (equivalent to the current PER level) in 2009. Initial discussions between the OEPA and Toro indicate that the existing environmental assessments and surveys for Lake Maitland would be acceptable for submission in a PER following peer review for correctness of content and adequacy. Toro have sought the advice and recommendations of *ecologiaEcolgia* Environment and appropriate sub-consultants who will undertake a peer review of the following reports:

- Regional and local flora
- Terrestrial fauna
- Short Range Endemic invertebrates (SREs)
- Stygofauna
- Troglifauna
- Aquatic Ecology
- Sediments and erosion
- Soils and waste rock characterization and geochemical assessment
- Human health and ecological risk assessment (human and ~~non-human~~non-human biota) and
- Air quality impact assessment and monitoring

This peer review report pertains to the *Background Ambient Air Quality Monitoring* (Air Quality Monitoring Plan) report which was undertaken by Golder Associates authored by Mr Sam Geard and authorised by Mr Frank Fleer.

The peer review has been undertaken by Mr Giacomo Collica, Principal at Emission Assessments Pty Ltd.

## **1.1 LEGISLATION AND POLICY BACKGROUND OF PEER REVIEW**

### **1.1.1 Compliance**

This peer review will satisfy the requirements of ~~the~~ necessary statutory legislation, guidance and policy, including but not limited to the National Environment Protection (Ambient Air Quality) Measure 1998.

### **1.1.2 Approach**

A review was undertaken of all environmental reports pertaining to the acquired Lake Maitland Project for breadth of scope, technical methodology, correctness of content and adequacy. The main findings of the peer review were to determine:

- a) Correctness of findings and conclusions of all reports;
- b) Adequacy of scope, methodology and results of all reports;
- c) Compliance of all reports with statutory legislation and policy; and
- d) Recommendations to address knowledge gaps (if applicable).

## 2 REVIEW RESULTS

### 2.1 CORRECTNESS OF FINDINGS AND CONCLUSIONS

The report provided correct technical information. The methodology employed to establish background air quality information was correct. The volume of data was sufficient for PM10, PM2.5 and may also be acceptable for TSP. Dust Deposition (Insoluble Solids) data may require further investigation due to limited data points.

The metals results (obtained from the preparation of TSP filters) seem very low in concentration. The reviewer would have expected to see a few common metal compounds above detection limit, at background level. This may impact interpretation of further data generated.

### 2.2 ADEQUACY OF SURVEY

#### 2.2.1 Scope of Works

The engagement of Golder Associates by Mega Lake Maitland Pty Ltd (MLM) was to prepare an Air Quality Monitoring Plan (AQMP). The objective of the AQMP was to describe the methodology for determining background ambient air quality data at Lake Maitland.

The assessment met the scope of work requested by MLM.

The level or intensity of the survey does vary with the individual species reported.

For example:

1. The PM10 and PM2.5 data set would be considered adequate in terms of program duration and spatial intensity.
2. The TSP data set was collected over March and April, this may be extended in future studies.
3. The metals data was all reported below detection limit. There were only four filters samples submitted.
4. The Deposited Dust (Insoluble Solids) data was based on 5 samples conducted between December 2010 and February 2011

Overall the data would be sufficient with TSP being considered moderate and Dust Deposition be considered inadequate.

#### 2.2.2 Sampling/Survey adequacy

The ambient air quality survey was conducted between 3 June, 2010 and 18 April 2011. In total 19 extended TSP samples were collected; 28, 24 hour TSP samples were collected; 52 PM10 samples were collected; 53 PM2.5 samples were collected and 5 Deposited Dust (insoluble solids) sample collected.

The ambient air metal determinations were completed on 4 TSP filters, collected within the initial multi-day sampling period.

The initial sampling period for TSP (multi-day) was conducted between 6 June 2010 and 19 March, 2011, with 19 multi-day samples collected throughout this period. The second round of sampling for TSP (24 hour samples) was conducted between 18 March 2011 and 18 April 2011, with 28 samples collected in total. This data set would be considered limited with respect to variations to atmospheric conditions throughout the year.

It is noted that TSP (multi-day) filter 10-2246 subsequently used for metals analysis is not listed in the TSP results table, and does not have an associated TSP value assigned to it.

The PM10 sampling period was between 3 June, 2010 and 14 March, 2011 with 52 samples collected throughout this period. Limited samples were collected in October 2011 and one sample collected in November 2011.

The PM2.5 sampling period was between 3 June, 2010 and 14 March, 2011 with 53 samples collected throughout this period. There were no samples collected in October 2011 and two sample collected in November 2011.

Deposited Dust (Insoluble Solids) samples were collected between 7 December, 2010 and 18 February, 2011. A total of 5 samples were collected within this period.

Yes. The sampling methodology was adequate in terms of relevant technical application.

### **2.2.3 Results**

The sampling conducted provided a fair and representative estimation of background ambient air quality conditions for the period of sampling.

The results were adequately interpreted and correct relative standards were used as guidelines.

## **2.3 CURRENCY OF RESULTS**

The results from the assessment conducted in 2010 and 2011 may be considered current. The reviewer is not aware of further development within the local area which may change the baseline data presented.

There are no additional regulatory or legislative requirements required in terms of background air quality determination or impact. There may be a potential to revisit the TSP measurements in months where measurements were not taken. The Deposited Dust measurements may be extended

## **2.4 COMPLIANCE**

Yes, the assessment did align with the NEPM.

## **2.5 RECOMMENDATIONS AND GAP ASSESSMENT**

The assessments carried out for PM10 and PM2.5 were conducted over an appropriate length of time. Although more samples could have been arranged in the later months of the year, as the summer months are typically wetter, there is no need for further investigation.

The assessments conducted for the TSP were satisfactorily completed over the months of March and April 2011. The author would have preferred to see data from assessments conducted mid to late year, in order to capture hot / dry periods.

The Deposited Dust (insoluble solids) sampling would be considered deficient in terms of duration and the number of data points generated throughout the study period. There is a real potential for future results to vary significantly, based on relative meteorological conditions.

It would be recommended that further baseline sampling be conducted for Dust Deposition in order to better understand dust deposition impact as a baseline.

### **3 RECOMMENDATIONS AND CONCLUSIONS**

The development of the scope and approach with the technical methodology overall was reasonably developed and executed. The findings lack any technical supporting data in terms of instrument calibrations, methodology and personnel training. It is assumed that the NATA accreditation for the results presented provides traceable technical data.

The assessment was overall sound.

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## **4 REFERENCES**

National Environment Protection (Ambient Air Quality) Measure 1998.