



# Bushland Regeneration Works

**PART LOT 6 DP 3944 39 Dell Rd, West Gosford**



TEC Job Number: J5179 - Version 2  
Submission Date: 14<sup>th</sup> October 2020

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Prepared for:	Conacher Consulting
Submission Date:	14 <sup>th</sup> October, 2020



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**Bushland Regeneration Works at  
PART LOT 6 DP 3944 39 Dell Rd, West Gosford.**

Dear Phil,

Please find Total Earth Care's (TEC) quote response for bush regeneration works as outlined from Vegetation Management Plan (VMP) completed, by Conacher Consulting in August 2020.

Total Earth Care is able to deliver all of the works to the highest professional standard and is committed in accomplishing the best ecological outcomes for site.

TEC prides itself as a leader in the Bush Regeneration industry. We employ a professional team of experienced regenerators, supported by an equally professional support team of administrators. Bush regeneration has been the major focus of our business since incorporation in 1991. Since when we have grown to include supporting divisions encompassing Environmental Consultation and Environmental Rehabilitation & Construction. A full company profile can be viewed at <https://www.totalearthcare.com.au>

TEC would enjoy the challenges and opportunities associated with having the responsibility for this project. Please feel free to contact us with any queries which may arise during assessment of our application.

Yours sincerely,

Aaron Mason

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Ph: 0413 627 581

Project Manager | Bushland Regeneration Division

*Total Earth Care Pty Ltd*



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## Bush Regeneration Works

### Priority of Works

This project will be worked over a 5 year period.

Establishing the priority of works by Zones required the following site parameters to be considered in order of importance.

- Protection of Threatened flora and fauna species listed on the Threatened Species Conservation Act 1995.
- Protection of Endangered Ecological Communities listed on the Threatened Species Conservation Act 1995.
- Regeneration of High resilient bushland.
- Regeneration of moderate resilient bushland.
- Regeneration of low resilient bushland.
- Weed eradication in contiguous non-bushland areas.
- Weed eradication in non-contiguous non-bushland areas.
- The eradication of noxious weeds.
- The eradication of highly invasive weeds.
- The eradication of non-invasive weeds.

*N:B Resilience has been established by rapid assessment of soil condition, vegetation strata present, hydrology and current weed density.*

Other factors which have been used to prioritise the area and type of work to be completed included:

- The sustainability of the regeneration effort:

For example

- The location of the bushland /weed infestation in relationship to the topography. ie higher ground has greater sustainability.
  - Proximity to weed infestations on adjacent lands. Weeding adjacent to large weed infestations on neighbouring /unmanaged land was not considered sustainable.
  - The type of weeding eg hand weeding of grass species had a low sustainability compared with woody weed eradication.
  - The longevity of the weed propagule in field conditions ie privet (approximately 5 years) compared with grass weed species (decades).
  - The eradication of weeds that are on the verge of becoming intractable. Minor weed infestations in otherwise good bush.
- The net benefit of the regeneration action:

For example

- Leaving a dense habitat thicket for passerines until the nesting season has finished rather than removing it when it is cost effective to do so.
- Revegetating open ground between two remnant bushland islands rather than creating an island remnant that is distant from a larger area of bushland
- Skirting vine weeds around the base of a mature tree has greater benefit than hand weeding grass species from within a patch of native grasses.



- Planting a tree in a senescing copse of Wattles (that is providing canopy for native grasses below) is of greater benefit than planting a tree in the middle of a turfed paddock.
- Planting adjacent to a pathway provides greater visual amenity compared with planting away from publicly accessible areas.

### Establishing resilience

**High resilience** - Remnant that has species present above or below ground (seed/propagule bank) that represent two or more species in all strata of that community as described by the scientific committee.

**Moderate resilience** - Remnant that has species present above or below ground (seed/propagule bank) that represent one species of all strata of that community as described by the scientific committee.

