

CSR = crown spread radius. An estimate of the farthest radial branch spread

H:D = Height to diameter ratio

LCR = Live crown ratio

LCV = Live crown volume

Tree #	DBH (m)	Height (m)	CSR (m)	H:D	LCR	LCV	Notes
739	1.34	42.5	12	31.79	0.39	90% - 99%	Stout trunk. One of the larger trees. H:D within lower quartile. Excellent basal rooting. Becoming phototropic in upper 1/3 of crown. Previous branch terminus fracture (300 mm) at 34 m. Retains nearly all of viable crown.
740	0.86	40.7	5	47.36	0.21	60% - 69%	Erect subordinate forming marginal asymmetric crown. Apical load tends 270° with main CoG tending 90° towards the path. Suspect trunk snap below mid point tending towards the path. H:D in third quartile. Good basal development with symmetrical root flare.
753	1.15	35.7	10	31.15	0.28	40% - 49%	Stout erect trunk to 24 m forming codominant bifurcating crown. H:D within lower quartile. Crown becoming sparse, suspect early hydraulic limitation. Irregular outer bark sloughing forming light 'flakes' with dark colouration - cause unknown. V. good buttress development on all sides.
767	1.18	45	9	38.21	0.33	70% - 79%	Stout trunk tending marginally E from GL forming moderately developed asymmetric crown. Broken branch (300 mm x 6 m) hangs from stub at 26 m.
780	1.15	39	11	34.03	0.18	70% - 79%	Erect edge tree becoming phototropic forming codominant crown at 30 m, tending S. Signs of previous limb fracture throughout the crown. Heavy cone set. Tree holds majority of its live crown. Current vitality sufficient to sustain mechanosensory growth in the short term. H:D within second quartile.
781	0.76	39.3	3	51.44	0.02	70% - 79%	Erect trunk from GL forming codominant crown at 28 m retaining majority of needles. Vitality sufficient to sustain mechanosensory response growth at present. Using binoculars, small birds were observed entering a small opening (associated with a branch stub) at 15 m on the N aspect. The bird arrived with a worm (?) and remained in the tree for several minutes. It would seem that there is at least one cavity in the trunk of this tree which is of sufficient size to accommodate nesting birds. Risk output reflects high H:D ratio and a cautious estimate of the extent
797	1.11	38	8	34.11	0.28	70% - 79%	Stout trunk. H:D within second quartile. Erect to 22 m forming well-branched mildly phototropic crown.
800	0.70	35.3	9	50.41	0.23	40% - 49%	H:D in upper quartile. Erect to 13 m (est) becoming phototropic forming moderate torque arm. Trunk marginally leans 168° south from GL. Forms irregular codominant crown.
801	0.67	34.7	4	51.91	0.09	30% - 39%	Erect subordinate marginally tending phototropically NW. Previously codominant at 1.8 m leaving 500 mm-diameter wound - no occlusion. H:D ratio is artificial when DBH is considered. Tree dims adjusted to produce a more realistic representation of slenderness of remaining trunk. Suspect trunk snap would result in butt kick-back on to footpath.
803	0.83	37.7	5	45.55	0.08	70% - 79%	Tree is of insufficient height to reach the zoo buildings (distance = 46 m + accounting for the slope) - demonstrable from adjacent tree's behaviour during failure. Tangential buckling at 2.5 m on S aspect at 3 m with apparent rupture. Twisting of woody tissues indicative of torsional loading.
826	1.00	37.9	10	37.80	0.49	90% - 99%	Marginal edge tree with subordinate over-extended scaffold framework tending asymmetrically to the SSW. Trunk becomes phototropic at 17 m. H:D in second quartile. 42 m to zoo fence
828	0.70	21.8	10	31.13	0.27	80% - 89%	Subordinate edge tree with marginal scaffold branching tending SW phototropically from GL. H:D within first quartile.
829	0.76	35	6	45.81	0.34	10% - 19%	Phototropic from 10 m tending SW towards stream forming moderate torque arm. Some large persistent deadwood. Suspect trunk snap would result in impact to aboveground waste water pipe / manhole. H:D above the mean and v. little crown volume to sustain static mass and mechanosensory adaptation.
830	0.77	34.5	4	44.60	0.20	30% - 39%	Erect subordinate becoming marginally phototropic in the upper crown only (24 m). Nearby fallen logs have extensive brown rot - causal agent unknown. Signs of previous limb shedding in the upper crown.
832	0.95	38	9	40.20	0.13	60% - 69%	Marginally erect from GL becoming heavily phototropic from 10 m (est) tending 212° SW.
834	0.51	13.3	3	26.11	0.25	90% - 99%	Tree has failed at the top leaving a short spar with inferior crown.
835	0.65	34.9	4	53.48	0.10	30% - 39%	H:D in upper quartile. Slender subordinate with marginal phototropic behaviour in upper crown. Trunk azimuth / fall angle reflects likely impact with 836 and subsequent deflection. V. sparse and under-developed crown.
836	0.64	33.3	5	52.31	0.15	70% - 79%	Erect trunk becoming phototropic from 14 m forming marginal torque arm tending S. H:D in upper quartile.

MoF = Mode of failure
V. Low occupation = < 12 people per day
Moderate occupation = 120 - 1,200 people per day

Scenario 1

Tree #	MoF	Target	Occupation	Consequences	Benchmark	Failure	Risk
739	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Green	4	Acceptable
740	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
753	Trunk snap	Private structures / property	-	3 - Moderate (\$5,000 - \$50,000)	Green	4	Acceptable
767	Branch failure	Pedestrian	Moderate	2 - High (150 mm - 300 mm)	Red	2	Not tolerable
780	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Green	4	Acceptable
781	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
797	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Green	4	Acceptable
800	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
801	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
803	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
826	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Green	4	Acceptable
828	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Green	4	Acceptable
829	Trunk snap	WW infrastructure	-	3 - Moderate (\$5,000 - \$50,000)	Red	3(R)	Not tolerable
830	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
832	Trunk snap	WW infrastructure	-	3 - Moderate (\$5,000 - \$50,000)	Green	3	Acceptable
834	Whole tree failure	WW infrastructure	-	3 - Moderate (\$5,000 - \$50,000)	Green	4	Acceptable
835	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
836	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable

Scenario 2

Tree #	MoF	Target	Occupation	Consequences	Benchmark	Failure	Risk
739							
740							
753							
767	Trunk snap	Pedestrian	Moderate	1 - High (150 mm - 300 mm)	Green	3	Acceptable
780							
781							
797							
800							
801							
803							
826	Whole tree failure	Zoo fence	-	3 - Moderate (\$5,000 - \$50,000)	Green	4	Acceptable
828							
829							
830							
832	Whole tree failure	WW infrastructure	-	3 - Moderate (\$5,000 - \$50,000)	Green	4	Acceptable
834							
835							
836							

