New Acland Mine Site

Grazing Trials

Tom Newsome
Outcross Resources offers four services

- Risk Assessment, mitigation and benchmarking of your land
- Development, design and implementation of formal R&D trials for grazing, cropping, forestry or native vegetation on rehabilitated overburden mining land (excluding tailings facilities)
- Management of end to end compliance and reporting for agricultural rehabilitation activities stemming from R&D trials
- Management of stock, crops and vegetation on rehabilitated overburden mined land
Grazing Trial Overview

**AIM OF TRIALS**
Measure Productivity, Viability and Sustainability

**FOCUS AREAS**
Soils, Pastures and Livestock

**OUTCOME**
Promoting commercial agricultural and environmental outcomes following mining activities
Land Management Case Study – New Hope Acland

Rehab Paddocks

Active Mine Site

Control Site
Soils Methodology

18 soil pits were used to benchmark the control and rehab sites.

We validated that the control site was representative of the overall area.
Control Validation

The control site was validated to be representative of the surrounding land types.
Pasture Methodology

Pasture production, quality and subsequent stocking rate was determined by regular pasture cuts prior to each grazing event, using the botanal process.

Annual pasted production was calculated using exclosures based on the switsynd technique.
Livestock Methodology

Angus steers were purchased
  • Held for 12 months to emulate a backgrounding enterprise
  • Grazed on the trial sites 4 times per year for approx 42 days
  • Grazed once in each season
  • Also tested
    • Grain finishing
    • Grass finishing over two years
    • Breeding
Results
Rehabilitated sites outperformed the unmined control site.
Rehabilitated sites outperformed the unmined control site
Total Beef Production

Measuring a combination of weight gain and stocking rate
Rehabilitated sites outperformed the unmined control site
Meat Quality

Carcasses were graded under the MSA GRADING system to determine eating quality.
Potential Contaminants

36 liver samples tested for potential contaminants including: Copper, lead, arsenic, mercury, zinc, cadmium

Of 216 samples, 4 were slightly outside the expected range for copper. Remaining 212 samples were in range
Pasture Production

Rehab site 2 was most productive when measured by:
• Presentation yield through Botanal technique; and
• Annual pasture yield through contained swiftsynd site
Pasture Production

Underlying measures of fertility supported weight gain results
Soil Fertility

Mineral N, PMN, Phosphorus, Potassium, Sulfur
Soil development

We observed root penetration into the interburden and a darkening of the soil horizon
Noise & Dust Monitoring

No significant difference in grazing patterns
Noise & Dust Monitoring

No significant difference in grazing patterns

https://www.youtube.com/watch?v=2e_Od3IvMt8
Noise & Dust Monitoring

No significant difference in weight gain
Noise & Dust Monitoring

No identifiable change in behaviour following blast events
Modelling future performance with GRASP

**FIG 1.** Initial estimates from GRASP simulations of mean annual (2014-17) pasture growth and cattle live weight gain for the three rehab paddocks, control paddock and 8 benchmark (BMK) sites.
Summary

This is the most detailed study of its kind to date in Australia

We have successfully managed it for >7 yrs

We have developed a process aligned with regulator requirements

We have a repeatable service to offer other prospective clients