



EnviroAg
Australia

Wellard Rural Livingstone Export Yard Rapid Vegetation Assessment

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1 Introduction

EcOz Environmental Consulting (EcOz) was contracted by EnviroAg Australia (EnviroAg) to undertake a rapid vegetation assessment of the Wellard Rural Livingstone Export Yard, 2658 Stuart Highway, approximately 40km south east of Darwin in the Northern Territory. The site is currently used for grazing and fodder crop production. The scope of the rapid vegetation assessment was to undertake the following:

- Condition assessment of the vegetation on the site
- Provision of species list of the vegetation located on the site

An onsite field survey was undertaken to address these requirements. The following aspects of site vegetation were assessed during the survey:

Vegetation condition

- Paddocks
- Native vegetation patches
- Infrastructure, fence lines and buildings

Vegetation lists

- Weeds declared under the Northern Territory Weed Management Act 2001 (NTWM Act)
- Other introduced species
- Native flora species

Vegetation locations and mapping

- Weed species, location, patch size and density
- Dominant pasture within paddocks
- Native vegetation patches
- Survey tracks

In addition to providing the required vegetation lists, maps showing the location of dominant vegetation types have also been produced and presented within the report. This report was prepared for EnviroAg to inform environmental reports required to gain approvals for the proposed development of an Integrated Live Export Facility (ILEF) within the project area.

2 Method

The project area was surveyed on the 12th of June by two suitably qualified environmental scientists. The survey was led by the EcOz senior botanist with experienced in surveying a wide range of vegetation types across the Top End of the Northern Territory. An All-Terrain vehicle was used to access the site and all survey waypoints and tracks were recorded with a handheld GPS unit, preloaded with an aerial image featuring the project area boundary. A field map of the aerial image and project boundary was also produced for purpose of recording field notes.

A brief onsite assessment was undertaken to determine survey requirement and priorities and a survey method was developed to best undertake a rapid vegetation assessment of the project area. Given that the project area is mainly characterised by hay paddocks planted with improved pasture species and featuring a small area of highly degraded and disturbed native vegetation, the survey of declared weed species throughout both of these areas forms the main focus of the survey. Methods undertaken for each aspect of the survey are shown in the following sections.

2.1 Vegetation condition

2.1.1 Paddocks

The dominant improved pasture species was recorded for each paddock area. The presence and density of weeds was recorded to determine the condition of vegetation within paddocks.

2.1.2 Native vegetation

The condition of native remnant vegetation patches were determined by broadly recording the following vegetation attributes across the entire patch:

- Vegetation structure according to broad floristic formation (NVIS level III)
- The level of clearing impact on vegetation composition and structure
- Species recorded within each strata
- Presence of both weeds and introduced flora

A landscape photo was also taken to show the vegetation condition and structure of the patch.

2.1.3 Infrastructure, fence lines and buildings

The presence of weeds, introduced and native flora species associated with fence lines and buildings were noted. The locations of weeds were mapped as outlined in Section 2.2.1.

2.2 Vegetation locations and mapping

Vegetation attributes were recorded in the field and later entered into ArcGIS 10.2 (ArcGIS) and maps produced and presented within the report.

2.2.1 Weed species, location, patch size and density

The locations of weeds declared under the NTWM Act were recorded for mapping purposes. The following additional attributes were collected for each weed patch:

Patch size

- 5m x 5m
- 20m x 20m

Patch density

- Scattered (<10% cover)
- Common (10-30% cover)
- Dense (>30% cover)

Site weed information was then entered into ArcGIS according to the recorded attributes to display the species, patch size and density of all weed patches recorded during the survey.

2.2.2 Dominant pasture within paddocks

The dominant pasture was identified within each paddock and noted on the field map for later mapping in ArcGIS.

2.2.3 Native vegetation

The boundary of native vegetation patches were identified on site and noted on the field map for later mapping in ArcGIS.

