

cranbourne east

precinct structure plan

Arboricultural Conditions

CEUGP/SR1B

September 2007

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Project Ref: 0953 DLA Cranbourne East

Client Ref: CEUGP/SR1B September 2007

Prepared for: David Lock & Assocaites / City of Casey

Site Overview

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Executive Summary

This report was undertaken to assess the arboricultural assets across the Cranbourne East Urban Growth Plan as a part of the Precinct Structure Plan for this area.

A total of 380 tree features were assessed across the study area. These were assessed as tree groups, rows or individual trees and accorded a value of High, Moderate, Low or Very low.

This report is primarily concerned with High value trees and those trees that are of Moderate, Low or Very low value are mapped and photographed but not assessed. High value trees are generally considered to be worthy of significant efforts of preservation and should be preserved on the site if possible.

Access was not available to some properties on the site and some of the tree groups have not been fully assessed. Where it is thought likely that these areas might contain high value trees the entire area is listed as being of high value. Further assessment of these high value tree areas is required to ascertain the presence of high value trees.

Existing conditions

The arboreal population of this site is generally of poor quality with very few trees of high value being found on the site. A total of 25 high value individual tree features 12 high value tree area features, 136 moderate value tree features and 207 low or very low value tree features were located and assessed across the entire study area.

The vast majority of the trees on this site are of moderate, low or very low value and should either be removed prior to development or should not constitute a material constraint on development of the site.

Constraints

There are very few trees of high value on the site and these can generally be incorporated into the development of the site without any significant loss of developable land.

Provided that the retention of the high value trees can be addressed at each of the major stages of the development process the successful retention of the vast majority of these trees is probable.

The development of the site is essentially unconstrained in any material sense. While the 37 high value tree features should be incorporated into the development of the site this is not expected to cause any significant difficulty or reduction in the potential yield of the site.

Introduction

This report was commissioned as a part of the Cranbourne East Urban Growth Plan to identify and locate all of the significant trees across the study area (Figure 1).

The report is based on a field survey and assessment of the trees within the study area.

The purpose of this report is to identify those trees that contribute significantly to the amenity of the local area so that they can be incorporated into the planning for the study area and preserved where possible. Assessment of the trees in this report also considers environmental values as a secondary consideration.

The primary output of this report is GIS (Global Information Systems) data that will be supplied to the planners and other professionals working on the site. This will enable those trees of value on the site to be accommodated within the site where this is feasible. It is intended that this data will facilitate the preservation of significant trees across the site.

