

DUBBO HEALTH SERVICES REDEVELOPMENT – STAGES 3 & 4

Prepared for:

*TSA Management Level 16, 207
Kent Street Sydney NSW 2000*

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Contents

	Page
1. Summary	2
2. Introduction: 1:1 Proposed works	3
1:2 Scope of works	4
3. Description of trees	5
4. Appendix 1- Site map	19
5. Appendix 2- Tree Protection Zone	20
6. Transplant Method statement	21
7. Bibliography	23

Summary of Dubbo Health Services Development

The Dubbo Health Services Development is located on Myall Street Dubbo NSW 2830 and has been prepared for TSA Management Level 16, 207 Kent Street Sydney NSW 2000. The report has been conducted to assess the health and viability of 52 trees and shrubs located within the site of the development. The trees are a mix of native, weeds and introduced species that have no historical significance to the site.

The purpose of this report is to collect the appropriate tree related data on the subject trees and provide advise and recommendations of trees that may be transplanted or retained before construction begins. It also outlines the surrounding trees that may be negatively affected by the removal of trees or building works and will require a Tree Protection Zone (TPZ). Any trees that can be relocated have also been identified and a transplant method statement has been included in the Appendices.

This report contains the following information-

- 1) Genus and species of each tree.
- 2) Impact of the proposed development on each tree.
- 3) Impact of retaining tree on the proposed development.
- 4) Any branch or root pruning that may be required for trees.

Introduction

1.1 Proposed works

The DHS Redevelopment Stage 4 project scope is described as follows:

- Stage 4 – Site preparation works
- Demolition of George Hatch and Existing Nurses Administration
- Demolition of existing Surgical Ward ('S' Block)
- New Construction – Temporary Corridor Bypass Link
- New Construction – 1 x permanent corridor bypass link south

A new 3-storey clinical building comprising:

- Ground Level
- Medical Imaging
- Emergency Department, including Short Stay Unit
- A refurbished and expanded Main Entry

Level 1

- Renal Dialysis Unit
- Ambulatory Care Services

Level 2

- 20 bed CCU/ Cardiovascular/ Stroke Unit
- 12 bed ICU
- Cardiovascular Suite

Level 3 Plant Area

- Other associated works
- Expansion of on grade car parking facilities and improved access and wayfinding.
- Dedicated ambulance access off Myall Street
- Amendments to the Cobbora Road roundabout to facilitate entry to the Hospital
- Demolition of Playmates/Doctors Accommodation
- Demolition of external component of existing Ambulatory Care Unit
- Landscaping including tree removal and other public domain works
- Upgrades of related engineering services infrastructure supporting Stages 4.
- Refurbishment of the two ICU ensuites within the medical inpatient ward (G-ward).

1:2 Scope of works

This report has been conducted on the health and viability of 52 trees and shrubs at the Dubbo Health Services Development is located on Myall Street Dubbo NSW 2830. It has been prepared for TSA Management Level 16, 207 Kent Street Sydney NSW 2000.

The purpose of this report is to collect the appropriate tree related data on the subject trees and to provide advice and recommendations to the design and possible construction alternatives to aid against any adverse impacts on any tree to be retained. Any trees that can be relocated have also been identified and a transplant method statement has been included in the Appendices.

The subject trees were assessed for their health and condition. Also included in this report are tree protection measures that will help retain and ensure that the long term health of the trees to be retained are not adversely affected by the proposed development in the future.

Description of trees

Tree No.	Genus and Species	Common Name	Approx height in metres	Condition G = Good, F = Fair P = Poor, D = Dead	Pest and diseases	Age Y= Young M=Mature O= Overmature	Significance scale 1= High 2= Medium 3= Low
1- 9	<i>Triadica sebifera</i>	Chinese Tallow	10 metres	F- P	None	Y	3

Photos



Description: These nine trees are an Australian native species. Their position surrounding a carpark and next to asphalt has caused 50% of the root systems to become compacted. They have thin foliage and dead wood throughout the canopy and are not growing to their full capacity. They have no environmental or historical impact and would not improve the aesthetics of the new hospital entrance.

Tree No.	Genus and Species	Common Name	Approx height in metres	Condition G = Good, F = Fair P = Poor, D = Dead	Pest and diseases	Age Y= Young M=Mature O= Overmature	Significance scale 1= High 2= Medium 3= Low
10- 14	<i>Olea europaea subsp. cuspidata</i>	African Olive	10 metres	F- P	Yes	O	3

Photos



Description: This is a weed species that needs to be removed. Information can be found at Department of Primary Industries site listed in References.

