

EXECUTIVE SUMMARY

FOTE YORK PROJECT 2009

From degradation to Vegetation – A land and bush Rehabilitation

OVERVIEW

FOTE (Friends of the Environment) Members Jan and Dennis have shared a lifelong interest in interacting with the natural environment and upon their retirement decided to do something practical about it.

They wanted to create a challenging common interest project, which would allow them to work together as a couple for the remainder of their active lives. Their dream was to produce a visible, positive and lasting result that would help protect and preserve the natural environment for now and future generations.

To put this vision into practical effect they needed to find a suitable property requiring rehabilitation.

Consequently, back in 1998, they acquired a suitable 50 Ha property in the wheat belt, which had all of the requirements to fulfill their vision. It is located in a basin, on high ground, near the western rim of the Avon Valley and adjoins a 50 Ha powderbark wandoo (*eucalyptus accedens*) woodland reserve – and will provide a rare wildlife habitat complex in an otherwise mainly cleared agricultural region.

This site is the only secure remnant forest in the area but has suffered from clearing then abandonment.

The selected land forms the main set of collector tributaries for the Boyanning Creek Catchment that feeds the Talbot Brook, then Dale and Avon Rivers, hence the Swan River. It collects surface and subsoil water from approximately 10 square km of catchment area and is an important source of fresh water in the region.

However this site is one of a small set that forms the saltiest land in the region. Records show the land has been salt affected for a very long time. It is reasonable to assume the surface salt is created by clearing of trees along ridges surrounding the catchment, followed by adjoining commercial agricultural operations.

This site was originally a quality *eucalyptus wandoo* woodland forest, prior to it being forested then cleared for agriculture and grazing more than one hundred years ago. Cessation of clearing may be attributed to the 1880's Gold Rush, and World Wars I and II, when the lowly paid woodcutters found other more interesting things to do.

Fortunately, during the period since, the forest has partially re-vegetated naturally for about half of the total area. However, during the past ten years of drought, minimal forest re-vegetation has occurred.

Notwithstanding the natural regeneration of *eucalyptus wandoo* depends upon fire, fire restrictions and risk liabilities associated with surrounding agricultural crops have meant that no fire has been practically permissible on the site for at least 60 years, thereby eliminating normal natural regeneration through fire. Indemnities applicable to state owned reserves are not available to this privately owned site. Consequently this situation will continue into the future, necessitating human intervention in the propagation process.

Since about 1995, when agriculture and stock grazing ceased on the land, under-story is slowly spreading through natural provenance propagation extension in the established woodland areas, however no significant natural regeneration has occurred in that portion of the site cleared for agriculture, resulting in extensive soil erosion.

It is visibly obvious that re-vegetation will improve catchment and creek freshwater quality by increasing natural vegetative filtering and reducing sediment from erosion.

So the first step was to fix it - with the ultimate goal of creating a quality forest and native wildlife habitat.

The existing remnant forest displays a significant population of large wandoo (*e.wandoo*) and powderbark wandoo (*e. accedens*) trees, indicating estimated ages ranging from quite young to about 400 years. In the main however, the majority of large trees are defective due to selective woodcutting operations that took only the tallest, straightest and fattest trees. This aspect may be witnessed also in National Parks and State Wandoo Conservation Reserves as a record of past forestry policies and practices.

Nonetheless, some magnificent examples of *e. wandoo* remain on the site and act as quality genetic local sources for future regional propagation. This project will add to the quality of stock of trees and under-story vegetation.

The property exhibits a range of soils - primarily a mix of red gravel and duplex sand over clays. Overall the soils are degraded from past over-farming practices and, as a direct result, are quite depleted of nutrients and in some areas the topsoil itself.

Forest exists and depends upon land. It follows that healthy land is essential for healthy forest. Thus the first priority is to restore the health of the land.

The main problems restricting success are high levels of surface and subsoil salinity, water runoff from adjoining upstream agricultural properties, low seasonal rainfall, periodic flooding, recharge surface water, damage by fauna, and wind and rain soil erosion. There is also a likelihood of phosphorous based fertiliser, pesticide and herbicide residues leached from upstream agriculture.

