

Lot 1 South West Highway
Proposal for Sand Extraction Licence
Rehabilitation and Decommissioning Programme as per Shire of
Capel Criteria
Compiled By
Albert Gorman BSc Environmental Restoration and Management

Refer to Drawings 11443E – CK07 & 08

Introduction

The proposed sand extraction site is at this time highly degraded, due mainly to the past uses of the site. It was previously used as a sand extraction pit, coupled with overgrazing by both native as well as exotic herbivore species and the presence of the fungal disease *Phytophthora cinnamomi* or Dieback disease, has led this to the highly degraded state that it is currently in. It is proposed that the sand extraction process be a staged process, with each of the six stages being less than two hectares in size. As the sand extraction processes are completed within each section, rehabilitation processes can commence while extraction of sand can begin on the next stage. It is hoped that with the right programmes in place, visible rehabilitation will follow the extraction process throughout the life of the sand mine. The restoration/rehabilitation programme upon completion/end-use of sand extraction pit are to restore the site to traditional existing neighbouring farming pastures (Restoration sites 1, 2, 4, 5 and sites 3 & 6). Where there is a batter of 1:10 in final land formation suitable/appropriate dieback resistant native flora species will be planted. (Appendices A & B) Tall trees and an understory of shrubs and native grasses will be established on all sloping terrain/1:10 Batters (sections of sites 3, 6, 5, 4 & 1). The proposed extraction sand pit site and surrounding locations are at present zoned rural. All adjacent properties are currently cropped as grazing pasture and/ hay production.

Objectives

On completion of sand extraction activities from Lot 1 South West Highway, Boyanup and final land forms established, all 1:10 battered sections will have been replanted with 3500 dieback tolerant native flora species. The taller canopy trees will be replanted to approximately 1000 stems per hectare which equates to 3.16m x 3.16m between stems and the understory species of 2500 stems per hectare or a stem 2m x 2m, or every four square meters. The level finished surfaces will be re-established to traditional agricultural pastures. Because the proximity of the groundwater table and the use of irrigational flows it is anticipated that the rehabilitated sections will become self sufficient within three years. The use of canopy trees will aid existing ecological links as well as provide habitat for locally present native fauna.

The function and end use of all sites in the rehabilitation processes will be,

- To have a self sustain ecosystem made up of both flora and fauna
- To have restored sections that meet land use expectations
- To have sections integrated into the surrounding landscape
- To have native vegetation that can be integrated with forest management
- To have pasture that will thrive with perennials and nitrogen fixing legumes being dominate species
- To have minimal effect on the existing perched aquifer water quality

Site Assessment

The proposed sand extraction site is 10.7 hectares in size. Various test excavations were made to access the soil composition and structure of the proposed site.



Photo 1: Excavation detailing sand profile

The site substrata consists of highly porous Bassendean Sands (for site assessment, refer to Agronomist Report – Attachment 9). This is a highly disturbed site as it has been used as a sand extraction pit in the past.



Photo 2: Previous Extraction

There is ample evidence of this occurrence in the form of previous top soil storage dumps and excavations. Ground cover vegetation is all but nonexistent due to the constant over grazing by kangaroos. It is because of these previous activities and the reintroduction of certain volunteer flora species, both native and exotic, that there is a variation in the number and condition of the identifiable soil horizons.



Photo 3: Non-existent groundcover due to overgrazing by kangaroos.

Due to the previous sand pit activities and level of disturbance, the topsoil (A horizon) varied in depth from 150 millimetres to 300 millimetres in depth over the entire site. Plant root penetration of less than 500 millimetres suggesting recent establishment. Certain sections of some proposed restoration sites had no identifiable soil profile and no vegetation cover at all. No organic litter or evidence of soil seed banks. What could normally be described as the B horizon extended right to the surface.



Photo 3: Shallow root penetration and minimal to zero A Horizon

In proposed Stages 5 and 6 evidence suggests that because of previous limited disturbance the A horizon/top soil is deeper and plant root activity in some instances was evident to a depth of 1.2 metres. With only slight variances in soil structure and composition, the proposed excavation site is uniform in its makeup, that is, highly porous Bassendean Sands with little or no water storage capacity.

