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**TORO ENERGY
LAKE MAITLAND
PEER REVIEW – SHORT RANGE ENDEMIC INVERTEBRATE FAUNA**



A Resource Development
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EXECUTIVE SUMMARY

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 have sought the advice and recommendations of *ecologia* Environment to undertake a peer review of the Short Range Endemic (SRE) Invertebrate fauna report previously completed.

The SRE invertebrate fauna assessment completed consisted of a desktop assessment and a two phase Level 2 field survey. Standard SRE invertebrate sampling design was employed and adequacy is sufficient to satisfy relevant guidelines.

The scope of works and objectives were sufficient for SRE invertebrate fauna EIA level, and were generally met well. Correctness of results are generally accurate with the following exceptions:

- The status of three previously recorded SRE species within the study area (*Urodacus* 'maitland1', *Urodacus* 'maitland2' and *Kwonkan* 'MYG194') is unclear. Despite being identified as occurring in the study area as potential SREs, no further detail in regards to their status within the study area is given; and
- The assessment includes identification of SRE habitat results. Caution should be applied when assigning SRE species to broad scale habitat preferences and quantifying the area of potential habitat per species based on this, as has been done in this assessment. The level of assessment completed is not at sufficient scale or intensity to provide detailed habitat preference information per species.

The taxonomic status of SRE invertebrate species is under constant revision, as new information becomes available and further specimens obtained. It is likely a number of potential or likely SRE species recorded during field surveys in 2011 may no longer be considered SRE species as a result of updates since this time.

A total of 471 invertebrate specimens from 37 species/morphospecies were collected on the Level 2 survey. Seven species were recorded and identified as likely SREs with a further eight species identified as potential SREs. Four species were collected from inside the disturbance footprint only, two of which were identified to species level (*Aname* 'MYG227' and *Buddelundia* 'sp. nov. 46') and considered likely SREs, while the other two were unable to be fully identified due to life history stages of individuals collected lacking morphological identification features (*Isometroides* sp. and *Urodacus* sp.) and considered potential SREs; and

The time frame since field surveying in 2011 provides doubt over the SRE status of specimens collected. It is recommended that the current status of SRE species collected during the field assessment be obtained through desktop assessment and discussion with taxonomic specialists. In particular whether species *Aname* 'MYG227' and *Buddelundia* 'sp. nov. 46' have since been collected in additional areas outside the study area. Additionally, the status of three potential SREs (*Urodacus* 'maitland1', *Urodacus* 'maitland2' and *Kwonkan* 'MYG194') identified as being recorded within the study area during previous surveying remains unclear. The nature of these records and status of species occurrence within the study area needs to be further assessed through desktop assessment and discussion with taxonomic specialists.

If these species are not represented outside the study area, further sampling in order to confirm the occurrence of these species outside the disturbance footprint may be warranted.

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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 *ecologia* 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 biota) and
- Air quality impact assessment and monitoring

This peer review report pertains to the *Lake Maitland Uranium Project: Terrestrial Short-range Endemic Invertebrate Fauna Assessment* (Outback Ecology 2012) report which were undertaken by Outback Ecology Services.

1.1 LEGISLATION AND POLICY BACKGROUND OF PEER REVIEW

1.1.1 Compliance

This peer review will satisfy the requirements of all necessary statutory legislation, guidance and policy, including but not limited to:

Short Range Endemic (SRE) invertebrate fauna

- EPA Guidance Statement No. 20: *Sampling of Short-range Endemic Invertebrate Fauna for Environmental Impact Assessment in Western Australia* (EPA 2009); and
- EPA Guidance Statement No. 56, *Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia* (EPA 2004b).

In relation to SRE fauna, Guidance Statement No. 56 states that some better-known SRE species have been gazetted as threatened or endangered under State legislation (WC Act) and/or Commonwealth legislation (EPBC Act), but the majority have not. Often the lack of knowledge about these species precludes their consideration for gazettal as threatened or endangered. Gazettal under legislation should, therefore, not be the only conservation consideration in environmental impact assessment.

