DEVELOPMENT OF A STANDARD FOR AVENUES OF HONOUR DATABASE

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1. INTRODUCTION

The Avenues of Honour Project has been under way for two years. During the 2004 Treenet Conference, a large undertaking commenced.
The Treenet organisation began to identify each of the Avenues of Honour throughout Australia.
This paper outlines the aims of developing a national database for the Avenues of Honour project.
A sample database has been designed that will hopefully form a base that can be improved upon as the project progresses.

2. KEY OBJECTIVES OF THE PRESENTATION

- Outline the structure of the database
- Detail the format that data for the database will be collected
- Detail the procedure that will be used to assess and include submitted data into the database.

3. DATABASE AIMS

- Develop an online database that documents the location and current condition of each tree within an existing or future Avenue of Honour across Australia.
  - The database aims to catalogue each tree that has been planted to honour an Australian soldier and detail the location and condition of corresponding plaques.
  - Where possible, personal information on the soldier honoured will also be included.
  - Generic information on each of the Avenues of Honour will be detailed.

4. DATABASE STRUCTURE

4.1 Database Type

The database is a geospatial database. That is, all of the information contained within the database can be displayed and utilised in a map format through GIS programs such as MapInfo, ArcView or AutoCAD.

It is envisaged that users of the database will utilise and search the information in a similar manner to that of 'Google Earth'.

5. DATA COLLECTION FIELDS

5.1 Generic Avenue Information

Avenue Name
Planting Date
Designer

Planted By
Avenue Length
Total Trees Present
Total Trees Planned Original
Total Trees Planned Future
Management authority/Contact person
Associated Groups:
Major changes over time
Hazards problems associated with the Avenue
Donations/Participation
Relevant local issues
Photographic Records- Historical

5.2 Human Information

Service Number- with hyperlink to Australian War Memorial
Service
Surname
Given Names
Next of Kin Contact
Historical Information Contact
Photograph

5.3 Plaque Information

Plaque Present
Plaque Location- Ground or Tree
Plaque Orientation- north, south, east, west
Plaque Condition
Plaque Manufacturer
Photograph

5.4 Tree Information

Memorial Avenue/ Avenue of Honour
Tree ID
Genus/Species
Height
DBH
Tree Age
Health
Structure
ULE
Likely works

Location- WGS 84- Universal
Photograph

6. FORMAT OF INFORMATION COLLECTED

6.1 Location

All location information will need to be collected in Latitude/Longitude WGS84 format.

This format is an international format that can be easily converted into local coordinate systems where necessary.

It is also the format that is supported by most commercially available handheld GPS units.

6.2 Photographs

In the final output of the database three photographs will be displayed (where available).

Photographs should all be in JPEG format.

6.3 Data

All data should be submitted in either a Microsoft Access or Microsoft Excel Format.

6.4 Data Collection

Data collected for submission into the database should be collected using the specified fields and supplied definitions. The data collection fields and data collection definitions will be made available online or can be posted to the respondent.

7. EXAMPLE OF THE AVENUES OF HONOUR NATIONAL DATABASE

In the following diagrams, an example of the database structure is shown. The user selects the avenue by location and is able to access the relevant information contained within the database.

Figure 1: Example of the Avenues of Honour National Database, National view.