There is strong evidence of the plant disease *Phytophthora cinnamomi* with 78.5% of the site being mapped as infested. For complete details refer to Attachment 5 –labelled “A Vegetation and Dieback Survey of part Lot 1 South West Highway North Boyanup.”

Soil management

- The proposed soil extraction pit processes will be completed in approximate two hectare Stages.
- Top soil removal and the removal of any remnant vegetation will proceed as a staged process according to development of proposed extraction pit.
- Remnant vegetation will be removed by rubber tyred front end loaders with minimal disturbance to top soil and stock piled adjacent to relevant excavation pit stage.
- The topsoil (A Horizon) will then be removed using appropriate machinery to suit the contours of existing soil formations.
- Removed top soil is to be stored at a convenient location adjacent to the stage of sand pit extraction, to a maximum height of two metres.
- Because of the variation in the depth of top soil throughout the proposed extraction pit absolute quantities of top soil are not known, their storage will however, conform to Shire of Capel Regulations.
- Water in the form of a sprayed application as well as wetting agent will be used to control dust and wind erosion of stockpiled top soil as well as the pit floor should it become necessary.
- As each stage of sand extraction is completed and permanent soil contours are established, the topsoil will be relocated to site using appropriate machinery to a depth similar to that prior to disturbance.
- The stockpiled remnant vegetation is to be mulched as needed on site by mechanical means and distributed evenly over the now relocated top soil to a nominal depth of 50 millimetres. A wetting agent will be applied to soil surface prior to the redistribution of mulched vegetation.
- The final contours shall be achieved and confirmed using the surveying data controls identified in order to achieve land form approved for pit development.

Weed and Pest Management

- This site is to be restored to conventional farming pasture to be used to supply fodder to grazing animals. (Appendix B)
- The surrounding 1:10 batter will be rehabilitated with dieback resistant native vegetation. (Appendix A)
- During the restoration process the sites will be fenced off to prevent grazing animals including exotic species such as rabbits, foxes and native species such as kangaroos from entering the site.
- After the decommissioning of the proposed sand pit a permanent fence will be erected to protect all native vegetation in the 1:10 battered sections.
- Prior to the pasture seeding the area will be sprayed with a suitable herbicide to remove all exotic plant species.

- Follow up weed monitoring will take place with all exotic infestations treated with a herbicide.

Seedbed Preparation

The sand extraction pit is to proceed in two hectare increments. On completion of each stage's extraction, that is when final land forms are established, topsoil will be relocated. A suitable wetting agent will be applied and a layer of mulch applied to the surface. The area will be fenced off to prevent traffic, both mechanical and animal. Stages will be allowed to settle allowing microorganisms, invertebrates and detravors to re-establish. With the coming of Autumn rains or when the ground conditions allow a suitable application of an appropriate herbicide will be applied. Shortly after pasture seeds will be direct drilled into topsoil. An application of a suitable fertilizer (500 kilograms Neutrog Bounce Back, 3-1-1 to hectare) will be applied prior to germination. Similar seed bed preparation will occur with the planting of native species seedlings, the exception being that different rates and types of fertilizer will be applied. In the case of native vegetation 100 kilograms of phosphate per hectare. Commercial wetting agents such as Lure H2O will be added to the sites t the time of rehabilitation to counter any hydrophobia and so control rain runoff in the 1:10 batter sections. It is not anticipated that mechanical deep-ripping will be necessary prior to the panting of native seedlings. This option will be left open should circumstances arise that require deep ripping.

Erosion and Sediment Control

During the sand removal process and subsequent restoration processes wetting agents will be applied on the 1:10 batters to control water runoff. Erosion that is due to wind forces in dry conditions will be controlled with the further application of wetting agents as well as water from an on-site water truck.