2.2.4 Survey tracks

All survey tracks were recorded using a handheld GPS unit and presented within survey maps to show the extent of the survey.

3 Results

3.1 Weeds

A total of seven weeds, declared Class B (growth and spread to be controlled) and Class C (Not to be introduced to the Territory), were recorded within the project area (NTWM Act). The majority of weeds were recorded along fence lines and within disturbed areas of native vegetation. A list of each weed name, type and class is provided below in Table 1. Maps showing the location, patch size and density of declared weeds are shown below, with Figure 1, showing the location of Gamba Grass and Figure 2, the location of all other recorded weeds.

Table 1. Weed name, type and class recorded during the survey

Common Name	Botanical Name	Weed Type	Weed Class (NTWM Act)
Gamba Grass	<i>Andropogon gayanus</i>	Grass	Class B & Class C
Spinyhead Sida	<i>Sida acuta</i>	Herb	Class B & Class C
Sickle Pod	<i>Senna obtusifolia</i>	Herb	Class B & Class C
Flannel Weed	<i>Sida cordifolia</i>	Herb	Class B & Class C
Neem	<i>Azadirachta indica</i>	Tree	Class B & Class C
Hyptis	<i>Hyptis suaveolens</i>	Herb	Class B & Class C
Lantana	<i>Lantana camara</i>	Shrub	Class B & Class C

