

5.2 ANALYSIS OF RESULTS

5.2.1 POPULATION MIX

The data collected by the Centennial Parklands staff provides a valuable opportunity to analyse the overall health and viability of the current tree population across the Parklands.

The following provides a summary of the analysis results. These provide a clear indication that Centennial Parklands currently supports a tree population dominated by only a few species with most in a mature to over mature age category. While the current health of most trees will remain relatively steady over the next 5 to 10 years, the data indicates that over the 10 to 20 years following that, there will be a more significant rate of decline apparent among most of the mature to over mature specimens across the parks.

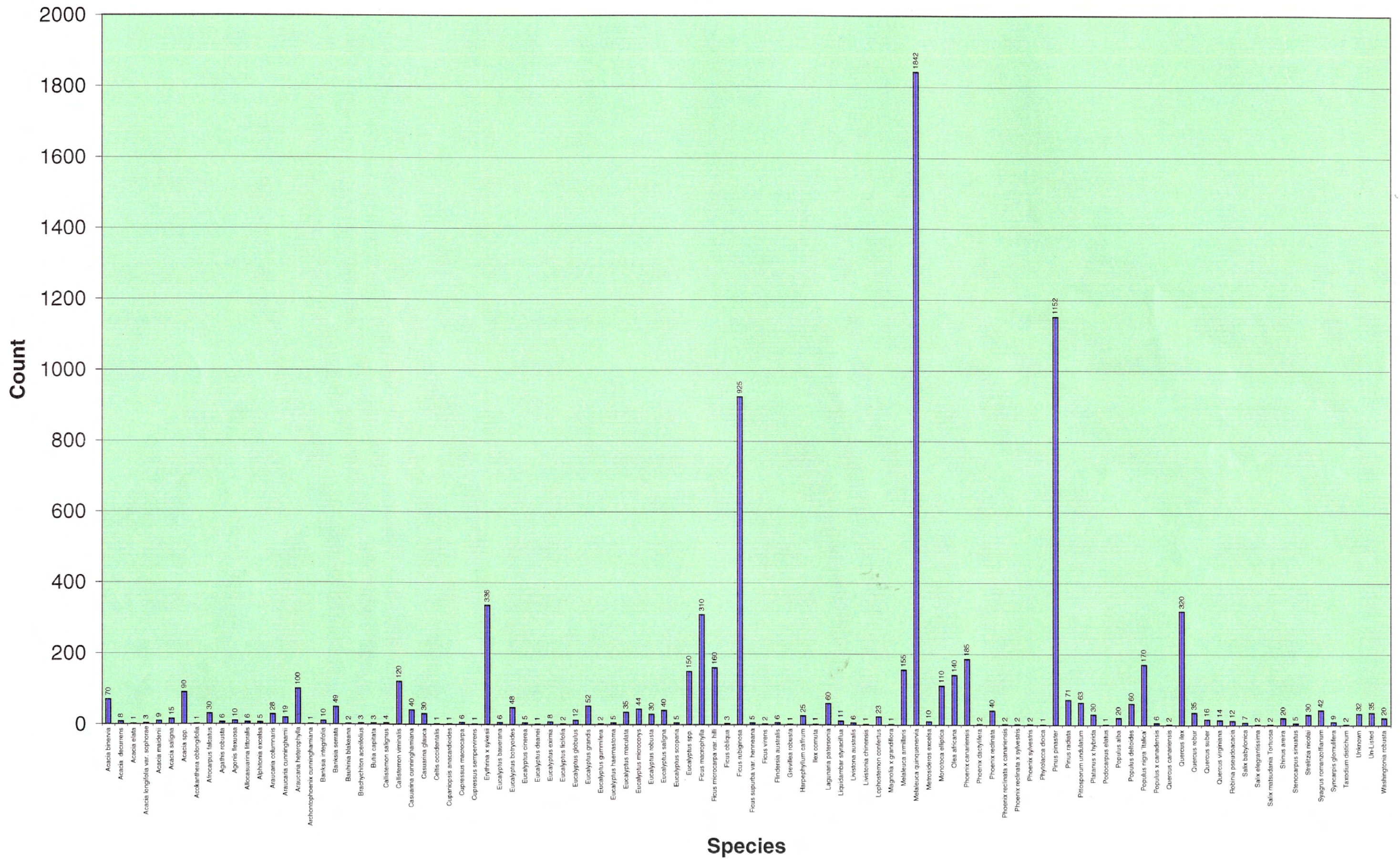
At this stage, tree maturity and Safe Useful Life Expectancy have not been determined for trees within Moore Park Golf Course and ES Marcs Field. Data for maturity ratings are based on data for Centennial Park, Queens Park and Moore Park.