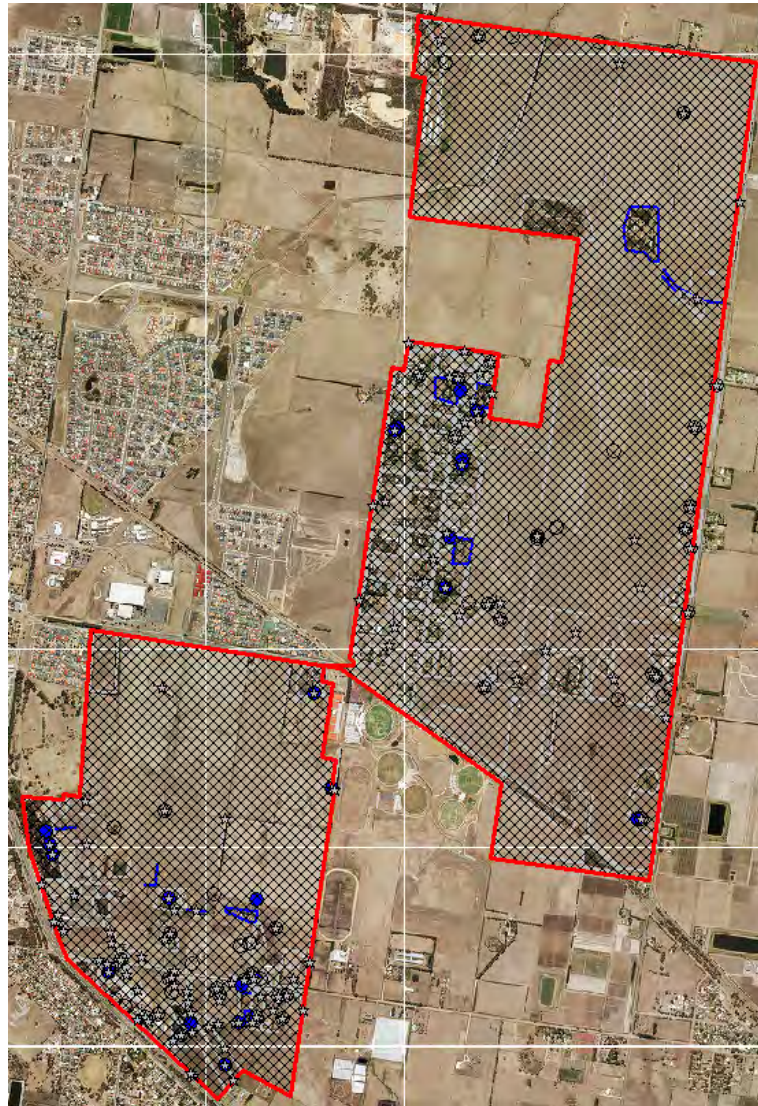


Figure 1 Study area

Methodology

A two part process was used in the data capture for this report.

The arboricultural assets of the site were mapped using photogrammetry on a desktop using high resolution aerial photography to locate all of the trees on the study area as individual specimens, rows or groups. This stage provided the tree location data only and was performed using MapInfo®.

This tree location data was then field verified with all of the locations created in the first stage inspected and photographed. Any discrepancies between the data and the field conditions were resolved during the field assessment and the spatial data was adjusted as required.

Spatial field data was verified, modified and / or created using sub metre DGPS (Differential Global Positioning Systems). All spatial data is in the GDA 94 (Zone 55 ITRF) coordinate system.

Trees were assessed as single tree point features or as lines or groups of varying tree numbers. Trees were generally grouped into contiguous sets of similar value and where appropriate single higher value trees were located as point features within the larger line or group. Tree numbers within each area or line feature were estimated.

Trees have been assessed as High, Moderate, Low or Very low value and only those trees that were assessed as high value have been attributed beyond the notation of value.

The following data was collected for each tree or group of trees with a value of High:

Field name	Notes
Genus / species	Genus and species names were collected for up to four dominant representatives within each group or row of trees.
Common names	Common names have been added to the data in a post process database application.
Condition	The overall condition of the individual, group or row was recorded from Excellent through to Very poor.
Style	The formation of the tree/s was recorded to assist with identifying the type of planting. The values for style are Mixed planting, Avenue planting, Native planting, Row planting, Single tree and Windrow.
ULE (Useful Life Expectancy)	Useful Life Expectancy for the tree/s as a group was recorded as per the following categories; 0, 1 – 5, 1 – 5, 15 – 25, 25 – 50 and 50+ (years).
Height and width	The height and width for each tree or group of trees was estimated as an average value.
Number in group	The number of trees in each group or row was estimated.
Photographs	Up to three photographs were taken of each tree or group of trees.

Assessment limitations

Access was not available to a number of the properties across the site (Figure 2). While some of these properties could be adequately assessed from adjoining properties some could not.

Where properties could not be adequately assessed and are thought to contain high value trees the entire tree group has been recorded as high value. If the proposed development layout threatens any of these tree groups then it would be advisable to make further efforts to gain access to these properties to more accurately assess these trees.

While a direct inspection of each property would be preferred, for the purposes of this study the current level of inspection is acceptable at this stage.