Environmental Controls

Dieback Procedures: (Refer to Attachment 11)

Noise Management Controls: (Refer to Attachment 11)

Dust Management Controls: (Refer to Attachment 11)

Revegetation Pasture

- *Identification of appropriate species:* from neighbouring properties with simular soil types, properties and structures. Advice from senior agronomist from Elders Limited. Pasture types include annual species for initial soil stabilization as well as fodder and perennials for long term soil stabilization.
- *Soil conditions:* For details of soil types and growing characteristics please refer to agronomists report. (Attachment 9)

- *Fodder species includes:* rye grasses, clovers and broad leaf varieties see (Appendix B)
- *Suitable supplier:* Elders Limited Bunbury & Bell Pasture Seeds Boyanup.
- *Fertilizer:* 500 kilograms per hectare of Neutrog Bounce Back + Trace Elements will be applied prior to seeding using traditional three point linkage tractor mounted super spreader.
- *At the appropriate time:* seeds will be direct drilled into soil.
- *Direct drilling of seeds:* will take place in autumn after season breaking rains. All invasive grass species to be treated with a suitable herbicide/roundup.
- *Protection measures:* Vermin proof fencing to be erected and maintained surrounding restoration area. Visual inspections and a monitoring log to be kept.
- *Rehabilitation to pasture:* Total area 6.28 Hectares

Revegetation Native species

- *Dieback Resistant Native Vegetation:* species (see Appendix A)
- *Suitable supplier:* Boyanup Native Nursery, Southwest Highway Boyanup.
- *Timing:* Seedling stocks are to be ordered in advance, delivery date 1 June and stored under appropriate conditions until seeding programme is to commence. Because of the two hectare increment nature of the restoration programme and the varying size of native revegetation in each section, seedling quantities will be ordered on an as you go basis.
- Seedlings will be planted by hand and spaced accordingly across the 1:10 batters. Canopy species with a density of 1000 (3.16m x 3.16m) stems per hectare and understory species 2500 (2m x 2m) stems per hectare (Smith. R. PC).
- *Fertilizer:* 100 kilograms per hectare of superphosphate will be applied prior to planting of seedlings using traditional three point linkage tractor mounted super spreader.
- *Protection measures:* to include appropriate fencing of restoration site.
- Monitoring for exotic weed infestations as well as fatalities within the native vegetation community and necessary amelioration processes put in place.
- Replanting of species if deemed appropriate. Log book to be kept detailing the progress of restoration processes.
- *Rehabilitation of Native species:* Total area 4.42 hectares.

Monitoring and Maintenance

- Upon completion of pasture seed drilling processes and the replanting of native species where appropriate, the site will be monitored during and after seed germination for the presence of any exotic plant species and these will be removed manually or with follow up application of herbicide depending on the severity of the infestation.

- An appropriate back up supplies of seedlings will be kept on site should they be needed to replace fatalities.
- Dead seedlings are to be replace with the same species or if circumstances demand it a similar species.
- Fences will be maintained and evidence of intrusion by both exotic as well as domestic stock monitored and ameliorated.
- Visual checks will be made on a regular basis through the entire restoration processes.
- A photographic as well as a written diary will be kept of all restoration processes and their progress.
- All monitoring data will be available for inspection by local government personnel.

Measures to ensure the success of restoration/reintroduction of pasture fodder species will include visual checks of plant vigour/resilience.

- Visual checks of plant vigour/resilience
- Monitoring of exotic weed infestation
- To be treated as soon as practicability allows
- The re-seeding of pasture is deemed necessary because of external forces such as frost or wind burn
- The planting of a pioneer crop such as swan oats to help in organic matter build up in soil profile

Other measures/procedures for procuring data that leads to successful outcomes

- The identification and amelioration of areas that appear to be suffering or lacking growth vigour
- The exploration of simular macrophyte/pasture species capable of thriving under same conditions if required
- Comparing soil horizons from different locations throughout the site and compare health of fodder adjacent to horizon monitoring site
- Regular inspections of the exclusion fence will be made looking for damage as well as any burrowing activity
- Identification of fauna activity will be recorded along with all issues pertaining to the success of restoration project
- A photographic inventory of the processes involved in this restoration project will be maintained for review purposes
- This property is zoned rural and at present complies with all statutory fire prevention measures, that is regulation boundary fire brakes and additional both fast attack fire response vehicles as well as tankers with up wards of 10,000 litres at their disposal. It is not anticipated any additional fire prevention measures will be required.