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Tree #	DBH (m)	Height (m)	CSR (m)	H:D	LCR	LCV	Notes
854	0.70	38	8	54.26	0.31	60% - 69%	H:D in upper quartile. Erect subordinate
856	0.83	36	6	43.50	0.19	70% - 79%	Erect subordinate forming poorly branched crown. H:D above the mean.
871	0.80	38	8	47.75	0.34	80% - 89%	Erect subordinate edge tree becoming phototropic from 20 m forming marginal torque arm. 37.8 m to zoo fence and 43.4 m to elephant shed. Lesion on SW aspect of trunk from 1 m to 1.5 m consistent with impact - note pine debris on the ground nearby
878	0.97	39	8	40.17	0.38	80% - 89%	Erect subordinate with stout trunk at edge of path. Twisting in trunk consistent with torsional loading. H:D in second quartile marginally below the mean.
879	0.91	44	9	48.50	0.23	50% - 59%	Erect subordinate with mild phototropic behaviour evident in trunk. Signs of torsional loading. Crown becoming sparse. H:D in third quartile above the mean
884	1.02	37	11	36.32	0.47	80% - 89%	Erect from GL forming crown at 19.6 m tending SW. CoG tends 83° from GL. H:D within lower quartile. Generally well-foliated crown showing early signs of sparseness in apical region. Whirls of twisting in the trunk consistent with torsional loading.
890	0.92	38.5	7	41.71	0.14	80% - 89%	Phototropic from GL tending downslope. Forms codominant crown at 27.5 m. The union appears incomplete. Both assessors inspected it with binoculars and had similar uncertainty about the integrity of the union. The risk assessment reflects this uncertainty. Trunk lesions / injuries consistent with falling branch impacts.
891	0.89	37	9	41.51	0.30	60% - 69%	H:D about the mean. Erect to 26 m forming sparse crown.
893	1.18	41	11	34.81	0.18	70% - 79%	Erect stout trunk. H:D within second quartile. Forms well-branched crown from 25 m.
894	0.99	39.2	10	39.73	0.13	50% - 59%	H:D in lower quartile. Becomes phototropic from 22 m tending SW. Moderate torque arm established. Longitudinal bark splitting evident in the upper crown visible from the E about the neutral plane - consistent with sheer forces. Obvious torsional rotation forces evident in twisting of the trunk. Risk assessment considers the maximum uncertainty re: sheer forces at this location.
898	0.81	30	11	36.96	0.83	90% - 99%	Moderately well-branched edge tree forming asymmetric crown tending SW. H:D within second quartile. Becoming sparse in apical region.
901	0.68	39	4	58.45	0.00	Dead tree	H:D in upper quartile. Tree would strike 879 during failure. Remnants of a subordinate
904	0.73	16.2	3	22.13	0.22	<10%	Top has failed previously, showing signs of internal cavity and tissue degradation. One remaining branch (200 mm dia) has snapped at 12.7 m.
935	0.68	15	3	21.92	0.20	80% - 89%	Topped at 15 m leaving subordinate inferior crown. Little or no wind force loading. Fungal Bracket (suspect Phellinus) on adjacent pine log and Daldinea on presumably native timber nearby also.
936	0.53	19	8	36.18	0.39	80% - 89%	Trunk collar obscured, query downslope erosion and sediment deposits. Phototropic from GL. Suppressed and sheltered
937	0.89	31	9	34.78	0.52	50% - 59%	Phototropic from GL forming torque arm with marginal scaffold branching from 15 m. H:D within second quartile. Suspect erosion in lower slope, some woody adventitious roots establishing
941	0.54	22	4	40.66	0.55	90% - 99%	Erect subordinate forming narrow crown. The tree has a heading cut at its apex. V. little sail area
942	1.38	35	17	25.28	0.83	80% - 89%	Phototropic from GL tending SW. H:D well within lower quartile. Becomes codominant at 19 m. Union inspected with binoculars and appears incomplete. Good crown volume and scaffold branching - albeit asymmetric.

MoF = Mode of failure
V. Low occupation = < 12 people per day
Moderate occupation = 120 - 1,200 people per day

Scenario 1

Tree #	MoF	Target	Occupation	Consequences	Benchmark	Failure	Risk
854	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
856	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
871	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
878	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Green	3	Acceptable
879	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
884	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Green	4	Acceptable
890	Codominant failure	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
891	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Green	3	Acceptable
893	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Green	4	Acceptable
894	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
898	Whole tree failure	Zoo fence	-	3 - Moderate (\$5,000 - \$50,000)	Green	4	Acceptable
901	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
904	Whole tree failure	Pedestrian	V. low	1 - Very high (> 300 mm)	Green	4	Acceptable
935	Whole tree failure	Pedestrian	V. low	1 - Very high (> 300 mm)	Green	4	Acceptable
936	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Green	4	Acceptable
937	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Green	4	Acceptable
941	Whole tree failure	Pedestrian	Moderate	1 - Very high (> 300 mm)	Green	3	Acceptable
942	Codominant failure	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(G)	Acceptable

Scenario 2

Tree #	MoF	Target	Occupation	Consequences	Benchmark	Failure	Risk
854							
856							
871	Whole tree failure	Zoo fence / structures	-	3 - Moderate (\$5,000 - \$50,000)	Green	4	Acceptable
878							
879							
884	Whole tree failure	Pedestrian	Moderate	1 - Very high (> 300 mm)	Green	4	Acceptable
890							
891							
893							
894							
898	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Green	4	Acceptable
901							
904							
935							
936							
937							
941							
942							

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Tree #	DBH (m)	Height (m)	CSR (m)	H:D	LCR	LCV	Notes
944	0.48	13	10	27.23	0.15	40% - 49%	Phototropic subordinate from GL, suppressed by 942. Query top snap leaving single lateral. DBH indicative of self-set juvenile. No targets.
949	0.64	36	4	56.55	0.17	20% - 29%	Erect subordinate becoming phototropic from 12.4 m forming moderate torque arm tending S. Axial lesions on trunk on NW and SE aspects consistent with abrasion during tree failure - note debris nearby. CoG tends upslope from GL (46°) but upper crown would fail towards the path. H:D in upper quartile, crown becoming sparse
950-C	0.80	36	7	45.24	0.19	40% - 49%	Largely erect with mild phototropism from GL tending S. Persistent deadwood. H:D approaching upper quartile. Query protrusion at 17 m on W aspect - anatomy consistent with codominant stem failure in the past.
950-A	0.95	37	9	38.75	0.24	30% - 39%	Erect to 19 m becoming phototropic tending SW forming moderate torque arm. Stout trunk. H:D remains in second quartile - below the mean.
950	0.76	33	6	43.20	0.15	70% - 79%	Phototropic from GL forming massive torque arm. H:D marginally above the mean but with massive torsional loading and mechanical force about the neutral plane. Sheltered tree at present. Viable assimilative crown to sustain static mass components of lever-arm remaining at present. However, increasing crown mass will increase the lever arm and elevate the likelihood of snapping. Questionable longevity. NOTE TO SELF - query green at redx100 but vitality won't affect anatomy so must be red.
954	0.65	38	4	58.23	0.08	30% - 39%	Erect subordinate becoming phototropic from 13.2 m forming moderate torque arm tending SE. Forms codominant crown at 29 m. H:D in upper quartile.
955	0.72	37	7	51.66	0.16	80% - 89%	Erect subordinate becoming phototropic from 13.6 m forming moderate torque arm tending S. Suppressed and marginal crown.
957	0.73	40.4	4	55.18	0.18	80% - 89%	H:D in upper quartile. Erect subordinate becoming phototropic from 13.4 m forming marginal torque arm tending SW. Persistent deadwood in lower crown
972	1.10	43	9	39.16	0.28	50% - 59%	Erect stout trunk to 33 m forming well-branched upper crown. Twisting in trunk suggests persistent torsional loads. CoG appears to be upslope but crown weight is down. Benchmark green for tree or trunk failure. Old fungal bracket at base, possibly Neolentinus.
973	0.37	18	3	49.17	0.39	90% - 99%	H:D approaching upper quartile. Suppressed subordinate at periphery. Considerable torque arm. DBH indicative of a younger tree, perhaps a self-set specimen allowed to establish
975	0.70	23	2	32.84	0.09	90% - 99%	Phototropic from GL, forming marginal torque arm. Top has failed leaving minimal live crown. Obvious torsional loading in trunk evidenced with twisting wood rolls. The apical end load has already failed and so little remains by way of mechanical force in the remaining trunk. Axial lesion on the N aspect from 0.5 m to 2.3 m bordered by adaptive growth. Moss covers the wood.
990	0.60	37	10	61.18	0.46	20% - 29%	Erect subordinate to 16 m becoming phototropic forming moderate torque arm tending S. H:D at upper quartile.
991	0.88	41	8	46.84	0.32	60% - 69%	H:D about the mean. Erect to 18 m becoming phototropic tending S forming obvious torque arm. Poorly branched. Signs of torsional loading in tissue twisting on E aspect.
999	0.89	20	6	22.44	0.00	Dead tree	Tree has been topped at 19 m, only a single dead branch remains tending 223°
1000	0.88	36	8	41.13	0.25	70% - 79%	Erect, largely sheltered. H:D around the mean. LCV conducive to sustain mechanics at present
1002	0.78	40	8	51.29	0.35	10% - 19%	Erect to 19 m becoming phototropic forming torque arm. Signs of previous scaffold limb failure and apparent torsional rotation of the limb.
1004	0.86	39	9	45.38	0.23	90% - 99%	Generally erect with CoG marginally tending south. H:D above the mean. Axial bark fissure from 5 m - 13.5 m AGL on NNE aspect consistent with neutral plane shear e.g. due to upper crown mass and wind loading. Ripples of compressive tissue evident on opposing aspect. Assimilative crown volume may sustain the biomechanics in the short term, but hydraulic limitation is likely expected to initiate decline.
1006	0.92	42	10	45.50	0.21	70% - 79%	Erect to 24 m becoming phototropic forming moderate torque arm tending 166° S. Moderately well-branched scaffold framework in upper crown. Compression ripples of bark protrusion on leeward aspect of trunk. Axial lesion in bark on W aspect from GL to at least 1 m. Bark removed to reveal apparent crack in the outer woody tissue with sap flow - consistent with (early?) neutral plane shear. No such anomaly on E aspect. Suspect torsional wind load from the NW. - Risk assessment considers trunk snap from near ground, i.e. whole tree length.

