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MANAGING THREATENED SPECIES AND WEEDS ON STATE ROADS IN TASMANIA

Greening Australia

BACKGROUND

In 1997, working with the RIMS database, botanist A.J. North & Associates undertook site inspections and set up monitoring plots at some threatened grassland sites occurring in road reserves along the Midlands Highway and near Hobart Airport. In 2000 A.J. North & Associates assessed all the known threatened species sites occurring along DIER roadsides and wrote the *Biological Risk Management State Road Network Sites of Critical Biological Conservation Significance Identification and Management* report. This study found that nine plant species rely on DIER road reserves for their continued survival. In 2001 and 2002 A.J. North & Associates inspected many threatened grassland and threatened species roadside sites, recording weeds present and condition. In 2004 Anahita Jungalwalla, working for DIER, wrote a management plan for the 45 highest priority sites. In the same year Land Management and Rehabilitation Services wrote a management plan covering specific conservation measures for the sites. In 2005 DIER took up Enviromark to manage roadside maintenance within the 43 highest priority sites so that infrastructure maintenance can be undertaken whilst avoiding damage to these critical sites.

A Public Authority Management Agreement has been signed between DIER and the Department of Primary Industries, Water and Environment, to cover work undertaken within the 43 priority threatened species sites. A five year works plan has been signed off for management of these sites under this agreement.

Enviromark is an integrated environmental management system for marking and managing significant environments developed by Greening Australia Tasmania. Enviromark can help organisations to observe their responsibilities under threatened species legislation, weed management legislation and local and regional natural resource management plans.

DIER is also using Enviromark to mark and manage the small number of serrated tussock sites occurring on State roadsides in the south-east. Serrated tussock is a Weed of National Significance. It can be spread by road maintenance activities.

This user guide explains the Enviromark system and outlines its application to the management of priority threatened plant populations and serrated tussock sites on DIER roadsides.

ENVIROMARK OVERVIEW

Enviromark uses an integrated set of tools. These are:

Field Markers
Specifications
Training and User Guide
Monitoring and evaluation

The Field Markers identify significant locations on the ground. Symbols and colours relate to specific Specification sheets, designed to be carried in vehicle glove-boxes. The Specifications set out the way in which maintenance activities are to be carried out between the field markers. There are separate specification sheets for each threatened species site and for serrated tussock. These specifications detail how road management activities are to be performed in each management area marked with a particular symbol. The system requires training and on-going monitoring to ensure effective use.

THE FIELD MARKERS

Field Markers have been put in place in both Northern and Southern DIER Regions at 46 locations (as at March 2005). Maps of their locations can be found on the DIER intranet and web site. The field markers show whether it is threatened species or weeds that are being managed at that site. They also indicate the direction of the management area with arrows and have a contact phone number for more information. Standard white Dura-post posts have been used, placed usually against the road reserve back fence.

Above are examples of a serrated tussock site (left) and a threatened species site (right).

Pest Species Area Marker

Management areas marked with this symbol, at right, contain pest species, usually significant weeds. In management areas marked with this symbol hygiene is critical.

Below the main marker is this code sticker, shown below at right; Nt, for serrated tussock.

There are three serrated tussock sites on DIER road reserve. All other known roadside serrated tussock in Tasmania has been marked with an Enviromark project with Clarence City Council. The DIER sites occur along South Arm Secondary Road east of the Police Academy turn-off, on both sides of the road, towards the Acton Road junction. The other site is on South Arm Secondary Road past the Forest Hill Road junction, south to the large pine trees, on the eastern road verge.

Serrated tussock (left) is causing a greater reduction in pasture carrying capacity than any other weed in Australia. Roadwork hygiene has a major influence on the spread of this Weed of National Significance.

Threatened Species Habitat Marker

This marker is used to mark sites containing one or more listed threatened plant species, or to mark a threatened plant community.

For each of the 43 highest priority DIER threatened species sites there is a unique site number, shown on the field marker and on the accompanying specification. Each site has a different specification.

There are three types of code; NO SLASHING, Distance Restricted SLASHING and Time Restricted SLASHING. Examples of these codes are shown below.