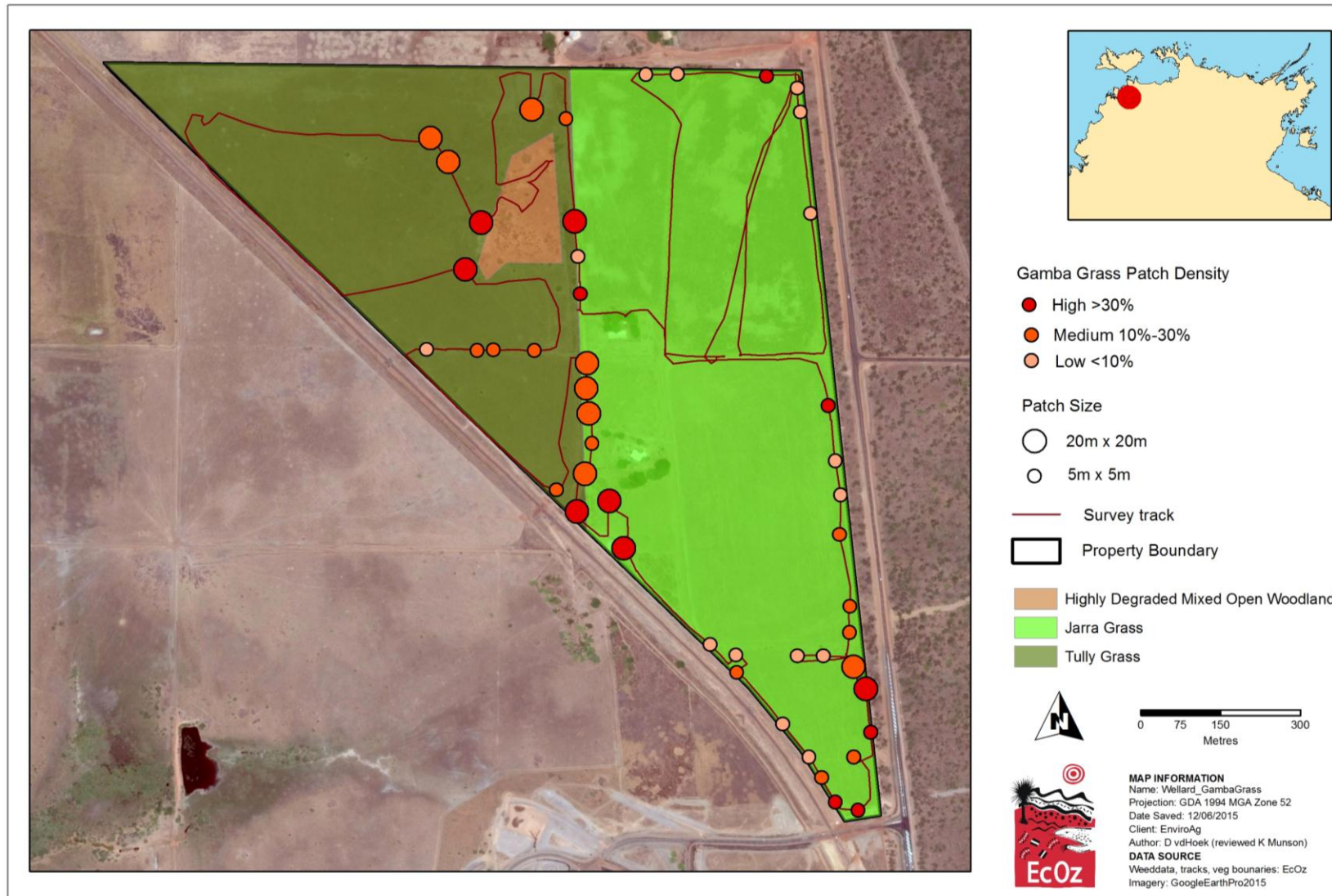


Figure 1. Gamba Grass patch location, size and density

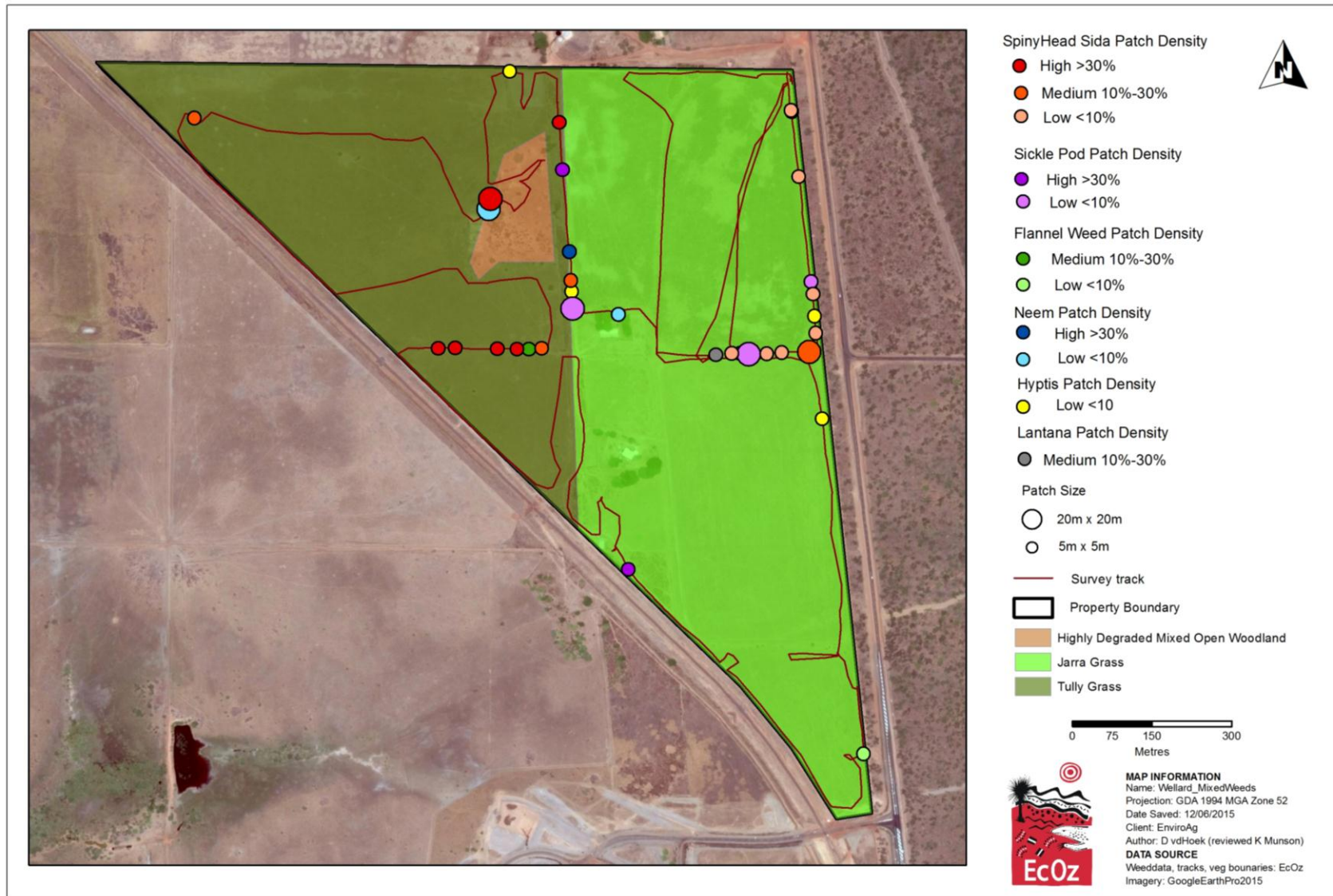


Figure 2. All other weeds patch location, size and density

3.2 Paddocks

Paddocks were surveyed and the dominate pasture species recorded and mapped within each area (see Figure 1 and Figure 2). The survey found that the western side of the project area (approximately 35 ha) was largely dominated by the improved pasture Tully Grass (*Urochloa humidicola cv Tully*), with the eastern side (approximately 54 ha), dominated by the improved pasture Jarra Grass (*Digitaria milanijiana cv Jarra*), see Table 2. An observation of weed occurrence was made within paddocks. A number of large Gamba Grass patches (Class B and Class C) were recorded within both the Jarra Grass and Tully Grass Paddocks (see Figure 1 and Figure 2). Apart from these weed records, paddocks of improved pasture were noted to be in good condition.

Table 2. Improved pasture grasses recorded within paddocks

Common Name	Botanical Name	Location	Type
Tully Grass	<i>Urochloa humidicola cv Tully</i>	Western paddock	High value pasture grass
Jarra Grass	<i>Digitaria milanijiana cv Jarra</i>	Eastern paddock	High value pasture grass

3.3 Fence lines

