

TECHNICAL MEMORANDUM

DATE 17 January 2018

REFERENCE No. 1777179-036-M-Rev0

TO Abbie Crawford, Senior Clearing Regulation Officer Department of Water and Environmental Regulation

CC Jake Hickey, Alkina Holdings Pty Ltd

FROM Craig Currie

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TREE SURVEY TO SUPPORT NATIVE VEGETATION CLEARING PERMIT APPLICATION (NVCP) FOR THE PROPOSED GREAT SOUTHERN LANDFILL

1.0 INTRODUCTION

On 12 January 2018 representatives of Golder Associates Pty Ltd (Golder) and Alkina Holdings Pty Ltd (Alkina) visited the site of the proposed Great Southern Landfill development to carry out a tree survey. The aim of the tree survey was to investigate the area for the presence of nesting trees, or trees with the potential to be used by any or all of the three species of Black Cockatoo: Carnaby's Black Cockatoo (Endangered) Calyptorhynchus latirostris, Baudin's Black Cockatoo (Vulnerable) Calyptorhynchus baudinii and Forest Red-tailed Black Cockatoo (Vulnerable) Calyptorhynchus banksii naso; and to obtain general information on tree age and size to assist the Department of Water and Environmental Regulation (DWER) in their processing of a NVCP for the abovementioned, proposed development.

2.0 METHODOLOGY

The methodology for the assessment was based broadly on the guidelines published by the then Department of Sustainability, Environment, Water, Population and Communities (DoSEWPaC) for these three-target species, which define the criteria for breeding for each of the three species (Table 1, pp 15 in the Guidelines) (DoSEWPaC, 2012) and comprised a systematic walk-over of the site and an inspection of each individual tree >300 mm in diameter. The investigation did not include a targeted survey for individuals nor did it include an assessment of the presence and value of feeding trees. Tree diameters were recorded at breast height (DBH) and visual inspections were conducted for potential hollows.

Suitable nesting trees must support hollow apertures that are at least 100 mm in diameter and these apertures must open to hollows that are near-vertical and between 500 and 400 mm deep, individual hollows were not measured. Each tree surveyed was photographed and marked using a handheld GPS. Attachment A shows the four survey locations and an aerial overview of the site.

3.0 CONSIDERATIONS

This Technical Memorandum (Memo) presents photographs of the surveyed trees, information on their diameter and any notable features, along with a figure showing the location of each tree. Corresponding spatial data is also provided. This Memo presents only the information obtained from the 12 January 2018 Tree Survey, it is not intended to provide analysis or technical advice.

4.0 ROAD REALIGNMENT FOOTPRINT

Figure 1 shows the (approximate) proposed clearing footprint resulting from the road realignment and widening. The extent of this footprint was determined in the field using design drawings, map scales and a measuring tape in order to identify which trees lie within the proposed clearing footprint. In total 17 trees were surveyed with three trees: T02, T04 and T17, lying just outside the proposed clearing area.

Two trees, T02 and T11 (Figure 4 and Figure 19) were identified as having possible hollows.

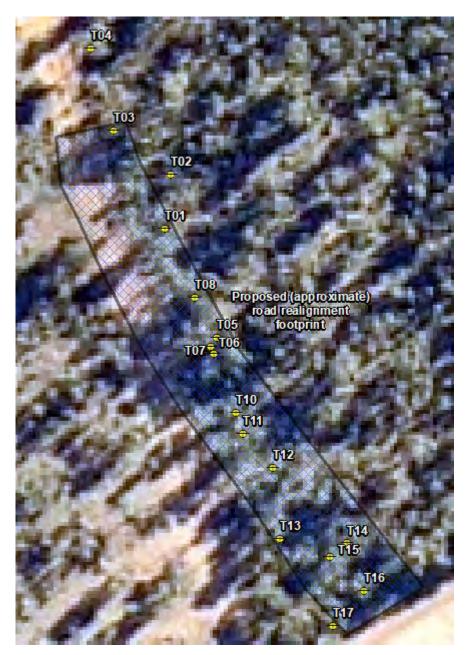


Figure 1: Proposed (approximate) road realignment footprint and surveyed trees

4.1 Surveyed trees

Table 1: Tree features

Tree Identity	Trunk Numbers, Diameter(s) and Features	Y Projection	X Projection
T01	2 trunks, 1 tree, 680 mm and 350 mm	6471026.516	460332.1607
T02	570 mm, dead tree, fire damage, possible hollows, lies outside clearing area	6471044.369	460334.0775
T03	440 mm	6471058.927	460315.2028
T04	540 mm, lies outside clearing area	6471085.944	460307.6276
T05	2 trunks, 1 tree, 310 mm and 380 mm	6470990.448	460349.4164
T06	300 mm	6470987.447	460347.3476
T07	480 mm	6470985.012	460348.3972
T08	5 trunks, 1 tree, all trunks less than 300 mm	6471003.721	460342.1782
T10	340 mm	6470965.643	460355.6589



Tree Identity	Trunk Numbers, Diameter(s) and Features	Y Projection	X Projection
T11	1500 mm, large dead tree, possible hollows, lies on edge of clearing area	6470958.669	460358.05
T12	290 mm	6470947.511	460367.8332
T13	350 mm	6470923.911	460370.2885
T14	360 mm	6470922.445	460392.422
T15	580 mm	6470917.878	460386.6713
T16	340 mm	6470906.727	460398.1565
T17	380 mm	6470895.049	460387.8943





Figure 2: T01 Figure 3: T01





Figure 4: T02



Figure 5: T03



Figure 6: T04

Figure 7: T05





Figure 8: T06



Figure 9: T06



Figure 10: T07



Figure 11: T07



Figure 12: T08





Figure 13: T08

Figure 14:T09





Figure 15: T09



Figure 16: T10





Figure 17: T10 Figure 18: T11



Figure 19: T11







Figure 20: T12



Figure 21: T13



Figure 22: T14

Figure 23: T15







Figure 24: T16

Figure 25: T17

5.0 LANDFILL FOOTPRINT

Figure 26 shows the proposed clearing footprint resulting from the construction of the landfill's first cells. This area was demarcated in the field using a handheld GPS and spatial coordinates showing the extent of the area. A total of 59 trees were surveyed with one tree: LT20, lying just outside the proposed clearing area.

No trees were identified as having possible hollows.





