



Samphire Field Recovery Trial Successfully Completed

Highlights

Alligator Energy has successfully completed the Samphire Field Recovery Trial, demonstrating uranium leaching, recovery, ion exchange and elution across two test wellfield patterns. The results strengthen the technical basis for the proposed ISR operation and support the ongoing Feasibility Study.

Pattern 1

- Produced outstanding results¹ that compare favourably to industry ISR benchmarks and align with or exceed the assumptions in Alligator's Scoping Study².
- The pattern is materially representative of the geological and hydrogeological conditions underpinning the Samphire Feasibility Study and provides a reasonable basis for planning and assessing the expected performance of future commercial wellfields.

Pattern 2

- Tested the medium/low-grade, low-flow extremities of the deposit where conditions are not representative of the main resource area to demonstrate the potential for commercial uranium recovery under more challenging conditions.
- Recovery consistent with behaviour in Pattern 1 showing ISR mining is feasible across all geological units within Blackbush including both high and low flow/grade areas.
- Ion exchange in the processing plant was highly efficient capturing approximately 100% of uranium recovered from the wellfield whilst sulphuric acid consumption remained within the highly favourable range of industry benchmarks similar to Pattern 1.

The FRT has successfully demonstrated ISR performance across two materially different geological and hydraulic settings, with consistent and predictable recovery behaviour and effective downstream uranium capture, providing a robust basis for forecasting future wellfield performance.

¹ AGE ASX Release 5 May 2026; Outstanding Results from First Well Test Pattern.
<https://alligatorenergy.com.au/announcements/7521138>

² AGE ASX Release 14 December 2023; Scoping Study Update-Samphire uranium Project. [ASX:AGE - Scoping Study Update - Samphire Uranium Project](#)

Alligator Energy Ltd (ASX: AGE, Alligator or the Company) is pleased to advise that the Samphire Field Recovery Trial has been completed with the successful leaching and resin ion exchange (capture) and elution (stripping) of uranium from both test patterns (Patterns 1 & 2).

Key takeaways include:

- Pattern 1 (previously reported in the Company's ASX Release on 5 May 2026¹) is representative of the geological and hydrogeological conditions expected across the areas of the Blackbush deposit targeted for future wellfield development.
- Pattern 1 achieved the ISR industry benchmark of 70% uranium recovery at around 70 Pore Volume Exchanges (PVE's), an average extraction grade of 115 mg/L U₃O₈ with a peak flow rate up to 5 L/s, confirming favourable grade, permeability and recovery relative to typical ISR operations.
- Pattern 2 test was applied to a non-representative (lower flow and grade) margin of the deposit to test the lower end of the operating envelope and provide data on how a future wellfield may perform under these conditions when economic to do so.
- Reagent consumption for both well patterns aligns with "highly favourable category" under international benchmarks indicating efficient leaching conditions and limited reagent losses.
- Minor gypsum precipitation observed during Pattern 1 operations was successfully managed in Pattern 2 through closer control of injection chemistry, confirming that the identified scaling mechanism can be addressed through conventional chemistry control and operating procedures.
- The successful performance of the resin and elution circuit for both patterns confirms that the integrated chloride mitigation strategy and downstream process ion exchange resin selection remain appropriate for future design development.

Next Steps

Results and learnings from FRT will be used to inform the Feasibility Study design criteria and the next stage of wellfield planning. Further laboratory work will focus on reagent optimisation and other process and management improvements.

Alligator's CEO and MD Andrea Marsland-Smith stated:

"We are very pleased to have reached another important technical and commercial milestone through the successful completion of the Field Recovery Trial. This achievement reflects the considerable expertise, commitment and collaborative effort of our technical and operational teams, who have successfully delivered a complex program and generated high-quality data to support the next stage of Samphire's development."