There are nine species of native plant that rely on DIER road reserves for their continued survival. There are also significant native grasslands, which are an endangered plant community, found within DIER road reserves. The locations of these populations are marked with the Threatened Species Habitat marker.

Installation and Maintenance of Field Markers

Installation of the field markers has been done by Greening Australia, with appropriate road safety training. Maintenance of the markers is also to be done by Greening Australia. Please report any apparently missing or damaged markers to the Hobart GA Office on 6223 6377.

The placement of markers and the associated management regimes are not to compromise safety or the reasonable functioning of the road corridor at any time.

SPECIFICATIONS

Specifications provide detail on road maintenance and roadwork actions within marked areas. There is a specification for each code on the field markers. Therefore there are 43 threatened species specifications and one pest species specification. Specifications are produced as A4 sheets and are to be carried within all vehicles and plant that will be operated within the marked areas.

The serrated tussock specification has a focus on vehicle hygiene. It is vital that equipment working in serrated tussock marked areas are cleaned before leaving the marked areas, or they will spread the weed further along the road reserve. An extensive spraying program has been undertaken in the adjacent and nearby private land areas to eradicate this weed and prevent its spread.

With the threatened species specifications the emphasis is on reducing disturbance within marked areas, but also on regulating the mowing regime. Some of the threatened species found within these areas rely on the disturbance of mowing, at particular times of year, to survive. Some of the species are destroyed by mowing and some populations have already been destroyed on roadsides.

Table 1 below sets out the location of all the Enviromark sites on DIER road reserves.

Table 1: Location of the Enviromark management areas

Site code	Site Name	Location	Road	Link	Chain start	Chain end	Length (m)
Serrated tussock sites							
Nt	Serrated tussock	Police Academy towards Acton Rd jnctn	South Arm Secondary Rd	5	1.51	2.73	1220
Nt	Serrated tussock	Police Academy towards Acton Rd jnctn	South Arm Secondary Rd	5	1.3	2.34	1040
Nt	Serrated tussock	Forest Hill Rd jnctn to large pines	South Arm Secondary Rd	5	6.34	7.19	100
Threatened species sites							
1	Orchids	Mason Point, north of Taranna	Arthur Hwy	73	4.65	4.8	150
2	Orchids	3.5 km southeast of Murdunna	Arthur Hwy	56	3.5	5.05	1550
3	Viminaria juncea	About 4km north of Swanwick	Coles Bay Tourist Rd	51	8.45	8.55	100
4	Eucalyptus morrisbyi	Between Cremorne Ave and Honeywood Dve	South Arm Sec Rd	5	10	10.05	50
5	Lepidium hyssopifolium	Bagdad; from Chauncy Vale Rd to East Bagdad Rd	Midland Hwy	20	0.45	0.81	360m
6	Lepidium hyssopifolium	Shones Corner, E Derwent Hwy junction with Grasstree Hill Rd	East Derwent Hwy	5	6.2	6.39	190

