

**Revegetation within the NW corner of
Lot 150 Welshpool Road East, Wattle Grove, West Australia**



Prepared by

Plantation and Landcare Services Pty Ltd

ABN 32546652580 ACN 098754271

PO Box 591
Mount Lawley WA 6929

Bill Davey (Forester)

Phone +61 8 9271 8725 all hours Mobile +61 0429961770

Email bdavey@palservices.com.au www.palservices.com.au

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Plantation and Landcare Services has developed this plan for its client, the development of lot 150 Welshpool Road Wattle Grove, to meet a condition of the Shire of Kalamunda.

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PO Box 591

Mount Lawley WA 6929

Bill Davey (Forester)

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Fax +61 8 9271 2661

Mobile +61 0429961770

Email bdavey@palservices.com.au, www.palservices.com.au

Taking landcare into the future

October 11 2016

Mr David Maiorana
Dykstra Planning
Perth WA

Revegetation within the NW corner of lot 150 Welshpool Road East, Wattle Grove

Plantation and Landcare Services has been consulted to produce a revegetation plan. This revegetation plan merges in with the Landscape Plan which is also been implemented. The landscape plan is a condition of development.

Introduction

This plan covers the revegetation proposed to occur on Lots 150 Welshpool Road East Wattle Grove. The entire site is approx. 4.0 ha and is located in the Shire of Kalamunda. The subject area is in the NW corner of the lot is approximately 1440 m².

Lot 150 Welshpool Road East has an application for development pending. The owner believes the revegetation proposed by this plan will enhance the property and surrounding area.

History of area

The rear of lot 150 has been used for agisting horses on an adhoc basis over many years. During 2015 an intensive summer fire swept through the rear of lot 150 from neighboring lots including the preserved Bush Forever lot. This fire has inflicted enormous damage to all surrounding vegetation. Much of which is struggling to regenerate. As a result the subject area as well as the neighboring properties, weeds have infested the area namely Watsonia.

Fire fighters access to this lot was greatly hindered and as a result many trees were pushed over to contain the fire and large firebreaks were constructed. The heat of the fire has destroyed much of the remnant vegetation.



Pic 1; Although the trees (jarrah/marri) are recovering from the fire their form and health is very poor.



Pic 2: A severe infestation of Watsonia is hindering the regrowth of groundcover and shrubs

As a result of the very poor hygiene and form of these trees they were pushed up by the current owner.

The current owner's foresight in his quest to rehabilitate the site include an extensive spraying program to eradicate the Watsonia. This has been carried out at the owners expense.

Two creek line channels flow through the corner of the property. These channels originate from the Yule Brook. Both channels have been cleaned mechanically over the years.

The western channel has been constructed to take the overflow from the main channel in the severe rainfall events.

Pic 3 Photo taken October 2016. No water is evident in this channel which was built to contain overflow from the severe weather/rainfall events



Objectives of the revegetation program

The objectives to revegetate this area is to

- Conserve the watercourse and surrounding area. Revegetating with a diverse pallet of native trees and shrubs that will have long term benefit to the surrounding region. The planting will be such a way that over the long term it will suppress the weeds.
- Splitting the area into zones with specialised native trees and shrubs that are adaptable to these zones i.e. watercourse/batter slope zones.

Scope of the plan

This plan addresses the physical management and improvements to the creekline rehabilitation of the Yule Brook. From the commencement of the initial weed control to a final inspection's, the plan has an approximate implementation phase of 18 months.

The implementation of the plan will be carried out by the owner.

Site context and general description

Lot 150 is located within the Shire of Kalamunda and the Yule Brook catchment landform system and is generally flat with a fall of only 2 meters over the 300 meters

between Welshpool Road and the lot's western boundary. Portion of the lot within the proposed reserve slopes towards the Brook and forms part of the Yule Catchment with surface water flowing to the west-north-east.

The soils in the proposed foreshore reserve are typical of a riverine zone in the Perth Coastal Plain and in proximity to the Darling Scarp. The soil-landform system is characterised by deep acidic mottled yellow duplex soils (Department of Agriculture, 2005). Within the river, soils are a clayey, sandy silt and of alluvial origin (JDA, 2010)

There is little native vegetation remaining on the site, except for Bush Forever site which is west of lot 150

The rear of Lot 150 has been recently cleared as a result of damage caused by the fire of 2015 and all livestock have been removed from the site as a result of poor boundary fencing.

A Bushfire Management Plan has been prepared for the site to support the proposed use of the land fronting Welshpool Road East for a Garden Centre.

Riparian zone condition

Within Lot 150 Welshpool Road East the river flows in a channel set approximately 1.5 to 2.5 metres below the surrounding topography. The elevation at the top of the river bank is approximately 26.5 to 27.5 m AHD and the river floor is set at about 24 m AHD. At the time of inspection on 11 October 2016, the river width varied from 1.0 meters to 1.5 meters.