The trial has achieved exactly what it was designed to do which was to reduce uncertainty around wellfield design, production scheduling and process assumptions, improve our understanding of the conditions expected during production, and provide the information required to optimise and complete the engineering design for the Feasibility Study. I am particularly proud of the team's disciplined and technically rigorous approach, which has further strengthened our confidence in the Project."

DETAILED ANALYSIS OF RESULTS FROM SAMPHIRE FIELD RECOVERY TRIAL

Summary

The Samphire FRT comprised two well patterns, each comprising a central extractor well surrounded by 4 injector wells at 10m spacing to a depth of 75 metres. The location of each pattern was selected to test a range of conditions relevant to future commercial wellfield design:

- Pattern 1 tested the ore representative of those parts of the Blackbush deposit intended to be under leach in the Samphire Feasibility Study. It achieved approximately 70% uranium recovery at around 70 PVE's, an average pregnant liquor stream (PLS) grade from the extractor of 115 mg/L U_3O_8 and flow rates up to 5L/sec. Pattern 1 results were previously reported in the Company's ASX Release on 5 May 2026¹.
- Pattern 2 tested a medium/lower-grade, lower-permeability area at the margin of the Blackbush deposit and was designed to establish the response of the orebody under lower-flow and lower grade conditions if at some stage in the future, these areas become economic to mine. Pattern 2 was operated for 54 days and had completed 15 PVE when the test was concluded. At shutdown, cumulative uranium recovery was approximately 17%. The observed recovery curve tracked the expected trend and was consistent with the trajectory required to reach approximately 70% recovery by around 70 PVE's.

The decision to conclude the test was based on the technical objectives having been met and the recovery trend being sufficiently established for modelling purposes. On a cumulative recovery-per-PVE basis, Pattern 2 displayed a response consistent with the broader recovery behaviour established in Pattern 1. This supports the use of a common recovery modelling framework, with adjustments for local flow rate, mineralised thickness, grade and permeability.

A summary of the FRT objectives and outcomes is outlined in Table 1 below.

Table 1: Summary of FRT objectives and outcomes.

Primary objective	Status	Outcome
Demonstrate uranium mobilisation and recovery under field conditions	Achieved	Uranium was successfully leached and extracted from both patterns. Pattern 1 achieved 70% recovery over 70 PVE's. Pattern 2 established a recovery trajectory consistent with the target curve.
Test contrasting geological and hydraulic conditions	Achieved	Pattern 1 represented higher flow and grade conditions. Pattern 2 represented lower flow and grade conditions.
Confirm wellfield hydraulic control and operating stability	Achieved	Stable circulation, solution control and extraction were maintained in both patterns with no preferential flow or major downtime due to pump failures or other issues encountered.
Validate ion exchange and elution on actual FRT solutions	Achieved	High uranium capture efficiencies and successful elution were demonstrated for both patterns using the selected chloride-tolerant resin and reducing the chloride levels prior to extracting uranium from the wellfield.
Establish reagent consumption and chemistry management parameters	Achieved	Sulphuric acid consumption in the wellfield was approximately 20 kg per tonne of ore and gypsum was managed through controlled injection chemistry.

Primary objective	Status	Outcome
Generate data for the BFS	Achieved	Pattern 1 data will inform well spacing, recovery curves, mine scheduling, plant design and operating cost assumptions in the Samphire Feasibility Study.

Comparison of results against Updated Scoping Study (2023)

Table 2 below summarises the key operating parameters for Pattern 1 & 2 against AGE's updated Scoping Study released in December 2023³.

Table 2: Scoping Study assumptions and FRT actuals.