Figure 26: Proposed landfill footprint and surveyed trees

5.1 Surveyed trees

Table 2: Tree features

Tree Identity	Trunk Numbers, Diameter(s) and Features	Y Projection	X Projection
LT01	2 trunks, 1 tree, 640 mm and 680 mm	6468997.718	462534.3193
LT02	660 mm	6469005.157	462537.9793
LT03	2 trunks, 1 tree, 480 mm and 400 mm	6469009.375	462539.5712
LT04	7 tree cluster, 360 mm, 500 mm, 320 mm, 370 mm, 450 mm, 700 mm and 340 mm	6469009.92	462476.3183
LT05	870 mm	6468988.773	462392.2504
LT06	2 trunks, 1 tree, 440 mm and 380 mm	6468943.796	462399.2227



LTOT 3 trunks, 1 tree, 460 mm, 490 mm and 530 mm 6469014,598 462361,5228 LTO8 680 mm 6469120,021 462310,2364 LTO9 2 tree cluster, both at 400 mm 6469120,021 462210,2364 LT10 2 trunks, 1 tree, both at 600 mm 6469146,049 402298,7336 LT11 3 tree cluster, 770 mm, 920 mm and 560 mm 6469065,374 462390,7548 LT13 870 mm 6469065,374 462897,731 LT13 870 mm 6469083,717 462897,731 LT14 970 mm 6469083,717 462891,9966 LT16 980 mm 6469111,22 462620,7853 LT17 740 mm 6469087,202 462620,7853 LT19 680 mm 6469159,463 46262,2583 LT20 1100 mm 6469159,463 462662,5953 LT21 5 trunks, 1 tree, 500 mm, 800 mm, 400 mm, 480 mm, and 300 mm 6469303,071 462674,6498 LT22 440 mm 6469159,463 462662,5953 462472,6473 LT23 5 trunks, 1 tree, 500 mm, 800 mm, 400 mm, 480 mm, and 300 mm <td< th=""><th>Tree Identity</th><th>Trunk Numbers, Diameter(s) and Features</th><th>Y Projection</th><th>X Projection</th></td<>	Tree Identity	Trunk Numbers, Diameter(s) and Features	Y Projection	X Projection
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LT10 2 trunks, 1 tree, both at 600 mm 6489148.049 462298.7336 LT11 3 tree cluster, 770 mm, 920 mm and 560 mm 6469030.00 462299.643 LT12 880 mm 6469033.006 462579.6448 LT13 870 mm 6469065.374 462697.731 LT14 970 mm 6469063.717 462681.9698 LT16 980 mm 6469111.22 462655.3964 LT17 740 mm 6469171.973 462655.3964 LT17 740 mm 646917.973 462625.593 LT18 2 tree cluster, 680 mm and 450 mm 646917.973 462625.5953 LT20 1100 mm 6469159.463 462662.5953 LT20 1100 mm 6469159.463 462573.0867 LT22 440 mm 6469191.245 462593.5564 LT23 660 mm 6469191.835 462573.0857 LT24 2 trunks, 1 tree, 920 mm and 1000 mm 6469191.835 462273.0857 LT25 980 mm 6469198.933 462402.763 LT26 720 mm 6469198.933	LT08	680 mm	6469129.021	462310.2364
LT11 3 tree cluster, 770 mm, 920 mm and 560 mm 6469039,006 462390,7548 LT12 680 mm 646906,374 462390,7548 LT14 870 mm 646906,374 4626807,731 LT14 970 mm 6469013,172 462681,9696 LT16 980 mm 6469111,222 462655,3984 LT17 740 mm 64699087,202 46255,3984 LT18 2 tree cluster, 680 mm and 450 mm 6469117,973 462622,6587 LT19 680 mm 646915,463 462622,6587 LT20 1100 mm 6469265,153 462622,6587 LT21 5 trunks, 1 tree, 500 mm, 800 mm, 400 mm, 480 mm, and 300 mm 6469300,371 462578,4067 LT22 440 mm 6469111,325 462578,3057 LT22 440 mm 646911,325 462573,0357 LT24 2 trunks, 1 tree, 920 mm and 1000 mm 6469280,611 462463,4069 LT25 980 mm 6469280,611 462449,8936 LT26 720 mm 6469180,635 462442,763 LT27 2 tree cluster	LT09	2 tree cluster, both at 400 mm	6469120.424	462293.2497
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LT16 980 mm 6469111.22 462655.3964 LT17 740 mm 6469087.262 462620.7853 LT18 2 tree cluster, 680 mm and 450 mm 6469117.973 462622.6587 LT19 680 mm 6469115.946 462622.6587 LT20 1100 mm 646919.265.153 46262.5553 LT21 5 trunks, 1 tree, 500 mm, 800 mm, 400 mm, 480 mm, and 300 mm 6469390.371 462578.6067 LT22 440 mm 6469191.283 462593.5546 LT23 660 mm 6469191.335 462573.0357 LT24 2 trunks, 1 tree, 920 mm and 1000 mm 6469191.283 462573.0357 LT24 2 trunks, 1 tree, 920 mm and 1000 mm 6469189.993 462449.8763 LT25 980 mm 6469189.993 462449.8763 LT26 720 mm 6469189.993 462449.8763 LT27 2 tree cluster, 600 mm and 440 mm 6469189.993 462409.763 LT27 2 tree cluster, 600 mm and 720 mm 6469186.516 46243.772 LT27 2 tree cluster, 6460 mm, 300 mm, 500 mm, 380 mm and 450 mm 64691616.	LT13	870 mm	6469065.374	462697.731
LT17 740 mm 6469087.262 462620.7853 LT18 2 tree cluster, 680 mm and 450 mm 6469117.973 462622.6887 LT19 680 mm 6469119.7973 462622.5687 LT20 1100 mm 64691619.636 462662.5653 LT21 5 trunks, 1 tree, 500 mm, 800 mm, 400 mm, 480 mm, and 300 mm 6469300.371 462574.067 LT21 5 trunks, 1 tree, 500 mm, 800 mm, 400 mm, 480 mm, and 300 mm 64693191.245 462573.0357 LT22 440 mm 6469191.335 462573.0357 LT24 2 trunks, 1 tree, 920 mm and 1000 mm 6469191.335 4622673.0357 LT25 980 mm 6469186.356 462483.4069 LT25 980 mm 6469186.556 462403.763 LT26 720 mm 6469186.556 462432.747 LT28 2 tree cluster, 600 mm and 240 mm 6469186.556 462432.747 LT29 5 tree cluster, 600 mm and 720 mm 6469186.556 462432.772 LT30 2 tree cluster, 460 mm, 300 mm, 500 mm, 380 mm and 450 mm 64691816.314 4622453.9229 LT30 2 tree	LT14	970 mm	6469083.717	462681.9696