**Low resilience** - Remnant that has species present above or below ground (seed/propagule bank) that represent one species in at least 50% of all strata of that community as described by the scientific committee.

N:B The sites in this instance have been assessed rapidly, as observed during the site inspection. Resilience assessments are refined as works proceed on site.

### Sustainability

The sustainability of the weeding effort is partially dependent upon the resilience and "weed freeness" of the bushland and also on the source of the weed species. The suggested regeneration program aims to regenerate "good" resilient bushland, avoid intractable weed species that do not threaten mature bushland, focus on weeds that are capable of killing mature bushland and which can feasibly be controlled.

It also aims to eradicate infestations of weeds that are the source of significant seeds that reinfest the bushland. Once controlled major weed infestations is convenient to eradicate completely, that would otherwise be spent removing new season weed seedlings, can be spent eradicating established weeds in the better quality bushland. The weeding program therefore focuses on the control of weedy and vine weed species that either threaten existing plantations or threaten future plantations and high quality bushland. In establishing native trees via seed it is also vitally important that grass weed species are also controlled long enough to allow tree species seedlings to grow tall enough to compete with grasses. In light of this, great effort will be made to eradicate weeds over a long enough period (years) to ensure that native seeds that are sown have the best chance of survival.



## Habitat Restoration

TEC recognises the potential environmental impacts that can arise during the course of a bush regeneration contract, including the potential risks to native fauna and their habitats. Accordingly our bush regeneration methods are designed to avoid or minimise these impacts, whilst taking opportunities to create or enhance new fauna habitats wherever possible. Excessive clearing of bushland will not be undertaken. The vegetation present on site will control what works are completed and how extensively. TEC understands that this site contains sensitive ecosystems/species and over clearing may detrimentally affect both flora and fauna species in the area and may cause erosion and sedimentation. Incremental weed removal is the best way for local fauna to successfully relocate to adjoining areas.

## Methodology Establishment Stage Year 1

### Primary Weed Control Works

Bush Regeneration works will focus in encouraging native regeneration and eliminate abundance of weed species on site, cease reproductive cycle, stop the site from looking messy.

Works will prioritise treatment and elimination of WONS and Environmental Weeds following problematic weeds that are prohibiting native regeneration

Technique used will be based on best bush regeneration techniques to which will increase results and reduce overall cost in the long run.

To reduce impact of bush regenerators on site, a regular path will be used to enter and leave each work area. This will minimise trampling and consequently reduce adverse environmental impact on flora and fauna species within the area.

This work will focus in mature seed bearing weeds, Noxious weeds, Dense infestations (these however may have staged removal in consideration of Fauna) and weed that are impeding native regeneration

The bush regeneration works will cover the entire site and treat all high priority weeds in this reserve and consolidating some of the areas with better conditions;





### **During this initial control the main purpose will be to treat:**

- The habitat changing weeds, those that impair ecological structure and function of the site.
- Focus on constricting and isolating broader weed plumes in Zones 1, 2 and 3
- Immediately target dominant weeds including Lantana, Giant Reed, Pampas Grass, Crofton Weed, Japanese Honeysuckle and Blackberry
- Noxious, environmental weeds and (WONS)
- Treat mature seed bearing weeds as priority
- Dense infestations (these however may have staged removal in consideration of the fauna.
- Weeds that are impeding native regeneration.
- Reduce the local weed seed source, create suitable for germination of native species.

Individual mature wood weeds will be hand treated via chisel/scrape and paint technique (Wipe Out Bio - Glyphosate 360g/l), exotic vines will be skirted and treated via scrape and paint technique.

Other annuals and garden escapes will be hand removed, for more details please to weed treatment techniques described below. All reproductive material will be hand removed and disposed accordingly to the nearest waste management facility centre.