The site also suffers from flash-flooding from major rain events.

There is an established body of scientific knowledge relating to salinity and WA Dept. of Agriculture and food **FarmNote No.'s 39/2001 and 76/2001** aptly describe causes and solutions applicable to this site.

http://www.agric.wa.gov.au/content/lwe/salin/salinity_intro.htm

<http://www.agric.wa.gov.au/content/lwe/salin/sman/f03901.pdf>

<http://www.agric.wa.gov.au/content/lwe/salin/sman/f07601.pdf>

http://www.agric.wa.gov.au/content/lwe/water/eng/fn052_2003.pdf

A current challenge to old forest is the manifestation of "Wandoo Crown Decline". Fortunately new plantings are not affected. Please see:

<http://www.dec.wa.gov.au/forests/conserving-our-wandoo/index.html>

<http://www.dec.wa.gov.au/forests/conserving-our-wandoo/wandoo-crown-decline.html>

<http://www.dec.wa.gov.au/forests/conserving-our-wandoo/research/current-research.html>

A further critical risk also exists with *dieback* spread from uncontrolled movement of electric powerline inspection and maintenance crew vehicles.

Over the last 10 years, Jan and Dennis have successfully planted out about 40,000 native trees and shrubs using natural planting methods to replicate nature. Their objective is to create strong trees that have the capacity to shelter and protect, retain soils, lower the water table and provide the seeds for future generations of trees.

They have also installed physical barriers such as logs, leaf litter and mulch, to inhibit and control surface

water flow.

This has been a trial and error process to find what works and what does not. Advice from professionals and scientists has been followed, then modified or improved upon, as experience progressively developed.

Nature, with the right stimulus, has been a good teacher, continuously reinforcing the principle that the 'Will of Nature' will prevail over man - no matter how well intentioned.

It can be demonstrated this site is a microcosm of larger interactive bio-diverse systems, offering a unique and convenient opportunity to study them in one privately owned secure location.

The successes so far demonstrate that progress can be made against seemingly insurmountable obstacles.

FOTE's ROLE

It is FOTE's intention to work in with and support Dennis & Jan with future plans in regards the rehabilitation to this land, offering it forward as a working model of land rehabilitation. We hope that others can build upon and emulate it's success and be aware of the failures in the future.

This process will evolve by Dennis being Convener/Facilitator of the project, due to his personal experiences and interest in taking it to the next level. He is concerned about vehicular traffic further compacting and destroying the top soil, which is very fragile, and so access will need to be coordinated through him. It will be Dennis' role to report back to the FOTE Board and keep us updated.

Dennis is very keen to involve 'Scientific Study and Research' that will build upon the previously established body of knowledge, such as the Dept of Agriculture's Farm Note series of publications. This project offers opportunity for University PhD students being involved, to further their studies and create a future resource.

FOTE is in the process of seeking funding to help support this project, for purchasing seedlings which will be used to help rehabilitate the land mass, and to provide a volunteer work force team. This will assist us to cover a greater area in a shorter period of time.

Further assistance for vital engineering solutions to drainage problems and erosion, may be developed from scientific research, assessments and evaluations.

In the longer term it would create a more exemplary model, leaving behind a legacy for the future, which would lead to greater health of our waterways in the future.

Further to this, the compost resulting from the from the build up of organic matter will help to build soil structure, water retention, etc, over a longer period, further aiding plants as well a slow release of the water into the creek line. The accumulation of the bio-mass will also encourage and attract fauna and flora to return over time.

Other options for surface water and erosion control include:

1. Installation of physical barriers using on-site logs and leaf litter
2. Installation of physical barriers using imported building rubble.
3. Installation of physical barriers using imported rocks from surrounding farms and road verges
4. Installation of open drains to channel water to existing formal creeks
5. Spreading of mulch and leaf litter to hold the soil

6. Construction of water holes progressively along creek lines to slow water flow
7. Construction of riffles in creeks to slow water flow
8. Planting grasses on salt-scalds and eroded areas
9. Ploughing in vegetative matter/compost to revitalize the soil
10. Ploughing in treated sewage to revitalize the soil

This is an ongoing project that is expected to continue for many, many years.