Tree No.	Genus and Species	Common Name	Approx height in metres	Condition G = Good, F = Fair P = Poor, D = Dead	Pest and diseases	Age Y= Young M=Mature O= Overmature	Significance scale 1= High 2= Medium 3= Low
15- 24	<i>Casuarina equisetifolia</i>	She Oak	18 metres	P	No	O	3
Photos 				Description: The 10 She Oak trees are an Australian species. They are over mature and contain a lot of dead wood in the canopy. They have no environmental or historical significance to the site. The new entrance directly off a main road round-a-bout requires these trees to be removed and new trees planted during re-vegetation.			
25	<i>Jacaranda mimosifolia</i>	Jacaranda	18 metres	G	No	M	1
Photo 				Description: This Jacaranda tree is a healthy, mature tree and a row of the same species. This tree sits within the area set for a new foot path connecting the new car park to the hospital entrance. The tree is significant to the surrounding landscaping but having a footpath wrap around the tree base will result in the root system becoming compacted, leading to a decline in the trees health. Any path could also be damaged as the tree roots seek water, leading to future trip hazards and liability.			

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26	<i>Callistemon</i>	Bottle brush	4 metres	G	No	M	1
Photo 				Description: this bottlebrush tree is a mature specimen and is in a row of trees of the same species. This tree sits within the area set for a new foot path connecting the new car park to the hospital entrance. The tree is significant to the surrounding landscaping but cannot have a footpath wrap around the base as it is too small. A Tree Protection Zone will need to be put into place for the trees on either side as outlined in Australian Standards (AS 4970—2009 Protection of trees on development sites).			
27	<i>Triadica sebifera</i>	Chinese Tallow	10 metres	G	No	Y	3
Photo 				Description: This is a common Australian native tree positioned close to a building to be demolished and where a new section will be built. This species has no environmental or historical significance and would not be able to be transplanted due to size, the site restraints to access and the substantial cost.			

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28	<i>Syagrus romanzoffiana</i>	Cocos Palms	10 metres	F	No	M	3
Photo				Description: This palm tree is a prolific introduced species that has been declared a weed. Removal is recommended by the Department of Primary Industries and information can be found through links on reference page.			
29		Shrub	3 metres	F	No	M	3
Photo				Description: A mature shrub that has no significance and is not cost effective to remove compared to cost of purchasing a younger specimen and the plants fast growth rate.			

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30	<i>Triadica sebifera</i>	Chinese Tallow	10 metres	G	No	Y	3
Photo 				Description: This is a common Australian native tree positioned close to a building to be demolished and where a new section will be built. This species has no environmental or historical significance and would not be able to be transplanted due to size, the site restraints to access and the substantial cost.			
31	<i>Syagrus romanzoffiana</i>	Cocos Palm	10 metres	F	No	M	3
Photo 				Description: This palm tree is a prolific introduced species that has been declared a weed. Removal is recommended by the Department of Primary Industries and information can be found through links on reference page.			

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32		Shrub	2 metres	G	No	M	3
Photo 				Description: A mature shrub that has no significance and is not cost effective to remove compared to cost of purchasing a younger specimen and the plants fast growth rate.			
33	<i>Syagrus romanzoffiana</i>	Cocos Palm	10 metres	F	No	M	3
Photo 				Description: This palm tree is a prolific introduced species that has been declared a weed. Removal is recommended by the Department of Primary Industries and information can be found through links on reference page.			

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34	<i>Triadica sebifera</i>	Chinese Tallow	10 metres	G	No	Y	3
Photo 				Description: This is a common Australian native tree positioned close to a building to be demolished and where a new section will be built. This species has no environmental or historical significance and would not be able to be transplanted due to size, the site restraints to access and the substantial cost.			
35	<i>Jacaranda mimosifolia</i>	Jacaranda	10 metres	F	No	M	3
Photo 				Description: This tree is a mature introduced species positioned in a courtyard. A new building will be built at this site and the tree is to be removed. Transplanting is not viable.			

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36	<i>Liquidambar styraciflua</i>	Liquid Amber	10 metres	G	No	M	3
Photo 				Description: This tree is a mature introduced species positioned in a courtyard. A new building will be built at this site and the tree is to be removed. Transplanting is not viable due to the size and maturity of the tree as well as the substantial cost.			
37	<i>Ulmus parvifolia</i>	Chinese Elm	12 metres	G	No	M	3
Photo 				Description: This tree is a mature introduced species positioned in a courtyard. A new building will be built at this site and the tree is to be removed. Transplanting is not viable due to the size and maturity of the tree as well as the substantial cost.			