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LT27 2 tree cluster, 600 mm and 440 mm 6469186.556 462432.747 LT28 2 tree cluster, 500 mm and 720 mm 6469170.635 46243.7728 LT29 5 tree cluster, 460 mm, 300 mm, 500 mm, 380 mm and 450 mm 6469161.472 462453.9229 LT30 2 tree cluster, 530 mm and 560 mm 6469196.2132 462472.2473 LT31 430 mm 6469166.214 462490.0203 LT32 2 tree cluster, 450 mm and 360 mm 6469178.933 462500.2816 LT33 490 mm 6469177.175 462500.2816 LT34 2 tree cluster, 350 mm and 430 mm 6469177.175 462501.4481 LT35 550 mm 6469173.305 462501.4481 LT36 600 mm 6469173.305 462507.1095 LT37 680 mm 6469173.394 462501.909 LT38 770 mm 6469137.614 462507.2401 LT39 3 trunks, 1 tree, 370 mm, 320 mm and 340 mm 6469131.936 462530.6139 LT41 380 mm 6469131.936 462530.6139 LT41 380 mm 6469131.936 46253	LT25	980 mm	6469280.614	462449.8936
LT28 2 tree cluster, 500 mm and 720 mm 6469170.635 462443.7728 LT29 5 tree cluster, 460 mm, 300 mm, 500 mm, 380 mm and 450 mm 6469161.472 462453.9229 LT30 2 tree cluster, 530 mm and 560 mm 6469192.132 462472.2473 LT31 430 mm 6469166.814 462490.203 LT32 2 tree cluster, 450 mm and 360 mm 6469166.275 462494.3714 LT33 490 mm 6469178.933 462500.2816 LT34 2 tree cluster, 350 mm and 430 mm 6469177.175 462504.4481 LT35 550 mm 6469173.305 462507.1095 LT36 600 mm 6469161.297 462497.1315 LT37 680 mm 6469147.349 462507.2001 LT38 770 mm 6469137.614 462507.201 LT39 3 trunks, 1 tree, 370 mm, 320 mm and 340 mm 6469137.614 462507.2401 LT39 3 trunks, 1 tree, 460 mm and 490 mm 6469139.493 462530.6139 LT41 380 mm 6469139.493 462535.9755 LT42 2 trunks, 1 tree, 460 mm and 490 mm 646	LT26	720 mm	6469189.993	462402.763
LT29 5 tree cluster, 460 mm, 300 mm, 500 mm, 380 mm and 450 mm 6469161.472 462453.9229 LT30 2 tree cluster, 530 mm and 560 mm 6469192.132 462472.2473 LT31 430 mm 6469166.814 462490.0203 LT32 2 tree cluster, 450 mm and 360 mm 6469178.933 462690.281 LT33 490 mm 6469178.933 462500.241 LT34 2 tree cluster, 350 mm and 430 mm 6469173.305 462504.481 LT35 550 mm 6469173.305 462507.1095 LT36 600 mm 6469161.297 462497.1315 LT37 680 mm 6469147.349 462501.9099 LT38 770 mm 6469137.614 462507.2001 LT39 3 trunks, 1 tree, 370 mm, 320 mm and 340 mm 6469131.936 462530.6139 LT40 310 mm 6469133.493 462535.955 LT41 380 mm 6469133.493 462538.4353 LT42 2 trunks, 1 tree, 460 mm and 490 mm 6469139.058 462539.316 LT43 2 trunks, 1 tree, both at 300 mm 6469139.058 462539.	LT27	2 tree cluster, 600 mm and 440 mm	6469186.556	462432.747
LT30 2 tree cluster, 530 mm and 560 mm 6469192.132 462472.2473 LT31 430 mm 6469166.814 462490.0203 LT32 2 tree cluster, 450 mm and 360 mm 6469166.275 462494.3714 LT33 490 mm 6469178.933 462500.2816 LT34 2 tree cluster, 350 mm and 430 mm 6469177.175 462501.2816 LT35 550 mm 6469173.305 462507.1095 LT36 600 mm 6469161.297 462497.1315 LT37 680 mm 6469147.349 462501.9099 LT38 770 mm 6469137.614 462507.2401 LT39 3 trunks, 1 tree, 370 mm, 320 mm and 340 mm 6469137.612 462528.6459 LT40 310 mm 6469131.936 462530.6139 LT41 380 mm 6469139.493 462533.4353 LT42 2 trunks, 1 tree, 460 mm and 490 mm 6469139.058 462533.4353 LT43 2 trunks, 1 tree, both at 300 mm 6469137.176 462539.104 LT44 2 trunks, 1 tree, 400 mm and 350 mm 6469137.105 462549.9267 LT45 420 mm 6469125.023 462553.913	LT28	2 tree cluster, 500 mm and 720 mm	6469170.635	462443.7728
LT30 2 tree cluster, 530 mm and 560 mm 6469192.132 462472.2473 LT31 430 mm 6469166.814 462490.0203 LT32 2 tree cluster, 450 mm and 360 mm 6469166.275 462494.3714 LT33 490 mm 6469178.933 462500.2816 LT34 2 tree cluster, 350 mm and 430 mm 6469177.175 462501.2816 LT35 550 mm 6469173.305 462507.1095 LT36 600 mm 6469161.297 462497.1315 LT37 680 mm 6469147.349 462501.9099 LT38 770 mm 6469137.614 462507.2401 LT39 3 trunks, 1 tree, 370 mm, 320 mm and 340 mm 6469137.612 462528.6459 LT40 310 mm 6469131.936 462530.6139 LT41 380 mm 6469139.493 462533.4353 LT42 2 trunks, 1 tree, 460 mm and 490 mm 6469139.058 462533.4353 LT43 2 trunks, 1 tree, both at 300 mm 6469137.176 462539.104 LT44 2 trunks, 1 tree, 400 mm and 350 mm 6469137.105 462549.9267 LT45 420 mm 6469125.023 462553.913	LT29	5 tree cluster, 460 mm, 300 mm, 500 mm, 380 mm and 450 mm	6469161.472	462453.9229