7	Lepidium hyssopifolium	Dysart, north of Clifton Vale Rd	Midland Hwy	20	5	5.1	100m
8	Lepidium hyssopifolium	Leona Rd area	Esk MR	47	6.49	6.5	10
9	Lepidium hyssopifolium	Just west of Falmouth (NE of St Marys)	Tasman Hwy	53	10.32	10.37	50
10	Austrodanthonia popinensis	Brighton; junction of Tea Tree Sec Rd and Ford Rd	Tea Tree SR	5	1.96	2.05	45
11	Austrodanthonia popinensis	Mangalore; from 300m southeast of Ballyhooly Rd, up to 2.1 km northwest of it, both sides.	Midland Hwy	15	2.6	5	2.4 km
12	Austrodanthonia popinensis	Kempton, south from Quoin Rd underpass	Midland Hwy	20	8.85	9.91	1.06 km
13	Austrodanthonia popinensis	Kempton northern main road junction to 1km south of Melton Mowbray	Midland Hwy	24	1.35	5.95	4.6 km
14	Austrodanthonia popinensis	Around the southern turn-off to Ross	Midland Hwy	57	2.95	2.98	30x2
15	Tunbridge Grassland	4km south of Blackman River Bridge	Midland Hwy	49	9.10	9.30	200m
16	Tunbridge Grassland	4km south of Blackman River Bridge	Midland Hwy	49	9.10	9.30	200m
17	Tunbridge Grassland	2.9km south of Blackman River Bridge	Midland Hwy	49	9.50	9.70	200m
18	Tunbridge Grassland	Between Blackman River Bridge and Tunbridge Tier Rd	Midland Hwy	55	0.20	0.75	550
19	Tunbridge Grassland	Between Blackman River Bridge and Tunbridge Tier Rd	Midland Hwy	55	0.20	0.45	250
20	Tunbridge Grassland	Less than 1km north of Tunbridge Tier Rd	Midland Hwy	55	1.05	1.30	250
21	Tunbridge Grassland	Less than 1km north of Tunbridge Tier Rd	Midland Hwy	55	1.20	1.25	50
22	Tunbridge Grassland	Less than 1km north of Tunbridge Tier Rd	Midland Hwy	55	1.45	1.80	350
23	Tunbridge Grassland	Less than 1km north of Tunbridge Tier Rd	Midland Hwy	55	1.50	1.70	200
24	Holyman Avenue Grassland	Hobart Airport turn-off round-about	Tasman Hwy	7	12.00	12.80	800
25	Holyman Avenue Grassland	Hobart Airport turn-off round-about	Tasman Hwy	7	12.00	12.80	800
26	Wanstead Grassland	Between Snaresbrook and Wanstead	Midland Hwy	68	7.10	7.25	150
27	Wanstead Grassland	Between Snaresbrook and Wanstead	Midland Hwy	68	7.15	7.25	100

28	Wanstead Grassland	Between Snaresbrook and Wanstead	Midland Hwy	68	7.85	8.50	750
29	Wanstead Grassland	Between Snaresbrook and Wanstead	Midland Hwy	68	8.10	8.40	300
30	Avoca Grasslands	Between Llewellyn and Hanleth	Esk MR	21	1.00	1.55	400
31	Avoca Grasslands	Between Llewellyn and Hanleth	Esk MR	21	1.80	1.90	100
32	Avoca Grasslands	Between Llewellyn and Hanleth	Esk MR	21	2.15	2.35	200
33	Avoca Grasslands	Between Llewellyn and Hanleth	Esk MR	21	2.90	3.00	100
34	Avoca Grasslands	Between Hanleth and Eastbourne	Esk MR	21	3.20	3.95	750
35	Avoca Grasslands	Between Hanleth and Eastbourne	Esk MR	21	4.35	4.45	100
36	Avoca Grasslands	Between Hanleth and Eastbourne	Esk MR	21	4.90	5.15	250
37	Avoca Grasslands	Between Hanleth and Eastbourne	Esk MR	21	5.25	5.85	600
38	Avoca Grasslands	Between Eastbourne and Stynes Creek	Esk MR	21	6.50	7.60	1100
39	Tasman Highway Lk Leake Jnctn	Springs Rd to Black Swamp	Tasman Hwy	36	8.20	8.69	490
40	Tasman Highway Lk Leake Jnctn	Springs Rd to Black Swamp	Tasman Hwy	36	8.69	9.13	440
41	Tasman Highway Lk Leake Jnctn	Springs Rd to Black Swamp	Tasman Hwy	36	8.35	8.60	250
42	Tasman Highway Lk Leake Jnctn	Springs Rd to Black Swamp	Tasman Hwy	38	0.00	0.20	200
43	Tasman Highway Lk Leake Jnctn	Springs Rd to Black Swamp	Tasman Hwy	38	0.33	0.45	120

The following pages show the serrated tussock specification and also give examples of the three types of threatened species specification. The threatened species specifications are all available on the DIER intranet and internet site.