### **Primary Bush Regeneration Works aims to:**

- Reduce the local weed and it's associated seed source
- Stimulate and flush of exotic weeds allowing rapid reduction in weed seedbank
- Helps to create conditions suitable for germination of native species
- Manage the bulk of above ground weed material, thereby also improving access.

TEC will incrementally treat bulk weed infestations and continually assess site resilience after each visit. Exotic reproductive material is to be controlled and/or disposed of. The bulk non reproductive debris will be piled in rafts to naturally decompose plus act as important habitat and shelter for local flora. All reproductive material will be disposed at the nearest waste management facility.

### **Control of exotic & non-indigenous trees**

Removal of exotic and non-indigenous trees have been costed in this report. Numerous Coral Trees, Camphor Laurel TEC will be treated according to industry approved methods. Associated costs for these services are included in this report. The use of a professional arborist may be required pending on site access and client preferences.





## Year 2

### Secondary Weeding

Work will focus on consolidating all works previously completed, follow up weeding by targeting weed regrowth, new seedlings, increasing target species, isolating weed plumes and monitoring and preservation of regenerating native species.

Secondary works aim to:

- Considerably slow weed re-growth
- Facilitate natural regeneration with increase manual weed treatment
- Use less herbicides
- Flush of annual exotic weeds after mature plant removal
- Next stage of removal of dense infestations where fauna is a consideration





## Year 3-5 Maintenance Works

### Maintenance Weeding

This stage work will be focused in targeting natural regeneration, revegetation (plantings) growth, weed regrowth, new seedlings, increasing target species, maintenance of planting areas, monitoring and care of regenerating native species.

Maintenance works aim to:

- Keep weed percentages low
- Continue to facilitate natural regeneration by more manual based approach to weed removal
- Effective Treatment of weed re-growth
- Target weed species prior to seed establishment
- Monitoring and care of regenerating native species
- Ensure that weeds are removed when young, most cost effective and less time spent on site
- Reducing weed management issues through time
- Continue to allow increasing the biodiversity

All of the reproductive material throughout the length of this contract will be carefully bagged and taken to the nearest waste management facility centre.

Reproductive material will be bagged and removed off site. All Dead and fallen plant material to be left in place where possible only dead and fallen plant material to be moved if necessary to location within site where visual amenity is not compromised and habitat values are maintained or enhanced.

### Photographic monitoring

Numerous photo monitoring points will be established, upon commencement of revegetation works. Some photographs from the site inspection have been included in this report.

Photo points will be clearly marked by flagging tape and marked by GPS to record the position. Photo will be taken from set monitoring points, with bearing noted to record the direction of the photo. The point and photo will be located such that the photo shows a good general overview of the revegetation work. Photo points will be used during the entire project to highlight changes over time, effectiveness of works and the ecological improvement of the subject site.





## Reporting

TEC will provide monthly reports during Years 1 and 2 where the majority of works will be completed. Annual reporting for Years 3-5 is recommended as per BMP (Conacher 2020). An allowance for the preparation of these reports is included in the pricing schedule.

The report will include:

- works carried out, weed species targeted and their location
- a summary of how the site-specific objectives have been met
- Photographic monitoring which will be carried out each site visit
- site recommendations, issues
- any observations, such as the occurrence of new weed species
- rates of regeneration or other issues (e.g. records of threatened species)
- a description of any problems encountered and how they were overcome
- herbicide and other chemicals used, including quantity, dilution rate and other relevant information
- other weed control mechanisms (e.g. mechanical control) used during the period
- climatic conditions which influenced weed germination
- performance criteria and success
- if required, maps of weed distribution and density

The basis for the fulfilment of the reporting requirement under this contract is the use of our Daily Site Reports (DSR's) records.