A number of introduced flora species that are not declared under the NTWM Act, were located along fence lines (see Table 3). The location and density of these species was not mapped. However, only two of these plants, Calopo and Annual Mission Grass, had a common occurrence along fence lines. The remaining plants were rarely observed. The native shrub Sandpaper Fig (*Ficus acuminata*) was also observed along fence lines on a number of occasions.

Table 3. Introduced flora species recorded along fence lines

Common Name	Botanical Name	Type
Calopo	<i>Calopogonium mucunoides</i>	Low value pasture legume
Annual Mission Grass	<i>Cenchrus pedicellatus</i>	Pest grass
Guinea Grass	<i>Panicum maximum</i>	Pasture grass
Rosella	<i>Hibiscus sabdariffa</i>	Sub shrub
Rattle Pod	<i>Crotalaria goreensis</i>	Pest herb
Coffee Bush	<i>Leucaena leucocephala</i>	Pest shrub
Sandpaper Fig	<i>Ficus acuminata</i>	Native Shrub (Least Concern*)

*Note – Conservation status under the TPWC Act

3.4 Infrastructure

Two buildings are located within the project area. Associated vegetation is shown below in Table 4. The introduced African Mahogany (*Kaya senegalensis*) is the main tree planted around the buildings. Two native species, Weeping Ti-Tree (*Leptospermum longifolium*) and Carpentaria Palm (*Carpentaria acuminata*) have also been planted around the southern building. A number of additional exotic garden species were observed around the southern buildings; however the residence was not entered so these plants were not identified to species. Both buildings are surrounded by a dense cover of the introduced Annual Mission Grass (*Cenchrus pedicellatus*).