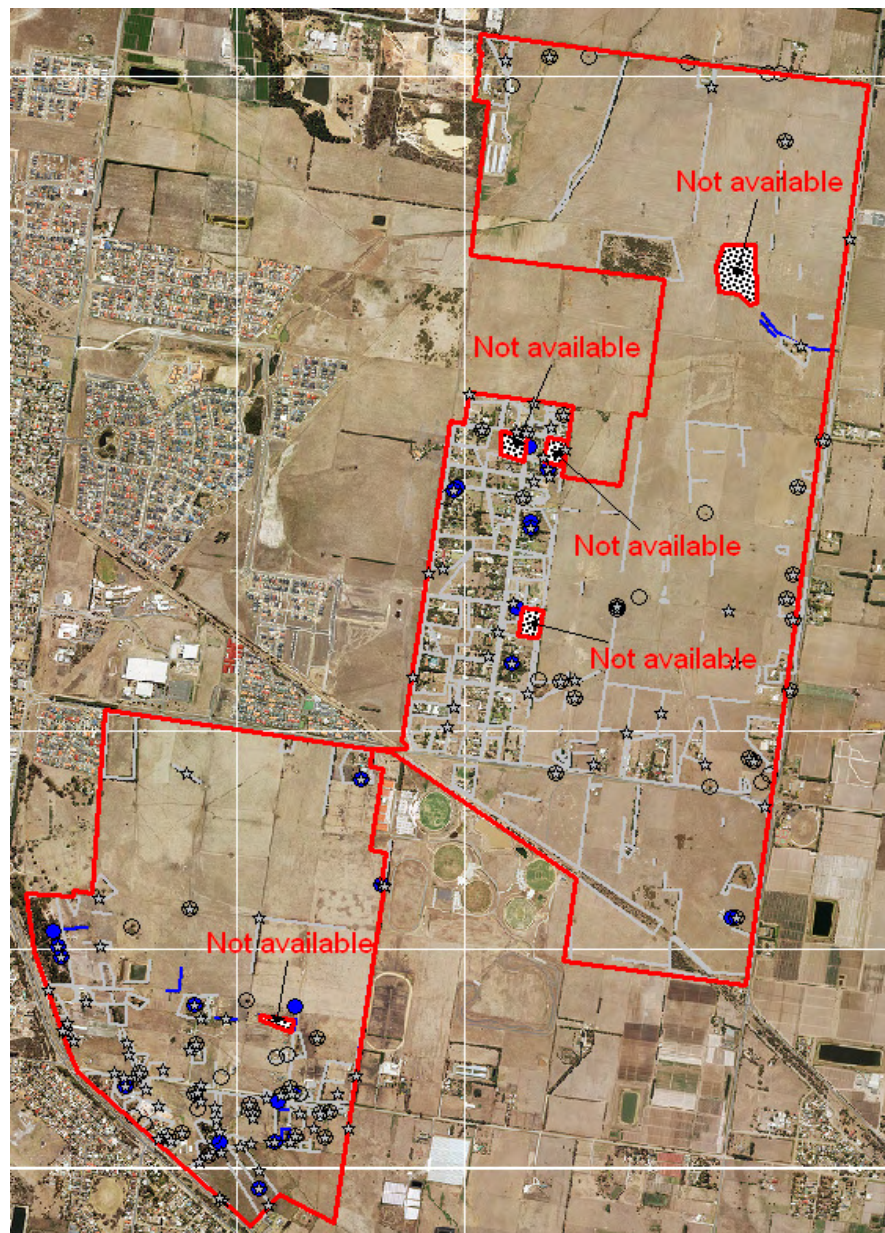


Figure 2 Areas for which access was not available

Assessment of value

To assist in the decision making process regarding the retention and removal of trees on the site, all of the tree features assessed on this site have been accorded a value from Very low to Very high.

Relative tree value is the key determinant of whether any tree should be retained as a part of a future development. The perceived value of the tree will determine the acceptable cost of retaining the tree within the development. Trees possess several types of value including amenity value (shade, aesthetic appearance, micro climate modification etc.), environmental value (habitat, food sources) and historical significance.

Of these three value types this report is primarily concerned with amenity value and, to a lesser extent, environmental value. Historical value is not considered as the area of assessing historical tree value is the role of the historical consultants.

Tree value is generally considered to be primarily related to size, age, longevity, species factors, suitability to the site and aesthetic qualities. High value trees are generally large, have a long Useful Life Expectancy, are unlikely to cause significant damage or injury to persons or property and are well formed and aesthetically pleasing. It is also generally the case that native and locally indigenous species will be more valuable than similar trees of exotic origin as local species are mostly more valuable environmentally.

