

SITE IMAGE
Landscape Architects



Proposed Industrial Development Lot 4, Bringelly Road, Leppington NSW

LANDSCAPE MANAGEMENT PLAN

Prepared by	Site Image (NSW) Pty Ltd	
Prepared for	ESR	
Project number	SS20-4497	
Date	05.11.2021	
Document Issue	Description	Date
A	For Comment	05.11.2021
B	Revised For Comment	29.11.2021

Contents

Contents

1.0 Scope

2.0 Maintenance Activities

- 2.1 Generally
- 2.2 Logbook
- 2.3 Plants
- 2.4 Pruning
- 2.5 Spraying
- 2.6 Fertilising
- 2.7 Stakes and Ties
- 2.8 Mulched Surfaces
- 2.9 Mowing and Top Dressing
- 2.10 Irrigation and Watering
- 2.11 Erosion Control Measures
- 2.12 Weeding and Rubbish Removal
- 2.13 Urgent Works
- 2.14 Completion

3.0 Maintenance Schedule

- 3.1 Management Requirements

1.0 Scope

Please refer to landscape plans to scope.

Relevant Landscape Drawings:

SS20-4497_FC_000_A
SS20-4497_FC_101_A
SS20-4497_FC_501_A
SS20-4497_000_E
SS20-4497_101_E
SS20-4497_102_E
SS20-4497_103_D
SS20-4497_104_D
SS20-4497_105_D
SS20-4497_201_E
SS20-4497_501_E

Note: these plans do not cover any revegetation works, those works are covers by a separate contractor.

2.0 Maintenance Activities

2.1 Generally

The Landscape Contractor shall rectify defects during installation and that become apparent in the works under normal use for the duration of the contract Defects Liability Period (DLP).

After the DLP, the implemented landscape treatments **must be managed for the life of the development** as per this Landscape Management Plan and as per the requirements of Appendix 4 of Planning for Bushfire Protection 2019, as stated in condition B33 of the DA consent and in the Applicant's Management and Mitigation Measures.

The landscape maintenance/ management works shall include, but not be limited to, the following:

- Replacing failed plants;
- Pruning;
- Insect and pest control;
- Fertilising;
- Maintaining mulch;
- Mowing;
- Watering;
- Weeding;
- Rubbish removal; and
- Cleaning of the surrounding areas.

2.2 Logbook

Keep a Maintenance Logbook recording when and what maintenance work has been done and what materials, including chemical materials, have been used.

The records shall show when and where identified chemicals were used and why.

Submit the initial logbook for inspection prior to Practical Completion.
Record all major events and activities in the logbook.

Make the logbook available for inspection on request.