Figure 2: Example of the Avenues of Honour National Database, Victoria view

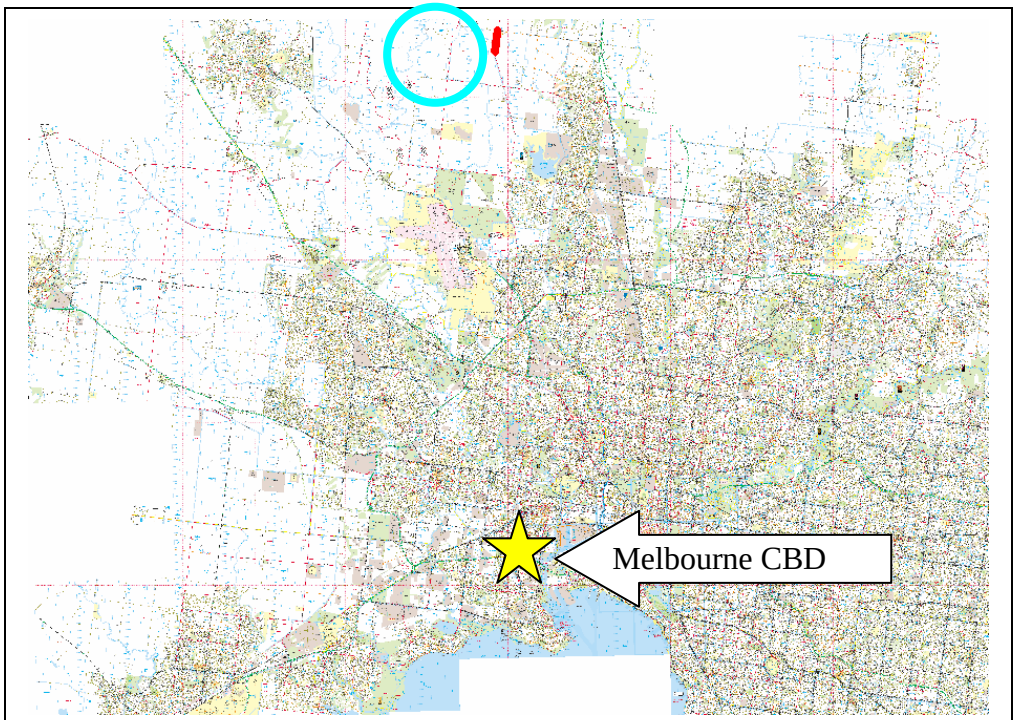

Figure 3: Example of the Avenues of Honour National Database, city view

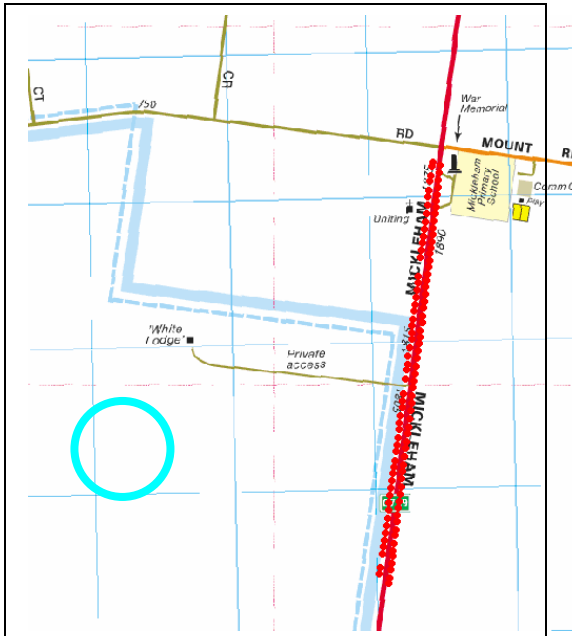

Figure 4: Example of the Avenues of Honour National Database, Local view

Figure 5: Example of the Avenues of Honour National Database, Individual view

Mickleham Avenue of Honour

Service No:	VX57549	**Plaque Present?**	Yes	Tree Identification Number:	19
Surname:	Lloyd	**Plaque Location:**	Ground	**Botanical Name:**	Eucalyptus camaldulensis
Given Name:	William John	**Plaque Orientation:**	West side	**Common Name:**	River Red Gum
Service:	Army	**Plaque Condition:**	Good	**Height:**	3
Comments:				**DBH:**	3
				Health:	Very Good
				Structure:	Good
				ULE:	40+
				Maturity:	Young
				Likely Works:	Irrigation and Formative Pruning

Figure 6: Example of the Avenues of Honour National Database, Individual Details

8. DATA COLLECTION DEFINITIONS

8.1 Tree Height

The height of the tree to the nearest meter as estimated from ground level by the assessor on the day of assessment.

8.2 DBH

The estimated total diameter at breast height of the tree trunk at 1.3m from ground level. (Diameter at breast height is generally measured at 1.3m from ground level as an international standard.)