The State is committed to the principles and objectives for the protection of biodiversity as outlined in *The National Strategy for the Conservation of Australia's Biological Diversity* (DEST 1996). The EPA expects that environmental impact assessment will consider impacts on conservation of SRE species (EPA 2004a).

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 major findings of the reports were considered to be correct. A summary of the key findings is given below:

- Seven species were recorded and identified as likely SREs with a further eight species collected identified as potential SREs;
- Eight SRE invertebrate faun habitats were identified; samphire flat, spinifex sand plain, woodland over calcrete plain, calcrete plain, woodland over sand plain, mosaic of kopi dune and samphire flat, bull spinifex on the lake edge and kopi dunes. Three habitats were identified as having medium potential to support SRE species, with the remaining five habitats assessed as low potential of supporting SRE species; and
- Four species were collected from inside the disturbance footprint only, two of which were identified to species level (*Aname* 'MYG227' and *Buddelundia* 'sp. nov. 46') and considered likely SREs, while the other two were unable to be fully identified due to life history stages of individuals collected lacking morphological identification features (*Isometroides* sp. and *Urodacus* sp.) and considered potential SREs.

2.2 ADEQUACY OF SURVEY

2.2.1 Scope of Works

The overall objectives of the invertebrate SRE fauna assessment for the Lake Maitland Project were to:

- a) assess the occurrence and likely distribution of SRE invertebrate fauna within the study area;
- b) identify, describe and map potential terrestrial SRE invertebrate fauna habitat and any significant habitat within the study area;
- c) assess survey findings in the regional context by comparisons with available data from other localities within the Murchison bioregion; and
- d) assess the potential impacts of the Project on terrestrial SRE invertebrate fauna and habitat in the study area.

Overall, the objectives of the scope were met well.

2.2.2 Sampling/Survey adequacy

The SRE invertebrate fauna assessment consisted of a desktop study followed by a two phase Level 2 survey.

Phase one consisted of wet pitfall traps deployed 3 – 11 February and collected 5 – 9 March 2011. Phase two consisted of wet pitfall traps deployed 5 – 9 March and collected 11 – 13 April 2011.

A total of 16 SRE sampling sites were established. Sampling methods consisted of a combination of wet pitfall traps, targeted searches, leaf litter collection and soil sieving. At each site, the following sampling effort was completed:

- Wet pitfall traps – 5 traps open for 34 nights (phase 1) and 36 nights (phase 2);
- Targeted searches – 3 person hours;
- Leaf litter collection – 3 samples; and
- Soil sieving – 3 samples.

Sample sites were positioned in a range of habitats and were established where possible in representative habitats inside the disturbance footprint and outside in control areas.

Standard sampling design and adequacy is sufficient and satisfies relevant guidelines and legislation.

2.2.3 Results

The main results from the assessment were:

- Eight SRE invertebrate faun habitats were identified; samphire flat, spinifex sand plain, woodland over calcrete plain, calcrete plain, woodland over sand plain, mosaic of kopi dune and samphire flat, bull spinifex on the lake edge and kopi dunes;
- Three habitats were identified as having medium potential to support SRE species, with the remaining five habitats assessed as low potential of supporting SRE species;
- The desktop assessment revealed 25 SRE species as occurring within 100 km of the study area, three of which have been previously recorded in the study area (*Urodacus* 'maitland1', *Urodacus* 'maitland2' and *Kwonkan* 'MYG194');
- A total of 471 invertebrate specimens from 37 species and morphospecies were collected on the Level 2 survey;
- Seven species were recorded and identified as likely SREs with a further eight species collected identified as potential SREs;
- Four species were collected from inside the disturbance footprint only, two of which were identified to species level (*Aname* 'MYG227' and *Buddelundia* 'sp. nov. 46') and considered likely SREs, while the other two were unable to be fully identified due to life history stages of individuals collected lacking morphological identification features (*Isometroides* sp. and *Urodacus* sp.) and considered potential SREs; and
- No major constraints or limitations were identified.

