



Coal & Allied's Recent Efforts to Restore Central Hunter Ironbark Communities

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Environmental Specialist - Rehabilitation



Diverse Understorey in Ironbark/Box Woodlands





Previous native vegetation rehab





Early trials – diverse understorey seed mixes





Early trials – diverse understorey seed mixes





Germination Results - Good





Establishment Results - Variable





Establishment Results - Variable





Establishment Results - Variable





Establishment Results - Variable

Hydromulch
carrier trial area
(wood pulp,
paper added to
tank)





Establishment Results - Variable





Establishment Results - Variable





Main Issue

Weed competition with native understorey species

* Need to consider whether to fertilise or not to fertilise

Rehabilitation Focus

Development of rehabilitation methods, for both native vegetation and agricultural outcomes, that are able to consistently produce quality rehabilitation (independent of good quality topsoils).

Two Methods Trialled

1. Clean-up topsoil
2. Avoid topsoil, use spoil/subsoil



Method 1: Clean-up Topsoil – Topsoil Improvements





Clean-up Topsoil – Compost Incorporation & Rock Sweeping





Clean-up Topsoil – Cover crop for weed control and surface stabilisation



Seed broadcast
into aerator
pattern – single
pass



Seed drilled -
able to
germinate on
moisture in
profile



Clean-up Topsoil – Cover crop for weed control and surface stabilisation





Clean-up Topsoil – crop rolling





Clean-up Topsoil – direct drill seeding





Clean-up Topsoil – interim result





Clean-up Topsoil – interim result

Lone Eucalyptus *crebra*
seedling



Calotis cuneata



Calotis lappulacea





Clean-up Topsoil – interim result





Clean-up Topsoil – follow-up trials

- Native grass pasture as first or second cover crop
- Burn or smoke/water trial to expose surface and/or stimulate germination of natives
- Crimping roller to take out cover crop prior to seeding
- Non-competitive bulking seed
- Early Grazon application





Method 2: Spoil/compost – growth medium improvements





Spoil/compost – results





Spoil/compost – results





Spoil/compost – results





Spoil/compost – results





Spoil/compost – results



Hakea sericea



Ozothamnus diosmifolius



Spoil/compost – nodulation investigation

Acacia filicifolia



No nodules observed,
poor-looking plant



Reasonable soil
structure





Spoil/compost – nodulation investigation

Acacia
filicifolia

Significant
nodulation
present,
healthy-looking
plant





Spoil/compost – nodulation investigation

Acacia filicifolia

Significant nodulation present, healthy-looking plant.





Spoil/compost – nodulation investigation

Small *Acacia filicifolia*
growing near larger *Acacia falcata*



Acacia falcata with no
nodules



Acacia filicifolia roots with
many branching nodules



Spoil/compost – nodulation investigation

Acacia falcata

No nodules observed,
poor-looking plant





Spoil/compost – nodulation investigation



Acacia longifolia



Seasonal rhizobium effect?

Some small live nodules, larger nodules appeared dead (dry when squashed)





Spoil/compost – nodulation investigation

Acacia salicina

Healthy-looking plant,
well-developed taproot,
nodules present





Spoil/compost – nodulation investigation

Acacia salicina



Nodules present



Spoil/compost – nodulation investigation

Hardenbergia violacea

No nodules observed,
healthy-looking plant





Spoil/compost – nodulation investigation

Hardenbergia
violacea

Significant nodulation
present, nodules located
very close to stem,
healthy-looking plant





Spoil/compost – nodulation investigation

Swainsona galegifolia

No nodules observed, plant healthy





Spoil/compost – nodulation investigation

Indigofera australis



No nodules observed,
healthy- looking plant





Spoil/compost – nodulation investigation

Allocasuarina litoralis

No nodules observed,
fibrous root section? →





Native Grass Seed Processing Equipment





Native Grass Seed Processing Equipment