Table 4. Introduced flora species recorded around buildings

Common Name	Botanical Name	Type
African Mahogany	<i>Kaya senegalensis</i>	Tree
Weeping Ti-Tree	<i>Leptospermum longifolium</i>	Native tree (Least Concern*)
Carpentaria Palm	<i>Carpentaria acuminata</i>	Native palm (Least Concern*)
Annual Mission Grass	<i>Cenchrus pedicellatus</i>	Pest grass

*Note – Conservation status under the TPWC Act

3.5 Native vegetation patch

A patch of remnant native vegetation was surveyed at the north eastern corner of the Tully Grass paddock (see Figure 1 and Figure 2). The patch is approximately 2.6 ha with extensive historical clearing taken place throughout the patch. The northern side of the patch is described as isolated trees dominated by *Acacia auriculiformis* in the upper strata and *Syzygium suborbiculare*, *S. eucalyptoides subsp. bleeseri* and *Pandanus spiralis* in the mid strata. The ground strata is dominated by Tully Grass and is entirely absent of native vegetation. On the southern end of the patch, an open woodland dominated by semi-mature *Eucalyptus tetradonta* resprouts with a high cover of *Cenchrus pedicellatus* in the ground strata, is present. A patch of the declared weed Neem (Class B and Class C) was also observed within the small patch of open woodland. Figure 3 is a photo taken within an area of isolated trees, looking south towards the open woodland. Additional native species surveyed within the patch are shown in Table 5.

Impacts on vegetation structure from past clearing and the dominance of introduced grass species within the ground strata have left the remnant vegetation patch in a highly degraded state. No species listed as threatened under the Territory Parks and Wildlife Conservation Act (TPWC Act) or the Environment Protection and Biodiversity Conservation Act (EPBC Act) were identified within the native vegetation patch or elsewhere on the property.



Figure 3. Photo of native vegetation patch

Table 5. Native species recorded within the native vegetation patch

Botanical Name	Vegetation Strata	Conservation status (TPWC Act)
<i>Eucalyptus tetradonta</i>	Upper	Least Concern
<i>Acacia auriculiformis</i>	Upper	Least Concern
<i>Alstonia actinophylla</i>	Upper	Least Concern
<i>Syzygium suborbiculare</i>	Mid	Least Concern
<i>Syzygium eucalyptoides</i>	Mid	Least Concern
<i>Xanthostemon paradoxus</i>	Mid	Least Concern
<i>Planchonia careya</i>	Mid	Least Concern
<i>Erythrophleum chlorostachys</i>	Mid	Least Concern
<i>Persoonia falcata</i>	Mid	Least Concern
<i>Petalostigma pubescens</i>	Mid	Least Concern
<i>Melaleuca viridiflora</i>	Mid	Least Concern
<i>Ficus acuminata</i>	Mid	Least Concern
<i>Calytrix exstipulata</i>	Mid	Least Concern
<i>Acacia holosericea</i>	Mid	Least Concern

4 Summary and recommendations

The rapid vegetation assessment of the project area found the following:

- A total of seven Class B and Class C weeds were located
- Weeds were mainly observed along fence lines and around infrastructure
- Tully Grass paddocks makes up a total of 35 ha
- Jarra Grass paddocks makes up a total of 54 ha
- Hay paddocks are largely clean of weeds
- A highly degraded area of native vegetation is located within the project area (2.6 ha)
- Sixteen native vegetation species were identified within the project area
- No species listed as threatened under the TPWC Act or the EPBC Act were identified within the project area.

Given the large number of weed populations recorded within the project area and the opportunity for these weeds to be spread via the transport of cattle through the property, it is recommended that a weed management plan be formed to address this issue within the proposed development application.