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38- 39		Shrub	2 metres	G	No	M	3
Photo 				Description: A mature shrub that has no significance and is not cost effective to remove compared to cost of purchasing a younger specimen and the plants fast growth rate. The garden bed contains common mature plants that are unable to be transplanted.			
40	<i>Acer palmatum</i>	Japanese Maple	2 metres	F	No	Y	3
Photo 				Description: This tree is a young introduced species currently positioned between an established building and the new development. The tree may be able to stay in place depending on if the area has a re-vegetation plan. A Tree Protection Zone will need to be implemented as outlined in the Australian Standards (AS 4970—2009 Protection of trees on development sites). Transplanting is a viable but expensive option depending on access to the proper machinery.			

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41	<i>Fraxinus angustifolia</i>	Claret Ash	12 metres	F	No	M	3
Photo 				Description: This tree is a mature introduced species positioned in a courtyard. A new building will be built at this site and the tree is to be removed. Transplanting is not viable due to the size and maturity of the tree as well as the substantial cost.			
42	<i>Acer negundo</i>	Box Elder	8 metres	G	No	M	3
Photo 				Description: This tree is a mature introduced species positioned in a courtyard. A new building will be built at this site and the tree is to be removed. Transplanting is not viable due to the size and maturity of the tree as well as the substantial cost.			

Tree No.	Genus and Species	Common Name	Approx height in metres	Condition G = Good, F = Fair P = Poor, D = Dead	Pest and diseases	Age Y= Young M=Mature O= Overmature	Significance scale 1= High 2= Medium 3= Low
43	<i>Melaleuca alternifolia</i>	Tea Tree	8 metres	F	No	M	3
Photo 				Description: This is a common Australian native tree positioned close to a building to be demolished and where a new section will be built. This species has no environmental or historical significance and would not be able to be transplanted due to size, the site restraints to access and the substantial cost.			
44- 46		Shrub	1 metre	G	No	M	3
Photo 				Description: A mature shrub that has no significance and is not cost effective to remove compared to cost of purchasing a younger specimen and the plants fast growth rate.			

Tree No.	Genus and Species	Common Name	Approx height in metres	Condition G = Good, F = Fair P = Poor, D = Dead	Pest and diseases	Age Y= Young M=Mature O= Overmature	Significance scale 1= High 2= Medium 3= Low
47- 50	<i>Cupressus sempervirens</i>	Golden Pencil Pine	10 metres	F	No	M	3
Photo 				Description: A row of trees along the side of a building to be demolished. They are mature trees and cannot be transplanted due to proximity to the building. Trees to be removed.			

Tree No.	Genus and Species	Common Name	Approx height in metres	Condition G = Good, F = Fair P = Poor, D = Dead	Pest and diseases	Age Y= Young M=Mature O= Overmature	Significance scale 1= High 2= Medium 3= Low
51	<i>Wisteria sinensis</i>	Wisteria	5 metres	G	No	M	3
Photo 				Description: An introduced species of vine situated over a walkway. To be removed to make way for new building works			
Tree No.	Genus and Species	Common Name	Approx height in metres	Condition G = Good, F = Fair P = Poor, D = Dead	Pest and diseases	Age Y= Young M=Mature O= Overmature	Significance scale 1= High 2= Medium 3= Low
52	<i>Callitris Glauca</i>	Plum tree	12 metres	G	No	Y	3
Photo 				Description: This plum tree is situated in the corner of a courtyard that will be impacted by building works. The tree offers limited shade and has limited significance to the courtyard as a whole.			

Appendix 1- Site Map



Appendix 2- Tree Protection Zone

Determining the Tree Protection Zone (TPZ)

The radius of the TPZ is calculated for each tree by multiplying its DBH x 12.

$$\text{TPZ} = \text{DBH} \times 12$$

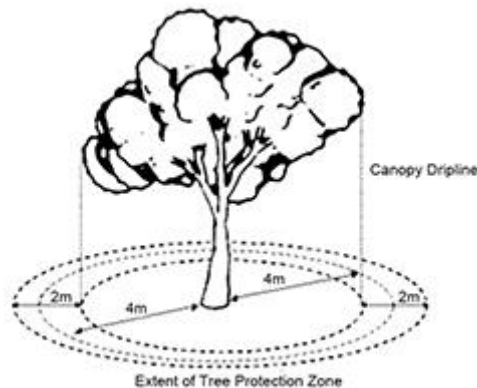
Where

DBH = trunk diameter measured at 1.4 metres above ground

Radius is measured from the centre of the stem at ground level.

A TPZ should not be less than 2 metres no greater than 15 metres (except where crown protection is required.). Some instances may require variations to the TPZ.

The TPZ of palms, other monocots, cycads and tree ferns should not be less than 1 metre outside the crown projection.



Transplant Method Statement

This Arboricultural Transplant Method Statement has been written to assist with the relocation of tree 40.

Location:

The development site is located at the Dubbo Base Hospital, Myall Street, Dubbo NSW. The subject tree is located within a court yard

Transplant Method Statement:

This method statement has been written based on the current conditions on site and final positioning of the tree. Watering rates will be based on the size of the final root ball that is realized. This will only be determined once the tree or palm is lifted.

