CHARLES DARWIN UNIVERSITY

WEED PLAN

(Palmerston Campus)

(2019/20 season)

1: Introduction and background:

Little Falcon Consulting presents an integrated strategic fire and weed management plan showing the results of the 2018/19 management program and the detailed aims, objectives and recommended actions for the 2019/20 weed management season at the Charles Darwin University owned Palmerston Campus. Importantly these aims and objectives are consistent with the obligations prescribed under the NT *Weeds Management Act 2013*.

Charles Darwin University (Palmerston campus) owned section 4244 is located approximately 15 kilometres from the Darwin CBD and occupies a total of approximately 40 hectares. For the purpose of developing, implementing and updating this plan the project site is surveyed and assessed on an annual basis. Weed distribution data and notes taken during the May 2019 assessment has been used to formulate this weed management plan. The project site has also been divided into management areas reflecting the overall landscape encountered in the area. Management areas, and the target weeds recorded within these areas, are then used as the basis of defining the aims, objectives and required actions to meet the planned aims and objectives across the site.

As a result of the 2018/19 weed management program the impact of weeds at this site has continued to decrease with all known areas of infestation having been further reduced since the preceding management season. End of season assessment conducted on 01/05/2019 showed that weed populations had remained at, or been reduced to zero, or very close to zero in the majority of the defined management areas. Elsewhere weed populations were found to have been generally reduced to very small isolated populations that had been effectively contained and reduced in density and area.

As such the management objectives for the 2019/20 management season aim to (i) prevent any further spread or establishment of targeted weed species across the site and to (ii) eradicate all known remaining infestations in the short/medium term (1 – 3 years).

2: Weed management obligations:

Issue	Obligations
Thatch grass	- declared a Class A/C weed (NT Weeds Act, Section 7).
	- to be eradicated.
Gamba grass	- declared a Class B/C weed (NT Weeds Act, Section 7).
	- active management of species required, growth and spread to be controlled.
	- subject to a statutory management plan (NT Weeds Act, Section 10).
	- high fuel load risk (NT Fire and Emergency Regulations, Section 4: accumulation of combustible material).
Perennial mission grass	- declared a Class B/C weed (NT Weeds Act, Section 7).
	- active management of species required, growth and spread to be controlled.
Snake weed + hyptis	- declared a Class B/C weed (NT Weeds Act, Section 7).
	- active management of species required, growth and spread to be controlled.
Annual Mission grass:	- not declared however identified as high risk species (listed as KTP under Commonwealth EPBC Act).

3: Key risks and consideration/recommendation:

Risk item	Consideration/recommendation
all declared weeds + annual mission grass	- currently under effective and legislatively compliant on ground management program **within targeted areas**. - recommend continuing with current approach to on ground weed management program at site. - refer to figures 1 and 2.
	- appears that targeted weed species may be being inadvertently spread via machinery/equipment movements during the undertaking of lawn mowing/slashing. - recommend expanding the area under active weed management to include additional sites, particularly the drainage area line in the north part of the campus. - recommend ensuring all equipment/machinery entering the site is clean/free prior to entry. - refer to figure 3.

Figure 1: Charles Darwin University, Palmerston campus, indicating all targeted management areas and weed location/density as at end of 2017/18 management season.

4: Site status at start of 2018/19 management season + result at end of season assessment:

Area	Status at start of 2018/19 season + result at end of season assessment.
Area A (AW)	Status: all snakeweed effectively controlled. Single untreated gamba grass plant noted at assessment in north western area (AW) adjacent to school. 99% effective. Result: single gamba plant, 0% perennial mission grass, very minor untreated area of annual mission grass detected at assessment.
A1	Status: all target grasses contained with 10 – 15 metre buffer, overall reduction in area occupied by > 70%. Result: high density gamba grass infestation appears to have been reduced to a single plant, perennial mission grass appears to have been reduced to less than 1%. Very good result at this site.
A2	Status: all gamba grass effectively treated. 100% effective control. Result: gamba grass appears to have been kept to zero, minor perennial mission grass detected at assessment, very minor annual mission grass detected at assessment.
A3	Status: all gamba grass and other target grass species effectively treated. 100% effective control. Result: gamba grass appears to have been kept to zero, zero perennial mission grass plants detected, single untreated annual mission grass plant detected at assessment.
A4	Status: all gamba grass effectively treated. 100% effective control. Result: gamba grass appears to have been kept to zero, zero perennial mission grass plants detected, single untreated annual mission grass plant detected at assessment.
Area A Thatch grass sites	Status: approximately 95% of plants effectively managed (prior to seed production) at eastern edge of area A1 and northern edge of area A2 during April control program.
Area B	Status: gamba effectively controlled, all perennial mission grass and thatch grass effectively controlled around lake edge. Result: scattered very low density (< 0.1%) thatch grass detected at assessment on eastern side of lake, single untreated perennial mission grass plant detected at assessment on western side of lake.
B1	Status: all gamba grass effectively treated. 100% effective control. Result: single gamba plant, 0% annual mission grass and zero perennial mission grass detected at assessment.
C1	Status: all gamba grass effectively controlled, minor untreated area of perennial mission grass (approx. 40 square metres) Result: gamba grass appears to have been kept to zero, perennial mission grass and annual mission grass appears to have been effectively contained however untreated plants remain in small area estimated to be at 1 – 10% density in a small area at the northern end of the site. 95% (+) of overall site remains weed free.
C2	Status: 99.9% effective control of all gamba grass, single gamba plant observed + 2 single perennial mission grass plants untreated. Significant “new” thatch grass infestation detected/controlled during control program.