It is likely that the River is situated in a channel substantially lower than under pre-European conditions. The erosion and scouring of the river bed probably occurred following the draining and clearing of the district many decades ago. Today, the River bed and banks are stable, and are kept in place by the roots of the native trees and shrubs remaining in the riparian zone.

It is envisaged that the secondary channel was constructed to concentrate and contain the peak water flows from spreading across the neighbouring farmland. The secondary channel is situated outside the boundary of Lot 150.

The objectives of establishing and managing this land are proposed as follows:

1. To restore and revegetate a low-maintenance, robust cover of local indigenous plants in the Channels and surrounding area, including riverine vegetation;
1. To maintain and enhance the stability of the river channel;
2. To protect and create habitat for local fauna;
3. To create a visually appealing and safe environment for passive recreation;
4. To ensure access is maintained for the purposes of maintenance, and fire and emergency management.

The above design criteria support the future actions proposed by the SW Catchment Council, namely to:

Extend programs for 'streamlining' waterways (including arterial drains) with indigenous riparian vegetation to reduce potential for sediment and nutrients to enter aquatic systems

Undertake maintenance programs within the revegetated area only
Restore the habitat of native aquatic biota in key wetlands and waterways



Pic4: The general condition of the main channel. Weeds will be sprayed and the batter slopes revegetated with sedges and rushes as per species list



Pic 5 : The only crossing onto the main area which will be revegetated. This crossing will be used for access to the main area

Overall design

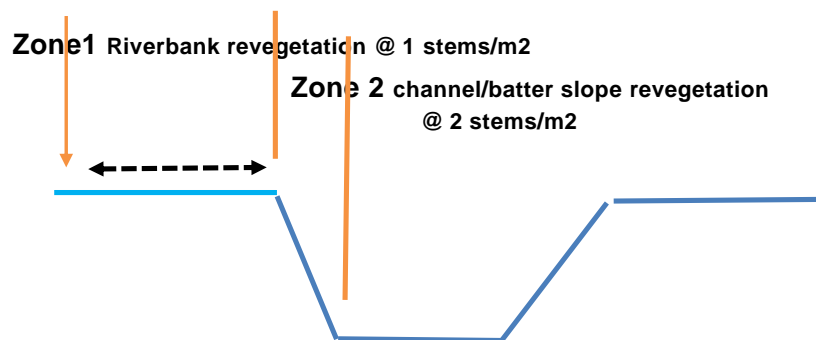


Figure 1: The segregation of the planting site into two (2) zones. Zone 2 will be planted in strategic clumps so access can be gained to clean/maintain the channel in the future

The main features of the design are:

- Weed control, restoration and revegetation of the Brook and surrounding area
- The revegetation of the reserve into two zones. Each zone having different species and densities associated with them.

All species are to be of local indigenous species as well species that can tolerate the conditions associated with the site (winter waterlogging)

Revegetation scheduling

Civil works and earthworks

A summary/scheduling of civil works and earthworks

Weed control

Ongoing operations

Infestations of exotic plants/grass's in the Site should be sprayed and cleared mechanically to ensure regrowth is minimised.

A small sample of the weed palate identified

- *Pennisetum clandestinum* (Kikuyu)
- *Avena fatua* (Wild Oats)
- African Lovegrass (*Eragrostis curvula*)
- *Watsonia meriana* (*watsonia*)
- *Chasmante floribunda* (*African cornflag*)
- *Sisyrinchion excile*
- *Cortaderia selloana* (*pampas grass*)
- *Erodium*
- *Paspalum spp*
- *Raphanus sp* Wild radish
- *Ornithopus compressus*
- *Chamaecytisus palmensis* Tagasate



Intensive weed control program has commenced. Continual spraying and control of weeds will be the key to this project. It is recommended that the weeds be mechanically removed and disposed of to ensure the site is clean of weeds prior to site preparation.

Site Preparation

April/May

Once the area is cleared of weeds and rubbish the site should be ripped. Ripping ensures good long term root development of the newly planted tubestock. 2 metre either side of the channels will be left un ripped to reduce the possibility of erosion.

It is envisaged the ripping will be carried out with an excavator with a rake bucket.

Tubestock will be planted within these rip lines which will harvest the natural rainfall and reduce the need for the trees and shrubs to be watered across the initial summer,

Planting

July/August

The planting of the tubestock will be carried out by an environmental tree planting contractor. All trees and shrubs will be planted mid-winter to allow for good consolidation prior to spring.

Trees will be ordered at least 6 months prior to planting commencing and be sourced from accredited nurseries.

