

5th September 2021

Tim Titheridge
c/-Hogan Planning
Att: Darren Hogan
darren@hoganplanning.com.au

ABN 89 877 340 321
PO Box 2257, Bowral 2576
Phone 0412 600 173
Email rhogan@hayesenv.com.au
Web www.hayesenv.com.au

Dear Mr Titheridge,

RE: Native vegetation and habitat survey at 'Sofala' 137 Brisbane Grove Road, Brisbane Grove.

A botanical survey was conducted by Mr Daniel Clarke across approximately 60 hectares of the 'Sofala' property at Brisbane Grove Road on 8th July 2021, as shown on Figure 1 following. A fauna habitat inspection was subsequently conducted by Ms Rebecca Hogan on 13th August 2021.

Native vegetation

The botanical survey involved identification of dominant plant species and an estimate of foliage percent cover (FPC) of native groundcover at forty-four fixed observation points around the site (each observation point encompassing an area of approximately 10-15m radius from the centre).

Observation point data is appended to this letter.

Additional advice provided by agronomist, James Cheetham, (dated 8th July 2021) has also been appended to this letter. Mr Cheetham sets out recent herbicide and sowing activities carried out across the property to combat large infestations of invasive weeds, including African Lovegrass, Chilean Needle Grass and Serrated Tussock.

In summary of the findings:

- * The entire site is characterised as 'open managed paddocks'.
- * There is no native tree canopy. Some paddock edges adjoin land containing rows of planted trees such as Radiata Pine *Pinus radiata* and non-local eucalypts.
- * There is no native shrub layer. There are sporadic, isolated occurrences of the native Sifton Bush *Cassinia arcuata*. The exotic and invasive shrub African Boxthorn *Lycium ferocissimum* is relatively common around the edges of paddocks.
- * Large areas of the site are in the process of being actively managed and are currently bare ploughed ground. Where groundcover is present, it is dominated by exotic grass and weed species, particularly Cocksfoot *Dactylis glomerata* (which forms close to 100% cover in some areas), *Bromus catharticus*, *Lolium* spp (sown as a cover crop in some areas), *Eragrostis tenuifolia*, *Brassica tournefortii*, Serrated Tussock *Nasella trichotoma*, Common Plantain *Plantago lanceolata*, Crowsfoot Grass *Eleusine indica* and *Phalaris aquatica* (mainly around the dams).

- * The foliage percent cover of native species across the site is generally well below 15%, with two exceptions observed in association with dam edges: (i) a patch approximately 400m² in extent near observation point 24, with a native FPC ~15%; and (ii) a patch approximately 250m² in extent near observation point 31, with a native FPC ~30%. The main native species in these areas are Common Bog-rush *Juncus usitatus*, *Austrostipa bigeniculata* and Threeawn Speargrass *Aristida vagans*.

It is noted that the survey was conducted during Winter at low temperatures and that additional plant species would be expected to appear in Spring and Summer. Despite this, given the aggressive and invasive nature of the exotic species recorded, and ongoing paddock restoration works, it is not anticipated that the FPC of native species would increase to a relevant proportion.

No threatened plant species were recorded or are considered likely to occur within the site.

Threatened fauna habitat

Fauna habitats provided by the site are highly modified grasslands with occasional exotic shrubs and farm dams. These habitat types are not limited or unique in the locality.

Upon a review of threatened fauna species known to occur within 5km of the site (Bionet Atlas search), there are two terrestrial species not associated with trees and of potential relevance: the Green & Golden Bell Frog and the Striped Legless Lizard.

In relation to the Green & Golden Bell Frog, there is one record in the locality, from the Mulwaree River approximately 4km to the north of the site, from 1975. There is no known local population of this species persisting in the area. Waterbodies within the site are simple farm dams without macrophytic vegetation. Adjacent lands are tilled and managed paddocks which do not provide diurnal shelter features. The site does not provide likely habitat for the Green & Golden Bell Frog.

In relation to the Striped Legless Lizard, there is one record in the Goulburn area, from the Gundry Travelling Stock Reserve along Bungonia Road approximately 2km to the southeast of the site, from 1997. It is assumed that a local population does persist in this area. The population would likely be based within the belt of natural grasslands occurring along the stock reserve and in adjacent properties (as indicatively mapped on the Southeast NSW Native Vegetation Map (SEED database). The site does not support a Natural Temperate Grassland and does not contain surface rocks or logs or other such shelter features. The site is also tilled and managed. The site does not provide likely habitat for the Striped Legless Lizard.