LT32 2 tree cluster, 450 mm and 360 mm 6469166.275 462494.3714 LT33 490 mm 6469178.933 462500.2816 LT34 2 tree cluster, 350 mm and 430 mm 6469177.175 462504.4481 LT35 550 mm 6469173.305 462507.1095 LT36 600 mm 6469161.297 462497.1315 LT37 680 mm 6469147.349 462501.9099 LT38 770 mm 6469137.614 462507.2401 LT39 3 trunks, 1 tree, 370 mm, 320 mm and 340 mm 6469137.162 462528.6459 LT40 310 mm 6469131.936 462530.6139 LT41 380 mm 6469139.493 462535.9755 LT42 2 trunks, 1 tree, 460 mm and 490 mm 6469139.058 462538.4353 LT43 2 trunks, 1 tree, both at 300 mm 6469137.176 462539.104 LT44 2 trunks, 1 tree, 400 mm and 350 mm 6469128.423 462539.9869 LT45 420 mm 6469125.023 462549.9267 LT46 440 mm 6469120.057 462555.9013 LT47 400 mm 6469110.905 462555.9013 L	LT30		6469192.132	462472.2473
LT33 490 mm 6469178.933 462500.2816 LT34 2 tree cluster, 350 mm and 430 mm 6469177.175 462504.4481 LT35 550 mm 6469173.305 462507.1095 LT36 600 mm 6469161.297 462497.1315 LT37 680 mm 6469147.349 462501.9099 LT38 770 mm 6469137.614 462507.2401 LT39 3 trunks, 1 tree, 370 mm, 320 mm and 340 mm 6469127.162 462528.6459 LT40 310 mm 6469131.936 462530.6139 LT41 380 mm 6469139.493 462535.9755 LT42 2 trunks, 1 tree, 460 mm and 490 mm 6469139.058 462538.4353 LT43 2 trunks, 1 tree, both at 300 mm 6469137.176 462539.104 LT44 2 trunks, 1 tree, both at 300 mm 6469128.423 462539.9869 LT45 420 mm 6469128.243 462539.9869 LT45 420 mm 6469120.057 462559.013 LT48 510 mm 6469120.057 462555.9013 LT48 510 mm 6469100.978 462555.9013 LT50 510 mm	LT31	430 mm	6469166.814	462490.0203
LT34 2 tree cluster, 350 mm and 430 mm 6469177.175 462504.4481 LT35 550 mm 6469173.305 462507.1095 LT36 600 mm 6469161.297 462497.1315 LT37 680 mm 6469147.349 462501.9099 LT38 770 mm 6469137.614 462507.2401 LT39 3 trunks, 1 tree, 370 mm, 320 mm and 340 mm 6469127.162 462528.6459 LT40 310 mm 6469131.936 462530.6139 LT41 380 mm 6469139.493 462535.9755 LT42 2 trunks, 1 tree, 460 mm and 490 mm 6469139.058 462538.4353 LT43 2 trunks, 1 tree, both at 300 mm 6469137.176 462539.104 LT44 2 trunks, 1 tree, 400 mm and 350 mm 6469128.423 462539.9869 LT45 420 mm 6469125.023 462549.9267 LT46 440 mm 6469125.027 462555.9013 LT48 510 mm 6469110.905 462550.412 LT47 400 mm 6469101.905 462561.8196 LT50 510 mm 6469130.498 4625501.8196 LT50 510 mm </td <td>LT32</td> <td>2 tree cluster, 450 mm and 360 mm</td> <td>6469166.275</td> <td>462494.3714</td>	LT32	2 tree cluster, 450 mm and 360 mm	6469166.275	462494.3714
LT35 550 mm 6469173.305 462507.1095 LT36 600 mm 6469161.297 462497.1315 LT37 680 mm 6469147.349 462501.9099 LT38 770 mm 6469137.614 462507.2401 LT39 3 trunks, 1 tree, 370 mm, 320 mm and 340 mm 6469127.162 462528.6459 LT40 310 mm 6469131.936 462530.6139 LT41 380 mm 6469139.493 462535.9755 LT42 2 trunks, 1 tree, 460 mm and 490 mm 6469139.058 462538.4353 LT43 2 trunks, 1 tree, both at 300 mm 6469137.176 462539.104 LT44 2 trunks, 1 tree, 400 mm and 350 mm 6469128.423 462539.9869 LT45 420 mm 6469125.023 462549.9267 LT46 440 mm 6469125.023 462550.412 LT47 400 mm 6469120.057 462555.9013 LT48 510 mm 646910.905 462563.2477 LT49 2 trunks, 1 tree, 380 mm and 400 mm 6469130.498 462561.8196 LT50 510 mm 6469134.043 462566.6155 LT52 380 mm </td <td>LT33</td> <td>490 mm</td> <td>6469178.933</td> <td>462500.2816</td>	LT33	490 mm	6469178.933	462500.2816
LT36 600 mm 6469161.297 462497.1315 LT37 680 mm 6469147.349 462501.9099 LT38 770 mm 6469137.614 462507.2401 LT39 3 trunks, 1 tree, 370 mm, 320 mm and 340 mm 6469127.162 462528.6459 LT40 310 mm 6469131.936 462530.6139 LT41 380 mm 6469139.493 462535.9755 LT42 2 trunks, 1 tree, 460 mm and 490 mm 6469139.058 462538.4353 LT43 2 trunks, 1 tree, both at 300 mm 6469137.176 462539.104 LT44 2 trunks, 1 tree, 400 mm and 350 mm 6469128.423 462539.9869 LT45 420 mm 6469125.023 462549.9267 LT46 440 mm 6469121.589 462550.412 LT47 400 mm 6469120.057 462555.9013 LT48 510 mm 6469101.905 462563.2477 LT49 2 trunks, 1 tree, 380 mm and 400 mm 6469130.498 462561.8196 LT50 510 mm 6469134.043 462561.2393 LT51 5 trunks, 1 tree, 360 mm, 260 mm, 300 mm, 400 mm and 200 mm 6469137.609 462566.6155	LT34	2 tree cluster, 350 mm and 430 mm	6469177.175	462504.4481