The proposed sand extraction pit is on the western side of Lot 1 South West Highway, Boyanup.

- It is not visible to either neighbours or passing traffic from the South West Highway that runs past the Eastern side of the lot.
- All records and data pertaining to the sand extraction volumes and methods of extraction will be maintained and available for scrutiny by appropriate statutory bodies.
- The possible presence of *Phytophthora cinnamomi* in the extracted soil shall be advertised in advance of soil sales and deliveries

Hydrocarbon/construction debris

- Refuelling of all plant will be at existing established refuelling points away from sand extraction pit locations
- It is envisaged that there will be little if any debris on the site at the completion of project due mainly to the staged restoration methods to be employed on this site
- The installation of permanent and temporary barriers and signage around the pit site will aid environmental integrity

Rehabilitation Estimates and Costing

Native Vegetation Supplier: Boyanup Botanical

Cell trays of 64 plants for all species are \$43.00 per tray. All seedlings are available on the 1st of June. A recommendation of 1000 canopy species (Marri 40%, Peppermint 60%) stems per hectare and 2500 ground cover/understory (Approximately 6% of each species listed) stems (Willyams. D. PC.) will be the target planting rate for this restoration programme.

Tall canopy type vegetation

<i>Corymbia calophylla</i> (Marri). 28 trays at \$43.00 per tray	= \$1204.00
<i>Agonis flexuosa</i> (Peppermint tree) 42 trays at \$43.00 per tray	= \$1806.00
Total canopy tree costing	\$3010.00

Understory vegetation and ground covers.

<i>Acacia extensa</i> (Wiry Wattle) 11 Trays at \$43.00 per tray	= \$ 473.00
<i>Acacia huegelii</i> . 11Trays at \$43.00 per tray	= \$473.00
<i>Acacia pulchella</i> (Prickly Moses) 5 at Trays at \$43.00 per tray	= \$215.00
<i>Allocasuarina humilis</i> (Dwarf Sheoak) 11 Trays at \$43.00 per tray	= \$473.00
<i>Bossiaea eriocarpa</i> (Common brown Pea) 11 trays at \$43.00 per tray	= \$473.00
<i>Calytrix fraseri</i> (Pink Summer Calytrix) 11 Trays at \$43.00 per tray	= \$473.00
<i>Gompholobium tomentosum</i> (Hairy yellow Pea) 11 Trays at \$43.00 per tray	= \$473.00
<i>Hakea varia</i> (Variable-leaved Hakea) 11 Trays at \$43.00 per tray	= \$ 473.00
<i>Hardenbergia comptoniana</i> (Native Wisteria) 11Trays at \$43.00 per tray	= \$473.00
<i>Hermiandra pungens</i> (Snake Bush) 11 Trays at \$43.00 per tray	= \$473.00
<i>Hibbertia racemosa</i> (Stalked Guinea Flower) 11Trays at \$43.00 per tray	= \$473.00
<i>Hibbertia vaginata</i> 11 Trays at \$43.00 per tray	= \$473.00
<i>Hypocalymma robustum</i> (Swan River Myrtle) 11 Trays at \$43.00 per tray	= \$473.00
<i>Jacksonia furcellata</i> (Gray Stinkwood) 11Trays at \$43.00 per tray	= \$473.00
<i>Kunzea glabrescens</i> (Spearwood)11 Trays at \$43.00 per tray	= \$473.00
<i>Lepidosperma longitudinal</i> (Pithy Sward-edge) 11trays at \$43.00 per tray	= \$473.00
<i>Melaleuca thymoides</i> 11 Trays at \$43.00 per tray	= \$473.00

