



## ASX RELEASE

13 June 2012

# Positive disequilibrium results for the Theseus Uranium Project, WA

Toro Energy Limited ("Toro" ASX: TOE) is pleased to announce positive disequilibrium results following detailed studies of drill sample data from the Theseus Uranium Project in WA.

The key conclusions of the disequilibrium study are:

- **consistently positive disequilibrium ratio of 1.34 (all samples) and 1.54 (for samples reporting above 300ppm uranium);**
- **a disequilibrium factor of 1.34 can therefore be applied to all gamma-radiation data taken from Theseus.**

**If this disequilibrium factor is applied to all gamma-radiation data, the size and grade of the Exploration Target Range will increase.** The Exploration Target Range presently stands at:

20Mt to 40Mt @ approx 400 to 500parts per million (ppm)  $U_3O_8$ ,  
for 10,000t to 20,000t  $U_3O_8$  or 22Mlb to 44Mlb  $U_3O_8$ <sup>#</sup>

# CAUTIONARY STATEMENT: The Exploration Target Range is conceptual in nature and there has been insufficient exploration completed to define this material as a Mineral Resource. There is no certainty that the further work referred to herein will result in the determination of a Mineral Resource

Disequilibrium analysis indicates a consistently positive disequilibrium ratio of 1.34 (all samples) and 1.54 (for samples reporting above 300 ppm uranium) for 47 representative and widely-spaced pulp samples distributed across the deposit (see Figure 1). These results confirm that gamma-radiation data previously reported for the Theseus Project have significantly underestimated the grade for the majority of the drillholes probed in 2011.

Additional Prompt Fission Neutron ("PFN") data obtained from the current drilling program is adding to Toro's confidence in applying a "correction factor" of approximately 1.34 (34%) to existing gamma-radiation data.

Toro is currently working with external consultants to determine if a maiden Inferred Resource can now be defined in accordance with the JORC Code at Theseus.

Toro Managing Director, Mr Greg Hall said:

*"This study potentially provides significant upside to the magnitude of the Theseus uranium discovery. Toro will continue to work hard to provide independent validation of this ratio so we can utilise it for on-going drill reporting and resource modelling. It is hoped that Theseus will develop into a large economically robust ISR uranium deposit and one of the more significant new uranium discoveries in Australia in recent times."*