Where there is a multi-stemmed tree the assessor will estimate the 'TOTAL' DBH of the stems combined (see 1 opposite)

Total DBH is the DBH for the combined cross sectional area of all of the trunks, not all of the diameters added together.

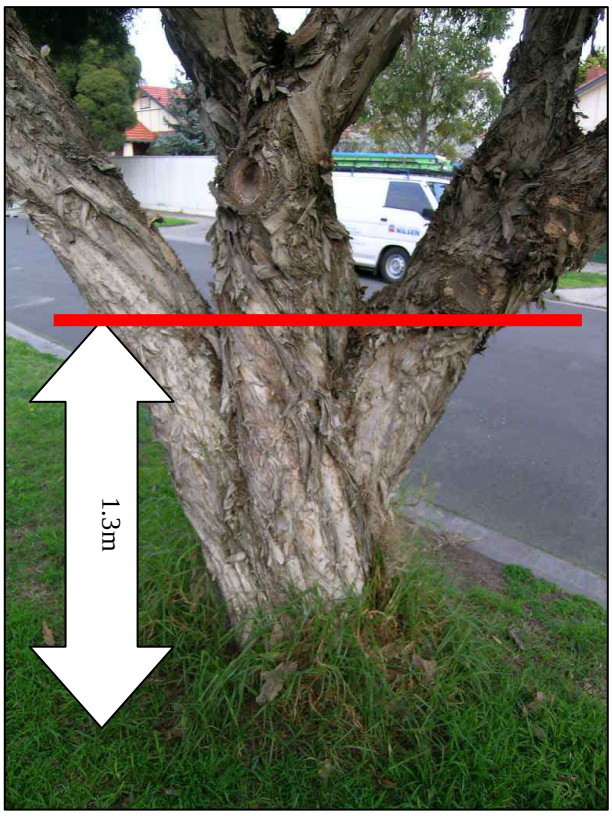

Figure 7 DBH multi stem measurement

8.3 Tree Age

- Young (< 10%)
- Semi mature (10 – 30%)
- Mature (30 – 100%)

Tree age is based on the age of the tree when compared to the expected ULE (Useful Life Expectancy) that would be considered typical for the species in the general area. It is not based on the health of the tree.

A *Lophostemon confertus* (Species ULE in eastern Melbourne = 80 – 100 years) that is 70 years old would be considered mature.

It is possible for a mature tree to exhibit good health and have a high ULE. Example: An 85 year old *Lophostemon confertus* growing in eastern Melbourne in good health may have a ULE of 10 to 20 years or even 20+ years.

Figure 8 Age Young

8.3.1 Young

The tree has recently been planted (within the last 3 – 5 years). The trees age is considered to be within the first 10% of the total ULE for that species.

Example: The tree under normal conditions would be expected to be maintained in the landscape for at least another 90% of that species ULE.

Figure 9 Age Semi mature

8.3.2 Semi mature

The tree has become established in the site and its age is more than 10% but less than 30% of the total ULE for that species. The tree may be approaching its expected mature size. If correctly maintained the specimen will continue to grow to maturity. These specimens may require inclusion in up to 3 formative pruning programs before they reach maturity.

8.3.3 Mature

The trees age is more than 30% of the total ULE for that species. Usually the tree will have reached the expected size for the species in the site.

Note

It is important to note that tree age is not directly related to tree health.

For example: It is possible for a young tree to have very poor health and a ULE of less than 5 years or a mature tree to have good health and a ULE of 20 years +.

Figure 10 Age Mature

8.3.4 Tree Health

- *Good*
- *Fair*
- *Poor*
- *Very poor*
- Dead

8.3.4.1 Good

The tree is demonstrating good or exceptional growth for the species. The tree should exhibit a full canopy of foliage, and have only minor pest or diseases problems. Foliage colour, size and density should be typical of a healthy specimen of that species. Dead wood, if it exists, will be internal and a normal feature of that species.

Figure 11 Good health

8.3.4.2 Fair

The tree is in reasonable condition and growing well for the species. The tree should exhibit an adequate canopy of foliage. There may be some dead wood present in the crown, some grazing by insects or animals may be evident and/or foliage colour, size or density may be atypical for a healthy specimen of that species.