Figure 1: The serrated tussock specification

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SPECIFICATION

PEST SPECIES AREA

***NASSELLA TRICHOTOMA* (SERRATED TUSSOCK)**

Nassella trichotoma

Nt

Serrated tussock

Description	Serrated Tussock is a tussock forming (clumping) grass. It is easily confused with some native grasses such as silver tussock (*Poa labillardieri*). See the sheet "Identifying Serrated Tussock" for key differences. Originally from South America, Serrated Tussock is one of Australia's worst weeds, and a serious threat to agriculture.
Management	Hygiene is critical. Serrated Tussock is easily spread along roadsides by moving bits of plants or soil that may contain seeds. If possible, do not enter Serrated Tussock pest species marked areas and do not move material, particularly soil, out of these areas. If you must work in these areas, follow the guidelines below:
Transport	Cover loads. Deposit material at the closest suitable point. Do not move material into uninfected areas.
Disposal of Spoil	Do not take spoil into weed free (unmarked) areas unless you can bury the infected soil at least 200 mm deep underneath uninfected soil. Inspect disposal sites regularly and treat any tussocks that come up.
Machinery and Equipment	Always clean machinery and equipment when leaving a pest species marked area.

SPECIFIC MANAGEMENT ACTIVITIES

Mowing & Slashing	No slashing from late spring to autumn. Best time to slash is usually in mid-spring (four weeks prior to the period of maximum grass growth).
Weeding	Treat with flupropanate or glyphosate herbicide. Follow the herbicide label directions. Flupropanate may only be applied between November and February. Manually remove small infestations and safely transport, in a covered vehicle. Dispose of plant material by burying at least 200mm under uninfected soil. Clean machinery and equipment when leaving a marked pest species work area.
Drain cleaning	Drains are the most likely place for seeds to occur. Spoil from marked areas must be safely transported (under cover) and disposed of by burying under 200mm of uninfected soil. Clean machinery and equipment when leaving a marked pest species work area.
Scraping /Grading	Avoid scraping and grading whenever possible. If it has to be done, the spoil from marked areas must be safely transported (under cover) and disposed of by burying under 200mm of soil from uninfected areas. Clean machinery and equipment when leaving a marked pest species work area.
Removal of material	Do not unless it is essential. Practice safe transport i.e. cover the vehicle. Dispose of material from marked past species areas by burying under 200mm of soil from uninfected areas. Clean machinery and equipment when leaving a marked pest species work area.
Stockpile & Parking	Do not stockpile materials or park on marked pest species areas.
Pruning	If pruning other plants in this area, practice hygiene i.e. clean all clothing, tools and equipment before leaving the area.
Clearing, Digging and Construction	Practice safe transport and disposal of material i.e. transport material under cover and dispose of by burying under 200mm of soil from uninfected areas. Clean all clothing, tools and equipment when leaving the area.