Revegetation scheduling

	Activity	Timing
1	Removal of all rubbish, old fencing. Remove/scrapping all weeds from the site with small excavator with a batter bucket.	Year 1, summer or pre-ground preparation for revegetation/river restoration. Summer 2016/17
2	Erection of new perimeter fence Placement of gate (s) in strategic area for fire access and future maintenance access see site plan for possible locations	Year 1, summer or pre-ground preparation for revegetation/river restoration. Autumn 2017 (after site has been prepared)
3	Weed control program. Regermination of weeds within the site to be sprayed	Summer 2017
4	Revegetation zone to be ripped. Ripping breaks the hard pan to allow root penetration and good root development.	Autumn 2017
5	Pre plant spray. Further spray to eradicate any autumn re germination	Winter 2017
6	Planting and tree guard installation	Winter 2017
7	Maintenance program commence <ul style="list-style-type: none"> • Secondary spot spraying where required. • Infill planting if there is mortalities 	Spring/summer 2017/18
8	Weed control program and infill planting gaps so an average survival rate of 80% is achieved	Winter 2018

Fencing/gates

The perimeter of the area will be fenced to the specifications required by the shire. Lockable gates will be strategically positioned to meet future Fire Management Plans and allow easy access to the site as well as alternative access to the neighbouring Bush Forever site. A new gates should be strategically position to allow access to the ford See Site plan for location recommendations.

Access Tracks

Access tracks have already been constructed. These gravelled tracks to be trimmed where necessary after the civil works have been completed.

Channel crossovers/access

A small crossover/ford is position in the southern corner of the main channel. This should be left as is to help within access both through the revegetation phase and maintenance. It will help with fire access if required

Culvert is positioned across the dry channel. This is not trafficable and will be removed.

Revegetation species and plant numbers**Plant numbers**

The number of plants to be planted has been calculated based on the area to be planted and the density of planting appropriate to the mix of species to be used.

The area to be planted has been calculated based on the gross zone area

	Area	Density	Total trees and shrubs required
Zone 1	1200+240	2 plants and shrubs/m2	2880
Zone 2	270	4/m2	1080 (sedges and reeds for channel batter slope)

Plant species

Table 2 lists the species to be used, and the number of plants to be used in each Zone.

Species have been selected on the basis of:

- Being locally indigenous plant species, known to occur on the site or similar Coastal plain soils;
- Availability of tubestock (subject to seasonal variations);
- Applicability to the site conditions; and
- Known to be effective in local revegetation projects.

Table 2 A sample of species that is recommended to be planted within the revegetation of lot 150

Species	Zone 1
Trees	
<i>Corymbia calophylla</i>	
<i>Eucalyptus rudis</i>	
<i>Melaleuca raphophylla</i>	
<i>M. pressiana</i>	
Tall shrubs	
<i>Acacia saligna</i>	
<i>Calothamus quadrifidus</i>	
<i>Calothamus hirsutus</i>	
<i>Kunzea ericifolia</i>	
<i>Mel incana</i>	
<i>Mel viminea</i>	
<i>Taxandra linearifolia</i>	
Small shrubs	
<i>Acacia extensa</i>	
<i>A pulchella</i>	
<i>Grevilea bipinnatifida</i>	
<i>Grev. diversifolia</i>	
<i>Hakea lissocarpha</i>	
<i>Pericalymma ellipticum</i>	
<i>Regelia ciliata</i>	
Sedges and rush's (Channel batter slopes)	Zone 2
<i>Ficinia nodosa</i>	
<i>Juncus kraussi</i>	
<i>Juncus pallidus</i>	
<i>Lepidosperma gladiatum</i>	
<i>Astartea fascicularis</i>	

Maintenance

The owner will commit to an 18 month post-planting maintenance plan

During the 18-month maintenance period:

- All weed control should aim to:
 - Keep all weed growth in both zones to less than 10% cover and no higher than 0.2 metres.
- The owner shall make provision to infill plant in the following winter, up to 30% in over the 18 month maintenance period, to achieve at least an 80% survival rate at the end of the 18-month maintenance period.
- Slashing/snipping of weeds will be required in the spring/summer period where adequate weed control has not been achieved and/or a fire hazard exists.

- All water and wind erosion linked to the implementation of this Plan should be managed and repaired by the owner. This excludes naturally occurring erosion.
- All rubbish is removed from the Site.
- Regular inspections of the site will be carried out by the owner and/or his/her agent. Between three and five inspections may occur over the life of the Plan.

Summary

The project is being funded 100% by the owner. He is aware of the significance the neighbouring value of the *Bush Forever* reserve next door and this small section merges with the reserve.