Figure 12 Fair health

Figure 13 Poor health

8.3.4.3 Poor

The tree is not growing to its full capacity; extension growth of the laterals may be minimal. The canopy may be thinning or sparse or significant sections of it may be dead. Large amounts of dead wood may be evident throughout the crown. Significant pest and disease problems may be evident or symptoms of stress indicating tree decline.

8.3.4.4 Very Poor

The tree appears to be in a state of decline and the canopy may be very thin and sparse. A significant volume of deadwood may be present in the canopy or pest and disease problems may be causing a severe decline in tree health. Most of the tree canopy is dead or dying although the entire tree is not dead.

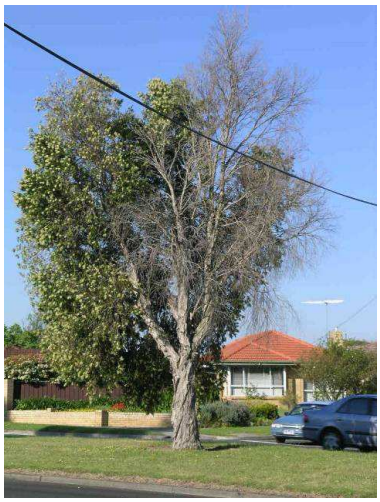

Figure 14 Very poor health

8.3.4.5 Dead

The tree is dead.

Figure 15 Dead

8.4 Structure

- *Good*
- *Fair*
- Poor
- Very poor
- Failed

The definition of structure is the likelihood of the tree to fail under normal conditions. A tree with good structure is highly unlikely to suffer any significant failure while a tree with Poor or Very poor structure is likely or very likely to fail.

Figure 16 Good structure

8.4.1 Good

The tree has a well-defined and balanced crown. Branch unions appear to be strong, with no defects evident in the trunk or the branches. Major limbs are well defined. The tree would be considered a good example of the species. Probability of significant failure is highly unlikely.

Figure 17 Fair structure

8.4.2 Fair

The tree has some minor problems in the structure of the crown. The crown may be slightly out of balance, and some branch unions or branches may be exhibiting minor structural faults. If the tree is single trunked, this may be on a slight lean or be exhibiting minor defects. Probability of significant failure is low.

Figure 18 Poor structure

8.4.3 Poor

The tree may have a poorly structured crown. The crown may be unbalanced or exhibit large gaps. Major limbs may not be well defined. Branches may be rubbing or crossing over. Branch unions may be poor or faulty at the point of attachment. The tree may have suffered major root damage. Probability of significant failure is moderate.

8.4.4 Very Poor

The tree has a poorly structured crown. The crown is unbalanced or exhibits large gaps. Major limbs are not be well defined. Branch unions may be poor or faulty at the point of attachment. A section of the tree has failed or is in imminent danger of failure. Active failure may be present or failure is probable in the immediate future.

Figure 19 Very poor structure

8.4.5 Failed

A significant section of the tree or the whole tree has failed.

Figure 20 Has failed

8.5 Useful Life Expectancy (ULE):

1. *Unsafe or 0 years*
2. *Less than 5 years*
3. *5 to 10 years*
4. *10 to 20 years*
5. *20 to 40 years*
6. *40+*

Useful life Expectancy is approximately how long a tree can be retained **safely and usefully** in the landscape providing site conditions remain unchanged and the recommended works are completed. It is based on the principles of safety and usefulness in the landscape and should not reflect personal opinions on species desirability.

Example: A semi mature *Eucalyptus mannifera* may be assessed as

- Health: Good
- Structure: Very Poor
- Works required: Formative pruning
- ULE: 40+

This indicates that, providing the formative pruning is undertaken, the tree will still contribute to the landscape for more than 40 years. If the works are not competed then the ULE assessment for that tree will become invalid.