Of the approximately 9100 trees spread across Centennial Park, Queens Park and Moore Park, 67% have been assessed as being Mature to Over-mature. The eight most significant species across the Parklands, both in terms of their visual impact and there heritage value, account for 75% of this total alone

Of these, the large blocks of *Pinus pinaster* characteristically have a life span of 70 to 90 years in Sydney. Most, therefore, are in the latter half of their potential useful horticultural life. Other species such as *Ficus* have many specimens in a poor or declining condition, *Phoenix spp.* are in decline due to disease and the older *Erythrina x sykesii* typically have a high rate of failure requiring their removal.

The reliance on only two main species, effectively in monocultures, is generally considered to be unsuitable from a horticultural perspective, in terms of pest and disease management.

Botanical Name	Mature/ Overmature	% of Total
Count		
<i>Melaleuca quinquenervia</i>	1842	26.90%
<i>Pinus pinaster</i>	1152	23.02%
<i>Ficus rubiginosa</i>	831	10.69%
<i>Erythrina x sykesii</i>	318	3.53%
<i>Quercus ilex</i>	296	3.80%
<i>Ficus macrophylla</i>	282	3.91%
<i>Phoenix canariensis</i>	172	1.91%
<i>Araucaria heterophylla</i>	90	1.32%



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• Tempe Macgowan, Landscape Architect • Garry Clibbey, Arborist
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CENTENNIAL PARK MATURE - OVERMATURE TREE TOTALS

Drawing No: V 2.8

5.3 ISSUES WITH SULE ANALYSIS

SULE is a tree rating system commonly used as part of process of assessing the suitability of trees for retention on any site at a planning stage. In the Tree Inventory carried out by Parklands Staff, SULE has been applied in its more narrow sense; as a measure of the anticipated age that a tree can be expected to attain before it either dies or (and of more importance in the context of a heavily used public park) has reached a state of decline that requires high resource input to manage the tree and poses a significant hazard to public safety.

As some mature specimens can often have many years of useful horticultural life, the SULE rating provides important information for the planning process. In determining SULE ratings for trees across the Parklands, the main factors taken into consideration have included: the known or estimated age of the tree; the average life span of the species; local environmental factors likely to modify the average life span; current and anticipated health and vigour of the specimen; structural integrity and presence of decay or defects; relevant safety or risk factors.

The SULE ratings given to trees in the Parklands raise several important issues for the park managers. The estimated SULE does not mean that these trees will necessarily be dead in the specified time, but they are likely to be in a state of significant decline and will require greater arboricultural inputs to manage them up to the point that they are removed.

- The main implications of these results are that they will directly affect:
- management of the tree population, particularly in terms of hazard management and public expectations of the appearance of the park
 - funding in terms of manpower and equipment required to manage the trees / cost of tree replacement.
 - design considerations in terms of appropriate species, planting rates and locations.

An assessment of the combined SULE ratings <5 years to 40 years (for Centennial Park, Queens Park and Moore Park) reveals that the largest numbers of trees with a Safe Useful Life expectancy of up to 40 years generally corresponds closely with trees rated as being Mature to Over-mature. The 10 most frequent trees with a SULE ranging up to 40 years account for 63.6% of the 7044 trees in this category.

Botanical Name	TOTAL COUNT	SULE <5-15	SULE 15-40	Combined SULE Values	SULE <5-40 % of TOTAL
<i>Pinus pinaster</i>	2092	73	1923	1996	21.7%
<i>Melaleuca</i>					
<i>quinquenervia</i>	2445	35	1814	1849	20.1%
<i>Ficus rubiginosa</i>	972	185	568	753	8.2%
<i>Erythrina x sykesii</i>	321	112	178	290	3.2%
<i>Quercus ilex</i>	345	47	237	284	3.1%
<i>Casuarina</i>					
<i>cunninghamiana</i>	346	2	263	265	2.9%
<i>Ficus macrophylla</i>	355	49	186	235	2.6%
<i>Phoenix</i>					
<i>canariensis</i>	174	14	159	173	1.9%
<i>Monotoca elliptica</i>	122	16	103	119	1.3%
<i>Araucaria</i>					
<i>heterophylla</i>	120	9	69	78	0.8%

In all, trees assessed as having a SULE of <5 to 15 years represented 9.5% of the total assessed population and trees with SULEs of 15 to 40 years, 66.9%. Trees in these combined categories account for almost 77% of a population of approximately 9200 trees assessed to date.