	Result: 0% gamba, 0% perennial mission grass, 0% thatch grass detected at assessment. Very minor untreated area of annual mission grass remaining.
C3	Status: all gamba grass effectively treated. Note that northern edge of C3 does not appear to be managed by landowner and has potential to effect program at CDU Palmerston. Result: gamba grass appears to have been kept to zero, zero perennial mission grass plants detected at assessment within CDU Palmerston boundary.
Area C Thatch grass sites	Status: small area untreated on north side of the eastern end of the main drainage line otherwise very effective control at northern end of Area C. All plants effectively treated along road edge(s) adjacent to area C1. Small untreated low density area observed on northern edge of area C1 (approx. 30 m²). All plants effectively treated at north western end of area C2. Estimated 90% (+) reduction in seed production across all sites. It appears that thatch grass is inadvertently being spread along the edges of slashed/mown area in/around areas C1 and C3 via machinery/equipment movements. Results: Scattered very low density untreated thatch grass detected at assessment on edges of track between areas C1 and C3 + several plants detected at bus turn-around area adjacent to C3. Thatch grass infestation at western edge of C3 appears to have been reduced by 90%.
D1	Status: 99.9% effective control of all gamba grass and other target grasses. Several single untreated gamba grass plants observed at established infestation sites during assessment. Minor "new" gamba grass site detected late in season approx. 80 metres in from eastern side. Result: small gamba grass patches previously found at the southern, northern eastern and north western edges (within 40 metres) appears to have been effectively brought to zero. Minor new gamba grass site detected late in season approx. 80 metres in from eastern side, hand pulled at assessment time prior to seed maturation, should be effective in preventing any seed production.
D2	Status: all gamba grass + other target grasses effectively controlled. Result: 0% gamba, 0% perennial mission grass, 0% annual mission grass detected at assessment.
D3	Status: all gamba grass + other target grasses effectively controlled. 100% effective. Result: 0% gamba, 0% perennial mission grass, 0% annual mission grass detected at assessment.
D4	Status: 99.9% effective control of all gamba grass, single gamba plant observed as untreated. Result: single untreated gamba plant + very small annual mission grass site untreated.
D5	Status: all gamba grass + other target grasses effectively controlled. 100% effective. Result: 0% gamba, 0% perennial mission grass detected at assessment. Very minor untreated area of annual mission grass remaining.
Area D Thatch grass sites	Status: all plants effectively managed during April control program. Seed production appears to have been prevented. Result: thatch grass previously detected at southern edge of site appears to have been successfully controlled resulting in zero % thatch grass being detected at final assessment.

Refer to Figure 1 for site location details and Appendix 1 for herbicide usage records.

Figure 2: Charles Darwin University, Palmerston campus, indicating all currently targeted management areas and weed location/density as at end of 2018/19 management season.

Figure 3: CDU Palmerston showing current management areas (red) and **recommended additional areas** (yellow) for 2019/20 management season

Weed Management: Charles Darwin University (Palmerston Campus) Objectives, actions and milestones – 2019/20 management season

Area	Objective(s)	Action required	Milestones	Management tools
All currently managed areas	Eradication of gamba grass, thatch grass, perennial and annual mission grass Eradication of snakeweed & hyptis	Treatment of all gamba grass (and other target grasses) prior to flowering/seeding. Treatment of all snakeweed and hyptis sites prior to maturity.	Seeding prevented in all target species	Foliar application of glyphosate or suitable alternative
All additional areas	Eradication of thatch grass and annual mission grass Eradication of snakeweed & hyptis	Treatment of all target grasses prior to flowering/seeding. Treatment of all snakeweed and hyptis sites prior to maturity.	Seeding prevented in all target species	Foliar application of glyphosate or suitable alternative

Note: refer to figure 3.