LT37 680 mm 6469147.349 462501.9099 LT38 770 mm 6469137.614 462507.2401 LT39 3 trunks, 1 tree, 370 mm, 320 mm and 340 mm 6469127.162 462528.6459 LT40 310 mm 6469131.936 462530.6139 LT41 380 mm 6469139.493 462535.9755 LT42 2 trunks, 1 tree, 460 mm and 490 mm 6469139.058 462538.4353 LT43 2 trunks, 1 tree, both at 300 mm 6469137.176 462539.104 LT44 2 trunks, 1 tree, both at 300 mm 6469128.423 462539.9869 LT45 420 mm 6469128.203 462549.9267 LT46 440 mm 6469121.589 462550.412 LT47 400 mm 6469120.057 462555.9013 LT48 510 mm 6469110.905 462563.2477 LT49 2 trunks, 1 tree, 380 mm and 400 mm 6469130.498 462561.2393 LT50 510 mm 6469134.043 462561.2393 LT51 5 trunks, 1 tree, 360 mm, 260 mm, 300 mm, 400 mm and 200 mm 6469140.3 462566.6155 LT52 380 mm 6469140.3 462584.0997	LT35	550 mm	6469173.305	462507.1095
LT38 770 mm 6469137.614 462507.2401 LT39 3 trunks, 1 tree, 370 mm, 320 mm and 340 mm 6469127.162 462528.6459 LT40 310 mm 6469131.936 462530.6139 LT41 380 mm 6469139.493 462535.9755 LT42 2 trunks, 1 tree, 460 mm and 490 mm 6469139.058 462538.4353 LT43 2 trunks, 1 tree, both at 300 mm 6469137.176 462539.104 LT44 2 trunks, 1 tree, 400 mm and 350 mm 6469128.423 462539.9869 LT45 420 mm 6469125.023 462549.9267 LT46 440 mm 6469121.589 462550.412 LT47 400 mm 6469120.057 462555.9013 LT48 510 mm 6469101.905 462563.2477 LT49 2 trunks, 1 tree, 380 mm and 400 mm 6469130.498 462561.2393 LT50 510 mm 6469134.043 462561.2393 LT51 5 trunks, 1 tree, 360 mm, 260 mm, 300 mm, 400 mm and 200 mm 6469137.609 462566.6155 LT52 380 mm 6469140.3 462575.0203 LT53 3 trunks, 1 tree, 350 mm, 360 mm and 300 mm 6469160.978<	LT36	600 mm	6469161.297	462497.1315
LT39 3 trunks, 1 tree, 370 mm, 320 mm and 340 mm 6469127.162 462528.6459 LT40 310 mm 6469131.936 462530.6139 LT41 380 mm 6469139.493 462535.9755 LT42 2 trunks, 1 tree, 460 mm and 490 mm 6469139.058 462538.4353 LT43 2 trunks, 1 tree, both at 300 mm 6469137.176 462539.104 LT44 2 trunks, 1 tree, 400 mm and 350 mm 6469128.423 462539.9869 LT45 420 mm 6469125.023 462549.9267 LT46 440 mm 6469121.589 462550.412 LT47 400 mm 6469120.057 462555.9013 LT48 510 mm 6469101.905 462563.2477 LT49 2 trunks, 1 tree, 380 mm and 400 mm 6469130.498 462561.8196 LT50 510 mm 6469134.043 462561.2393 LT51 5 trunks, 1 tree, 360 mm, 260 mm, 300 mm, 400 mm and 200 mm 6469137.609 462566.6155 LT52 380 mm 6469140.3 462575.0203 LT53 3 trunks, 1 tree, 350 mm, 360 mm and 300 mm 6469165.384 462584.0997 LT54 590 mm 6469160.978<	LT37	680 mm	6469147.349	462501.9099
LT40310 mm6469131.936462530.6139LT41380 mm6469139.493462535.9755LT422 trunks, 1 tree, 460 mm and 490 mm6469139.058462538.4353LT432 trunks, 1 tree, both at 300 mm6469137.176462539.104LT442 trunks, 1 tree, 400 mm and 350 mm6469128.423462539.9869LT45420 mm6469125.023462549.9267LT46440 mm6469121.589462550.412LT47400 mm6469120.057462555.9013LT48510 mm6469101.905462563.2477LT492 trunks, 1 tree, 380 mm and 400 mm6469130.498462561.8196LT50510 mm6469134.043462561.2393LT515 trunks, 1 tree, 360 mm, 260 mm, 300 mm, 400 mm and 200 mm6469137.609462566.6155LT52380 mm6469140.3462575.0203LT533 trunks, 1 tree, 350 mm, 360 mm and 300 mm6469165.384462584.0997LT54590 mm6469160.978462591.6796	LT38	770 mm	6469137.614	462507.2401
LT41380 mm6469139.493462535.9755LT422 trunks, 1 tree, 460 mm and 490 mm6469139.058462538.4353LT432 trunks, 1 tree, both at 300 mm6469137.176462539.104LT442 trunks, 1 tree, 400 mm and 350 mm6469128.423462539.9869LT45420 mm6469125.023462549.9267LT46440 mm6469121.589462550.412LT47400 mm6469120.057462555.9013LT48510 mm6469101.905462563.2477LT492 trunks, 1 tree, 380 mm and 400 mm6469130.498462561.8196LT50510 mm6469134.043462561.2393LT515 trunks, 1 tree, 360 mm, 260 mm, 300 mm, 400 mm and 200 mm6469137.609462566.6155LT52380 mm6469140.3462575.0203LT533 trunks, 1 tree, 350 mm, 360 mm and 300 mm6469165.384462584.0997LT54590 mm6469160.978462591.6796	LT39	3 trunks, 1 tree, 370 mm, 320 mm and 340 mm	6469127.162	462528.6459
LT42 2 trunks, 1 tree, 460 mm and 490 mm 6469139.058 462538.4353 LT43 2 trunks, 1 tree, both at 300 mm 6469137.176 462539.104 LT44 2 trunks, 1 tree, 400 mm and 350 mm 6469128.423 462539.9869 LT45 420 mm 6469125.023 462549.9267 LT46 440 mm 6469121.589 462550.412 LT47 400 mm 6469120.057 462555.9013 LT48 510 mm 6469101.905 462563.2477 LT49 2 trunks, 1 tree, 380 mm and 400 mm 6469130.498 462561.8196 LT50 510 mm 6469134.043 462561.2393 LT51 5 trunks, 1 tree, 360 mm, 260 mm, 300 mm, 400 mm and 200 mm 6469137.609 462566.6155 LT52 380 mm 6469140.3 462575.0203 LT53 3 trunks, 1 tree, 350 mm, 360 mm and 300 mm 6469165.384 462584.0997 LT54 590 mm 6469160.978 462591.6796	LT40	310 mm	6469131.936	462530.6139