The results appear to be accurate and are concise and well structured.

The status of three previously recorded SRE species within the study area (*Urodacus* 'maitland1', *Urodacus* 'maitland2' and *Kwonkan* 'MYG194') identified during the desktop assessment is unclear. Despite being identified as occurring in the study area as potential SREs, no further detail in regards to their status within the study area is given.

The assessment includes identification of SRE habitat results. Caution should be applied when assigning SRE species to broad scale habitat preferences and quantifying the area of potential habitat per species based on this, as has been done in this assessment. The level of assessment completed is not at sufficient scale or intensity to provide detailed habitat preference information per species.

2.3 CURRENCY OF RESULTS

The taxonomic status of SRE invertebrate species is under constant revision, as new information becomes available and further specimens obtained. Discussions with SRE species group identification specialists at Phoenix Environmental Sciences suggest identifications completed outside a one year time frame may no longer be valid. It is likely a number of potential or likely SRE species recorded during field surveys in 2011 may no longer be considered SRE species as a result of updates since this time.

Since the completion of the assessment, the WA Museum have updated the SRE classification criteria from Confirmed, Likely and Potential as seen in the current assessment to just Confirmed and Potential.

2.4 COMPLIANCE

The assessment aligns with statutory legislation.

2.5 RECOMMENDATIONS AND GAP ASSESSMENT

The current status of SRE species collected during the field assessment in 2011 should be reviewed. In particular whether species *Aname* 'MYG227' and *Buddelundia* 'sp. nov. 46' have since been collected in additional areas outside the disturbance footprint. Additionally, seek clarification of the identification of three potential SRE species (*Urodacus* 'maitland1', *Urodacus* 'maitland2' and *Kwonkan* 'MYG194') identified from the desktop assessment as occurring within the study area.

If these species are not represented outside the study area, further sampling in order to confirm the occurrence of these species outside the disturbance footprint may be warranted.

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3 CONCLUSIONS AND RECOMMENDATIONS

- The scope of works and survey methodology is adequate and compliant with relevant guidelines and legislation;
- Seven species collected were considered likely SREs and eight species collected were considered potential SRE species;
- Four species were collected from inside the disturbance footprint only, two of which were identified to species level (*Aname* 'MYG227' and *Buddelundia* 'sp. nov. 46') and considered likely SREs. The other two species were unable to be fully identified due to life history stages of individuals lacking morphological identification features (*Isometroides* sp. and *Urodacus* sp.) and were considered potential SREs;
- The status of three previously recorded SRE species within the study area (*Urodacus* 'maitland1', *Urodacus* 'maitland2' and *Kwonkan* 'MYG194') identified during the desktop assessment is unclear. Despite being identified as occurring in the study area as potential SREs, no further detail in regards to their status within the study area is given.
- Caution should be applied when assigning SRE species to broad scale habitat preferences and quantifying the area of potential habitat per species based on this, as has been done in this assessment. The level of assessment completed is not at sufficient scale or intensity to provide detailed habitat preference information per species; and
- The taxonomic status of SRE invertebrate species is under constant revision, as updated information and specimens are recorded. It is likely a number of potential or likely SRE species recorded during field surveys in 2011 may no longer be considered SRE species as a result of taxonomic updates since this time.

The time frame since field surveying in 2011 provides doubt over the SRE status of specimens collected. It is recommended that the current status of SRE species collected during the field assessment be obtained through desktop assessment and discussion with taxonomic specialists. In particular whether species *Aname* 'MYG227' and *Buddelundia* 'sp. nov. 46' have since been collected in additional areas outside the study area. Additionally, the status of three potential SREs (*Urodacus* 'maitland1', *Urodacus* 'maitland2' and *Kwonkan* 'MYG194') identified as being recorded within the study area during previous surveying remains unclear. The nature of these records and status of species occurrence within the study area needs to be further assessed through desktop assessment and discussion with taxonomic specialists.

If these species are not represented outside the study area, further sampling in order to confirm the occurrence of these species outside the disturbance footprint may be warranted.

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