NSW Biodiversity Conservation Act 2016

The NSW BC Act applies to activities that will impact upon native vegetation or upon habitat for threatened species.

Development of the site could impact upon two small patches of groundcover vegetation that would meet the current definition of native vegetation under the *Biodiversity Assessment Method 2020*.

In relation to the Biodiversity Offset Scheme Entry Threshold (BOSET):

- i. No part of the site is mapped on the Biodiversity Values Map;
- ii. The area of clearing criteria for this site is 0.5ha. The site contains less than 0.1ha of native vegetation. The current extent using the BAM 2020 DPIE formula for the purpose of the BOSET is $0.15 \times 400 + 0.3 \times 250 = 135\text{m}^2$ (0.014ha)
- iii. The site does not contain threatened species or ecological communities or their habitats.

Development of the site would not exceed BOSET. The Biodiversity Offset Scheme would not apply. A Biodiversity Development Assessment Report would not be required.

Given the extremely limited extent of highly degraded native vegetation, this letter is regarded as sufficient for the purpose of assessing potential impacts of development of the site upon biodiversity to satisfy relevant legislation.

Please do not hesitate to contact me with any queries or if I can be of further assistance.

Kind regards,

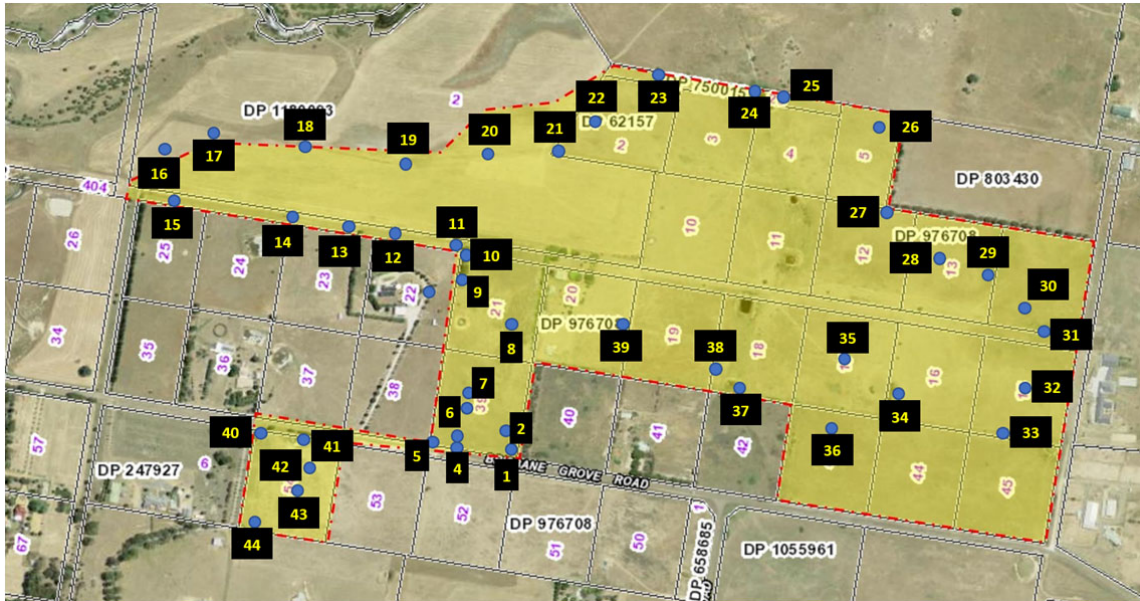


Rebecca Hogan
BSc (environmental biology) MEngMngt MECA (NSW)
Accredited BAM Assessor (BAAS17090)
Principal, Hayes Environmental

PO Box 2257 Bowral NSW 2576
M: 0412 600 173
E: rhogan@hayesenv.com.au
W: www.hayesenv.com.au



Study Area and Observation Points



Observation Point Data – Daniel Clarke, 8th July 2021

Observation Point: 1
GPS: 748792, 6147245 (MGA 55)
Natives:

Cassinia arcuata (Sifton Bush)

Exotic / Non-local natives

**Dactylis glomerata*

**Cirsium vulgare*

**Phalaris aquatica*

Comments: Small dam in south-east corner of Lot 39, DP 976708. Dominated by exotic vegetation. Shrub of *Cassinia arcuata* observed.