LT432 trunks, 1 tree, both at 300 mm6469137.176462539.104LT442 trunks, 1 tree, 400 mm and 350 mm6469128.423462539.9869LT45420 mm6469125.023462549.9267LT46440 mm6469121.589462550.412LT47400 mm6469120.057462555.9013LT48510 mm6469101.905462563.2477LT492 trunks, 1 tree, 380 mm and 400 mm6469130.498462561.8196LT50510 mm6469134.043462561.2393LT515 trunks, 1 tree, 360 mm, 260 mm, 300 mm, 400 mm and 200 mm6469137.609462566.6155LT52380 mm6469140.3462575.0203LT533 trunks, 1 tree, 350 mm, 360 mm and 300 mm6469165.384462584.0997LT54590 mm6469160.978462591.6796	LT41	380 mm	6469139.493	462535.9755
LT44 2 trunks, 1 tree, 400 mm and 350 mm 6469128.423 462539.9869 LT45 420 mm 6469125.023 462549.9267 LT46 440 mm 6469121.589 462550.412 LT47 400 mm 6469120.057 462555.9013 LT48 510 mm 6469101.905 462563.2477 LT49 2 trunks, 1 tree, 380 mm and 400 mm 6469130.498 462561.8196 LT50 510 mm 6469134.043 462561.2393 LT51 5 trunks, 1 tree, 360 mm, 260 mm, 300 mm, 400 mm and 200 mm 6469137.609 462566.6155 LT52 380 mm 6469140.3 462575.0203 LT53 3 trunks, 1 tree, 350 mm, 360 mm and 300 mm 6469165.384 462584.0997 LT54 590 mm 6469160.978 462591.6796	LT42	2 trunks, 1 tree, 460 mm and 490 mm	6469139.058	462538.4353
LT45 420 mm 6469125.023 462549.9267 LT46 440 mm 6469121.589 462550.412 LT47 400 mm 6469120.057 462555.9013 LT48 510 mm 6469101.905 462563.2477 LT49 2 trunks, 1 tree, 380 mm and 400 mm 6469130.498 462561.8196 LT50 510 mm 6469134.043 462561.2393 LT51 5 trunks, 1 tree, 360 mm, 260 mm, 300 mm, 400 mm and 200 mm 6469137.609 462566.6155 LT52 380 mm 6469140.3 462575.0203 LT53 3 trunks, 1 tree, 350 mm, 360 mm and 300 mm 6469165.384 462584.0997 LT54 590 mm 6469160.978 462591.6796	LT43	2 trunks, 1 tree, both at 300 mm	6469137.176	462539.104
LT46 440 mm 6469121.589 462550.412 LT47 400 mm 6469120.057 462555.9013 LT48 510 mm 6469101.905 462563.2477 LT49 2 trunks, 1 tree, 380 mm and 400 mm 6469130.498 462561.8196 LT50 510 mm 6469134.043 462561.2393 LT51 5 trunks, 1 tree, 360 mm, 260 mm, 300 mm, 400 mm and 200 mm 6469137.609 462566.6155 LT52 380 mm 6469140.3 462575.0203 LT53 3 trunks, 1 tree, 350 mm, 360 mm and 300 mm 6469165.384 462584.0997 LT54 590 mm 6469160.978 462591.6796	LT44	2 trunks, 1 tree, 400 mm and 350 mm	6469128.423	462539.9869
LT47 400 mm 6469120.057 462555.9013 LT48 510 mm 6469101.905 462563.2477 LT49 2 trunks, 1 tree, 380 mm and 400 mm 6469130.498 462561.8196 LT50 510 mm 6469134.043 462561.2393 LT51 5 trunks, 1 tree, 360 mm, 260 mm, 300 mm, 400 mm and 200 mm 6469137.609 462566.6155 LT52 380 mm 6469140.3 462575.0203 LT53 3 trunks, 1 tree, 350 mm, 360 mm and 300 mm 6469165.384 462584.0997 LT54 590 mm 6469160.978 462591.6796	LT45	420 mm	6469125.023	462549.9267
LT48 510 mm 6469101.905 462563.2477 LT49 2 trunks, 1 tree, 380 mm and 400 mm 6469130.498 462561.8196 LT50 510 mm 6469134.043 462561.2393 LT51 5 trunks, 1 tree, 360 mm, 260 mm, 300 mm, 400 mm and 200 mm 6469137.609 462566.6155 LT52 380 mm 6469140.3 462575.0203 LT53 3 trunks, 1 tree, 350 mm, 360 mm and 300 mm 6469165.384 462584.0997 LT54 590 mm 6469160.978 462591.6796	LT46	440 mm	6469121.589	462550.412
LT49 2 trunks, 1 tree, 380 mm and 400 mm 6469130.498 462561.8196 LT50 510 mm 6469134.043 462561.2393 LT51 5 trunks, 1 tree, 360 mm, 260 mm, 300 mm, 400 mm and 200 mm 6469137.609 462566.6155 LT52 380 mm 6469140.3 462575.0203 LT53 3 trunks, 1 tree, 350 mm, 360 mm and 300 mm 6469165.384 462584.0997 LT54 590 mm 6469160.978 462591.6796	LT47	400 mm	6469120.057	462555.9013
LT50 510 mm 6469134.043 462561.2393 LT51 5 trunks, 1 tree, 360 mm, 260 mm, 300 mm, 400 mm and 200 mm 6469137.609 462566.6155 LT52 380 mm 6469140.3 462575.0203 LT53 3 trunks, 1 tree, 350 mm, 360 mm and 300 mm 6469165.384 462584.0997 LT54 590 mm 6469160.978 462591.6796	LT48	510 mm	6469101.905	462563.2477
LT51 5 trunks, 1 tree, 360 mm, 260 mm, 300 mm, 400 mm and 200 mm 6469137.609 462566.6155 LT52 380 mm 6469140.3 462575.0203 LT53 3 trunks, 1 tree, 350 mm, 360 mm and 300 mm 6469165.384 462584.0997 LT54 590 mm 6469160.978 462591.6796	LT49	2 trunks, 1 tree, 380 mm and 400 mm	6469130.498	462561.8196
LT52 380 mm 6469140.3 462575.0203 LT53 3 trunks, 1 tree, 350 mm, 360 mm and 300 mm 6469165.384 462584.0997 LT54 590 mm 6469160.978 462591.6796	LT50		6469134.043	462561.2393
LT53 3 trunks, 1 tree, 350 mm, 360 mm and 300 mm 6469165.384 462584.0997 LT54 590 mm 6469160.978 462591.6796	LT51	5 trunks, 1 tree, 360 mm, 260 mm, 300 mm, 400 mm and 200 mm	6469137.609	462566.6155
LT54 590 mm 6469160.978 462591.6796	LT52	380 mm	6469140.3	462575.0203
	LT53	3 trunks, 1 tree, 350 mm, 360 mm and 300 mm	6469165.384	462584.0997
LT55 2 trunks, 1 tree, both at 300 mm 6469153.214 462590.3843	LT54	590 mm	6469160.978	462591.6796
	LT55	2 trunks, 1 tree, both at 300 mm	6469153.214	462590.3843