<i>Stirlingia latifolia</i> (Blue Boy) 11 trays at \$43.00 per tray	= \$473.00
Total seedling cost.	\$8256.00
Total fertilizer cost. 400 kilograms. Super phosphate. 100 kilo per hectare	\$480.00
Wetting agent 4.42 hectares at 20ltr per hectare = 88.5 lts	\$700.00
Total material costing for return to native vegetation	\$9436.00

Pasture Revegetation Bells Pasture Seeds

The composition of the pasture seeds used in the back to pasture processes will consist of a blending of both annual and perennial ryegrasses as well as legumes/clovers. The seed application rate will be 25 kilogram of seed to the hectare. Prior to the seed drilling an application of Neutrog Bounce Back (3-1-1) at a rate 500 kilograms to the hectare will be applied using a three point linkage super spreader on a conventional farming tractor.

BPS Pasture Blend:

- Atomic ryegrass, Tetila Gold ryegrass, Wicher ryegrass,
- Balansa clover, Turbo clover, Trikkala sub clover.

Total seed costing, 6.28 hectares at 25 kilograms per hectare	
= 157 kilograms of BPS pasture blend at \$4.18 per kilo	\$656.26
Total fertilizer costing, 6.28 hectares at 500 kilograms per hectare	
= 3 140 kilograms 3 140 kilograms at \$695.00 per ton	\$2,182.30
Wetting agent: 6.28 hectares at 20lts per hectare = 125.6lts	\$1000.00
Total material costing for return to pasture	\$3838.56

Costing of Individual Stages 1 – 6 (*Note, all costing and estimates may be rounded up to next decimal*)

<i>Stage 1: Pasture: 1.08 hectares. Fertilizer, seeds, wetting agent</i>	
and herbicide	\$1120.00
Natives vegetation: 0.710 Fertilizer, seedlings, wetting agent and herbicide	\$1785.00
Total costs including labour (\$5 635.00)	\$8 540.00

<i>Stage 2:</i> Pasture: 1.46 hectares Fertilizer, seed, wetting agent and herbicide	\$1515.00
Native vegetation 0.43 hectares Fertilizer, seedlings, wetting agent and herbicide	\$1122.00
Total cost including labour (\$3 461.00)	\$6098.00

<i>Stage 3:</i> Pasture: 0.60 hectares Fertilizer, seed, wetting agent and herbicide	\$625.00
Native vegetation 1.13 hectares Fertilizer, seedling, wetting agent and herbicide	\$3430.00
Total cost including labour (\$10 545.00)	\$14 600.00

<i>Stage 4</i> Pasture: 1.46 hectares Fertilizer, seed, wetting agent and herbicide	\$1507.00
Native vegetation 0.50 hectares Fertilizer, seedling, wetting agent and herbicide	\$1339.00
Total cost including labour (\$4025.00)	\$6871.00

<i>Stage 5</i> Pasture: 1014 hectares Fertilizer, seed, wetting agent and herbicide	\$1460.00
Native vegetation 0.29 hectares Fertilizer, seedling, wetting agent and herbicide	\$780.00
Total cost including labour (\$2334.00)	\$4574.00

<i>Stage 6</i> Pasture: 0.27 hectares Fertilizer, seed, wetting agent and herbicide	\$298.00
Native vegetation 1.19 hectares Fertilizer, seedling, wetting agent and herbicide	\$3098.00
Total cost including labour (\$9 579.00)	\$12 975.00

Land form Preparation

Prior to seeding and planting of native flora

Stage 1: 1.78 hectares. Relocating mulched vegetation to site	\$1246.00
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Stage 2: 1.89 hectares. Relocating mulched vegetation to site	\$1323.00
Stage 3: 1.91 hectares. Relocating mulched vegetation to site	\$1337.00
Stage 4: 1.96 hectares. Relocating mulched vegetation to site	\$1372.00
Stage 5: 1.70 hectares. Relocating mulched vegetation to site	\$1190.00
Stage 6: 1.46 hectares. Relocating mulched vegetation to site	\$1022.00
Total cost of mulching and relocation	\$7490.00