# Costings



# Quote

Date: 14/10/2020  
 Invoice #:  
 Expiration Date: 90 Days  
 ABN: 14 043 484 770  
 IMS Ref #: J5179

**Bushland Regeneration Works 2020-2025**

**PART LOT 6 DP 3944**  
**39 DELL ROAD, WEST GOSFORD**

#	Description	Cost ex GST \$
<b>Revised BMP Implementation: Bushland Regeneration Works 2020-2025</b>		
<b>1 Year 1 - 2020/21</b>		
1.1	WH&S, Inductions, Administration & Documentation	\$750.00
1.2	Bush Regeneration: Primary Works Zones 1-3	\$58,000.00
1.3	Exotic Tree Works	\$4,500.00
1.4	Monitoring & Reporting	\$2,800.00
1.5	Waste removal and disposal	\$1,800.00
<b>2 Year 2 - 2021/22</b>		
2.1	WH&S, Inductions, Administration & Documentation	\$500.00
2.2	Bush Regeneration: Secondary Works Zones 1-3	\$42,000.00
2.3	Monitoring & Annual Reporting	\$2,000.00
2.4	Waste removal and disposal	\$400.00
<b>3 Year 3 - 2022/23</b>		
3.1	WH&S, Inductions, Administration & Documentation	\$400.00
3.2	Bush Regeneration: Secondary Works Zones 1-3	\$25,000.00
3.3	Monitoring & Reporting	\$1,400.00
3.4	Waste removal and disposal	\$300.00
<b>4 Year 4 - 2023/24</b>		
4.1	WH&S, Inductions, Administration & Documentation	\$300.00
4.2	Bush Regeneration: Maintenance Works Zones 1-3	\$18,000.00
4.3	Monitoring & Reporting	\$1,400.00
4.4	Waste removal and disposal	\$250.00
<b>5 Year 5 - 2024/25</b>		
4.1	WH&S, Inductions, Administration & Documentation	\$200.00
4.2	Bush Regeneration: Maintenance Works Zones 1-3	\$14,000.00
4.3	Monitoring & Reporting	\$1,400.00
4.4	Waste removal and disposal	\$250.00
Total Quote (ex GST)		<b>\$175,650.00</b>
GST		<b>\$17,565.00</b>
Total Quote (inc GST)		<b>\$193,215.00</b>



