



MINING REHABILITATION

*RETURNING LAND TO THE APPROPRIATE POST-MINING LAND USE
SUSTAINABLE HYDRO MULCHING SOLUTIONS*

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COMMON CHALLENGES WITH INEFFECTIVE MINE REHABILITATION:

- ***EROSION***
- ***SEDIMENT MOVEMENT***
- ***DUST***

SOIL EROSION & SEDIMENT MOVEMENT

- Exposed soils without vegetation struggle to absorb water, leaving large areas of soil open increases the risk of wind and rain erosion.
- Getting a grass cover on these soils dramatically reduces this risk by up to 99%
- Vegetated surface vs unvegetated surface water absorption.
- Approx 45 seconds to empty 450ml cup of water on vegetated surface.



DUST: *the silent killer*

- Employee Health in the Work Environment
- 10 people die every day from work related health conditions
- Local Resident Health affects Community Relationships



\$ OPERATIONAL DOWNTIME - THE REAL COST TO YOU

- **Environmental Remediation Costs:**

- Restoring eroded landscapes and waterways, mucking out ponds.
- Implementing measures to prevent further erosion and environmental damage.

- **Operational Delays & REWORK:**

- Halted or slowed mining activities due to erosion-related problems.
- Reworking & prepping areas twice if the failure the first time.

- **Regulatory Fines and Penalties:**

- Non-compliance with erosion control regulations.
- Violations leading to fines and legal consequences.

MACHINES FIXING ENVIRONMENTAL ISSUES:

= LESS COAL MOVED

= LESS PROFIT ON THE BOTTOM LINE

CASE STUDY: *Instant Green value proposition*



Location: Maramarua Coal mine



Client: Bathurst Resources



Secondary land use: Grazing pasture for livestock



Project scope: 3 Hectares





COMPARISON

TRADITIONAL MINE CLOSURE PLAN:



Spread Topsoil 300ml thick over the 3ha and Hydroseed



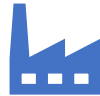
Cost of spreading topsoil, preparing surface + hydroseeding, estimated to bring total cost to around:



Insufficient topsoil onsite at the time. 9000m3 topsoil to be trucked in.



\$265,000 using original mine closure plan.



Cost of \$180k to import topsoil alone.

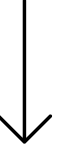


\$8.80/m2

INSTANT GREEN'S APPROACH:

- ✓ Site visit, soil temperatures taken
- ✓ Recommendation
- ✓ Soil Blanket applied at 2500kg/ha
- ✓ Organic matter
- ✓ Mycorrhizal Fungi
- ✓ Soil Microbes.
- ✓ Hydro Mulch applied at 2000 kg/ha.
- ✓ Erosion Control Seed Blend
- ✓ Total Cost all inclusive: \$112k
- ✓ **\$3.75/m2**

\$153,000 saving, plus machinery could be processing coal rather than spreading topsoil.



IMPORTANCE OF MYCORRHIZAE FUNGI

- **Stronger, deeper root systems:** Mycorrhizal fungi penetrates deep into the soils, searching for nutrients. This creates a 'pathway' for the roots and means deeper rooted species long term = more stabilised surface.
- **No Need for ongoing Fertilizers:** These fungi break down nutrients in the soil, and build the organic layer over time. Once mycorrhizae fungi is working at full potential, there is no need for further fertilizing. The fungi creates its eco system where all aspects support each other through symbiotic relationships.
- **Healthy Variety:** Fungi supports all plant types, making ecosystems diverse and vibrant. Any seeds that are existing in the soil (e.g. natives) will benefit from the fungi as well.
- **Stop Soil Erosion:** Mycorrhizae improves the strength of the root structure of plants, improving the ability to hold onto soil, preventing erosion, sediment movement and washouts.
- **Improves the toughness of vegetation:** Mycorrhizae fungi improves plants toughness, making them more drought tolerant and resistant to disease.