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Moderate occupation = 120 - 1,200 people per day

Scenario 1

Tree #	MoF	Target	Occupation	Consequences	Benchmark	Failure	Risk
944	Whole tree failure	Pedestrian	V. low	1 - Very high (> 300 mm)	Green	4	Acceptable
949	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
950-C	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
950-A	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Green	4	Acceptable
950	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
954	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
955	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
957	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
972	Whole tree failure	Pedestrian	Moderate	1 - Very high (> 300 mm)	Green	4	Acceptable
973	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
975	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Green	4	Acceptable
990	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
991	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
999	Whole tree failure	Pedestrian	V. low	1 - Very high (> 300 mm)	Green	5	Acceptable
1000	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(G)	Tolerable
1002	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
1004	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
1006	Whole tree failure	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	2	Acceptable

Scenario 2

Tree #	MoF	Target	Occupation	Consequences	Benchmark	Failure	Risk
944							
949							
950-C							
950-A							
950							
954							
955							
957							
972							
973							
975							
990							
991							
999	Branch failure	WW infrastructure	-	4 - Low (\$500 - \$5,000)	Green	3	Acceptable
1000							
1002							
1004							
1006							

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LCV = Live crown volume

Tree #	DBH (m)	Height (m)	CSR (m)	H:D	LCR	LCV	Notes
1010	0.67	38	2	56.85	0.26	10% - 19%	High H:D yet little sail area and tree appears sheltered from prevailing winds.
1012	0.86	41	9	47.71	0.22	70% - 79%	Erect with marginal tendency to the W. Clear signs of rotational torsion loading in trunk spirals throughout.
1013	0.67	34	9	50.86	0.56	40% - 49%	Marginal edge tree with low (15 m) scaffold branching. Tree is becoming subordinated by its larger neighbours. V. sparse upper crown.
1014	0.92	40	8	43.33	0.23	30% - 39%	Erect becoming phototropic from 16 m. Good basal development. Stout lower trunk
1015	0.64	38	7	59.69	0.00	Dead tree	Becomes phototropic from 10 m forming torque arm. Upper trunk tends 200° to the S. High H:D but little sail area and tree is partially sheltered by its neighbours
1016	0.72	37	5	51.21	0.14	80% - 89%	Erect becoming phototropic from 13 m. Bifurcation at 28 m. Suspect impact with 1059 during failure.
1017	0.88	37	9	42.12	0.19	70% - 79%	Erect becoming phototropic from 12 m. Crown is weighted to the SSW.
1018	0.64	21	11	32.99	0.33	90% - 99%	Subordinate edge tree. Tangential bark rupture at 0.4 m on S aspect approx 700 mm circumferentially. Given crown form, suspect compression anomaly.
1019	0.80	33	9	41.47	0.27	90% - 99%	Erect becoming phototropic tending ESE. H:D around the mean and tree shows good vitality. Some axial lesions in trunk consistent with falling tree. Note log to NNE on the ground. Obvious cambial necrosis on the trunk at lesions.
1052	0.73	38	6	51.90	0.16	90% - 99%	Erect becoming phototropic from 14 m. Suspect strike with trees 1015 and 1016 during failure.
1053	0.60	37	3	61.18	0.27	90% - 99%	Erect to 16 m becoming phototropic forming moderate torque arm tending S. Bifurcation at 27 m.
1055	0.73	37	6	50.54	0.19	80% - 89%	Erect to 15 m becoming phototropic producing heavy torque arm tending WSW.
1059	1.02	38	9	37.31	0.71	80% - 89%	Apparent corridor to the N where trees have failed / been removed has opened up wind channel. H:D remains acceptable but remaining crown form and branch architecture push 'A' into the red. The tree is subordinated by its larger neighbours.
1084	0.60	31	11	51.80	0.65	80% - 89%	Subordinate edge tree. Becoming phototropic from 12 m
1085	0.86	35	10	40.72	0.20	70% - 79%	Erect becoming phototropic from 16 m. Persistent deadwood in lower crown. Forms weighted torque arm tending SW.
1086	1.15	41	11	35.78	0.22	90% - 99%	V. good basal development. Erect becoming codominant at 20 m. Wide angle of attachment.
1091	1.04	31	10.8	29.78	0.58	90% - 99%	Tangential bark rupture at 2 m largely circumferential. Axial bark rupture 30° from GL to 5 m. Absent on opposing side. Query torque arm and early / historical neutral plane sheering. Codominant at 10 m (est) tending 80° and 260° with natural brace at fork. W upright would strike path during failure event. Risk assessment reflects uncertainties re: bark ruptures / anomalies.
1096	1.18	32.6	14	27.68	0.50	90% - 99%	Agaricale at base at 316°, suspect Gymnopilis. Erect to LCR, crown tends 210°. Snapped limb (250 mm) at 12 m (est). Previous fracture at 18 m at 265°. Limb would strike low-use area of vegetation.

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Scenario 1

Tree #	MoF	Target	Occupation	Consequences	Benchmark	Failure	Risk
1010	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
1012	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
1013	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
1014	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
1015	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
1016	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
1017	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
1018	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Green	4	Acceptable
1019	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(G)	Tolerable
1052	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
1053	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
1055	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
1059	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(G)	Tolerable
1084	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
1085	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
1086	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Green	3	Acceptable
1091	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
1096	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Green	5	Acceptable

Scenario 2

Tree #	MoF	Target	Occupation	Consequences	Benchmark	Failure	Risk
1010							
1012							
1013							
1014							
1015							
1016							
1017							
1018							
1019							
1052							
1053							
1055							
1059							
1084							
1085							
1086							
1091							
1096	Broken limb detachment	Pedestrian	V. low	1 - High (150 mm - 300 mm)	Red	3	Acceptable