Observation Point: 2
GPS: 748781, 6147253 (MGA 55)
Natives:

None observed

Exotic / Non-local natives

**Lolium* sp.

Comments: Recently ploughed field on Lot 39, DP 976708. Cover crop of Rye Grass sown



Observation Point: 3
GPS: 748702, 6147247 (MGA 55)
Natives:
 None observed
Exotic / Non-local natives
 None observed
Comments: Ploughed paddock on Lot 39, DP976708, mostly bare dirt. No native components



Observation Point: 4
GPS: 748703, 6147234 (MGA 55)
Natives:
Aristida vagans
Exotic / Non-local natives
**Dactylis glomerata*
Comments: Southern boundary of Lot 39, DP 976708 – some *Aristida vagans* on edge / road verge, about 1 m wide.



Observation Point: 5
GPS: 748667, 6147249 (MGA 55)
Natives:
Aristida vagans
Exotic / Non-local natives
Eragrostis tenuifolia
Lolium sp.
Comments: Paddock on Lot 39 DP 976708, Triangular patch in south-western corner. Mostly exotic. Minimal *Aristida vagans*.



Observation Point: 6
GPS: 748714, 6147302 (MGA 55)
Natives:
 None observed
Exotic / Non-local natives
**Lolium rigidum*
**Lycium ferocissimum*
Comments: Paddock on Lot 39 DP 976708, central small patch of *Lolium rigidum* and *Lycium ferocissimum*



Observation Point: 7 GPS: 748718, 6147314 (MGA 55) Natives: None observed Exotic / Non-local natives <i>*Lolium sp.</i> Comments: Paddock on Lot 39 DP 976708, cover crop of Rye Grass.	
Observation Point: 8 GPS: 748779, 6147443 (MGA 55) Natives: None observed Exotic / Non-local natives <i>*Lolium sp.</i> Comments: Paddock on Lot 21 DP 976708, cover crop of Rye Grass.	
Observation Point: 9 GPS: 748723, 6147511 (MGA 55) Natives: <i>Microlaena stipoides</i> <i>Einadia polygonoides</i> Exotic / Non-local natives <i>*Pinus radiata</i> <i>*Lycium ferocissimum</i> <i>*Brassica tournefortii</i> Comments: Western edge in <i>Pinus radiata</i> copse on Lot 21 DP 976708. Midstorey of <i>Lycium ferocissimum</i>. Minor patches of <i>Microlaena stipoides</i> and <i>Einadia polygonoides</i> under pine trees.	
Observation Point: 10 GPS: 748729, 6147575 (MGA 55) Natives: None observed Exotic / Non-local natives <i>*Eragrostis tenuifolia</i> <i>*Lolium rigidum</i> <i>*Dactylis glomerata</i> <i>*Brassica tournefortii</i> <i>*Bromus catharticus</i> <i>*Lycium ferocissimum</i> Comments: Paddock area on Lot 21 DP 976708 – north-west corner. All exotic groundlayer. No substantial native component.	

Observation Point: 11 GPS: 748709, 6147575 (MGA 55) Natives: None observed Exotic / Non-local natives <i>*Dactylis glomerata</i> <i>*Bromus catharticus</i> Comments: Paddock area on Lot 2 DP 1180093 – alive and vigorous exotic grass with long sward. No native presence – all exotic. Fresh cow scats.	
Observation Point: 12 GPS: 748605, 6147591 (MGA 55) Natives: None observed Exotic / Non-local natives <i>*Dactylis glomerata</i> <i>*Eragrostis cilianensis</i> Comments: Paddock area on Lot 2 DP 1180093 – alive and vigorous exotic grass with long sward. No native presence – all exotic.	
Observation Point: 13 GPS: 748528, 6147608 (MGA 55) Natives: None observed Exotic / Non-local natives <i>*Dactylis glomerata</i> <i>*Eragrostis cilianensis</i> Comments: Paddock area on Lot 2 DP 1180093 – alive and vigorous exotic grass with long sward. No native presence – all exotic.	
Observation Point: 14 GPS: 748445, 6147618 (MGA 55) Natives: None observed Exotic / Non-local natives <i>*Dactylis glomerata</i> <i>*Bromus catharticus</i> <i>*Nassella trichotoma</i> <i>*Rubus anglocandicans</i> <i>*Eragrostis cilianensis</i> Comments: Paddock area on Lot 2 DP 1180093 – alive and vigorous exotic grass with long sward. No native presence – all exotic.	