Metric	Updated Scoping Study (Dec 2023)	Pattern 1	Pattern 2	Interpretation
Test setting	Medium-Low grade/ Mod permeability	High grade / med-high permeability	Medium-lower-grade/ low permeability	Two materially different settings tested
Modelled mineralised interval grade	720ppm	~1,500 ppm U3O8	~750 ppm U3O8	Pattern 2 represents lower end of tested grade range
Extractor flow rate	3.0 L/s	Peak 5 L/s (operated on average at 2.8 L/sec)	0.43 L/s average	Pattern 1 flow rate peaked at 5L/s but was ramped back to 2.8L/sec due to size of small pilot plant. Pattern 2 constrained by local formation permeability.
Target leach pH	1.5	1.4	1.5	On target in both patterns
Average pregnant liquor stream (PLS) grade	110 mg/L U3O8	115 mg/L U3O8	42 mg/L U3O8	Pattern 2 consistent with lower modelled grade
Uranium recovery	70% at 30 PVE	~70% at ~70 PVE achieved. (Recovery peak reached at 25 PVE)	17% at 15 PVE at shutdown; trend supports ~70% at ~70 PVE	Field curves will refine feasibility study assumptions. Recovery results indicate the recovery curve could be compressed with further reagent optimisation.
Ion exchange uranium capture	95%	98%	100%	Selected resin performed effectively on both pregnant liquor solution from both patterns.
Sulphuric acid consumption	20 kg/t ore	~20 kg/t ore	~20 kg/t ore	Highly favourable benchmark range

³ AGE ASX announcement 14 December 2023; Scoping Study Update-Samphire Uranium Project. [ASX:AGE - Scoping Study Update - Samphire Uranium Project](#)

Ion Exchange and Elution

The chloride-tolerant ion exchange (IX) resin selected for the FRT continued to perform strongly during recovery of both patterns. For acid ISR uranium operations, a typical ion-exchange uranium capture efficiency is approximately 95–99%, with 97–98% being a reasonable design benchmark.

Approximately 100% of the uranium presented to the resin ion exchange circuit was captured in Pattern 2, compared with 98% adsorption efficiency in Pattern 1. Loaded resin was successfully eluted (stripped) from Pattern 2 using a standard reagent system, confirming that uranium recovered from the lower-grade PLS of Pattern 2 solution could be transferred through the same downstream process route. The comparable IX and elution performance across both patterns supports a common process design basis for the Samphire Feasibility Study meaning there is no requirement to change plant or process design to allow future mining of lower grade/flow areas should market conditions support this in the future.

Reagent Consumption and Chemistry Management

Sulphuric acid consumption for Pattern 2 was approximately 20 kg per tonne of ore, consistent with Pattern 1 and within the "highly favourable" category used in international acid ISR benchmarking⁴ indicating that lower permeability and lower PLS grade does not result in a material increase in acid consumption.

Groundwater chemistry, chloride management and calcium-related scaling were managed throughout the trial. The successful performance of the resin and elution circuit confirms that the integrated chloride mitigation strategy and downstream process selection remain appropriate for further design development.

Next Steps

The Company will complete the detailed reconciliation of all testwork undertaken, which will then be used for inputs into the Samphire Feasibility Study targeting completion mid-2027. Further laboratory optimisation will focus on elution reagent efficiency incorporating the FRT learnings into future well construction, commissioning and chemistry management procedures.

This announcement was authorised for release by the Board of Alligator Energy Ltd.

Engage with this announcement at the Alligator Energy [InvestorHub](#).

⁴ IAEA-Tecdoc-1239, *Manual of acid in-situ leach uranium mining technology*, 2001

Contacts

For more information, please contact:

Dr Andrea Marsland-Smith
CEO & MD

Mr Blayney Morgan
Interim CFO

Jeffrey Sterlson

General Manager - Government Relations, Communications and Public Affairs

js@alligatorenergy.com.au

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About Alligator Energy

Alligator Energy is a uranium project development and exploration company with projects that have clear pathways for approval and development. The Alligator Energy Directors and Leadership Team have significant uranium experience including uranium ISR operations at Beverley and Four Mile (Heathgate Resources), achieving approval of WA's first uranium mine at the Wiluna Uranium Project (Toro Energy), and senior management roles with WMC Olympic Dam and ERA Ranger Mine.

Projects