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# Map – Location Site

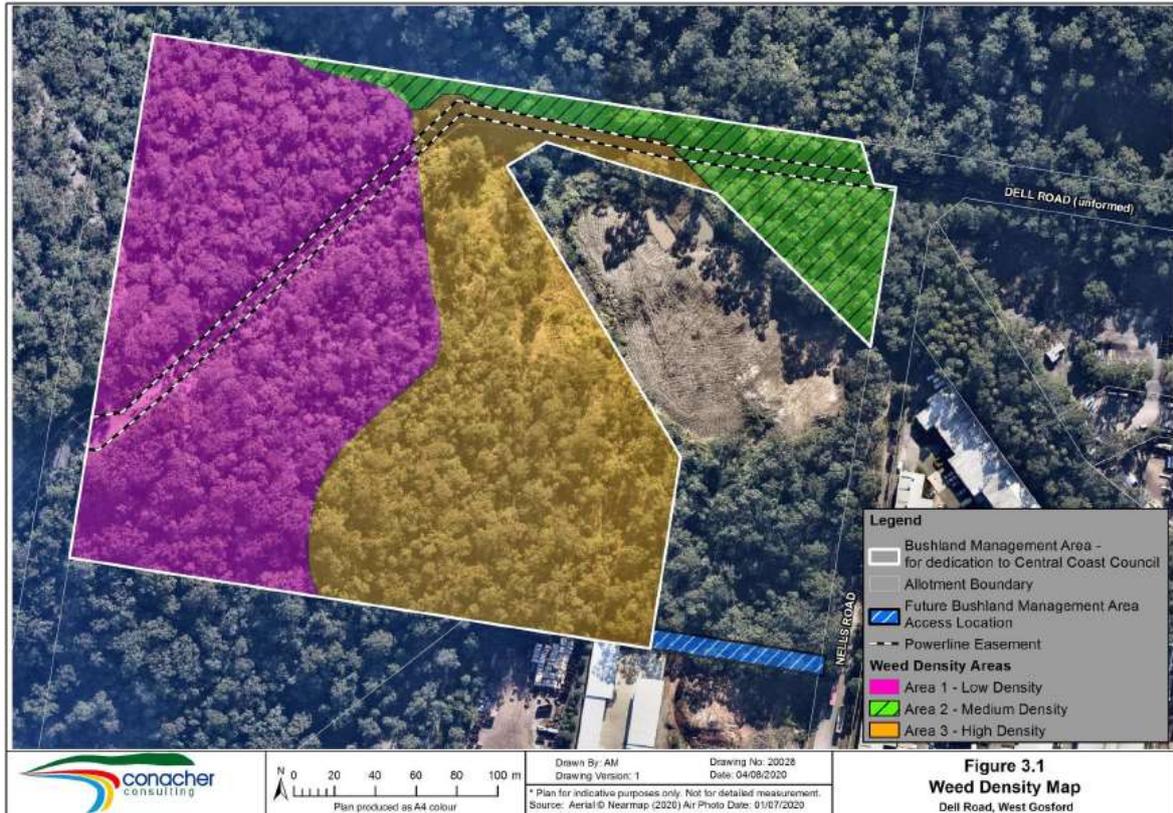


Figure 2: BMP Revegetation Area (Conacher: 2020)







## Herbicide Use

The application of herbicides associated with the carrying out of bush regeneration activities must be carried out in accordance with council requirements.

All staff using herbicide should read the MSDS and label for the herbicide prior to use. Herbicide applicators should hold a Chemcert Certification or equivalent and ensure compliance with the *Occupational Health and Safety Act 2000*, *Pesticides Act 1999*, *Protection of the Environment Operations Act 1997* and other relevant legislation.

“While herbicides are valuable aids in weed management, they will destroy native vegetation if used indiscriminately. To avoid outcomes counter-productive for regeneration:

- Only choose a herbicide on the basis of a clear understanding of:
- The purpose behind the use of the herbicide.
- The effectiveness of the herbicide on the targeted species.
- The correct concentration of herbicide identified for the weed species.
- The possible deleterious effect on any off target native species, including fauna, amphibians, insects etc.
- Use herbicides strictly in accordance with the manufacturers’ labelling and ensure that any permits, orders or other ‘off-label’ use requirements are obtained and complied with.
- Where direct injection, or cut/scrape and paint methods using concentrated solutions of non-selective herbicides is being carried out in herbaceous native areas, exercise great care so that applicators or other equipment do not inadvertently drip onto or touch native plants.
- Control by herbicide should follow prior assessment to ensure no endangered or vulnerable species are on site. Work should be limited to cautious, targeted spot spraying only, carried out by experienced operators with a good knowledge of native ground storey flora (i.e. no broad-scale spraying of these herbicides).
- Avoid spraying to such an extent that it leaves soils bare and easily susceptible to erosion, and/or open to hardening or ‘baking’ which will make natural regeneration difficult.
- Time the application of herbicides so that maximum effectiveness is achieved.

Application should be in accordance with:

- The identified peak period of susceptibility for the weed concerned.
- The limitations posed by climatic conditions, eg hot, dry weather, slows herbicide translocation; wet weather may wash it off or render it ineffective.
- The seeding times of native grasses as an additional precaution to minimise the potential for loss of native species (in cases where there is no suitable selective herbicide).”

(Adapted from DIPNR 2003)



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## Phytophthora Hygiene Protocols

Often death is also associated with factors such as drought periods, altered hydrology, insect attack, microclimatic changes from weed invasion and altered fire regimes. Spores are soil borne and therefore can easily be transported in soil material on boots, vehicles, tools and in nursery plant material.