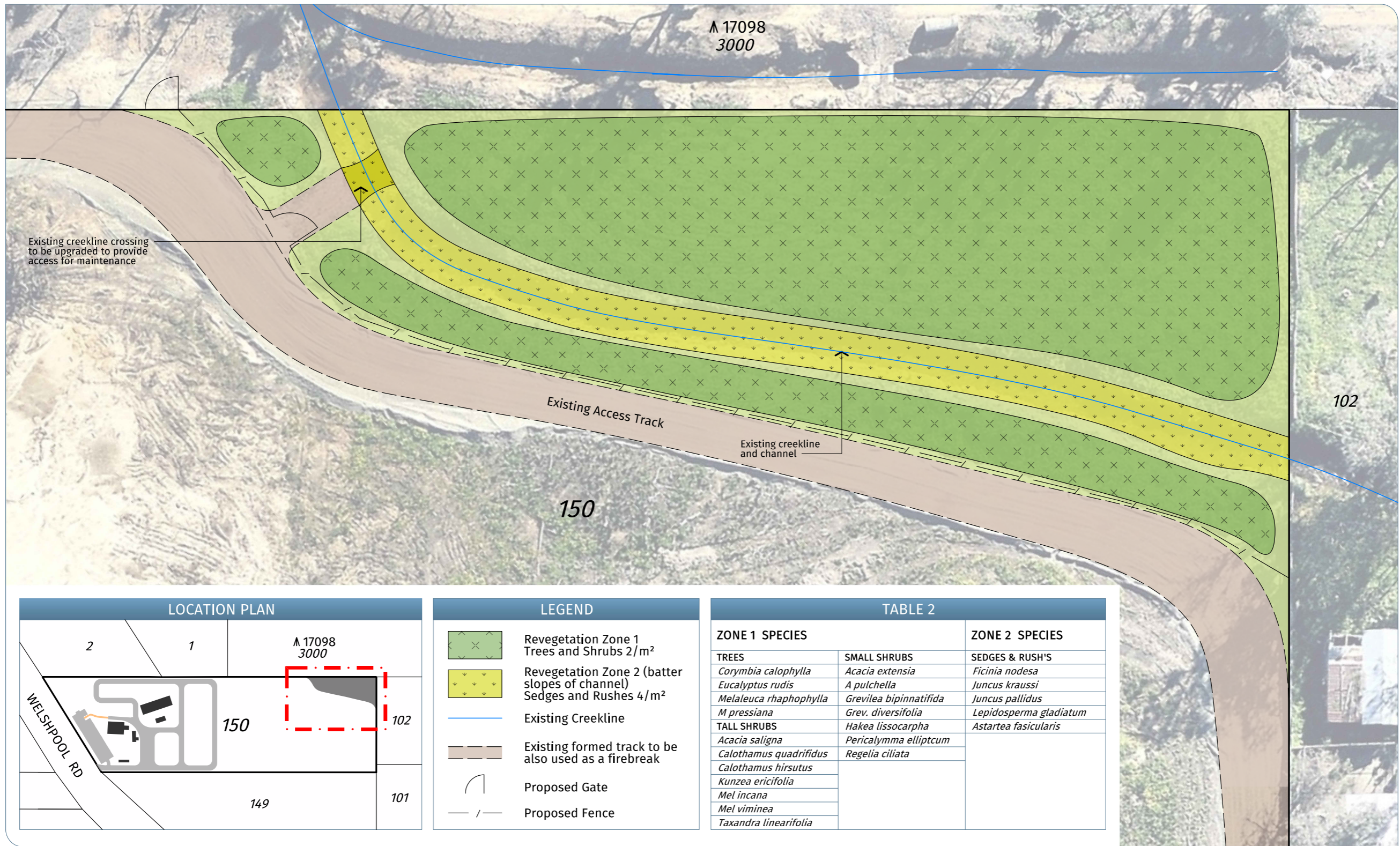
The area is infested with weeds and is a major fire risk. The weeds/grasses need to be control immediately, which the owner is currently addressing.

Long term revegetating will help suppress the weeds as well as stabilise and add enormous environmental benefit to the immediate and surrounding area.

This Revegetation Plan should be viewed along side the Landscape Plan for the front of lot 150.

With a significant amount of planning and work to be carried out on this site early recognition of the plan would be appreciated to ensure the scheduling of operations can be carried effectively and on time





LANDSCAPE PLAN 2

Proposed Garden Centre

Lot 150 Welshpool Road East, WATTLE GROVE

Plan No. | 20843-04A
 Date | 20/10/16
 Drawn | BdR
 Checked | DM
 Revision | A

PERTH OFFICE:
 Level 1, 252 Fitzgerald Street,
 Perth WA 6000
 T: 08 9228 9291
 E: perth@harleydykstra.com.au
 W: www.harleydykstra.com.au
 Offices also at Albany, Bunbury,
 Busselton and Kelmscott

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Scale | 1:250@A3

0 2.5m 5m

NOTE: This plan has been prepared for planning purposes. Areas, Contours and Dimensions shown are subject to survey