The method statement is detailed in four (4) separate sections, as listed below.

- a. Excavation and lifting of the root ball.
- b. Storage of the trees
- c. Planting of the trees
- d. Aftercare.

It should be remembered that transplanting mature trees is a difficult process however if the following instructions are followed accordingly, the tree will have a good chance of survival and continue to grow.

Excavation of the root ball

- For Tree 40 a circular trench should be dug at a distance of approximately two thousand (2000) millimetres from the trunk giving the overall root ball a four (4) metre spread to a depth of 900mm. The trench should then angle towards the trunk with the aim of almost severing the entire root ball. A hose set to high pressure can sometimes help expose the last roots at the base to allow them to be severed cleanly with a sharp pruning saw. Once the trench becomes deep enough, steel poles (similar to scaffold poles) should be inserted so that the root ball does not collapse to one side. It is most likely the root ball will be a dense mat of root matter.
- The north point on the trunk shall be clearly marked so that the tree retains the correct aspect in the new location.
- An excavator could then remove as much of the soil to allow lifting of the tree. All services shall be confirmed prior to this process occurring.
- If the surrounding soil is very sandy it is likely that most of this soil will fall away during the lifting process. This is unavoidable during this process. What is important is to limit the damage to the root system.
- If roots are required to be severed they should be cut cleanly with a sharp pruning saw or shears. Try not to prune any roots over fifty (50) millimetres in diameter.
- Lifting the root ball will require an excavator taking care not to damage the trunk. The trunk should not be used to move or lift the tree under any circumstances. Access for the excavator needs to be possible.
- Note: If the exposed root ball is not replanted within the same day as being excavated, the entire root ball should be covered with wet hessian to retain moisture

Storage of the trees

- Whilst lifted out of the hole, the root ball shall be wrapped in heavy grade cling film followed by black plastic. It is important to puncture holes in the bottom to allow the escape of water from rain and irrigation. Allow space that will leave a rim around the bag similar to a large pot. Fill this area with a loam soil mix that does not contain organic matter. This loam should be washed into the side of the bag as best as possible.
- The finished level of loam should be the same as the level the tree was at in the ground. Mulch the top of the tree to cover all areas of exposed soil.
- If using a sling attached to an excavator there should be no contact with the trunks. All slings shall be attached and wrapped around the root ball at any time.
- The tree shall be stored not in direct sunlight. The less number of times the trees are moved reduces the chance of injury. The builder's advice and input may be required for this. The storage area shall be agreed prior to excavations occurring.
- Irrigation attached to a timer shall be run in a continuous line over the tree. Drip irrigation will be the best form of regular irrigation.
- An Arborist shall be consulted if there is any visual evidence of yellowing of needles of leaves, damage during the moving process or sudden change of vigour over the holding period.

Planting of the subject tree

- Use a loam based soil mix for filling the new holes. Where sand or gravel has been placed in the bottom of planting holes, supposedly for the purpose of improving drainage of the soil above, this will in fact have just the opposite effect. This layer will unfortunately cause the soil above to become saturated when it otherwise would not.
- Any roots matted at the bottom or circling around the root ball should be cut and removed or shortened and/or straightened. If these roots are not removed they will continue to grow in a circular restricted manner called 'Girdling'.
- Don't backfill with compost. Compost is organic matter and without oxygen will begin to decompose below ground and eventually kill the subject tree.
- Backfill with the soil you have dug from the hole if possible. If your site soil is unusable then back fill with a soil mix that is sand and loam based rather than using organic matter. Mound the soil so as to form a circular mound that will retain water over the root zone area that has been transplanted.
- As this tree is being planted in a lawn area the base should be cultivated around the base so that the new roots will not compete with grass roots. Mulch the surface to retain moisture and encourage soil microbe activity.

Aftercare

- Following being planted, the single most important need of a newly-planted tree is to receive adequate moisture. As a general rule, one (1) bucket of water twice a week should suffice. Water must be concentrated on the existing root ball. An important point to remember is that moisture will not flow from wet surrounding soils back into the root ball. So, watering must concentrate on wetting the root ball itself.
- A sturdy levy that will retain water must be built (and maintained) around the edge of the root ball of the subject tree. The pond created within the levy should be regularly filled with water.
- If the watering basin remains wet between each watering then take a break from watering. It is good for the root ball to dry out between watering.
- Do not stop watering in the event of rain. It might wet the ground but, unless heavy and/or prolonged, rain normally will not deliver adequate moisture to the root ball.
- If the new growth on your tree is showing signs of wilting then water as soon as possible. If the new growth is wilting and the soil is waterlogged then the problem is below ground level.

Bibliography

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