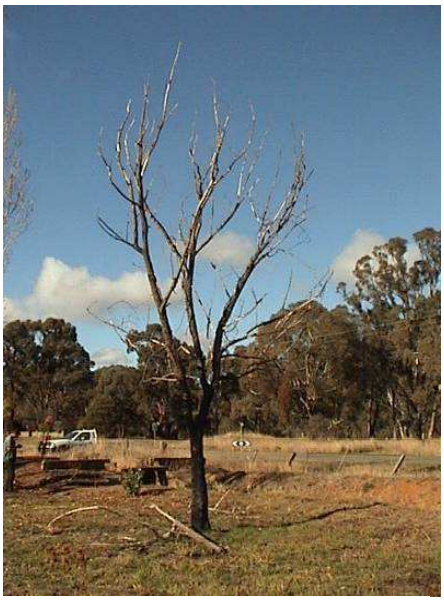

Figure 21 ULE 0 years

8.5.1 Unsafe or Zero years

The tree is considered dangerous in the location and/or no longer provides any amenity value.
Works in this category will generally be “Remove”.

Figure 22 ULE 0 - 5 years

8.5.2 Less than 5 years

The tree under normal circumstances and without extra stress should be safe and have value for a maximum of five years. The tree will need to be replaced in the short term. Replacement plants should be established as soon as possible if there is sufficient space or consideration should be given to the removal of the tree to facilitate replanting.
Works for this category will often be “Remove”.

8.5.3 5 to 10 years

The tree under normal circumstances and without extra stress should be safe and of value for up to 10 years. Trees in this category may require regular inspections and maintenance particularly if they are large specimens.
Replacement plants should be established in the short term if there is sufficient space or consideration should be given to the removal of the tree to facilitate replanting. However this is a management decision and is beyond the scope of an inventory.

Figure 23 ULE 5 - 10 years

8.5.4 10 to 20 years

The tree under normal circumstances and without extra stress should be safe and of value for up to twenty years. During this period, regular inspections and maintenance may be required.

Figure 24 ULE 10 - 20 years

Figure 25: ULE 20 – 40 years

8.5.5 20 to 40 years

The tree under normal circumstances and without extra stress should be safe and of value for up to forty years. During this period, regular inspections and maintenance may be required.

Figure 26 ULE 40+ years

8.6 40+years

The tree under normal circumstances and without extra stress should be safe and of value for more than forty years. During this period, normal inspections and maintenance may be required.

8.7 Likely Works

The likely works for a tree within the Avenue of Honour should only be recommended as general guidelines.

Specific recommendations for the each of the trees should not be made. The recommended works are intended as a guide to formulating planning policies and applications for funding.

Likely works should only be recommended by qualified arborists, who are suitably qualified and experienced.

8.7.1 Irrigation and Formative Pruning

Irrigation and formative pruning is the most likely works that will be required for 'Young' and 'Semi mature' trees.

8.7.2 Maintenance Pruning

Maintenance pruning would generally be recommended for 'Mature' trees.
Maintenance pruning would include (but not be limited to) pruning to maintain standard clearances, deadwood removal and pruning to maintain form and health.

8.7.3 Major remedial Pruning

Major remedial pruning would generally be recommended for trees that have significant structural faults or are in severe decline. Major remedial pruning would generally require specific assessment by the responsible authority.

8.7.4 Removal and Replacement

Tree removal should only be recommended if the assessed tree cannot be safely retained in the landscape. Replacement trees will need to be established to maintain the structure and integrity of the Avenue.

8.7.5 None

No immediate works can be identified in the assessed tree.

8.7.6 N/A

A tree requires planting or the tree does not exist.

9. DATA COLLECTION SHEETS

These data collection sheets and sample spreadsheets will be available for download online on the Treenet website.