Dieback caused by Phytophthora is listed as a 'Key Threatening Process' under the NSW Threatened Species Conservation Act 1995 and the Commonwealth's Environment Protection and Biodiversity Conservation Act 1999

The Sydney Botanic Gardens Trust has developed Phytophthora protocols applicable for works in bush regeneration, these are provided below; "Provide hygiene protocols and induction to all new workers, contractors and Volunteers Assume the area you are entering in is free of *P. cinnamomi* unless otherwise tested and understand that your activities have the potential to introduce *P. cinnamomi*

- To avoid introducing infection, before entering uninfested sites remove excess soil
- and mud and then spray boots, tools, gloves and small equipment with recommended
- disinfectant until runoff is clear
- To avoid spreading *P. cinnamomi*, when leaving infested sites remove excess soil
- and mud and then spray boots, tools, gloves and small equipment with methylated
- spirits or disinfectant until runoff is clear
- Plan works so they begin in non- infested sites and then move on to infested areas
- Use coloured tape to label tools when working in infested sites. Remove tape once
- tools have been cleaned
- Do not work on a site if the soil is saturated and mud is likely to adhere to footwear
- and tools
- Avoid unnecessary soil disturbance
- Do not import plants unless they are from nurseries accredited with Nursery Industry
- Accreditation Scheme (NIASA)
- On infested revegetation sites, plant species known to be resistant to *P. cinnamomi*
- Never import soil or gravel unless it is certified to be free of *P. cinnamomi* by plant
- disease diagnostic laboratory

All materials removed from a site must be bagged and taken to landfill

Do not drive or park vehicles or trailers off established tracks

Use vehicle wash down stations when available

Ensure effluent from wash down stations does not drain into bushland

Restrict access in high value areas, particularly if autonomous spread is unlikely to occur"  
(Liew and Suddaby, 2008)



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## Myrtle Rust

Myrtle rust is a plant disease caused by the fungus *Uredo rangelii*. The rust was first detected on the Central Coast of New South Wales in April 2010. Myrtle Rust is an exotic plant fungal disease that can be spread in bushland containing plants from the Myrtaceae family. Myrtle Rust is spread by people moving infected plant material, dirty equipment including containers and tools, contaminated clothing and vehicles.

Bushland workers such as bushland regenerator groups, bush care groups, Landcare, forestry workers, and National Parks & Wildlife Services staff should take reasonable measures to prevent the spread of Myrtle Rust between and within areas of bushland.

Myrtle rust is present on the eastern seaboard of NSW from the far south coast to the Queensland border. Myrtle rust is also present in south east Queensland and Victoria. National agreement acknowledges that it remains the responsibility of each State, affected businesses and individuals to undertake management actions to slow the spread of the disease and that these actions are to be delivered in a manner appropriate to each State and business enterprise

In the event of identifying Myrtle Rust on site;

- Do not move plants known to be infected with Myrtle Rust
- Relocate planned activities from known or likely infected areas to another place if possible
- Consider an alternative activity(s)
- Implement simple measures to reduce the risk of moving rust spores including
- Launder clothing, hats and gloves worn during activities in high risk areas before re-using them in areas where plants may be susceptible to the rust.

Wash external surfaces of equipment and vehicles. Although no special cleansing agents are required, products such as Farm cleanse can be used to decontaminate machinery and equipment prior to washing.

Always try to start new jobs with clean equipment and clean vehicles.

The surfaces of equipment that may be sensitive to washing or vehicle seats and interiors can be wiped down with alcohol wipes or similar products.

Comply with risk management and mitigation measures that business enterprises and sites of vulnerable plants and plant communities have in place.

Further information on Myrtle Rust

Please refer to the following websites for prevention measures and protocols

<http://www.dpi.nsw.gov.au/biosecurity/plant/myrtle-rust>

<http://www.dpi.nsw.gov.au/biosecurity/plant/myrtle-rust>



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total earth care  
Baseline Photographs



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