The following descriptors of value are used in this report.

Value	Description
Very low	The tree has either a very short Useful Life Expectancy and/or is very small. Very low value trees would normally be removed as a part of any development.
Low	The tree may have a short Useful Life Expectancy and/or may be small. Low value trees would generally be removed as a part of any development.
Moderate	Trees may will generally be greater than 10 metres in height and have a Useful Life Expectancy exceeding 15 years. However larger native trees with a shorter Useful Life Expectancy may be assessed as having Moderate value. Moderate value trees should generally be retained within a development provided that they do not significantly constrain the development. Further tree assessment should be undertaken where any development is likely to impact on these trees.
High	High value trees are generally large trees with a Useful Life Expectancy of greater than 15 years. However larger native trees with a shorter Useful Life Expectancy may be assessed as having High value. High value trees should generally be retained within a development unless they seriously constrain the development. Further tree assessment should be undertaken where any development is likely to impact on these trees.
Very high	Very high value trees are generally very large trees with a Useful Life Expectancy of greater than 15 years. However native trees with a shorter Useful Life Expectancy may be assessed as having Very high value. Very high value trees should generally be retained within a development at almost any cost. Further tree assessment should be undertaken where any development is likely to occur within 30 metres of Very high value trees.

Study area overview

A total of 380 arboricultural features were assessed across the site. This comprises 25 high value individual tree features, 12 high value tree area features, 136 moderate value tree features and 207 low or very low value tree features.

In terms of the tree population this site can be divided into the rural areas of larger landholdings and the more closely settled areas of large urban properties. The large urban properties are primarily located in the area of Mayfield and Colson Roads and to the north and south of Ballarto Road (Figure 3).

Within the urban areas the tree planting is largely more densely planted Australian native species while within the more rural areas the plantings are primarily scattered exotic trees around houses or windrows along paddock boundaries.

The study area is primarily populated with a mixture of recently planted (past one hundred years) trees of exotic or Australian origin. Very few of these trees are locally indigenous and probably none are remnant of the original forest.