2.3 Plants

CO	Botanical Name	Common Name	Mature Size (Height x Width)	Pot Size	Density	Quantity	Native/Exotic
TREES							
Cm	<i>Corymbia maculata</i>	Spotted Gum	30 x 8	45L	As Shown	50	Native, CPW
Cm - 100L	<i>Corymbia maculata</i>	Spotted Gum	30 x 8	100L	As Shown	3	Native, CPW
Er	<i>Elaeocarpus reticulatus</i>	Blue Berry Ash	13 x 6	400L	As Shown	3	Native
EED	<i>Eucalyptus 'Euky Dwarf'</i>	Dwarf Gum Tree	6 x 5	45L	As Shown	6	Native
Et	<i>Eucalyptus tereticornis</i>	Forest Red Gum	30 x 8	45L	As Shown	8	Native, CPW
Et - 100L	<i>Eucalyptus tereticornis</i>	Forest Red Gum	30 x 8	100L	As Shown	3	Native, CPW
Li	<i>Lagostromia indica</i>	Crepe Myrtle	6 x 3	45L	As Shown	5	Exotic
MLG	<i>Magnolia grandiflora</i> 'Little Gem'	Dwarf Magnolia	5 x 3	400L	As Shown	6	Exotic
Ms	<i>Melaleuca stypheloides</i>	Prickly Paperbark	10 x 6	100L	As Shown	39	Native
Wfl	<i>Waterhousea floribunda</i>	Weeping Lily Pilly	20 x 8	400L	As Shown	4	Native
SHRUBS							
Wf	<i>Westringia fruticosa</i>	Coastal Rosemary	2 x 2	300mm	As Shown	84	Native
CDS	<i>Carissa macrocarpa</i> 'Desert Star'	Desert Star	2 x 1	300mm	As Shown	174	Exotic
Ca	<i>Correa alba</i>	White Correa	1 x 1	300mm	As Shown	132	Native
LPG	<i>Loropetalum 'Plum Gorgeous'</i>	Loropetalum Plum Gorgeous	1.5 x 2	300mm	As Shown	166	Exotic
MCT	<i>Melaleuca 'Claret Tops'</i>	Honey Myrtle	1 x 1	300mm	As Shown	353	Native
ROP	<i>Raphiolepis 'Oriental Pearl'</i>	Oriental Pearl	0.8 x 1	300mm	As Shown	316	Exotic
Vo	<i>Viburnum odoratissimum</i>	Sweet Viburnum	3 x 2.5	300mm	As Shown	16	Exotic
WWG	<i>Westringia 'Wynyabbie Gem'</i>	Wynyabbie Gem	1.5 x 1.5	300mm	As Shown	45	Native
GROUNDCOVERS							
Hv	<i>Hardenbergia violacea</i>	Native Sarsparilla	0.2 x 3	Tube stock	5/m ²	187	Native, CPW
LI	<i>Lomandra longifolia</i>	Matrush	0.75 x 1	150mm	5/m ²	1002	Native
Gt	<i>Gazania tomentosa</i>	Silver Leaf Gazania	0.1 x 1	150mm	5/m ²	5699	Exotic
Hs	<i>Hibbertia scandens</i>	Snake Vine	0.3 x 1	150mm	5/m ²	60	Native
PR	<i>Pennisetum Rubrum</i>	Purple Fountain Grass	0.9 x 0.6	150mm	5/m ²	572	Native
Sp	<i>Sedum purpurea</i>	Stonecrop	0.15 x 0.5	150mm	5/m ²	119	Exotic

Above is an extract of the plant schedule from the relevant landscape drawings and details the plants to be planted on site. As highlighted above, the majority of the proposed planting is made up of Australian native species and display a preference for smooth barked and evergreen trees as stated in Appendix 4 of Planning for Bushfire Protection 2019.

Trees, shrubs and groundcovers shall at all times display healthy vigorous growth. Spent flower heads or stalks shall be removed immediately following flowering.

Replace failed plants: A "failed" plant may not mean complete death of soft tissue but failure due to poor growth, appearance, or unacceptable time for plant to re-establish new growth following damage or vandalism.

Replacement plants shall be in a similar size and quality and identical species or variety to the plant that has failed.

Replacement of plants shall be at the cost of the Landscape Contractor unless advised otherwise. If the cause of the failure is due to a controllable situation then correct the situation prior to replacing plants.

Failure of a plant shall be at the sole discretion of the Landscape Architect.

2.4 Pruning

Whatever pruning work is requested by the Landscape Architect shall be performed, including any pruning of damaged growth or miscellaneous pruning considered as beneficial to the condition of the plants.

Trees should not overhand or touch the building and lower limbs should be removed up to a height of 2m above the ground as per Appendix 4 of Planning for Bushfire Protection 2019.

Pruning works to be carried out to as per Section 3.1 Management Requirements.

2.5 Spraying

Avoid spraying:

- if ever possible;
- in wet weather;
- if wet weather is imminent;

- if target plants are still wet after rain;
- in windy weather; and
- if adjacent desirable species are too close to the target plants to be avoided.

Immediately report to the Project Manager any evidence of intensive weed infestation, insect attack or disease amongst plant material. Submit all proposals to apply chemicals and obtain approval before starting this work.

When approved, spray with herbicide, insecticide, fungicide as appropriate in accordance with the manufacturers' recommendations. Record in the logbook all relevant details of spraying activities including:

- Product brand / manufacturer's name,
- Chemical / product name,
- Chemical contents,
- Application quantity and rate,
- Date of application and location,
- Results of application, and
- Use approval authority.