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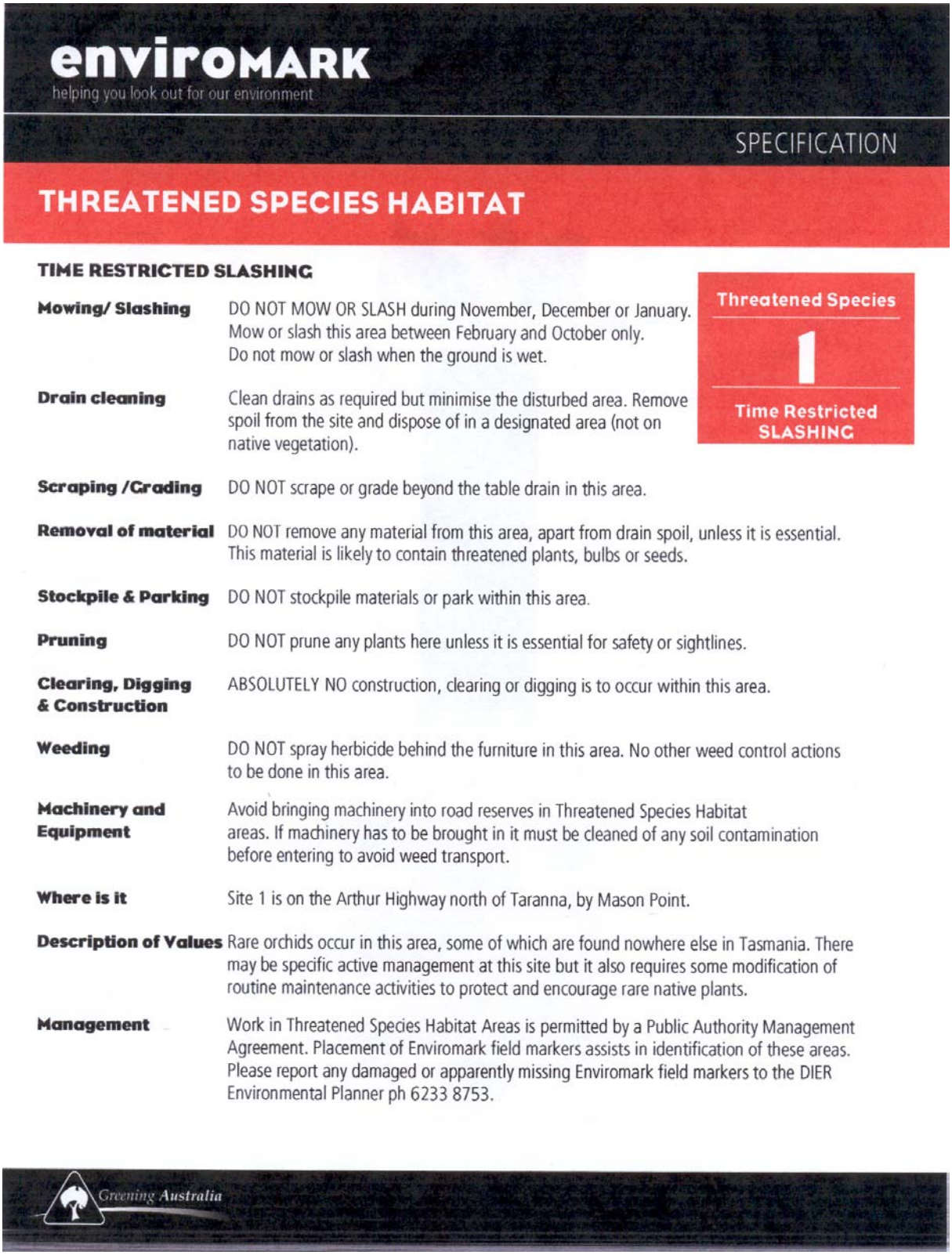
Figure 2; Example of a Time Restricted Slashing specification



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SPECIFICATION

THREATENED SPECIES HABITAT

TIME RESTRICTED SLASHING

Threatened Species
1
Time Restricted SLASHING

Mowing/ Slashing	DO NOT MOW OR SLASH during November, December or January. Mow or slash this area between February and October only. Do not mow or slash when the ground is wet.
Drain cleaning	Clean drains as required but minimise the disturbed area. Remove spoil from the site and dispose of in a designated area (not on native vegetation).
Scraping /Grading	DO NOT scrape or grade beyond the table drain in this area.
Removal of material	DO NOT remove any material from this area, apart from drain spoil, unless it is essential. This material is likely to contain threatened plants, bulbs or seeds.
Stockpile & Parking	DO NOT stockpile materials or park within this area.
Pruning	DO NOT prune any plants here unless it is essential for safety or sightlines.
Clearing, Digging & Construction	ABSOLUTELY NO construction, clearing or digging is to occur within this area.
Weeding	DO NOT spray herbicide behind the furniture in this area. No other weed control actions to be done in this area.
Machinery and Equipment	Avoid bringing machinery into road reserves in Threatened Species Habitat areas. If machinery has to be brought in it must be cleaned of any soil contamination before entering to avoid weed transport.
Where is it	Site 1 is on the Arthur Highway north of Taranna, by Mason Point.
Description of Values	Rare orchids occur in this area, some of which are found nowhere else in Tasmania. There may be specific active management at this site but it also requires some modification of routine maintenance activities to protect and encourage rare native plants.
Management	Work in Threatened Species Habitat Areas is permitted by a Public Authority Management Agreement. Placement of Enviromark field markers assists in identification of these areas. Please report any damaged or apparently missing Enviromark field markers to the DIER Environmental Planner ph 6233 8753.