These results indicate that there will be high demands placed on Centennial Parklands' resources over the next 40 years to manage the existing trees and to gradually replace them so as to maintain the appearance and health of the whole population over the long term.

5.0 TREE POPULATION SUMMARY

BOTANICAL NAME	TOTAL COUNT	Mature/ Overmature	Young/ Semimature	SULE <5-15	SULE <15-40	SULE Sum	SULE <5-40 % of TOTAL
<i>Acacia binervia</i>	17	11	6	14	2	17	0.18%
<i>Acacia elata</i>	1	1	0	1	0	1	0.01%
<i>Acacia longifolia</i> var. <i>sophorae</i>	1	1	0	1	0	1	0.01%
<i>Acacia maidenii</i>	9	9	0	9	0	9	0.10%
<i>Acacia saligna</i>	6	4	2	2	0	2	0.02%
<i>Acmena smithii</i>	1		1				
<i>Acokanthera oblongifolia</i>	1	1		1		1	0.01%
<i>Afrocarpus falcatus</i>	21	20	1	1	12	13	0.14%
<i>Agathis robusta</i>	78	6	72		5	5	0.05%
<i>Agonis flexuosa</i>	8	5	3	1	5	6	0.07%
<i>Allocasuarina littoralis</i>	16	6	10	8	8	16	0.17%
<i>Angophora costata</i>	18		15	2	1	3	0.03%
<i>Araucaria bidwilli</i>	3		3				
<i>Araucaria columnaris</i>	44	25	19	2	10	12	0.13%
<i>Araucaria cunninghamii</i>	75	19	56	2	7	9	0.10%
<i>Araucaria heterophylla</i>	120	90	30	9	69	78	0.85%
<i>Archontophoenix cunninghamiana</i>	2	1	1		1	1	0.01%
<i>Banksia integrifolia</i>	13	10	3	4	5	9	0.10%
<i>Banksia serrata</i>	43	43		17	11	28	0.30%
<i>Butia capitata</i>	3	3			2	2	0.02%
<i>Callistemon salignus</i>	4		4	4		4	0.04%
<i>Callistemon viminalis</i>	3		3	3		3	0.03%
<i>Calodendrum capence</i>	1		1		1	1	0.01%
<i>Casuarina cunninghamiana</i>	346	36	310	2	263	265	2.88%
<i>Casuarina glauca</i>	44	30	14	2	28	30	0.33%
<i>Cupaniopsis anacardioides</i>	19	1	18	4	3	7	0.08%
<i>Cupressus macrocarpa</i>	6	6		2	1	3	0.03%
<i>Erythrina x sykesii</i>	321	318	3	112	178	290	3.15%
<i>Eucalyptus bauerana</i>	6	6			6	6	0.07%
<i>Eucalyptus botryoides</i>	26	24	2	23	1	24	0.26%
<i>Eucalyptus cinerea</i>	5	4	1	2	3	5	0.05%
<i>Eucalyptus citriodora</i>	1		1				
<i>Eucalyptus deanei</i>	1	1			1	1	0.01%
<i>Eucalyptus eximia</i>	14	8	6	2	9	11	0.12%
<i>Eucalyptus ficifolia</i>	2	2		2		2	0.02%
<i>Eucalyptus globulus</i>	9	9		1	8	9	0.10%
<i>Eucalyptus grandis</i>	58	52	6			25	0.27%
<i>Eucalyptus gummifera</i>	2	2			2	2	0.02%
<i>Eucalyptus haemastoma</i>	13	5	8	3	3	6	0.07%
<i>Eucalyptus maculata</i>	93	34	59	26	40	66	0.72%
<i>Eucalyptus microcorys</i>	122	44	78	5	38	43	0.47%
<i>Eucalyptus robusta</i>	82	30	52	10	20	30	0.33%
<i>Eucalyptus saligna</i>	11	9	2		4	4	0.04%
<i>Ficus benjamina</i>	7		7				
<i>Ficus destruens</i>	12		12				
<i>Ficus macrophylla</i>	355	282	73	49	186	235	2.56%
<i>Ficus microcarpa</i> var. <i>hilli</i>	111	54	57	1	45	46	0.50%
<i>Ficus platypoda</i>	24		24				