2.6 Fertilising

Fertilise gardens with a proprietary slow release fertiliser applied in accordance with the manufacturer's directions and recommendations. Record in the logbook all relevant details of fertilising including:

- Product brand / manufacturer's name,
- Fertiliser / product name,
- Application quantity and rate, and
- Date of application and location.

2.7 Stakes and Ties

Adjust and replace as required to ensure plants remain correctly staked. Remove those not required at the end of the planting establishment period (Defects Liability Period).

2.8 Mulched Surfaces

Maintain the surface in a clean, tidy and weed free condition and reinstate the mulch as necessary to ensure correct depth as before specified.

2.9 Mowing and Top Dressing

Grass cutting regularity, heights and fertilization is subject to seasonal, climatic conditions and grass types all of which need to be considered in the maintenance program.

Grass cutting heights:

The seasonal height of the cut is one of the most critical issues in maintaining healthy looking lawns and to achieve this the general rule is to maintain grass cut heights at 30mm-50mm as grass which is cut taller will re-grow slower than short cut grass and therefore requires less frequent cutting. Do not remove more than one third of the grass height at any one time.

Remove grass clippings from site immediately after each mowing session or use catcher mowers in presentation areas or where grass heights have exceeded 75mm.

Where grass cutting has been delayed due to inclement weather conditions or taller grass cutting has been required all grass cuttings must be removed either by the use of catchers, raking by blower vacuumed to avoid "clumping" of dead grass on the surface and rotting of the understory grass which remains.

Specifically, the following table should be adopted:

Season:	Grass type:	Optimum height:	Cut	Regularity:
Summer	Couch	20-25mm		Fortnightly
	Buffalo	30-35mm		

Autumn	Couch	30mm	Fortnightly
	Buffalo	30mm	
Winter	Couch	35-40mm	Fortnightly
	Buffalo	30mm	
Spring:	Couch	15-20mm	Weekly
	Buffalo	30-40mm	

General guidelines to be adopted:

1. Increase the mowing heights by 1-2cm for shady areas or where existing lawns have been worn down resulting in sparse cover.
2. Keep all mowing equipment blades sharp at all times by regular equipment maintenance.
3. Select the correct type of mowing equipment for the job, do not use heavy ride on mowers on pour or weekend grass coverage areas or areas having brick paved pathways in close proximity, hand mow these areas with cutting heights 2-3mm above the average specified grass cut heights.
4. Remove grass clippings where grass cutting has been done when grass is too long.
5. Dead grass is not to be left after mowing in any area under any circumstances.
6. Ensure that all areas that are cut in one day are also edged and all cut grass is removed and or cleaned up from all pathways and street gutters, do not mow more grass areas than can be edged or cleaned up in the same time period and work all mowing cycles on a half day period to ensure no areas are left uncleaned by the half day.
7. Grass should kept mown to no more than 100mm in height as per Appendix 4 of Planning for Bushfire Protection 2019.

2.10 Irrigation and Watering

Maintain the irrigation system to sure that each individual plant receives the required amount of water to maintain healthy and vigorous growth, adjust and rectify as required.

Provide additional watering, if necessary.

2.11 Erosion Control Measures

Where necessary, maintain the erosion control devices in a tidy and weed free condition and reinstate as necessary to ensure control measures are effective where deemed necessary.

2.12 Weeding and Rubbish Removal

During the plant establishment period remove by hand, rubbish and weed growth that may occur or re-occur throughout all planted, mulched and paved areas.

The contractor shall target weeds that are capable of producing a major infestation of unwanted plants by seed distribution.

Whenever possible, time weed removal to precede flowering and seed set.

Leaves and vegetation debris should be removed as per Appendix 4 of Planning for Bushfire Protection 2019.

2.13 Urgent Works

Notwithstanding anything to the contrary in the Contract, the Project Manager may instruct the Landscape Contractor to perform urgent maintenance works that place the completed contract works at risk.