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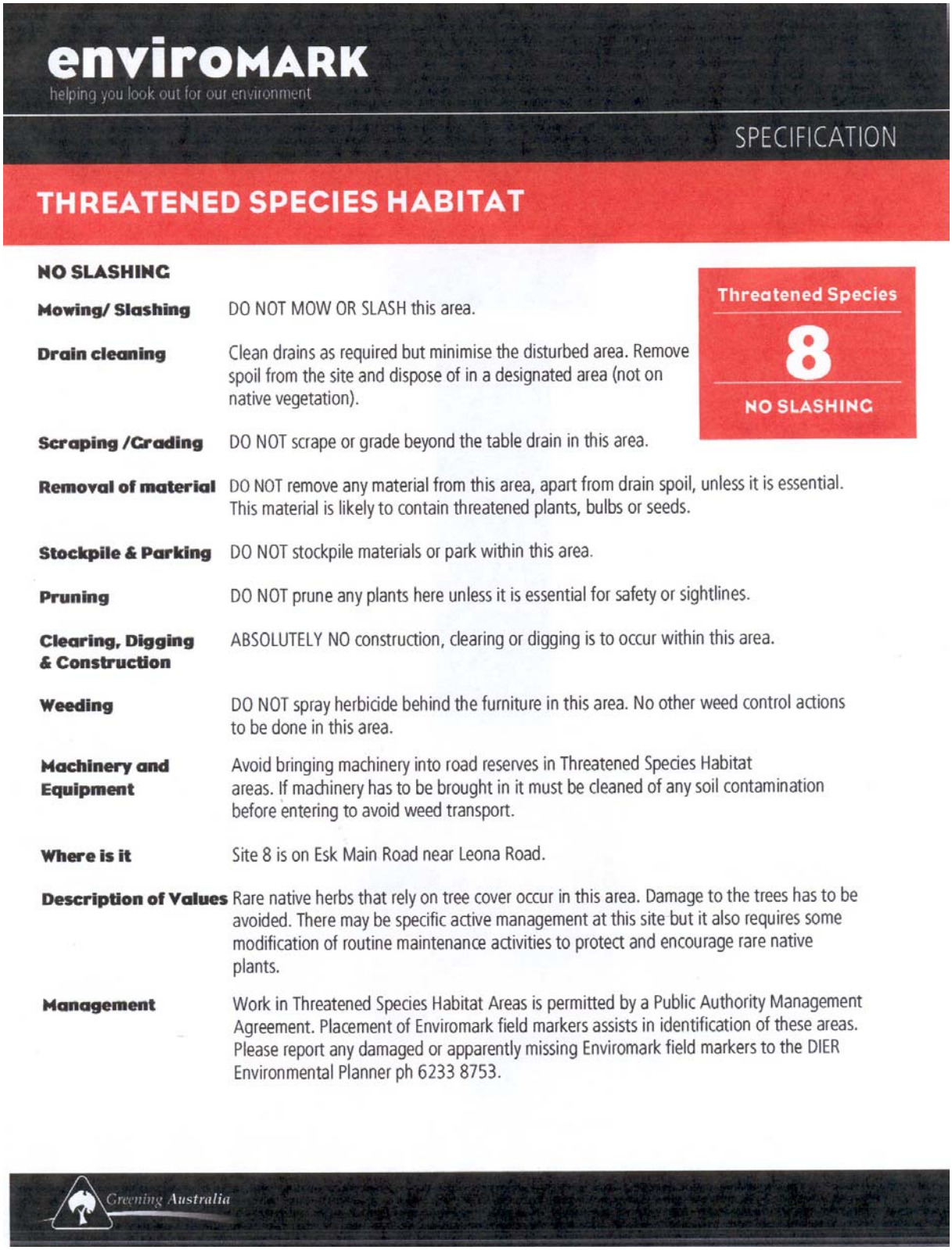
Figure 3; Example of a No Slashing specification