5.0 TREE POPULATION SUMMARY

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<i>Ficus rubiginosa</i>	972	831	141	185	568	753	8.19%
<i>Ficus supurba</i> var. <i>henniana</i>	5	5		1	3	4	0.04%
<i>Ficus virens</i>	5		5				
<i>Flindersia australis</i>	9	6	3				
<i>Glochidion ferdinandi</i>	1	0	1		1	1	0.01%
<i>Grevillea robusta</i>	3	1	2		2	2	0.02%
<i>Harpephyllum caffrum</i>	24	22	2	4	13	17	0.18%
<i>Ilex cornuta</i>	1	1			1	1	0.01%
<i>Lagunaria patersonia</i>	8	3	5	3	4	7	0.08%
<i>Liquidambar styraciflua</i>	26	11	15		16	16	0.17%
<i>Livistona australis</i>	6	6			1	1	0.01%
<i>Livistona chinensis</i>	1	1			1	1	0.01%
<i>Lophostemon confertus</i>	79	3	76		16	16	0.17%
<i>Magnolia x grandiflora</i>	5	1	4	1		1	0.01%
<i>Melaleuca armillaris</i>	51	48	3	38	13	51	0.55%
<i>Melaleuca quinquenervia</i>	2445	1842	603	35	1814	1849	20.11%
<i>Metrosideros excelsa</i>	2	1	1	1	1	2	0.02%
<i>Monotoca elliptica</i>	122	119	3	16	103	119	1.29%
<i>Phoenix canariensis</i>	174	172	2	14	159	173	1.88%
<i>Phoenix dactylifera</i>	2	2			2	2	0.02%
<i>Phoenix reclinata</i>	40	40		2	35	37	0.40%
<i>Phoenix reclinata x canariensis</i>	3	2	1		2	2	0.02%
<i>Phoenix reclinata x sylvestris</i>	2	2			2	2	0.02%
<i>Phoenix sylvestris</i>	2	2		1	1	2	0.02%
<i>Phytolacca dioica</i>	1	1		1		1	0.01%
<i>Pinus pinaster</i>	2092	1152	940	73	1923	1996	21.71%
<i>Pinus radiata</i>	77	66	11	32	21	53	0.58%
<i>Pittosporum undulatum</i>	73	63	10	32	24	56	0.61%
<i>Platanus x hybrida</i>	26	12	14		5	5	0.05%
<i>Podocarpus elatus</i>	17	1	16	2	1	3	0.03%
<i>Populus alba</i>	20	20		20		20	0.22%
<i>Populus deltoides</i>	23	21	2	1	12	13	0.14%
<i>Populus nigra</i> 'Italica'	7	7		5	2	7	0.08%
<i>Populus x canadensis</i>	6	6			6	6	0.07%
<i>Quercus canariensis</i>	2	2			2	2	0.02%
<i>Quercus ilex</i>	345	296	49	47	237	284	3.09%
<i>Quercus robur</i>	3	3		3		3	0.03%
<i>Quercus suber</i>	12	11	1	1	9	10	0.11%
<i>Quercus virginiana</i>	15	14	1	2	6	8	0.09%
<i>Robinia pseudoacacia</i>	2	2		2		2	0.02%
<i>Robinia pseudoacacia</i> 'Frisia'	19		19	3	16	19	0.21%
<i>Salix babylonica</i>	28	7	21	3	3	6	0.07%
<i>Salix eleagnifolia</i>	8	2	6	1		1	0.01%
<i>Salix matsudana</i> Tortuosa	3	2	1				
<i>Strelitzia reginae</i>	33	30	3	1	28	29	0.32%
<i>Syagrus romanzoffiana</i>	44	42	2	1	40	41	0.45%
<i>Stenocarpus sinuatus</i>	20	5	15		2	2	0.02%

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BOTANICAL NAME	TOTAL COUNT	Mature/ Overmature	Young/ Semimature	SULE <5-15	SULE <15-40	SULE Sum	SULE <5-40 % of TOTAL
<i>Syncarpis glomulifera</i>	10	9	1	1	9	10	0.11%
<i>Syzygium francissii</i>	5		5				
<i>Taxodium distichum</i>	6	2	4	0	2	2	0.02%
<i>Ulmus parvifolia</i>	1		1				
Un-Listed	81	35	46	9	27	36	0.39%
Unknown	35	16	19	3	23	26	0.28%
<i>Washingtonia filifera</i>	1		1		1	1	0.01%
<i>Washingtonia robusta</i>	12	12					
	9193	6172	3018	871	6135	9193	76.49%



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GRAND DRIVE SULE ANALYSIS <5-15 YRS

Drawing No: V 2.9

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