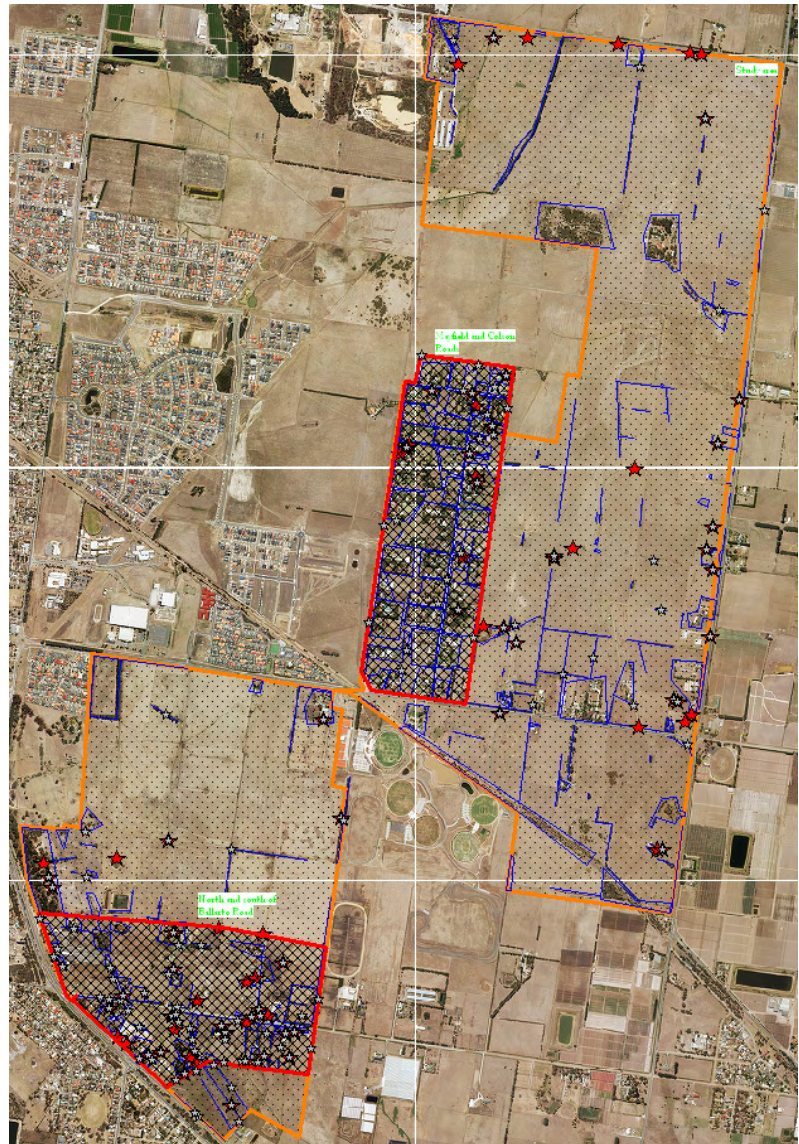


Figure 3 Urban areas (shown darker hatch) and rural areas

There are a number of wind rows across the site and these are of varying species composition and maturity. There are a number of rows of mixed native species, large overmature *Pinus radiata* (Monetery Pine), *Cupressus macrocarpa* (Monterey Cypress) and *Xcupressocyparis leylandii* (Leyland Cypress).

Generally these trees either have a short ULE or are relatively immature and of small stature (Figure 4, Figure 5).



Figure 4 Immature *C. macrocarpa* windrow



Figure 5 Large and over mature windrow of *P. radiata*

Generally the arboreal vegetation across the site is of low quality with a significant number of trees of Moderate, a small number of trees of High value and no trees of Very high value.

In general the trees on this site should not constrain the development to any significant degree.

Assessment findings

A total of 380 arboricultural features have been assessed across the study area. These features are comprised of approximately 8,000 trees. The majority of these were low or very low value with 54% of all tree features falling into these two categories. Moderate value tree features comprise 36% of the assessed features while high value trees comprise only 10% of the tree features (Figure 6).

No tree features of Very high value were recorded on the site.

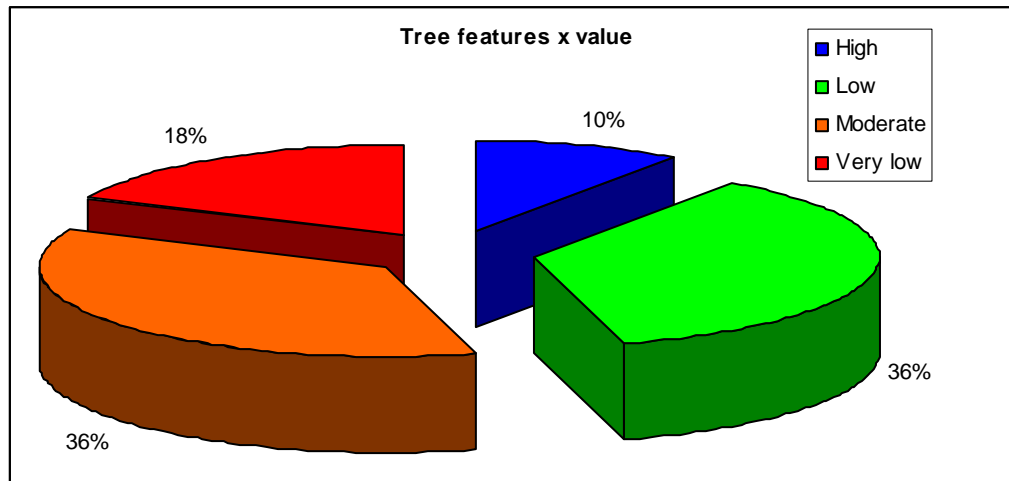


Figure 6 Tree features by value

The distribution of moderate and high value trees across the site is shown below (Figure 7).