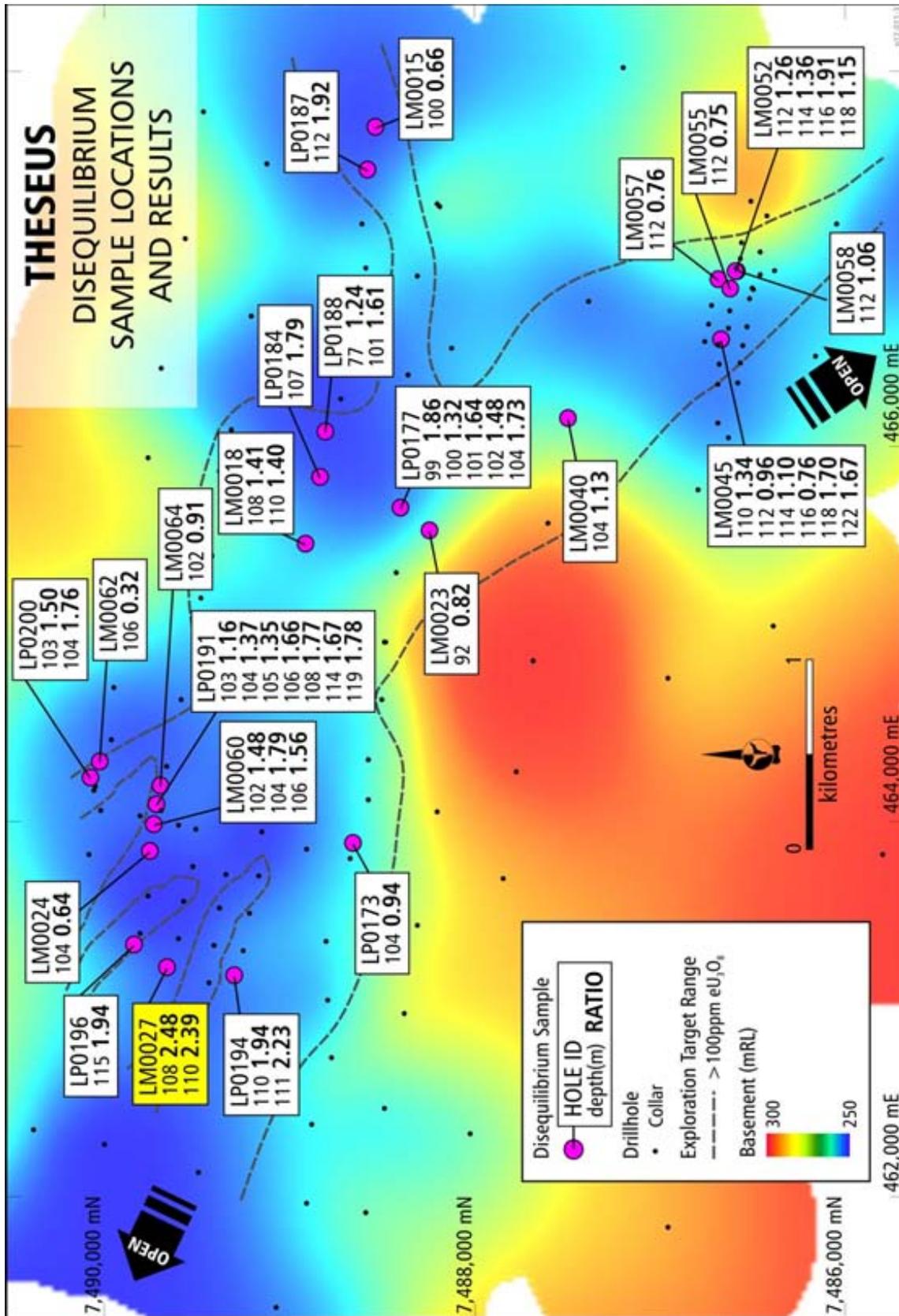


Figure 1: Map of Theseus drill holes showing the spatial distribution of disequilibrium samples and the disequilibrium ratio determined. A figure of 1 equals equilibrium.

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## Technical Discussion

Analysis is herein reported for 47 representative and widely-spaced pulp samples collected at Theseus during the 2011 drilling program (Figure 1; Appendix 1). Analytical work was carried out by Radiation Detection Systems in Adelaide to determine the degree of disequilibrium between uranium and its shorter-half-life radioactive daughter products. It is critical to understand this phenomenon in “young” sediment-hosted deposits, because ambient groundwater movement can often lead to fractionation of these elements and therefore affect the application of gamma-radiation logging to establishing uranium grade and cut-off thickness in drill holes.

Disequilibrium is represented as a ratio of the radiation predicted from the known uranium content of a given sample (via chemical assay), versus the actual radiation emanating from the sample (via precision “lead canister” radiometric analysis). Generally speaking, a positive disequilibrium ratio ( $>1$ ) is where uranium is present in concentrations greater than its daughter products and is therefore underestimated by radiation measuring methodologies such as gamma-radiation logging. Conversely, a negative disequilibrium ratio ( $<1$ ) is where daughter products are present in the sample in excess of the parent uranium. Early establishment of the disequilibrium characteristics of deposit types that are largely assessed by gamma-radiation logging can have a marked impact on the estimated grades, resources and ultimately economics.

At Theseus, a plot of data shown on Figure 2, depicts a significant and consistent degree of positive disequilibrium in most samples, with a “best fit” ratio in the order of 1.34. Importantly, Figure 2 indicates that positive disequilibrium is the norm for samples above 300 ppm, and the arithmetic average of the ratio is 1.54. This ratio might be more statistically valid for assessing data above an economic cut-off. Below 300 ppm, both positive and negative disequilibrium ratios are evident in Figure 3, at least partly due to precision and accuracy limitations at low radiation levels. The overall quantum of this positive ratio is also born out in a preliminary comparison of gamma and PFN data collected so far this year, the latter measuring in-situ uranium, not a proxy like gamma.