Observation Point: 15 GPS: 748273, 6147655 (MGA 55) Natives: None observed Exotic / Non-local natives <i>*Dactylis glomerata</i> <i>*Bromus catharticus</i> <i>*Brassica tournefortii</i> <i>*Avena barbata</i> Comments: Paddock area on Lot 2 DP 1180093 – alive and vigorous exotic grass with long sward. No native presence – all exotic.	
Observation Point: 16 GPS: 748245, 6147729 (MGA 55) Natives: None observed Exotic / Non-local natives <i>*Dactylis glomerata</i> <i>*Eleusine indica</i> <i>*Brassica tournefortii</i> <i>*Lolium sp.</i> <i>*Plantago lanceolata</i> <i>*Eragrostis cilianensis</i> Comments: Paddock area on Lot 2 DP 1180093 – alive and vigorous exotic grass with long sward. No native presence – all exotic.	
Observation Point: 17 GPS: 748317, 6147753 (MGA 55) Natives: None observed Exotic / Non-local natives <i>*Dactylis glomerata</i> <i>*Eleusine indica</i> <i>*Brassica tournefortii</i> <i>*Lolium sp.</i> Comments: Paddock area on Lot 2 DP 1180093 – alive and vigorous exotic grass with long sward. No native presence – all exotic.	
Observation Point: 18 GPS: 748471, 6147724 (MGA 55) Natives: None observed Exotic / Non-local natives <i>*Dactylis glomerata</i> <i>*Plantago lanceolata</i> <i>*Rumex crispus</i> <i>*Bromus catharticus</i> Comments: Paddock area on Lot 2 DP 1180093 – alive and vigorous exotic grass with long sward. No native presence – all exotic.	

Observation Point: 19 GPS: 748603, 6147689 (MGA 55) Natives: None observed Exotic / Non-local natives <i>*Dactylis glomerata</i> <i>*Eleusine indica</i> <i>*Brassica tournefortii</i> <i>*Bromus catharticus</i> Comments: Paddock area on Lot 2 DP 1180093 – alive and vigorous with long sward. No native presence – all exotic. <i>Dactylis glomerata</i> with almost 100% cover.	
Observation Point: 20 GPS: 748742, 6147695 (MGA 55) Natives: None observed Exotic / Non-local natives <i>*Dactylis glomerata</i> <i>*Eleusine indica</i> <i>*Brassica tournefortii</i> <i>*Lolium sp.</i> Comments: Paddock area on Lot 2 DP 1180093 – alive and vigorous with long sward. No native presence – all exotic.	
Observation Point: 21 GPS: 748866, 6147711 (MGA 55) Natives: None observed Exotic / Non-local natives <i>*Hordeum leporinum</i> <i>*Lolium sp.</i> <i>*Dactylis glomerata</i> Comments: Closely cropped green grass. All exotic on Lot 2 DP62157	
Observation Point: 22 GPS: 748935, 6147760 (MGA 55) Natives: None observed Exotic / Non-local natives <i>*Lolium sp.</i> Comments: Brownd-off Rye grass – all exotic on Lot 2 DP62157. Ploughed.	

Observation Point: 23
GPS: 749041, 6147824 (MGA 55)
Natives:
None observed
Exotic / Non-local natives
**Nassella trichotoma.*
Comments: Browned-off grass – all exotic on Lot 29 DP750015. Serrated tussock in paddock and alive on fence edge



Observation Point: 24
GPS: 749188, 6147794 (MGA 55)
Natives:
Austrostipa bigeniculata
Juncus usitatus
Exotic / Non-local natives
**Senecio madagascariensis*
Comments: Dam on Lot 29 750015 and Lot 4 DP62157. Substantial native component at about 30% cover. *Austrostipa bigeniculata* and *Juncus usitatus* with exotics *Phalaris aquatica* and *Dactylis glomerata*. Approximate 5 x 20 metre area, north of dam. End mapping at 749225, 6147785 from OP point.