CSR = crown spread radius. An estimate of the farthest radial branch spread

H:D = Height to diameter ratio

LCR = Live crown ratio

LCV = Live crown volume

Tree #	DBH (m)	Height (m)	CSR (m)	H:D	LCR	LCV	Notes
1097	1.18	32	10	27.17	0.66	90% - 99%	Edge tree. Signs of primary limb failure on S aspect from 12 m (est). Various limbs on N aspect becoming over extended. Unlikely that primary limbs would contact footpath - failure = trunk / limb snap into bush
1098	0.72	32	7	44.68	0.54	80% - 89%	Fall direction towards containers. Sap bleeding at base (115°). Subordinate tree.
1099	0.91	38	12	41.74	0.39	70% - 79%	Probe can be inserted at 45° to vertical at 300 mm depth at 300° azimuth at root collar. Outer bark detachment from woody tissue from 0.5 m to 2 m at 210°. Old sap present. Suspect localised region of cambial necrosis. Possible tissue compression in same location, note tangential bark rupture. Codominant framework from 20 m (est).
1543	0.80	22.1	11	27.77	0.50	90% - 99%	Subordinate edge tree with marginal scaffold framework. Suppressed, H:D in lower range. Good crown volume.
1576	0.54	12.5	8	23.10	0.48	80% - 89%	Suppressed subordinate. DBH indicative of self-set tree allowed to establish. Excellent downslope structural roots. Unlikely to make it across the river during a failure.
1578	0.86	36.3	8	42.24	0.41	80% - 89%	Erect from GL becoming phototropic from 18 m forming moderate torque arm. Crown density remains good and conducive with supporting mechanosensory responses at present.
1580	0.84	34.5	11	41.05	0.00	Dead tree	Subordinate edge tree with marginal scaffold framework. Erect from GL becoming phototropic at 17 m forming torque arm over the stream. 35 m to zoo buildings. Suspect insect frass at base - query termites. Benchmark red ('V', 'A') for trunk snapping to reflect uncertainty.
1582	0.57	33	5	57.60	0.44	80% - 89%	Erect subordinate becoming phototropic from 20 m (est) forming moderate torque arm tending W. Suspect likely failure mode to be trunk snap (upper 10 - 12 m) striking vegetation underneath. Risk considers uncertainty of snap height. 35 m to fence. 38 m to building. H:D in upper quartile. Target considers minimal clean-up cost only given fence strike is so unlikely.
1583	0.42	23.7	9	55.98	0.00	Dead tree	Suppressed dead subordinate. No primary branching remains. Forms considerable torque arm in apex. Most likely mode of failure is the trunk tip (5-10 m) breaking off and striking the stream area. 29 m to zoo fence. 31 m to zoo building
1584	0.49	24.5	8	49.66	0.00	Dead tree	Erect subordinate to 11 m tending 224° SW forming marginal torque arm. 27 m to fence and 29 m to building. Suspect most likely mode of failure to be upper crown (10-12 m) snapping and striking grass. Tree is of insufficient size to reach zoo structures
1585	0.64	31.5	7	49.48	0.30	60% - 69%	Erect subordinate becoming marginally phototropic in upper crown tending SW. Upper crown becoming sparse. 30 m to zoo fence (35 m in line with trunk azimuth). 34 m to zoo building (38 m in line with trunk azimuth). Most likely mode of failure is upper crown (10 m) striking grass / stream.
1586	0.78	36.2	8	46.23	0.29	30% - 39%	Erect subordinate forming modest crown now becoming sparse with persistent deadwood. 38 m to zoo fence. 45 m to zoo building. H:D above mean approaching upper quartile.
1588	0.60	31.4	8	51.92	0.08	10% - 19%	Erect subordinate leaning upslope, possible result of mechanical pressure from 1590. Refer comments re: contact abrasion. H:D in upper quartile.
1590	0.89	37.2	6	41.74	0.13	10% - 19%	Erect becoming phototropic from 15 m (est) tending W into 1588 crown contact in apical region showing approx. 2 m of longitudinal abrasion. Trunk snap would see the contact come free and the part would strike ground. H:D about the mean. Risk rating reflects maximum uncertainty re: torque arm loading.
1591	0.72	34	5	47.47	0.37	20% - 29%	Largely erect tree with with marginal crown. Heavy cone set with sparse crown. Crown weight marginally tends upslope.
1592	1.20	39.3	9	32.75	0.23	30% - 39%	Twin stemmed tree. One stem snapped at 18.1 m. Basipetal decay propagation. Some obvious decay at basal roots. H:D above the union = 56. (Individual VALID assessment carried out).
1609	1.18	31.1	10	26.41	0.61	80% - 89%	Stout trunk forming well-branched asymmetric scaffold framework tending marginally NE. Axial bark splitting from GL to 1.5 m on opposing SW and NE aspects perpendicular to prevailing wind. Feature does not appear recent. Generally good vitality, edge tree. Target range for pedestrian occupancy is the same as for damage to the exposed WW pipe. (Individual assessment carried out).
1618	1.24	41.7	8	33.59	0.40	60% - 69%	Stout trunk with H:D in second quartile. Excellent basal development. Forms irregular crown from 25 m tending north (no target). Whole tree failure downhill.

MoF = Mode of failure
V. Low occupation = < 12 people per day
Moderate occupation = 120 - 1,200 people per day

Scenario 1

Tree #	MoF	Target	Occupation	Consequences	Benchmark	Failure	Risk
1097	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Green	4	Acceptable
1098	Trunk snap	Equipment / machinery	-	3 - Moderate (\$5,000 - \$50,000)	Red	3(R)	Not tolerable
1099	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(G)	Tolerable
1543	Trunk snap	WW infrastructure	-	3 - Moderate (\$5,000 - \$50,000)	Green	4	Acceptable
1576	Whole tree failure	Pedestrian	V. low	1 - Very high (> 300 mm)	Green	4	Acceptable
1578	Trunk snap	WW infrastructure	-	3 - Moderate (\$5,000 - \$50,000)	Red	3(G)	Tolerable
1580	Trunk snap	Zoo fence	-	3 - Moderate (\$5,000 - \$50,000)	Red	3(R)	Not tolerable
1582	Trunk snap	Zoo fence	-	4 - Low (\$500 - \$5,000)	Red	3	Acceptable
1583	Trunk snap	Pedestrian	V. low	2 - High (150 mm - 300 mm)	Red	3(R)	Acceptable
1584	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
1585	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
1586	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
1588	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
1590	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
1591	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
1592	Trunk snap	Zoo fence	-	3 - Moderate (\$5,000 - \$50,000)	Red	3(R)	Not tolerable
1609	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Green	3	Acceptable
1618	Whole tree failure	Pedestrian	Moderate	1 - Very high (> 300 mm)	Green	4	Acceptable

Scenario 2

Tree #	MoF	Target	Occupation	Consequences	Benchmark	Failure	Risk
1097							
1098							
1099							
1543							
1576							
1578							
1580							
1582							
1583							
1584							
1585	Whole tree failure	Zoo fence	-	3 - Moderate (\$5,000 - \$50,000)	Green	4	Acceptable
1586	Whole tree failure	Zoo fence	-	3 - Moderate (\$5,000 - \$50,000)	Green	4	Acceptable
1588							
1590							
1591							
1592	Whole tree failure	Zoo building	-	3 - Moderate (\$5,000 - \$50,000)	Green	3	Tolerable
1609							
1618	Trunk snap	WW infrastructure	-	3 - Moderate (\$5,000 - \$50,000)	Green	4	Acceptable

CSR = crown spread radius. An estimate of the farthest radial branch spread

H:D = Height to diameter ratio

LCR = Live crown ratio

LCV = Live crown volume

Tree #	DBH (m)	Height (m)	CSR (m)	H:D	LCR	LCV	Notes
1620	1.38	37.5	8	27.08	0.56	90% - 99%	Stout trunk forming well-branched scaffold framework retaining large percentage of foliage volume. Limb fracture (250 mm) on NW aspect at 20 m. Other limbs becoming over-extended on same aspect. Lots of sap on trunk from 8 m on W aspect - cause unknown
1621	1.08	37	8	34.19	0.00	Dead tree	Erect dominant tree forming moderately well-branched crown. Axial bark splits on N and S aspects from GL to 2 m consistent with neutral plane shear. Sap exudate supports inference of woody tissue rupture. Risk assessment reflects whole tree length failing due to trunk snap at GL along neutral plane. Note tree is partially sheltered by adjacent larger 1620
1624	0.62	34.7	5	55.90	0.44	60% - 69%	Erect subordinate with marginal crown. H:D in upper quartile. Trunk azimuth suggests tree would not strike perimeter fence = 'Acceptable'
1629	0.83	12.73	5	15.38	0.00	Dead tree	Tree has lost its top and has been 'pruned' to leave a single branch tending N. The branch is now dead. The tree is essentially nothing more than a totem pole as others have been made elsewhere.
1630	0.78	17.7	6	22.70	0.48	70% - 79%	Subordinate edge tree. Heavily suppressed forming irregular and contorted primary framework including main trunk. Appears to have lost its top in the past leaving torn stub. Retains most of its live crown.
1636	0.70	27.5	8	39.27	0.62	60% - 69%	Subordinate forming phototropic scaffold framework with marginally over extended lower branch. Irregular contortions in upper crown. No major targets within fall distance
1662	1.08	37	9	34.19	0.47	70% - 79%	Erect edge tree forming marginal scaffold framework. Becoming marginally phototropic tending N from 18 m (est). H:D well in lower (approaching second) quartile. Tree retains modestly full crown and is probably sufficient to sustain mechanosensory growth for now.
1800	0.91	39.9	11	43.98	0.14	20% - 29%	Generally erect throughout with marginal phototropic behaviour in upper crown only, tending W. Prolific sap bleeds on trunk from midpoint, looks historical. Irregular trunk morphology forms depressed or flattened region on E aspect at GL. Local excavation reveals apparent interstice between sinker roots. Full appraisal precluded by adjacent fallen log. Lateral fluting appears robust. 38 m to zoo fence and 40 m to building in direction of fall.
1814	0.70	34.9	6	49.84	0.15	50% - 59%	Largely erect with marginal tendency downslope (SW). H:D at upper quartile. Asymmetric irregular crown showing signs of previous snaps.
1816	0.78	37.9	4	48.60	0.00	Dead tree	H:D approaching upper quartile. Suppressed and now dead subordinate. Tending S
1835	0.67	39.2	6	58.64	0.01	70% - 79%	Twin trunks from 2 m showing adaptive response at the fork. H:D reflects DBH and height of SE trunk from 2 m AGL. Slender trunk with irregular taper from 14 m. Forms irregular crown with torque arm acting at the fork.
1837	1.02	41.2	7	40.45	0.13	60% - 69%	Erect subordinate forming marginal crown becoming sparse. H:D marginally below mean. Old stub (200 mm) on NE aspect at 2 m has basipetal decay to GL forming superficial region of sealed degradation.
1839	1.24	47.2	7	38.02	0.30	40% - 49%	Stout trunk forms erect tree with marginal crown becoming sparse. Old stub at 2.2 m on SE aspect forms superficial basipetal decay column to GL. Excellent basal development on all sides. The neutral plane is visible in an interstice on the E aspect from GL to 3 m - appears to be bordered by two columns of adaptive wood. Marginal pattern on opposing trunk aspect.
1842	1.02	41.5	7	40.74	0.17	70% - 79%	Erect, previously codominant from 4 m with failed stem now heavily subordinated and dead. Columns of response / adaptive growth evident on S aspect. H:D just below mean. Retains moderately full crown.
1843	1.10	39.2	12	35.70	0.29	70% - 79%	Stout trunk. Low H:D. Forms asymmetric moderate crown with some over extension to the NNW.
1844	1.08	40.1	8	37.05	0.19	80% - 89%	Stout trunk. Low H:D. Forms well-branched yet asymmetric crown. Note girdling roots around collar at GL.
1873	1.40	36	10	25.70	0.58	80% - 89%	Stout edge tree with well-developed crown and excellent basal development. Query region of local cambial necrosis on W aspect at GL with irregular morphology. Region has bark present which, when removed, reveals cambial necrosis with viable and wet woody tissue beneath. Cause unknown - possible girdling root?
1874	1.05	40.7	9	38.75	0.37	70% - 79%	Erect tree forming marginal crown from 26 m with irregular and abrupt morphology. H:D below mean in second quartile.