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SPECIFICATION

THREATENED SPECIES HABITAT

Threatened Species
8
NO SLASHING

NO SLASHING

Mowing/ Slashing	DO NOT MOW OR SLASH this area.
Drain cleaning	Clean drains as required but minimise the disturbed area. Remove spoil from the site and dispose of in a designated area (not on native vegetation).
Scraping /Grading	DO NOT scrape or grade beyond the table drain in this area.
Removal of material	DO NOT remove any material from this area, apart from drain spoil, unless it is essential. This material is likely to contain threatened plants, bulbs or seeds.
Stockpile & Parking	DO NOT stockpile materials or park within this area.
Pruning	DO NOT prune any plants here unless it is essential for safety or sightlines.
Clearing, Digging & Construction	ABSOLUTELY NO construction, clearing or digging is to occur within this area.
Weeding	DO NOT spray herbicide behind the furniture in this area. No other weed control actions to be done in this area.
Machinery and Equipment	Avoid bringing machinery into road reserves in Threatened Species Habitat areas. If machinery has to be brought in it must be cleaned of any soil contamination before entering to avoid weed transport.
Where is it	Site 8 is on Esk Main Road near Leona Road.
Description of Values	Rare native herbs that rely on tree cover occur in this area. Damage to the trees has to be avoided. There may be specific active management at this site but it also requires some modification of routine maintenance activities to protect and encourage rare native plants.
Management	Work in Threatened Species Habitat Areas is permitted by a Public Authority Management Agreement. Placement of Enviromark field markers assists in identification of these areas. Please report any damaged or apparently missing Enviromark field markers to the DIER Environmental Planner ph 6233 8753.

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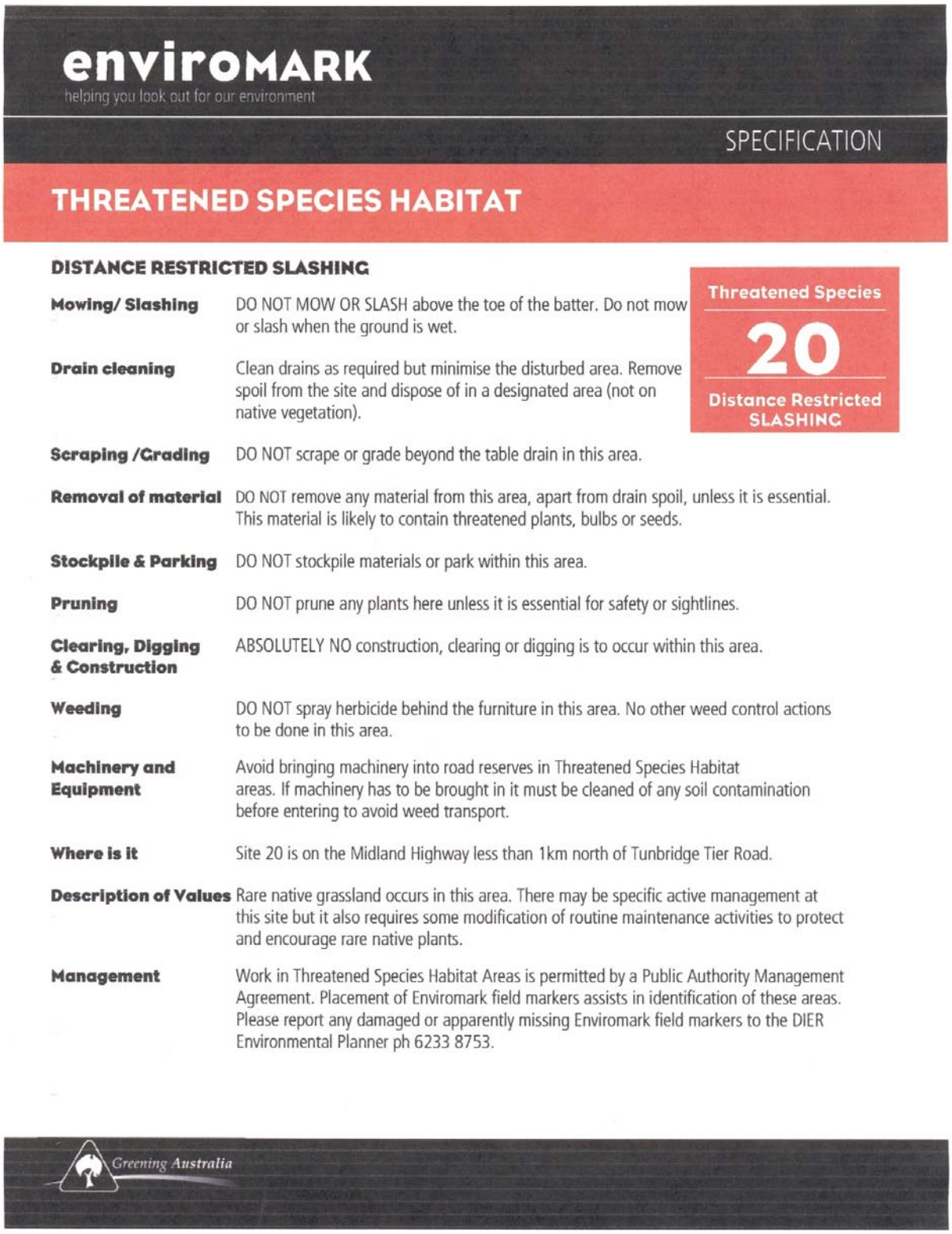
Figure 4: Example of a Distance Restricted Slashing specification