If the Landscape Contractor fails to carry out the work within seven (7) days of such notice, the Project Manager (or representative) reserves the right without further notice to employ others to carry out such urgent and specified work and charge the cost to the Landscape Contractor.

Such work shall include but not limited to the inspection and clearing of drains in the pavement and gardens.

2.14 Completion

A final inspection shall be made by the Project Manager, Landscape Contractor and Landscape Architect before the completion of the Plant Establishment Maintenance Period (Defects Liability Period).

Any items requiring rectification shall be repaired before completion of the relevant works and finally approved prior to certification.

3.0 Maintenance Schedule

Activity	Suggested Frequency							Key Performance Standards
			Weekly	Fortnightly	Monthly	Quarterly	6 Months	
Logbook								Logbook to be completed at every visit. Logbook to be available for inspection upon request.
Softworks								
Watering and Irrigation System Checks				•				Irrigation system to be checked fortnightly. Major repairs to system and extreme condition watering to be carried out as Additional Works.
Mulch				•				Inspect and replace mulch deficiencies within 2 weeks of observation. Prior to placing new mulch aerate the soil by fork turning to a depth of at least 100mm, roughly level the soil and then place mulch. Do not disturb major plant roots while aerating soil. It can be expected that mulch will have significantly broken-down after an estimated 12-month period following initial application. It is therefore recommended that all mulch beds are topped-up with a 50mm layer of woodchip/leaf mulch (Compliant with AS 4454) at this stage. This should be accompanied by a topdressing application of a 9-month, slow release, low phosphorous fertiliser to ensure that semi-established plantings do not suffer as a result of potential nitrogen draw-down that may be associated with the application of the 50mm mulch layer at the 12-month period.
Erosion control					•			Inspect and repair ground, soil and mulch immediately. Maintain erosion control device as necessary. Silt fencing installed for sediment control purposes to the east of the tributary. Silt fencing should be regularly inspected and repaired or reinstalled as necessary
Plant Replacement					•			Inspect and replace failed plants within 2 weeks of observation of failure. Match species, size (original) and location of new with old.
Stakes and Ties				•				Inspect every two weeks, adjust and/or replace as necessary but remove as plants mature and are able to support themselves.

Pruning - Native Grasses										• Native grasses to be pruned annually in spring
Pruning - Hedges									•	Maintain to a maximum new growth of 50mm
Pruning – Small Trees									•	Evergreen Trees to be pruned year round to maintain a healthy form
									•	Deciduous trees to be crown lifted annually to 2.5m and canopy shaped
Fertilising									•	Slow release NPK fertiliser to be applied quarterly Note: Use low phosphorus product on Native Species
Weeding - Hardstand									•	Combination of hand and spray weeding Where weeds are greater than 25mm hand weeding to be carried out Use 'Roundup Bi Active' <u>without</u> dye
Weeding - Garden Beds									•	Where weeds are greater than 25mm hand weeding to be carried out Use 'Roundup Bi Active' with dye
Rubbish and Litter Removal									•	General garden waste to be cleared. Any waste created by general maintenance duties eg, pruning waste is to be removed off site weekly. General litter picking to be carried out on garden areas only
Urgent Works										Complete within 1 week (7 days) of notification. Inspect and clear drains.

*Maintenance Schedule and Landscape Specification to be read in conjunction with vegetation management plan

3.1 Management Requirements

The following are the requirements to be **maintained** in perpetuity as stated in Appendix 4 of Planning for Bushfire Protection 2019.

Trees:

- tree canopy cover should be less than 15% at maturity;
- trees at maturity should not touch or overhang the building;
- lower limbs should be removed up to a height of 2m above the ground;
- tree canopies should be separated by 2 to 5m; and
- preference should be given to smooth barked and evergreen trees.

Shrubs:

- create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings should be provided;
- shrubs should not be located under trees;

- shrubs should not form more than 10% ground cover; and
- clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.

Grass:

- grass should be kept mown (as a guide grass should be kept to no more than 100mm in height); and
- leaves and vegetation debris should be removed.