MoF = Mode of failure
V. Low occupation = < 12 people per day
Moderate occupation = 120 - 1,200 people per day

Scenario 1

Tree #	MoF	Target	Occupation	Consequences	Benchmark	Failure	Risk
1620	Trunk snap	Perimeter fence	-	3 - Moderate (\$5,000 - \$50,000)	Green	4	Acceptable
1621	Whole tree failure	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
1624	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
1629	Whole tree failure	Perimeter fence	-	3 - Moderate (\$5,000 - \$50,000)	Green	5	Acceptable
1630	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Green	4	Acceptable
1636	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Green	3	Acceptable
1662	Trunk snap	Perimeter fence	-	3 - Moderate (\$5,000 - \$50,000)	Green	4	Acceptable
1800	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
1814	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
1816	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
1835	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
1837	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Green	3	Acceptable
1839	Trunk snap	WW infrastructure	-	3 - Moderate (\$5,000 - \$50,000)	Green	3	Acceptable
1842	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Green	3	Acceptable
1843	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Green	4	Acceptable
1844	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Green	4	Acceptable
1873	Whole tree failure	Pedestrian	Moderate	1 - Very high (> 300 mm)	Green	4	Acceptable
1874	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Green	3	Acceptable

Scenario 2

Tree #	MoF	Target	Occupation	Consequences	Benchmark	Failure	Risk
1620	Whole tree failure	Perimeter fence	-	3 - Moderate (\$5,000 - \$50,000)	Green	4	Acceptable
1621							
1624							
1629							
1630							
1636							
1662							
1800							
1814							
1816							
1835							
1837							
1839							
1842							
1843							
1844							
1873							
1874							

CSR = crown spread radius. An estimate of the farthest radial branch spread

H:D = Height to diameter ratio

LCR = Live crown ratio

LCV = Live crown volume

Tree #	DBH (m)	Height (m)	CSR (m)	H:D	LCR	LCV	Notes
1910	0.89	34.9	5	39.16	0.00	Dead tree	Stout erect single trunk to 15 m forming codominant crown (two stems) - union shows good fusion of tissue. Tree looks recently dead. Apparent fissure in the bark / wood at the neutral plane on the E aspect with bark protrusions on opposing aspect. Query reaction growth forming columns about a) a neutral plane sheer or b) a mechanical weakness (mechanosensory growth).
1911	0.83	35.7	3	43.14	0.00	Dead tree	Recently dead tree with narrow, marginal crown. V. little sail area remains. Essentially this is a 'totem pole'. Suspect ongoing deterioration of remaining branch framework, e.g. gradual crumbling and limb shedding over time. Upper crown weight tends S towards 1910.
1912	0.76	37	4	48.43	0.00	Dead tree	Largely erect forming contorted trunk at 23 m. H:D in third quartile. CoG difficult to estimate. Tree seems to have retained some needles, suspect has died recently
1914	0.67	35	4	52.61	0.00	Dead tree	Phototropic from GL tending SE with marginal upright crown devoid of foliage.
1915	1.05	38	10	36.18	0.21	80% - 89%	Stout trunk, well-developed buttress region. H:D well within lower quartile. Erect from GL tending E from 12 m forming well-branched crown at 26 m. Axial rib of expansion growth about the neutral plane on the SW aspect from GL to 2 m (+?). Tree retains much of its live crown. Overall, one of the better trees in the forest.
1916	0.64	36.5	3	57.33	0.00	Dead tree	Erect subordinate becoming marginally phototropic but generally tending downslope. Limited branching in upper crown.
1920	0.72	17.5	3	24.22	0.25	80% - 89%	Tree has lost its top at 17.5 m leaving torn stub becoming decayed. Remaining crown tends E towards property. Only a single scaffold remains, marginally exposed given absence of full crown. Target area = vegetated area behind fence within the reserve
1922	1.08	37.2	8	34.37	0.78	80% - 89%	Stout edge tree with marginal scaffold framework. Partially suppressed. H:D in second quartile. Good basal development. Upper crown starting to thin. Heavy cone set.
1943	0.40	16	3	40.21	0.31	90% - 99%	No targets within fall distance
1947	1.31	33	13	25.29	0.76	70% - 79%	Edge tree. History of limb shedding on N aspect from 8 - 19 m. Branches have failed into scrub area. Obvious history of crown lifting evident throughout trunk.
1948	1.21	38	14	31.42	0.63	60% - 69%	Stout edge tree forming moderate crown becoming sparse. V. good buttress roots and basal development. Desiccated fruiting body on root, query Phaeolus. No obvious signs of decay or injury.
1956	0.73	35	5	47.81	0.17	60% - 69%	Phototropic from GL beginning mildly and increasing from 11 m to form considerable torque arm. Persistent large (200 mm x 6 m) deadwood on S aspect at 13 m. H:D above the mean in third quartile.
1960	0.95	41	9	42.94	0.15	10% - 19%	Marginally phototropic from GL tending ESE. V. good buttress development on W aspect. Axial fissure in bark from GL to 1 m on W aspect, does not appear to be a crack. Opposing side has large column of reaction wood - suggests opposing wind / weight loads.
1969	0.70	34	4	48.55	0.26	40% - 49%	Erect subordinate becoming phototropic from 20 m tending SE forming moderate torque arm. H:D approaching 50:1. Marginal crown becoming sparse in upper region consistent with hydraulic limitation
1970	1.18	40	12	33.78	0.20	40% - 49%	Stout trunk with H:D well into lower quartile. Trunk tends S from GL with phototropic correction at 17 m forming erect crown with marginal scaffold branching.
1973	0.86	37	9	43.05	0.16	40% - 49%	H:D about the mean. Erect single trunk becoming codominant from 17 m tending S. Union appears complete: H:D marginally above the mean
1974	1.11	39	10	35.01	0.28	30% - 39%	Erect to 25 m becoming phototropic tending SSE. V. sparse crown, little assimilative crown remains. Obvious signs of torsional load throughout the trunk - twisting. Apparent columns of adaptive wood enveloping the neutral plane on the W aspect. Large persistent deadwood.
1974-A	0.76	39	7	51.05	0.15	40% - 49%	H:D in upper quartile. Generally erect subordinate, marginally tending upslope from GL. Trunk contortion from 23 m forming under-developed crown.