Observation Point: 25
GPS: 749241, 6147786 (MGA 55)
Natives:
Austrostipa bigeniculata
Exotic / Non-local natives
**Nassella trichotoma*
**Lolium sp.*
Comments: Paddock area past above dam. Browned-off vegetation. Mostly exotic. Some minor native components



Observation Point: 26
GPS: 749381, 6147734 (MGA 55)

Natives:

Rytidosperma sp. in paddock

Microlaena stipoides on fenceline (2nd photo)

Exotic / Non-local natives

**Senecio madagascariensis*

**Nassella trichotoma*

**Lolium* sp.

Comments: Central north-east corner on Lot 5 DP62157, paddock area adjoining *Pinus radiata* trees. No substantial native cover. Groundlayer is mainly chaff. On edge of paddock is an approx. 40 cm wide strip of *Microlaena stipoides*



Observation Point: 27
GPS: 749396, 6147602 (MGA 55)

Natives:

Austrostipa bigeniculata

Exotic / Non-local natives

**Lolium* sp.

**Setaria parviflora*

Comments: Paddock area on Lot 12, DP976708. No substantial native cover. Chaff is mainly exotic



Observation Point: 28
GPS: 749496, 6147540 (MGA 55)

Natives:

None observed

Exotic / Non-local natives

**Lolium* sp.

**Setaria parviflora*

Comments: Paddock area on Lot 13, DP976708. No substantial native cover. Chaff is mainly exotic



Observation Point: 29 GPS: 749568, 6147518 (MGA 55) Natives: None observed Exotic / Non-local natives <i>*Setaria parviflora</i> <i>*Nassella trichotoma</i> Comments: Paddock area on Lot 14, DP976708. No substantial native cover. Chaff is mainly exotic	
Observation Point: 30 GPS: 749595, 6147436 (MGA 55) Natives: None observed Exotic / Non-local natives <i>*Lolium sp.</i> <i>*Nassella trichotoma</i> Comments: Ploughed paddock location on Lot 14 DP976708 – covered in chaff and browned-off grass. No native component observed,	
Observation Point: 31 GPS: 749630, 6147395 (MGA 55) Natives: <i>Leptospermum polygalifolium</i> <i>Eucalyptus ovata</i> <i>Ptilothrix deusta</i> <i>Entolasia stricta</i> <i>Leptospermum juniperinum</i> Exotic / Non-local natives <i>*Senecio madagascariensis</i> Comments: Substantial native component surrounding dam – up to about 30% cover. Approx 25 m W to E x 10 m S to N. Can map to 749663, 6147393 and 749642, 6147387	 

Observation Point: 32 GPS: 749587, 6147297 (MGA 55) Natives: None observed Exotic / Non-local natives None observed Comments: Lot 15 DP 976708, bare paddock, recently ploughed. Minimal groundcover and no substantial native cover.	
Observation Point: 33 GPS: 749563, 6147235 (MGA 55) Natives: <i>Austrostipa bigeniculata</i> Exotic / Non-local natives <i>*Lolium</i> sp. <i>*Hypochaeris radicata</i> Comments: Looking onto Lot 45 DP 976708 (sturdy barbed-wire fence impeded access). Groundlayer of mostly browned-off grass. Minimal native cover. Ploughed.	
Observation Point: 34 GPS: 749401, 6147299 (MGA 55) Natives: None observed Exotic / Non-local natives <i>*Lycium ferocissimum</i> <i>*Bromus catharticus</i> Edge of Lot 16 DP 976708, weedy patch of <i>Lycium ferocissimum</i> and <i>Bromus catharticus</i>. No native components	
Observation Point: 35 GPS: 749303, 6147333 (MGA 55) Natives: None observed Exotic / Non-local natives <i>*Lolium</i> sp. <i>*Avena barbata</i> Comments: Browned-off paddock grass on Lot 17 DP976708 with chaff – recently ploughed. Evidence of Rye Grass and Oat Grass	