Total Rehabilitation Cost Estimates for Each Individual Excavations Site

Stage 1: 1.78 hectares. Vegetation and Associated Cost + Land Form Preparation	\$ 9786.00
Stage 2: 1.89 hectares. Vegetation and Associated Cost + Land Form Preparation	\$ 7421.00
Stage 3: 1.91 hectares. Vegetation and Associated Cost + Land Form Preparation	\$15 937.00
Stage 4: 1.96 hectares. Vegetation and Associated Cost + Land Form Preparation	\$ 8846.00
Stage 5: 1.70 hectares. Vegetation and Associated Cost + Land Form Preparation	\$ 5764.00
Stage 6: 1.46 hectares. Vegetation and Associated Cost + Land Form Preparation	\$13 991.00
Total	\$61 745.00

Fencing

Based on present prices of \$6.00 per metre and the removal and relocation of intermediate fencing between site locations, it is anticipated that all staged internal fencing will cost in the vicinity of \$5,000 and the permanent exclusion fence approximately \$7200.00. Combined total fence costing for the duration and eventual closure of sand extraction pit.

\$10 200.00

Costing totals for the restoration and closure of proposed sand extraction pit located at location 1 South West Highway North Boyanup.

\$71,945.00

Stem Densities per Site

Stage 1: Canopy Species. 700 in total. 40% Marri. Minimum numbers needed.	280
Peppermint trees 60% Minimum numbers required.	420
Understory species total seedlings	1750
Stage 2: Canopy Species. 430 in total. 40% Marri. Minimum numbers needed.	172
Peppermint trees 60% Minimum numbers required.	678
Understory species total seedlings	1075
Stage 3: Canopy Species. 1130 in total. 40% Marri. Minimum numbers needed.	452
Peppermint trees 60% Minimum numbers required.	678
Understory species total seedlings	2825
Stage 4: Canopy Species. 500 in total. 40% Marri. Minimum numbers needed.	200
Peppermint trees 60% Minimum numbers required.	300
Understory species total seedlings	1250
Stage 5: Canopy Species. 290 in total. 40% Marri. Minimum numbers needed.	116
Peppermint trees 60% Minimum numbers required.	176
Understory species total seedlings	725
Stage 6: Canopy Species. 1190 in total. 40% Marri. Minimum numbers needed.	476
Peppermint trees 60% Minimum numbers required.	714
Understory species total seedlings	2975

Understory Species Selection

There are 15 species of Dieback resistant local flora available. Acting on advice from Mr Russel Smith and with the aim of flora biodiversity, a major consideration, we will be using a mosaic approach in species selection for rehabilitation of 1:10 batters. That is rather than jam as many species in any one given area. We intend to initiate quadrants of particular species blending into alternate species throughout the various sites. For Dieback resistant species selections please refer to appendix A.

References

- Willyams. David. *Personal Communication*. 8.30am Monday 16th April 2012. Propagation and Revegetation Research Officer. Marrinup Nursery Alcoa Pinjarra Australia.
- Smith. Russell. *Personal Communication/email*. Monday 16th April 2012. Ekologica Pty Ltd Bunbury Western Australia.

Appendix A

Dieback resistant species Lot 16580 South West Highway, North Boyanup Western Australia.

As compiled by Russell Smith BSc (Hons) MPhil

Latin Name	Common Name
<i>Acacia extensa</i>	Wiry Wattle
<i>Acacia huegelii</i>	
<i>Acacia pulchella</i>	Prickly Moses
<i>Agonis flexuosa</i>	Peppermint
<i>Allocasuarina humilis</i>	Dwarf Sheoak
<i>Bossiaea eriocarpa</i>	Common Brown Pea
<i>Calytrix fraseri</i>	Pink Summer Calytrix
<i>Corymbia calophylla</i>	Marri
<i>Gompholobium tomentosum</i>	Hairy Yellow Pea
<i>Hakea varia</i>	Variable-leaved Hakea
<i>Hardenbergia comptoniana</i>	Native Wisteria
<i>Hemiandra pungens</i>	Snakebush
<i>Hibbertia racemosa</i>	Stalked Guinea Flower
<i>Hibbertia vaginata</i>	
<i>Hypocalymma robustum</i>	Swan River Myrtle
<i>Jacksonia furcellata</i>	Grey Stinkwood
<i>Kunzea glabrescens</i>	Spearwood
<i>Lepidosperma longitudinale</i>	Pithy Sword-sedge
<i>Melaleuca thymoides</i>	
<i>Stirlingia latifolia</i>	Blueboy