The veracity of the data is also supported by the project-scale spatial consistency of the disequilibrium ratio at Theseus shown on Figure 1 and by the consistency of the disequilibrium ratio in adjacent samples and duplicates within individual drillholes. The exceptionally high ratios in the west around LM0027 (highlighted in yellow on Figure 1) imply that groundwater flow and parent-daughter fractionation is greatest in this area. Nearer the edges of the palaeochannel mapped from drilling in 2011, the ratio is closer to equilibrium or is negative, as expected. Local variations such as between LP0187 and LM0015 also fit a model of small-scale redox contrasts associated with an individual roll-front.

This data is consistent with the currently held “roll front” model for Theseus, whereby uranium and its’ daughter products are currently mobile in the saline groundwater regime and have been systematically separated throughout the known spatial extent of the mineralising system. It is not known if the daughter products have moved out of the deposit (as it is currently defined) into local low-permeability zones that are below the cut-off, or regionally down the large-scale palaeochannel trend. Most importantly, the consistency of the data above 300 ppm  $U_3O_8$  allows the global application of the disequilibrium ratio to

Toro’s existing gamma-radiation database, thereby substantially increasing the grades and broadening mineralised intervals at any given cut-off level.

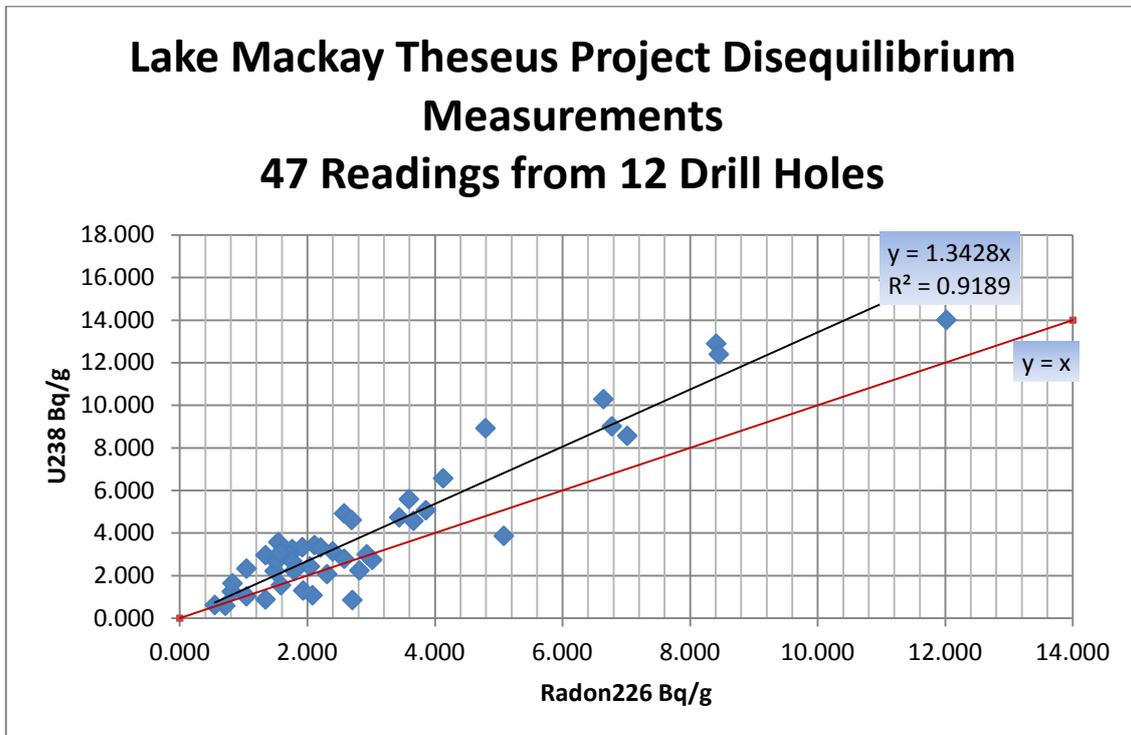


Figure 2: Disequilibrium plot of representative samples from Theseus. The line of best fit indicates 34% underestimation of uranium by gamma radiation data.