MoF = Mode of failure
V. Low occupation = < 12 people per day
Moderate occupation = 120 - 1,200 people per day

Scenario 1

Tree #	MoF	Target	Occupation	Consequences	Benchmark	Failure	Risk
1910	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Green	3	Acceptable
1911	Whole tree failure	Private fence / garden	-	3 - Moderate (\$5,000 - \$50,000)	Green	3	Acceptable
1912	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
1914	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
1915	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Green	4	Acceptable
1916	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
1920	Whole tree failure	Private fence / garden	-	3 - Moderate (\$5,000 - \$50,000)	Green	5	Acceptable
1922	Trunk snap	Ancillary building	-	3 - Moderate (\$5,000 - \$50,000)	Green	4	Acceptable
1943	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Green	3	Acceptable
1947	Whole tree failure	Private fence / garden	-	3 - Moderate (\$5,000 - \$50,000)	Green	4	Acceptable
1948	Whole tree failure	Private fence / garden / ancillary building	-	3 - Moderate (\$5,000 - \$50,000)	Green	4	Acceptable
1956	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
1960	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
1969	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
1970	Whole tree failure	Pedestrian	Moderate	1 - Very high (> 300 mm)	Green	4	Acceptable
1973	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
1974	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Green	3	Acceptable
1974-A	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable

Scenario 2

Tree #	MoF	Target	Occupation	Consequences	Benchmark	Failure	Risk
1910	Codominant stem failure	Pedestrian	V. low	1 - Very high (> 300 mm)	Green	4	
1911							
1912							
1914							
1915							
1916							
1920							
1922							
1943							
1947							
1948							
1956							
1960							
1969							
1970							
1973							
1974							
1974-A							

CSR = crown spread radius. An estimate of the farthest radial branch spread
H:D = Height to diameter ratio
LCR = Live crown ratio
LCV = Live crown volume

Tree #	DBH (m)	Height (m)	CSR (m)	H:D	LCR	LCV	Notes
1975	0.67	38	5	56.85	0.13	10% - 19%	Subordinate tree, heavily phototropic forming marginal torque arm. H:D in upper quartile.
1976	0.99	40	11	40.54	0.15	20% - 29%	Stout trunk. Marginally phototropic from GL forming codominant over-extended crown from 25 m. Union appears wide and complete. Aspect ratio > 1/3
1980	0.92	42	5	45.50	0.10	20% - 29%	Generally erect with minor irregularities in trunk. Persistent deadwood in lower crown. Foliage becoming sparse.
1981	0.83	37	7	44.71	0.14	10% - 19%	Erect showing abrupt phototropic behaviour at 20 m tending 140°. Green x 100 for trunk snap
1982	0.79	37	3	47.06	0.19	20% - 29%	Erect to 19 m becoming phototropic forming moderate torque arm tending S. Query abrasion at 18 m - possible point of contact from since removed/failed adjacent tree. Persistent deadwood. H:D marginally above the mean.
1983	0.67	38.8	3	58.04	0.56	<10%	Suppressed, highly irregular crown form. V.sparse crown. Query previous stem failure at 23 m. H:D in upper quartile
1984	0.76	36	6	47.12	0.11	80% - 89%	Erect forming abrupt scaffold framework at 19 m. H:D above mean approaching upper quartile
1988	0.95	38	8	39.79	0.11	70% - 79%	Query 1988A - generally erect forming scaffold framework from 26 m. Persistent deadwood in lower crown. H:D in second quartile.
1989	0.99	37.4	12	37.90	0.21	60% - 69%	Erect to 19 m becoming phototropic forming marginal torque arm with well-branched yet asymmetric scaffold framework. Stout trunk. H:D in second quartile. Query axial bark displacement from 10 m to 17 m (est) on NE aspect - neutral plane?
1998	1.37	39.5	14	28.86	0.39	40% - 49%	Robust edge tree forming well-branched scaffold framework from 20 m. Asymmetric tending S; note old stump to N and infer crown contact / suppression. Columns of adaptive growth throughout forming robust trunk. Torsional loads evident from twisting trunk. H:D in lower quartile.
2024	1.34	37	16	27.68	0.52	70% - 79%	Asymmetric edge tree forming N-tending scaffold framework from 15 m (est) with signs of limb fracture in lower crown. Some aspect ratios > 1/3. Good adaptive growth at the tree base. H:D is in first quartile
2025	1.11	25	16	22.44	0.68	80% - 89%	Phototropic edge tree tending N towards property. Possible impact to S aspect buttress roots revealing cambial necrosis although no apparent decay. No acoustic anomaly. Low use target = seating area. Possibly the old shed. Scaffold framework becomes over extended due to phototropism. Some signs of end snaps, although query interventions from residents. 36.2 m to conservatory. 38.4 m to the building - 16 WVR. 14.2 m to Grey building 14 WVR. Strike unlikely except with branch tips.
2038	0.88	37	8	42.27	0.00	Dead tree	Erect subordinate with marginal crown now dead. Has been for some time. Nearby fallen trees abutting trunk on two sides.
2039	1.19	36	10	30.16	0.28	20% - 29%	Phototropic from 13.5 m tending NE with crown weight tending E. Assimilative crown volume is v. low and becoming (already is) insufficient to sustainable mechanosensory growth. H:D in low range.
2040	1.16	38	14	32.71	0.24	40% - 49%	Erect trunk forms abrupt bend at 17 m with apparent phototropic correction. Moderately branched crown becoming sparse. H:D in lower quartile.
2048	1.11	41	9	36.80	0.22	60% - 69%	Stout erect tree. Region of trauma on NE aspect from GL to 3 m in triangular formation with acroptean apex. Cambium is clearly dead with subsequent wall 4 response growth forming axial columns either side. No acoustic irregularities. H:D in second quartile.
2051	0.81	41	9	50.31	0.24	50% - 59%	H:D in upper quartile. Signs of compression ruptures on leeward aspect (SW). Largely erect to 25 m becoming phototropic forming marginal torque arm.
2053	0.81	38	6	46.82	0.24	50% - 59%	Erect to 25 m becoming phototropic forming marginal torque arm tending S. H:D above mean.

MoF = Mode of failure
V. Low occupation = < 12 people per day
Moderate occupation = 120 - 1,200 people per day

Scenario 1

Tree #	MoF	Target	Occupation	Consequences	Benchmark	Failure	Risk
1975	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
1976	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
1980	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
1981	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
1982	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
1983	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
1984	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
1988	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Green	3	Acceptable
1989	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Green	3	Acceptable
1998	Whole tree failure	Pedestrian	V. low	1 - Very high (> 300 mm)	Green	4	Acceptable
2024	Whole tree failure	Dwelling	-	3 - Moderate (\$5,000 - \$50,000)	Green	4	Acceptable
2025	Whole tree failure	Private ancilliary structures	-	3 - Moderate (\$5,000 - \$50,000)	Green	4	Acceptable
2038	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
2039	Whole tree failure	Private ancilliary structures	-	3 - Moderate (\$5,000 - \$50,000)	Green	4	Acceptable
2040	Whole tree failure	Private ancilliary structures	-	3 - Moderate (\$5,000 - \$50,000)	Green	4	Acceptable
2048	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Green	3	Acceptable
2051	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
2053	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable

Scenario 2

Tree #	MoF	Target	Occupation	Consequences	Benchmark	Failure	Risk
1975							
1976	Primary limb failure	Pedestrian	V. low	2 - High (150 mm - 300 mm)	Green	4	Acceptable
1980							
1981							
1982							
1983							
1984							
1988							
1989							
1998							
2024							
2025							
2038							
2039							
2040							
2048							
2051							
2053							