Observation Point: 36 GPS: 749287, 6147245 (MGA 55) Natives: <i>Austrostipa bigeniculata</i> Exotic / Non-local natives <i>*Nassella trichotoma</i> <i>*Lolium</i> sp. Comments: Paddock area on Lot 43 DP976708, browned-off grass on recently ploughed area. Some <i>Austrostipa bigeniculata</i> but less than 15% cover. Some Serrated Tussock Grass	
Observation Point: 37 GPS: 749154, 6147320 (MGA 55) Natives: <i>Carex appressa</i> <i>Juncus usitatus</i> Exotic / Non-local natives <i>*Cirsium vulgare</i> <i>*Phalaris aquatica</i> <i>*Eragrostis cilianensis</i> <i>*Bromus catharticus</i> Comments: Small degraded dam on Lot 18 DP976708. Some native components but very minor (less than 5% cover). Mainly exotics	Photo unavailable
Observation Point: 38 GPS: 749104, 6147352 (MGA 55) Natives: <i>Leptospermum polygalifolium</i> <i>Eucalyptus ovata</i> <i>Ptilothrix deusta</i> <i>Entolasia stricta</i> <i>Leptospermum juniperinum</i> Exotic / Non-local natives <i>*Lolium</i> sp. <i>*Cirsium vulgare</i> <i>*Setaria parviflora</i> (Pigeon Grass) <i>*Vulpia muralis</i> Comments: Recently ploughed area with brown dead-grass (chaff) on Lot 18/19 DP976708. Mostly dead exotic grass	

Observation Point: 39 GPS: 748971, 6147411 (MGA 55) Natives: None observed Exotic / Non-local natives <i>*Lolium sp.</i> <i>*Bromus catharticus</i> <i>*Trifolium repens</i> Comments: Green enriched paddock on Lot 20 DP 976708. Cover of <i>Trifolium repens</i>, <i>Bromus catharticus</i> and <i>Lolium sp.</i>	
Observation Point: 40 GPS: 748384, 6147271 (MGA 55) Natives: <i>Microlaena stipoides</i> Exotic / Non-local natives <i>*Eragrostis tenuifolia</i> <i>*Dactylis glomerata</i> <i>*Phalaris aquatica</i> Comments: South-west corner on Lot 54 DP 976708. Some <i>Microlaena stipoides</i> but less than 15% cover.	
Observation Point: 41 GPS: 748427, 6147255 (MGA 55) Natives: <i>Juncus usitatus</i> Exotic / Non-local natives <i>*Senecio madagascariensis</i> Comments: Dam area on Lot 54 DP 976708. Mostly weed dominated with <i>Phalaris aquatica</i> and <i>Cirsium vulgare</i>. Some minor <i>Juncus usitatus</i> patches	
Observation Point: 42 GPS: 748495, 6147231 (MGA 55) Natives: None observed Exotic / Non-local natives <i>*Lolium sp.</i> Comments: Ploughed paddock with browned-off grass on Lot 54 DP 976708. No substantial native component.	

Observation Point: 43
GPS: 748484, 6147171 (MGA 55)

Natives:

None observed

Exotic / Non-local natives

**Lolium* sp.

**Eragrostis cilianensis*

Comments: Ploughed paddock with browned-off grass on Lot 54 DP 976708. No substantial native component.



Observation Point: 44
GPS: 748389, 6147115 (MGA 55)

Natives:

Aristida vagans

Exotic / Non-local natives

**Chenopodium album* (Fat Hen) (dead)

**Xanthium spinosum* (Bathurst Burr)

**Phalaris aquatica*

**Lolium* sp.

Comments: Mostly dead grass on Lot 54 DP 976708, recently ploughed adjoining a green corner of weedy grass. No substantial native component. Dead Fat Hen in the corner. Bathurst Burr also recorded.



8th July 2021

To whom it may concern,

I have been advising Tim Titheradge at 'Sofala' 137 Brisbane Grove Rd, Brisbane Grove, NSW, 2580 on effective control strategies to manage the large infestation of African Lovegrass (*Eragrostis curvula*), Chilean needle grass (*Nessella neesiana*) and serrated tussock (*Nessella trichotoma*) on his property. A control strategy was implemented following a notice given to control these weeds from Goulburn Mulwaree Council.

Below are the inspection notes from my visit in March 2020 and the control strategies used to date including the pasture improvement program.

March 2020 – Inspection of property

Key inspection notes:

- Heavy infestation of African lovegrass across the whole farm.
- Moderate infestation of Chilean Needle grass
- Low- Moderate level of Serrated tussock
- Evidence of previously sown perennial pasture. Species included phalaris, cocksfoot, sub clover, perennial and annual ryegrass.
- Low to moderate levels of broadleaf weeds including saffron thistle, mustard and cape weed.
- Little evidence of any existing or regenerating native pasture.
- Due to weed severity, blanket herbicide application and subsequent sowing down of competitive perennial pastures recommended as the only sustainable method of eradicating the weeds long term.