6X6 & 8X8 TRUCKS ESTABLISHED TO SITE 26th May



Firing 70–100m from truck with cannon on top





14th June - USING JCB FAST-TRAC FOR STEEPER AREAS



**DRONE FOOTAGE
OF TRUCKS ON-SITE**





RESULTS/PROGRESS PHOTO: 07/07/2023





Soil Blanket with
Mycorrhizae Fungi Case
study – Cut face on CHB
roading project

Before: a freshly cut batter with no topsoil,
clay/ash soils with little organic matter.



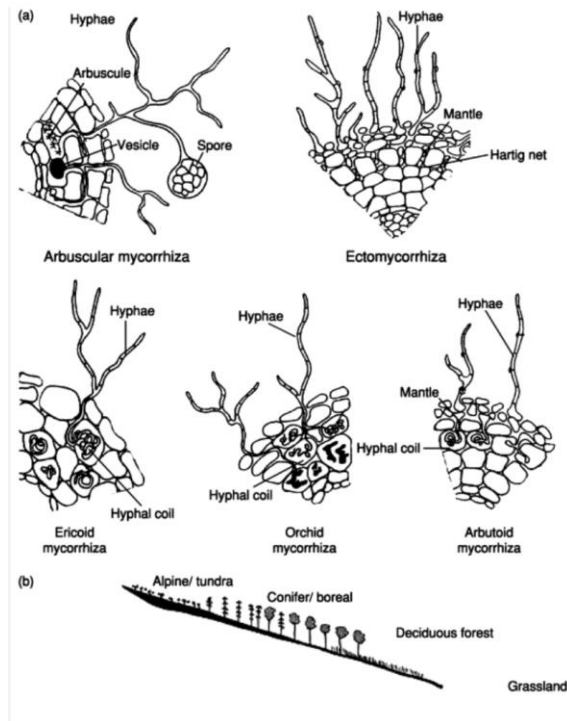
Application - August 15th 2022

- Instant Green Soil Blanket with Mycorrhizae Fungi.
- Followed by second application of Hydro Mulch with NZ wooden fibre mulch.
- Erosion control seed blend.



1 Year After – 15th August 2023

15th August 2023
Organic layer
Developing & soil
profile building,
Mycorrhizae Fungi in
action!



WHO ARE WE?



R E S P E C T

STAFF
PROPERTY & PLANT
EQUIPMENT
CUSTOMERS

MOVE WITH

P U R P O S E

PURPOSEFUL
WALK: ALWAYS
GOING
SOMEWHERE

RIGHT
DECISIONS

OPTIMISTIC
APPROACH

EVERY DAY
WE WILL BE
BETTER BY AT
LEAST 1%

H U M I L I T Y

UNASSUMING

LEARN
FROM OUR
MISTAKES

THE GUTS
TO ADMIT
I'M WRONG

P R O S P E R I T Y

PLANET
OUR
COMPANY
SHARED
SUCCESSSES
PEOPLE



**INSTANT
GREEN**



2007: LAND CRUISER + TRAILER COMPLETING SMALL PROJECTS





2020: DEVELOPED OUR OWN WOODEN FIBRE FOR HYDRO-MULCHING, PRODUCED HERE IN NZ!





INSTANT GREEN

New Zealand's
Biggest
Hydroseeder

ASTRA

PBE98

ROB WALKER SPR





2023

Waipawa River Hydro-Mulching

instantgreen.co.nz

NZ'S most CAPABLE HYDRO SEEDING FLEET



DUST CONTROL: *our solution*

DUST LOC

- For trafficked areas, haul roads, loading pads etc.
- Hydroscopic product which attracts moisture to the pavement.
- Binds tightly with the surface fines, making them too heavy to become airborne (like water, but water evaporates).
- Reworks itself when driven on.
- Lasts 3-6 months when applied at the start of summer.
- Designed for heavy traffic, dump trucks, truck n trailers.



DUST CONTROL: *our solution*

SITE LOC

- For un-trafficked areas.
- Ideal for Stock piles, ground, sand, minerals, tailings.
- Binds together tightly with the surface particles.
- Creates a weatherproof, permeable crust with the surface.
- Locks in the dust and removes needs for water carts, sprinklers etc.
- Lasts between 3 months and 2 years, depending on project requirements.



Q&A
THANK YOU FOR YOUR TIME!





Waipawa River Hydro-Mulching

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