BELL PASTURE SEEDS 2012 PRICELIST

Terry 0427389567

Rob 0427271638

Phone/Fax 08 97272243

bellpastureseeds@gmail.com

ANNUAL RYEGRASS

		gst exclusive	gst inclusive
Atomic	<i>mid late tetraploid - new variety</i>	\$3.70	\$4.07
BPS Wicher	<i>mid late tetraploid W.A grown</i>	\$2.70	\$2.97
Abundant	<i>mid late tetraploid</i>	\$3.60	\$3.96
Winter Star	<i>mid late tetraploid</i>	\$3.95	\$4.35
Tetila Gold	<i>mid tetraploid - best of the tetila ryegrasses</i>	\$2.60	\$2.86
Sungrazer	<i>mid tetraploid</i>	\$3.30	\$3.63
Betta Tetila	<i>early mid tetraploid</i>	\$2.20	\$2.42
Fantastic	<i>Diploid - new variety</i>	\$3.60	\$3.96
Wimmera	<i>very early</i>	\$2.30	\$2.53

PERENNIAL RYEGRASS

Everlast		\$5.50	\$6.05
Banquet 11	<i>endo 5</i>	\$9.00	\$9.90

LEGUMES/ CLOVERS

Balansa Paradana		\$2.90	\$3.19
Turbo Persian Clover		\$4.30	\$4.73
Crimson Clover		\$4.50	\$4.95
Dalkeith Sub Clover		\$5.10	\$5.61
Trikkala Sub Clover		\$5.80	\$6.38
Seaton Park Sub Clover		\$5.20	\$5.72

OATS

Massif	<i>tall late hay and grazing oat</i>	\$1.00	\$1.10
Saia	<i>tall hay and grazing oat</i>	\$0.85	\$0.94
Elgin	<i>tall very late and dense hay and grazing oat</i>	\$0.70	\$0.77
Graza 50	<i>semi-tall medium grazing and hay oat</i>	\$0.75	\$0.83
Vasse	<i>medium hay oat</i>	\$0.65	\$0.72
Winjardie	<i>semi tall hay oat</i>	\$0.60	\$0.66
Swan	<i>tall hay oat - early maturity</i>	\$0.65	\$0.72
Carrolup	<i>medium hay oat - thin straw</i>	\$0.50	\$0.55

GRAZING CEREALS

Yukuri Triticale (awnless)		\$0.75	\$0.83
Forerunner Triticale		\$0.85	\$0.94
Revenue Wheat		\$0.80	\$0.88
White Stallion Barley		\$2.20	\$2.42

BPS RYEGRASS MIX

Atomic, Wicher, Tetila Gold	25kg bags	\$3.20	\$3.52
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BPS WICHER PASTURE

Wicher, Balansa Paradana, Turbo Persian, Trikkala	25kg bags	\$3.60	\$3.96
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BPS PASTURE BLEND

Atomic, Tetila Gold, Wicher, Balansa, Turbo, Trikkala	25kg bags	\$3.80	\$4.18
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BPS QUICKFEED OAT & RYEGRASS

Carrolup oats (15kg) and BPS Ryegrass Blend (10kg)	25kg bags	\$1.60	\$1.76
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BPS OAT & PASTURE BLEND

Elgin Oats (15kg) and BPS Pasture Blend (10kg)	25kg bags	\$1.90	\$2.09
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CUSTOM MIXING AND BLENDING WELCOME

All prices ex BPS cleaning sheds Cain Road Boyanup - Prices subject to change without notice

Trailer mounted mister for insect control available - dry hire