CSR = crown spread radius. An estimate of the farthest radial branch spread

H:D = Height to diameter ratio

LCR = Live crown ratio

LCV = Live crown volume

Tree #	DBH (m)	Height (m)	CSR (m)	H:D	LCR	LCV	Notes
2056	0.83	41	6	49.54	0.15	70% - 79%	Erect to 16 m, becoming phototropic forming moderate torque arm tending ESE. H:D above the mean entering upper quartile.
2064	0.70	39	5	55.69	0.08	10% - 19%	Heavily phototropic from 4 m (est), tending upslope. Footpath strike is unlikely. 50 mm girdling root at GL on NW aspect becoming constrictive.
2066	0.67	41	6	61.34	0.12	40% - 49%	Erect to 17 m becoming heavily phototropic to the S. V. sparse crown.
2067	0.76	35	9	45.81	0.00	Dead tree	Tends S from GL. Bifurcates and becomes phototropic tending S from 14 m. Seemingly good basal development but portions of trunk collar are obscured by fallen logs.
2071	0.76	37	8	48.43	0.19	90% - 99%	Erect becoming phototropic from 14 m retaining largely upright crown form (phototropic correction) from 30 m
2090	0.66	36	9	54.90	0.19	80% - 89%	Erect pole, phototropically tending 210° to SW from 16 m. Subordinate tree, v. little assimilative crown
2091	0.73	38	9	51.90	0.13	70% - 79%	Sap bleed (recent) on trunk at 0° from 4 m dripping to GL. Cause unknown.
2093	0.95	32	12.5	33.51	0.78	80% - 89%	Local lesion at trunk base at 180° from impact of falling material (100 mm x 350 mm est). Signs of previous limb fracture at 16 m at 170° above containers. Low limbs becoming over extended although unlikely to strike fixed target.
2095	0.93	34	5	36.46	0.00	Dead tree	Low volume of needles retained on tree, indicative of recent and possibly swift death. Irregular phototropism from 14 m to 169°
2096	0.56	33	4	59.24	0.00	Dead tree	Dead tree, phototropically tending to 190° from est 10 m. No root flare at 90°, suspect girdling root. Bark can be readily removed from trunk at 60° from GL to 0.5 m. Necrotic wood, obvious mycelium and various frass tubes.
2097	0.60	33	6	54.56	0.21	70% - 79%	Subordinate pole, phototropically tending to 210° from 14 m. Highly irregular crown framework.
2098	0.95	38	7	40.06	0.21	10% - 19%	Erect becoming phototropic from 20 m. Sounding suggests bark is not attached to wood = cambial necrosis.
2099	0.70	36	7	51.41	0.03	<10%	Extensive damage at tree base. Fire damaged in the past and now obvious wood degradation including white rot on windward aspect - 50%. Axial cracking in exposed wood tissues.
2100	0.72	37.5	6	52.36	0.12	70% - 79%	Fungal bracket on roots. Some severely decayed structural roots. Sounding suggests cambial necrosis / wood degradation on 30-40% of trunk circumference. Probe can be inserted 200 mm into trunk base and adjacent surface roots on WSW aspect. Obvious torsional loading in trunk. Irregular weight distribution.
2101	0.51	32	4	62.44	0.00	Dead tree	Suppressed subordinate, absence of foliage means there is very little sail area. H:D at the upper end of the upper quartile.
2102	0.76	38	7	49.74	0.18	70% - 79%	Possible signs of previous root plate lifting on windward aspect. Erect becoming phototropic tending 100° from 15 m. Unlikely to strike any fixed targets.
2103	0.78	41	4	52.57	0.07	30% - 39%	Erect subordinate becoming phototropic from 20 m.
2104	0.73	37	5	50.54	0.11	40% - 49%	Erect becoming phototropic from 15 m. Persistent lower deadwood.

MoF = Mode of failure
V. Low occupation = < 12 people per day
Moderate occupation = 120 - 1,200 people per day

Scenario 1

Tree #	MoF	Target	Occupation	Consequences	Benchmark	Failure	Risk
2056	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
2064	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
2066	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
2067	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
2071	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
2090	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
2091	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
2093	Trunk snap	Containers / machinery / equipment / structures	-	3 - Moderate (\$5,000 - \$50,000)	Green	4	Acceptable
2095	Trunk snap	Containers / machinery / equipment / structures	-	3 - Moderate (\$5,000 - \$50,000)	Red	3(R)	Not tolerable
2096	Trunk snap	Containers / machinery / equipment / structures	-	3 - Moderate (\$5,000 - \$50,000)	Red	3(R)	Not tolerable
2097	Trunk snap	Containers / machinery / equipment / structures	-	3 - Moderate (\$5,000 - \$50,000)	Red	3(R)	Not tolerable
2098	Trunk snap	Containers / machinery / equipment / structures	-	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable
2099	Whole tree failure	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	2	Not acceptable
2100	Trunk snap	Containers / machinery / equipment / structures	-	3 - Moderate (\$5,000 - \$50,000)	Red	3(R)	Not tolerable
2101	Trunk snap	Containers / machinery / equipment / structures	-	3 - Moderate (\$5,000 - \$50,000)	Red	3(R)	Not tolerable
2102	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
2103	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
2104	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable

Scenario 2

Tree #	MoF	Target	Occupation	Consequences	Benchmark	Failure	Risk
2056							
2064							
2066							
2067							
2071							
2090							
2091							
2093							
2095							
2096							
2097							
2098							
2099							
2100							
2101							
2102							
2103							
2104							

CSR = crown spread radius. An estimate of the farthest radial branch spread

H:D = Height to diameter ratio

LCR = Live crown ratio

LCV = Live crown volume

Tree #	DBH (m)	Height (m)	CSR (m)	H:D	LCR	LCV	Notes
2109	0.86	38	6	44.22	0.00	Dead tree	Erect dead subordinate. CoG is upslope from 10 m.
2132	0.89	40	7	44.88	0.13	10% - 19%	Erect subordinate becoming phototropic from 16 m; upper crown remains erect.
2133	0.86	36	11	41.89	0.17	80% - 89%	Erect becoming phototropic from 20 m. Some persistent deadwood.
2135	0.73	38	5	51.90	0.00	Dead tree	Becoming phototropic from 14 m. CoG tends tree to 270°. Bark detachment in buttress interstice at 330° at GL.
2138	0.73	39	5	53.27	0.15	10% - 19%	Erect inner stand tree
2144	0.75	30	11	40.11	0.63	90% - 99%	Edge tree. Crown asymmetry and fallen debris suggest fallen/removed neighbour.
2147-A	0.91	29	8	31.86	0.17	70% - 79%	Suppressed subordinate on forest periphery becoming phototropic from 14 m (est) forming torque arm. Would contact storage yard and containers during whole tree failure
2147	0.59	33	6	55.74	0.00	Dead tree	Lesion at base consistent with falling tree impact. No clear target within fall distance
2152	0.78	38	8	48.73	0.26	40% - 49%	H:D approaching third quartile. Marginal crown becoming sparse
2153	0.60	33	3	54.56	0.12	80% - 89%	H:D in upper quartile. Impact to wall during failure.
2154	0.86	35	8	40.72	0.11	40% - 49%	Phototropic from GL 25° to 150° ESE. No phototropic correction in the crown. Absence of buttress roots on compression side of lean. Bark is loose and weakly (if at all) attached. Old sap is present. Cambial viability in this location is unclear. No central buttress root on windward side. No obvious neutral plane cracking visible. Robust lateral basal roots. Insufficient characteristics to benchmark RED for WTF. Branch architecture suggests tree would hang up in tree 2152 during failure. Target considers marginal impact to wall and localised cleanup costs.
2156	0.83	36	9	43.50	0.00	Dead tree	Erect subordinate becoming codominant from 7.5 m with trunks oriented approx N-S. Union appears incomplete on E aspect, largely devoid of adaptive growth. W aspect reveals narrow protrusion of response growth (elephant ear). The load is fixed. No further mechanosensory response at the fork. Gradual weakening of the fork is expected over time as the tissue degrades.
2158	0.73	37.5	5	51.22	0.17	20% - 29%	Irregular crown form. CoG is over the upslope aspect (12°). Suspect trunk snap would see the top fall downslope (180°). Historically damaged and now decayed structural root on SW aspect.
2161	0.62	34	5	54.78	0.12	60% - 69%	Erect subordinate on forest periphery. H:D in upper quartile.
2167	0.59	36	4	60.81	0.00	Dead tree	Dead tree, H:D in upper quartile. Forms marginal torque arm in upper crown tending S
2170	0.99	39	11	39.52	0.26	50% - 59%	Erect forming marginal yet symmetrical crown. Previously codominant from 4 m, now failed revealing cup-shaped union with superficial tissue degradation. H:D of remaining trunk with DBH measured just above inclusion is 50:1 Circ main trunk = 2199 Ht = 35. Tree fails to strike fixed target.
2187	0.80	38	9	47.75	0.21	60% - 69%	Erect becoming phototropic from 22 m. Suspect strike with 2133 during failure
2190	0.83	38	6	45.92	0.00	Dead tree	Erect subordinate becoming marginally phototropic in upper crown, tending SW. Dead tree with marginal crown devoid of foliage retaining moderate cone set. H:D above the mean approaching third quartile