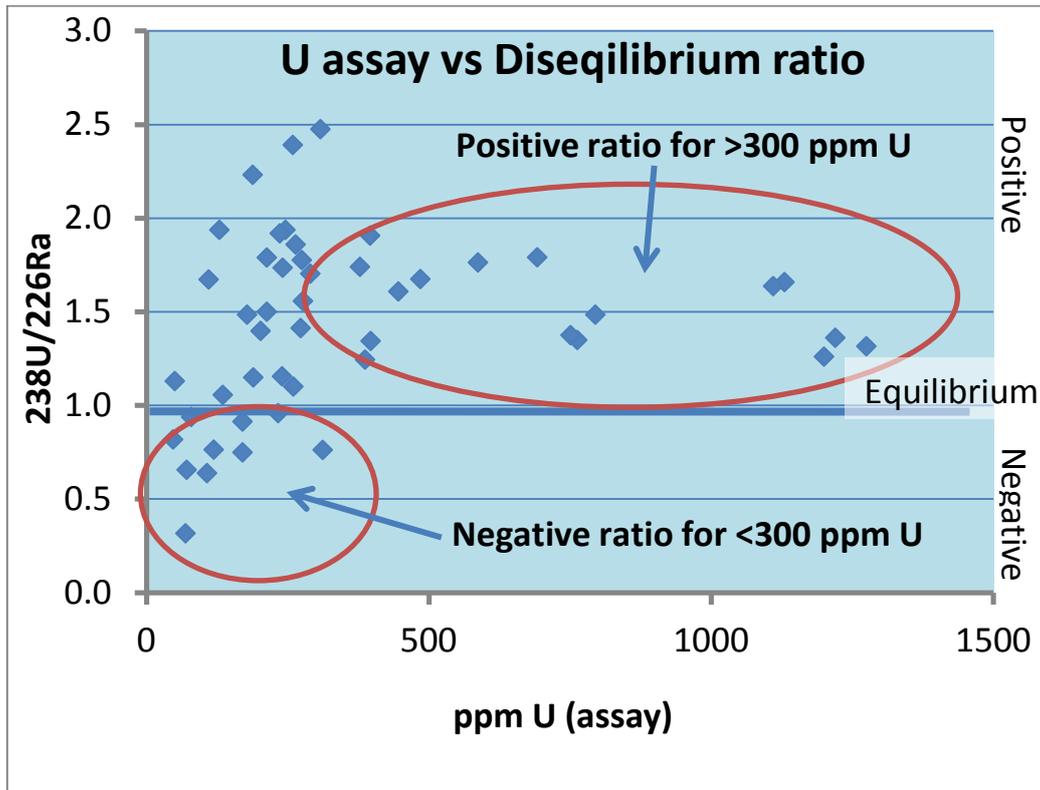


Figure 3 Plot of the assayed uranium content of the sample versus the calculated disequilibrium ratio, showing that, at grades above 300 ppm U, all samples exhibit a strong positive ratio.

**Greg Hall**  
 Managing Director

**MEDIA CONTACT:**

Greg Hall	Toro Energy	08 8132 5600
Kevin Skinner	Field Public Relations	08 8234 9555 / 0414 822 631

Toro Energy is a modern Australian uranium company with progressive project development, acquisition and growth. The company is based in Adelaide, South Australia with a project office in Perth, Western Australia.

Toro's flagship and wholly-owned Wiluna uranium project (includes existing mining lease) is 30 kilometres southeast of Wiluna in Central Western Australia.

Wiluna contains two shallow calcrete deposits, Lake Way and Centipede, with prefeasibility and optimisation studies completed and a definitive feasibility study underway. Toro has advanced the approvals process with an anticipated date of mid-2012, construction through 2013 and first uranium sales in 2014.

Toro also has a new uranium project called Theseus in Western Australia, and owns uranium assets in the Northern Territory and in Namibia, Africa.

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

*Information in this report is based on a compilation by Dr David Rawlings, who is a Member of the Australasian Institute of Mining and Metallurgy. Dr Rawlings is a full-time employee of Toro, and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity he is undertaking to qualify as a Competent Person as defined in the 2004 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Dr Rawlings consents to the inclusion in this release of the matters based on his information in the form and context in which it appears.*

*Disequilibrium analysis was carried out by Radiation Detection Systems, Adelaide, using conventional "sealed canister" techniques and a high resolution scintillometer with a sodium iodide detector (see <http://www.rdsjk.com/>). Various standards and duplicates have been utilised and quality control systems indicate acceptable levels of accuracy and repeatability.*