Tree Identity	Trunk Numbers, Diameter(s) and Features	Y Projection	X Projection
LT56	3 tree cluster, 290 mm, 440 mm and 340 mm	6469146.687	462593.8118
LT57	3 tree cluster, 320 mm, 370 mm and 330 mm	6469151.366	462600.3184
LT58	2 tree cluster, 300 mm and 600 mm	6469138.853	462603.5787
LT59	3 tree cluster, 430 mm, 350 mm and 400 mm	6469123.962	462593.2329





Figure 27: LT01 Figure 28: LT01



Figure 29: LT02



Figure 31: LT04



Figure 30: LT03



Figure 32: LT04



Figure 33: LT05



Figure 35: LT07



Figure 34: LT06



Figure 36: LT08





Figure 37: LT09



Figure 39: LT11



Figure 38: LT10



Figure 40: LT11





Figure 41: LT12



Figure 43: LT14



Figure 42: LT13



Figure 44: LT15



Figure 45: LT16



Figure 47: LT18



Figure 46: LT17



Figure 48: LT19





Figure 49: LT20



Figure 51: LT22



Figure 50: LT21



Figure 52: LT23





Figure 53: LT24



Figure 55: LT26



Figure 54: LT25



Figure 56: LT27





Figure 57: LT28



Figure 59: LT30

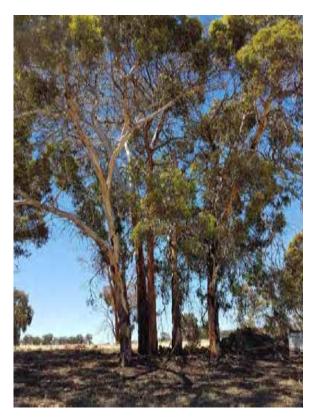


Figure 58: LT29



Figure 60: LT31





Figure 61: LT32



Figure 63: LT34



Figure 62: LT33

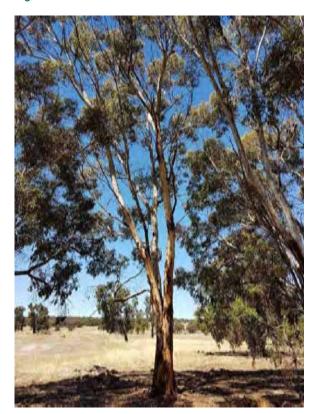


Figure 64: LT35



Figure 65: LT36



Figure 67: LT38



Figure 66: LT37



Figure 68: LT39



Figure 69: LT40



Figure 71: LT42



Figure 70: LT41



Figure 72: LT42





Figure 73: LT43



Figure 75: LT44



Figure 74: LT43



Figure 76: LT44





Figure 77: LT45

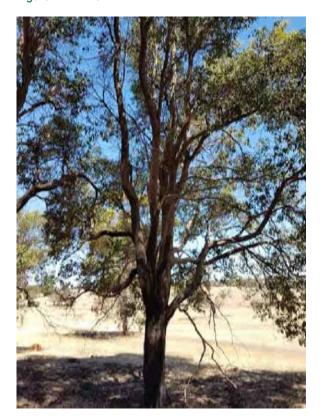


Figure 79: LT46



Figure 78: LT45



Figure 80: LT46



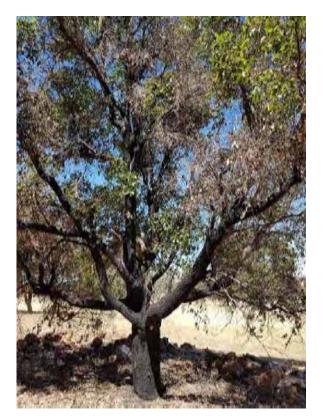


Figure 81:LT47

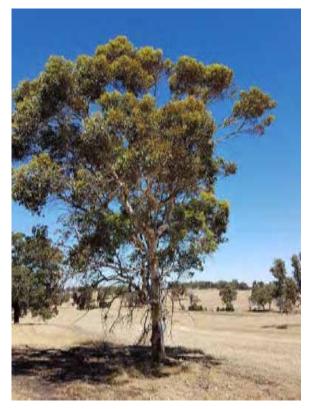


Figure 83: LT48



Figure 82: LT47



Figure 84: LT49





Figure 85: LT49



Figure 87: LT50



Figure 86: LT50

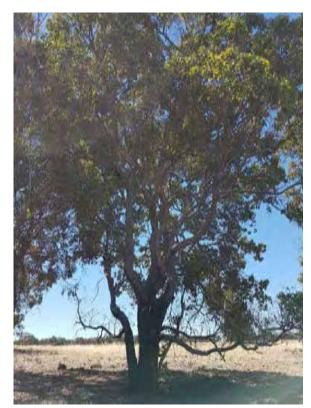


Figure 88: LT51





Figure 89: LT52

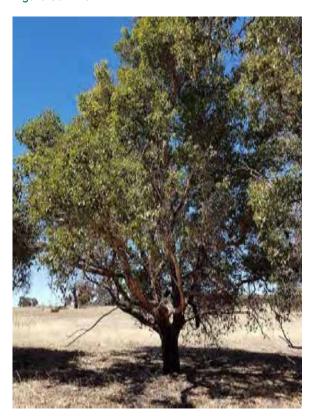


Figure 91: LT54



Figure 90: LT53



Figure 92: LT55





Figure 93: LT56



Figure 95: LT57



Figure 94: LT56



Figure 96: LT58





Figure 97: LT59

6.0 DAM FOOTPRINT

Figure 98 shows the proposed clearing footprint from the construction of the landfill's dam. This area was demarcated in the field using a handheld GPS and spatial coordinates showing the extent of the area. A total of 15 trees were surveyed with two trees: D07 and D09, lying just outside the proposed clearing area.

Two trees, D08 and D11 (Figure 106 and Figure 113), was identified as having possible hollows.



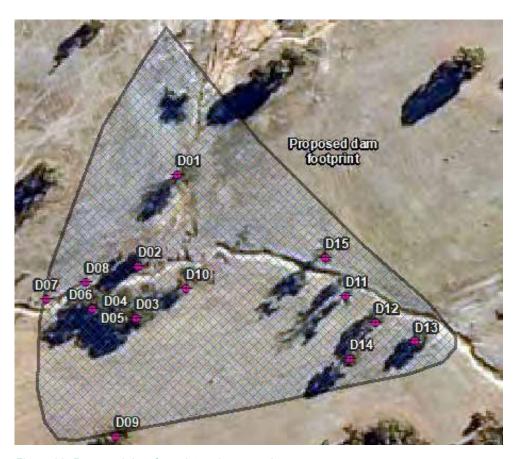


Figure 98: Proposed dam footprint and surveyed trees

6.1 Surveyed trees

Table 3: Tree features

Tree Identity	Trunk Numbers, Diameter(s) and Features	Y Projection	X Projection
D01	2 tree cluster, 420 mm and 400 mm	6468972.982	462864.5613
D02	820 mm	6468917.028	462840.088
D03	720 mm, fire damage	6468885.101	462838.9747
D04	4 tree cluster, 400 mm, 300 mm, 200 mm and 260 mm	6468887.284	462829.4178
D05	490 mm	6468894.164	462831.7564
D06	6 tree cluster, 300 mm, 410 mm, 430 mm, 190 mm, 370 mm and 340 mm	6468891.212	462812.3856
D07	550 mm, dead tree	6468897.206	462784.095
D08	1110 mm, possible hollows	6468907.603	462808.5443
D09	4 tree cluster, outside of clearing area, 490 mm, 590 mm, 270 mm and 760 mm	6468812.897	462826.4732
D10	580 mm	6468903.722	462869.2559
D11	6 tree cluster, possible hollows on large dead tree, 630 mm, 430 mm, 540 mm, 650 mm, 670 mm and 450 mm	6468898.868	462967.4106
D12	550 mm	6468882.638	462985.3382
D13	7 trunks, one tree, 310 mm, 270 mm, 280 mm, 230 mm, 300 mm, 320 mm and 340 mm	6468871.31	463009.7715
D14	720 mm	6468860.747	462970.1011
D15	580 mm	6468922.21	462954.8464