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SPECIFICATION

THREATENED SPECIES HABITAT

DISTANCE RESTRICTED SLASHING

Threatened Species
20
Distance Restricted SLASHING

Mowing/ Slashing	DO NOT MOW OR SLASH above the toe of the batter. Do not mow or slash when the ground is wet.
Drain cleaning	Clean drains as required but minimise the disturbed area. Remove spoil from the site and dispose of in a designated area (not on native vegetation).
Scraping /Grading	DO NOT scrape or grade beyond the table drain in this area.
Removal of material	DO NOT remove any material from this area, apart from drain spoil, unless it is essential. This material is likely to contain threatened plants, bulbs or seeds.
Stockpile & Parking	DO NOT stockpile materials or park within this area.
Pruning	DO NOT prune any plants here unless it is essential for safety or sightlines.
Clearing, Digging & Construction	ABSOLUTELY NO construction, clearing or digging is to occur within this area.
Weeding	DO NOT spray herbicide behind the furniture in this area. No other weed control actions to be done in this area.
Machinery and Equipment	Avoid bringing machinery into road reserves in Threatened Species Habitat areas. If machinery has to be brought in it must be cleaned of any soil contamination before entering to avoid weed transport.
Where is it	Site 20 is on the Midland Highway less than 1km north of Tunbridge Tier Road.
Description of Values	Rare native grassland occurs in this area. There may be specific active management at this site but it also requires some modification of routine maintenance activities to protect and encourage rare native plants.
Management	Work in Threatened Species Habitat Areas is permitted by a Public Authority Management Agreement. Placement of Enviromark field markers assists in identification of these areas. Please report any damaged or apparently missing Enviromark field markers to the DIER Environmental Planner ph 6233 8753.

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MONITORING AND REASSESSMENT

Monitoring System Use

DIER has signed a five year licence agreement for the use of Enviromark. This licence covers any Enviromark projects that DIER wish to undertake within that time. This began in 1994. As part of this licence DIER have made a commitment to undertake a yearly review of the operation of Enviromark within the Department. The yearly review includes checking that the specifications are being followed, for example checking that the restrictions on mowing regime within marked areas are being adhered to.

After five years the use of the Enviromark system needs to be reassessed, to check that it is being used properly and that the issues for which it was implemented are still being adequately addressed and still require the prescribed management, within the marked areas.

Monitoring Vegetation

Threatened species management, beyond that covered under the specifications, and also monitoring of the threatened species sites is to be done by Greening Australia. Some monitoring has previously been done by A.J. North and Associates.

UPDATES AND FEEDBACK

Greening Australia Tasmania needs to be informed of the results of the yearly and five-yearly system review. We also seek any comments DIER may have on the operation of the system that will enable us to improve or fine-tune it.

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