**Appendix I Tabulated disequilibrium data (all AMGs are GDA94, zone 52)**

Hole_ID	Easting	Northing	m_From	m_To	Sample_ID	U_ppm	226Ra_Bq/g	238U_Bq/g	U_Ra
LP0173	463847	7488636	104	105	140160	79	1.044	0.980	0.938
LP0177	465638	7488378	99	100	140254	264	1.761	3.274	1.859
LP0177	465638	7488378	100	101	140255	1275	12.017	15.810	1.316
LP0177	465638	7488378	101	102	140257	1110	8.408	13.764	1.637
LP0177	465638	7488378	102	103	140258	178	1.487	2.207	1.484
LP0177	465638	7488378	104	105	140260	241	1.723	2.988	1.735
LP0184	465800	7488816	107	108	140501	213	1.476	2.641	1.790
LP0187	467435	7488559	112	113	140575	236	1.525	2.926	1.919
LP0188	466040	7488789	77	78	140587	387	3.857	4.799	1.244
LP0188	466040	7488789	101	102	140611	446	3.439	5.530	1.608
LP0191	464050	7489698	103	104	140669	240	2.576	2.976	1.155
LP0191	464050	7489698	104	105	140670	751	6.773	9.312	1.375
LP0191	464050	7489698	105	106	140671	763	7.014	9.461	1.349
LP0191	464050	7489698	106	107	140672	1130	8.449	14.012	1.658
LP0191	464050	7489698	108	109	140674	378	2.694	4.687	1.740
LP0191	464050	7489698	114	115	140680	485	3.591	6.014	1.675
LP0191	464050	7489698	119	120	140685	275	1.920	3.410	1.776
LP0194	463143	7489276	110	111	140698	246	1.575	3.050	1.937
LP0194	463143	7489276	111	112	140699	188	1.045	2.331	2.231
LP0196	463306	7489823	115	116	140754	129	0.826	1.600	1.937
LP0200	464193	7490054	103	104	140898	213	1.761	2.641	1.500
LP0200	464193	7490054	104	105	140899	587	4.128	7.279	1.763
LM0015	467664	7488518	100	102	141358	71	1.343	0.880	0.656
LM0018	465443	7488894	108	110	141411	273	2.396	3.385	1.413
LM0018	465443	7488894	110	112	141413	202	1.792	2.505	1.397
LM0023	465516	7488226	92	94	141571	47	0.713	0.583	0.818
LM0024	463805	7489732	104	106	141601	107	2.080	1.327	0.638
LM0027	463181	7489640	108	110	141701	308	1.543	3.819	2.475
LM0027	463181	7489640	110	112	141703	259	1.343	3.212	2.391
LM0040	466110	7487480	104	106	141976	50	0.549	0.620	1.130
LM0045	466535	7486650	110	112	142029	397	3.663	4.923	1.344
LM0045	466535	7486650	112	114	142030	233	3.015	2.889	0.958
LM0045	466535	7486650	114	116	142031	260	2.930	3.224	1.100
LM0045	466535	7486650	116	118	142032	119	1.933	1.476	0.763
LM0045	466535	7486650	118	120	142033	290	2.111	3.596	1.703
LM0045	466535	7486650	122	124	142035	110	0.816	1.364	1.672
LM0052	466892	7486565	112	114	142288	1200	11.807	14.880	1.260
LM0052	466892	7486565	114	116	142290	1220	11.116	15.128	1.361
LM0052	466892	7486565	116	118	142292	396	2.575	4.910	1.907
LM0052	466892	7486565	118	120	142293	189	2.039	2.344	1.149
LM0055	466805	7486600	112	114	142369	170	2.815	2.108	0.749
LM0057	466855	7486665	112	114	142430	312	5.079	3.869	0.762
LM0058	466900	7486575	112	114	142447	135	1.585	1.674	1.056
LM0060	463950	7489715	102	104	142512	795	6.641	9.858	1.484
LM0060	463950	7489715	104	106	142513	692	4.792	8.581	1.791
LM0060	463950	7489715	106	108	142514	277	2.206	3.435	1.557
LM0062	464285	7490005	106	108	142544	69	2.705	0.856	0.316
LM0064	464155	7489680	102	104	142614	170	2.308	2.108	0.913