9.1 Generic Avenue Information

Avenue Name	
Planting Date	
Avenue Designer	
Planted by	
Avenue length	
Total trees present	
Total trees planned originally	
Total trees planned in the future	
Management Authority/Contact person	
Associated Groups	
Major changes over time	
Hazards or problems associated with the Avenue	
Relevant local issues	
Photograph details	
Example **Photograph DSCN1234**	Photograph of Memorial

9.2 Individual Assessment Information

Avenue Name						
Tree Number						
Latitude						
Longitude						
Genus						
Species						
Common Name						
Height						
DBH						
Tree Age	Young		Semi mature		Mature	
Tree Health	Good	Fair	Poor	Very poor		Dead
Tree Structure	Good	Fair	Poor	Very poor		Failed
ULE	0	<5	5-10	10-20	20-40	40+
Likely Works	☐ Irrigation and Formative Pruning ☐ Maintenance pruning ☐ Major remedial pruning ☐ Removal and replacement ☐ None ☐ Not applicable					
Tree photograph filename						
Service Number						
Service						
Surname						
Given Names						
Next of Kin						
Historical Information Contact						
Photograph Filename						
Plaque Present?	☐ Yes		No			
Plaque Location	Ground		Tree	Other		
Plaque Orientation	North	South	East	West		
Plaque Condition	Good	Illegible	Damaged	Other		
Plaque Photograph Filename						

9.3 Example

Avenue Name	Mickleham Avenue of Honour				
Tree Number	019				
Latitude	-37.569818386				
Longitude	144.875331556				
Genus	Eucalyptus				
Species	camaldulensis				
Common Name	River Red Gum				
Height	3				
DBH	3cm				
Tree Age	**Young**		Semi mature		Mature
Tree Health	**Good**	Fair	Poor	Very poor	Dead
Tree Structure	**Good**	Fair	Poor	Very poor	Failed
ULE	0	<5	5-10	10-20	20-40	**40+**
Likely Works	☑ Irrigation and Formative Pruning ☐ Maintenance pruning ☐ Major remedial pruning ☐ Removal and replacement ☐ None ☐ Not applicable				
Tree photograph filename	019.jpg				
Service Number	VX57549				
Service	Army				
Surname	Lloyd				
Given Names	William John				
Next of Kin	Unavailable				
Historical Information Contact	Unavailable				
Photograph Filename	019.jpg				
Plaque Present?	☑ Yes			No	
Plaque Location	**Ground**		Tree	Other	
Plaque Orientation	North	South	East	**West**	
Plaque Condition	**Good**	Illegible	Damaged	Other	
Plaque Photograph Filename	019.jpg				

Mickleham Avenue of Honour

Service No:	VX57549
Surname:	Lloyd
Given Name:	William John
Service:	Army
Comments:	

Plaque Present?	Yes
Plaque Location:	Ground
Plaque Orientation:	West side
Plaque Condition:	Good

Tree Identification Number: 19

Botanical Name:	Eucalyptus camaldulensis
Common Name:	River Red Gum
Height:	3
DBH:	3
Health:	Very Good
Structure:	Good
ULE:	40+
Maturity:	Young
Likely Works:	Irrigation and Formative Pruning

10. DATA SUBMISSION ASSESSMENT

Data for the national database can be collected by anyone. The information collected will be submitted to
Treenet and assessed for accuracy and validity.

The following questionnaires have been developed to assist with the assessment of the information submitted.

10.1 Generic Avenue Information

Name and Contact Details of the person who collated the requested information

Is there a reference source for the information collected? **Yes** / **No**

If yes please detail

10.2 Human Information

Does the person/next of kin provide Treenet with permission to display their personal details in the
National Avenue of Honour Database? **Yes / No**

If yes please provide an original copy of written authority.

Name and Contact details of the person who collated the personal information on the service person honoured

Name and contact details of the next of kin of the person honoured

Was a reference used to obtain the personal information collated? **Yes/No**

If yes please detail.

10.3 Plaque Information

Name and contact details of the person who collated the information of the plaque dedicated to the service person honoured.

Was a reference used to collate the information collected on the dedicated plaque?

Yes/No

If yes please detail

10.4 Tree Information

The name and contact details of the person who collected the information on the trees assessed

Does the person who collected the information have formal Arboricultural qualifications?
Yes/No

If yes please include a brief CV/Resume to assist

10.5 Location Information

Was the location of the trees collected using GPS? **Yes/No**

If no, please specify how the information was collected.

If yes

What is the brand and model number of the GPS that was used?

What is the specified accuracy of the GPS that was used?