Figure 99: D01



Figure 101: D03



Figure 100: D02



Figure 102: D04





Figure 103: D05



Figure 105: D07



Figure 104: D06



Figure 106: D08





Figure 107: D09



Figure 109: D09



Figure 108: D09



Figure 110: D10





Figure 111: D11



Figure 113: D11

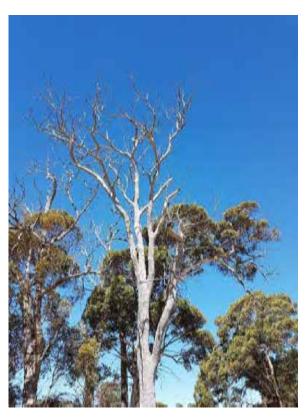


Figure 112: D11



Figure 114: D12



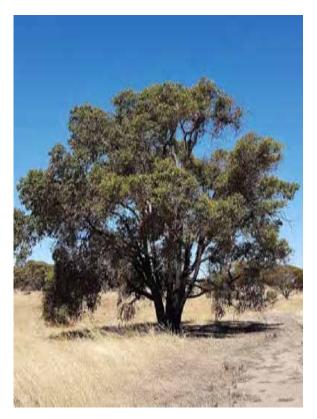






Figure 117: D15



Figure 116: D14



7.0 SEDIMENT DAM FOOTPRINT

Figure 118 shows the proposed clearing footprint resulting from the construction of the landfill's sediment dam. This area was demarcated in the field using a handheld GPS and spatial coordinates showing the extent of the area. A total of five trees were surveyed, all situated within the proposed clearing area.

No trees were identified as having possible hollows.

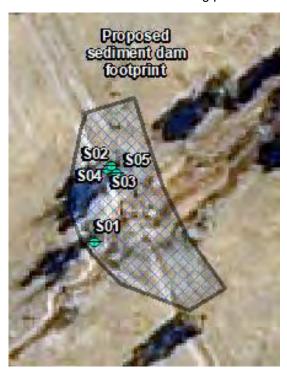


Figure 118: Proposed sediment dam footprint and surveyed trees

7.1 Surveyed trees

Table 4: Tree features

Tree Identity	Trunk Numbers, Diameter(s) and Features	Y Projection	X Projection
S01	2 trunks, 1 tree, 490 mm and 360 mm	6468766.821	462471.3468
S02	4 tree cluster, 1 large and 3 small, 460 mm on large tree, others less than 300 mm	6468797.878	462476.9057
S03	2 trunks, 1 tree, 480 mm and 330 mm	6468799.767	462478.0333
S04	420 mm	6468799.768	462478.4115
S05	3 tree cluster, 340 mm, 270 mm and 150 mm	6468796.561	462480.5032





Figure 119: S01



Figure 121: S02



Figure 120: S01



Figure 122: S03





Figure 123: S03



Figure 125: S05



Figure 124: S04



Figure 126: S05

8.0 CLOSING

We trust that this information will assist with the NVCP application assessment. If you have any questions, or require any further information, please do not hesitate to contact the undersigned.

GOLDER ASSOCIATES PTY LTD

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CC/EWC/hn

Ed Clerk

Principal Consultant and Division Lead

Elull.

REFERENCES

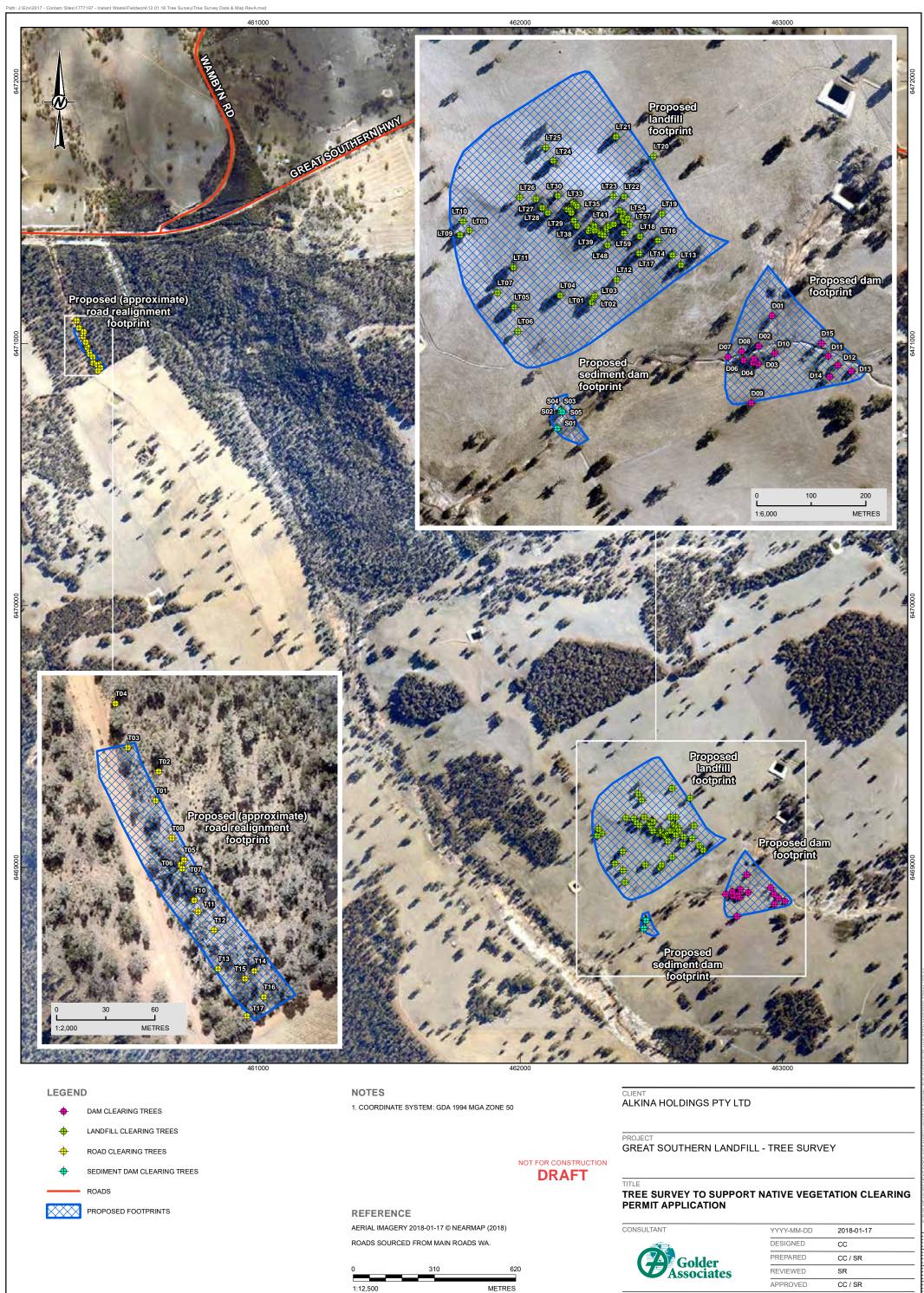
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FIGURE
Site Overview





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FIGURE

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