MoF = Mode of failure
V. Low occupation = < 12 people per day
Moderate occupation = 120 - 1,200 people per day

Scenario 1

Tree #	MoF	Target	Occupation	Consequences	Benchmark	Failure	Risk
2109	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
2132	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
2133	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
2135	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
2138	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
2144	Trunk snap	Containers / machinery /equipment / structures	-	3 - Moderate (\$5,000 - \$50,000)	Green	3	Acceptable
2147-A	Trunk snap	Containers / machinery /equipment / structures	-	3 - Moderate (\$5,000 - \$50,000)	Red	3(R)	Not tolerable
2147	Trunk snap	Containers / machinery /equipment / structures	-	3 - Moderate (\$5,000 - \$50,000)	Red	3(R)	Not tolerable
2152	Trunk snap	Wall	-	3 - Moderate (\$5,000 - \$50,000)	Red	3(R)	Not tolerable
2153	Trunk snap	Wall	-	3 - Moderate (\$5,000 - \$50,000)	Red	3(R)	Not tolerable
2154	Whole tree failure	Structures	-	4 - Low (\$500 - \$5,000)	Green	3	Acceptable
2156	Codominant failure	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
2158	Trunk snap	Containers / machinery /equipment / structures	-	3 - Moderate (\$5,000 - \$50,000)	Red	3(R)	Not tolerable
2161	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
2167	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
2170	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
2187	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
2190	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable

Scenario 2

Tree #	MoF	Target	Occupation	Consequences	Benchmark	Failure	Risk
2109							
2132							
2133							
2135							
2138							
2144	Whole tree failure	Containers / machinery /equipment / structures	-	3 - Moderate (\$5,000 - \$50,000)	Green	4	Acceptable
2147-A							
2147							
2152	Whole tree failure	Wall	-	3 - Moderate (\$5,000 - \$50,000)	Green	4	Acceptable
2153	Whole tree failure	Wall	-	3 - Moderate (\$5,000 - \$50,000)	Green	4	Acceptable
2154							
2156							
2158							
2161							
2167							
2170							
2187							
2190							

CSR = crown spread radius. An estimate of the farthest radial branch spread
H:D = Height to diameter ratio
LCR = Live crown ratio
LCV = Live crown volume

Tree #	DBH (m)	Height (m)	CSR (m)	H:D	LCR	LCV	Notes
2203-B	0.60	32	7	52.91	0.25	60% - 69%	Tree tends SE. Tangential protrusion consistent with compression injury at 2.5 m on SE aspect for 300 mm circumferentially.
2203	0.70	38	6	54.26	0.00	Dead tree	Erect dead tree. No real sail area
2205	0.91	37	12	40.79	0.16	80% - 89%	Irregular phototropism from 6 m but generally tending S. Crown becomes irregular from 21 m where trunk contorts through two 45° + bends. Some primary limbs becoming over extended. H:D marginally below the mean.
2207	0.67	36	8	53.86	0.14	30% - 39%	Erect subordinate tending marginally S phototropically forming moderate crown, now becoming sparse.
2212	0.99	37	11	37.50	0.24	40% - 49%	Erect to 14 m becoming marginally phototropic tending first N then correcting to S. CoG tending S. H:D in second quartile
2213	0.81	37	9	45.58	0.19	40% - 49%	Phototropic at 10° from GL tending NNW. Decayed branch stub at 2 m appears to be superficial only and has been adequately compensated for. H:D in third quartile above mean. H:D reflects DBH at head height above old branch stub. V. good buttress roots.
2215	0.65	37	8	56.70	0.32	30% - 39%	Phototropic subordinate forming marginal torque arm from 5 m tending W. H:D in upper quartile
2216	0.96	37	8	38.49	0.00	Dead tree	Stout, generally erect tree forming symmetrical moderate crown from 29 m. Devoid of needles retaining cones and twigs infers recent death. H:D in second quartile. V. good basal development. Green x 100 for trunk snap. Some cambial necrosis of 100 mm roots within 2 m of trunk but woody tissue appears in tact at present - bark removed for photo
2218	0.83	35	5	42.29	0.00	Dead tree	Erect, persistent dead tree. Bark absence on N aspect at 10 m to 11.6 m and again locally at 20.5 m. Becoming desiccated and superficially cracking. Note avians stripping bark, query foraging behaviour. Note insect burrow on N aspect at 0.5 m. H:D about the mean. Benchmark reflects the maximum uncertainty re: internal condition of the tree.
2291	0.64	32.1	3	50.42	0.00	Dead tree	H:D in upper quartile. Tree forms torque arm tending N towards wooden hut at 14 WVR. Weeping (still moist during inspection) on N aspect of trunk from 3 m to GL- cause unknown. Target considers minor impact to wall plus localised cleanup costs.
2292	0.86	32.7	7	38.05	0.26	60% - 69%	Good basal development on all sides. Erect tree. Previously codominant at 22 m with heading cut made at wide fork. Some old branch stubs now decayed (1 m long). H:D within second quartile. Query susceptibility to crown breakage due to mass damping changes.
2305	1.08	31.9	12	29.48	0.84	30% - 39%	Stout edge tree bordering properties. Previously codominant from 16 m with stem removed. Upper crown (>16 m) becoming sparse. Some limbs over extended. Consider scaffold limb failure onto ancillary building - limb is dead / dying and has tip removed (end load lessened). (Individual assessment carried out).
2306	0.70	30.3	4	43.27	0.22	60% - 69%	Phototropic from GL tending SE forms marginal torque arm.
2307	0.97	32.5	9	33.48	0.37	40% - 49%	Stout edge tree bordering properties. Becomes phototropic in upper 1/3 forming asymmetric crown tending N. Becoming sparse. H:D within second quartile. Some coarse roots (50-70 mm) show signs of cambial necrosis on dorsal surfaces, not expected to change structural integrity.
2308	0.70	31	4	44.27	0.00	Dead tree	Erect edge tree now dead. CoG is hard to gauge but seems to head SE. Anomalous protrusion / canker at 9 m on SE aspect. H:D above mean.
2312	0.72	33	7	45.67	0.21	80% - 89%	Phototropic from GL first tending SE and then S from 15 m. Forms marginally asymmetric crown, interrupted by 2215. Crown health remains good but produces moderate torque arm tending S. H:D in third quartile.
2605	0.92	43	9	46.58	0.00	Dead tree	Erect subordinate becoming irregularly phototropic from 21 m. Burfucating crown. Persistent deadwood.

MoF = Mode of failure
V. Low occupation = < 12 people per day
Moderate occupation = 120 - 1,200 people per day

Scenario 1

Tree #	MoF	Target	Occupation	Consequences	Benchmark	Failure	Risk
2203-B	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
2203	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
2205	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Green	3	Acceptable
2207	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
2212	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Green	3	Acceptable
2213	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
2215	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
2216	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Green	3	Acceptable
2218	Trunk snap	Wall	-	3 - Moderate (\$5,000 - \$50,000)	Red	3(R)	Not tolerable
2291	Trunk snap	Wall	-	3 - Moderate (\$5,000 - \$50,000)	Red	3(R)	Not tolerable
2292	Trunk snap	Private ancilliary building	-	3 - Moderate (\$5,000 - \$50,000)	Green	4	Acceptable
2305	Branch failure	Private ancilliary building	-	4 - Low (\$500 - \$5,000)	Green	4	Acceptable
2306	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
2307	Trunk snap	Private structures / property	-	4 - Low (\$500 - \$5,000)	Green	4	Acceptable
2308	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
2312	Trunk snap	Pedestrian	V. low	1 - Very high (> 300 mm)	Red	3(R)	Acceptable
2605	Trunk snap	Pedestrian	Moderate	1 - Very high (> 300 mm)	Red	3(R)	Not tolerable

Scenario 2

Tree #	MoF	Target	Occupation	Consequences	Benchmark	Failure	Risk
2203-B							
2203							
2205							
2207							
2212							
2213							
2215							
2216							
2218							
2291							
2292	Whole tree failure	Private ancillary building	-	3 - Moderate (\$5,000 - \$50,000)	Green	4	Acceptable
2305							
2306							
2307							
2308							
2312							
2605							