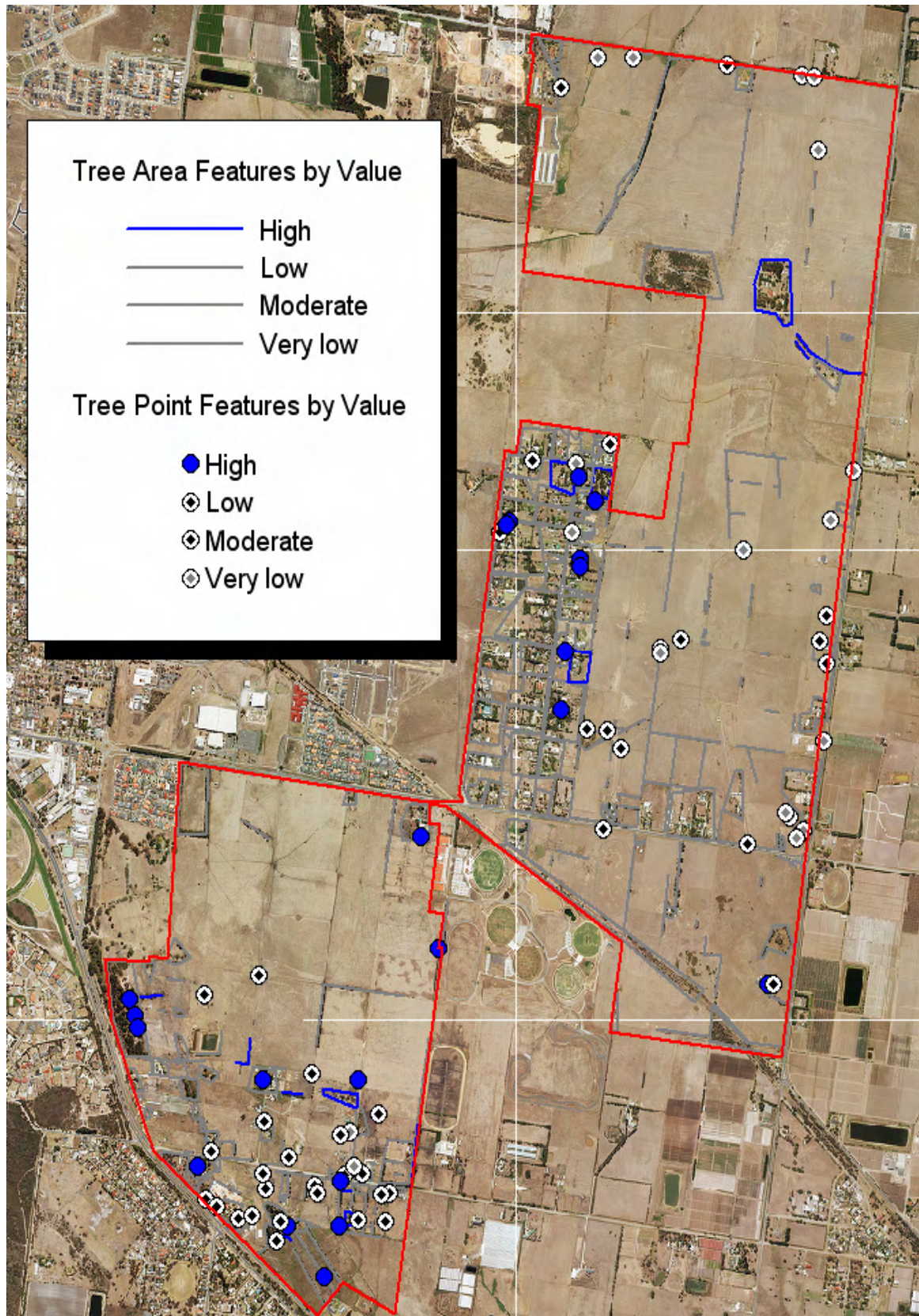


Figure 7 Tree features by value

Tree types

Of the tree features assessed on this site there are several main groups. These are:

1. High value individual trees.
2. High value tree areas (generally not accessible)
3. Younger Cypress windrows.
4. Moderate value mixed plantings.
5. Low value mixed plantings.

High value individual trees

These 25 individual trees and 12 tree features are scattered across the site but are primarily located within the Collison Estate and at the south part of the site. These trees are generally of significant size and with a long Useful Life Expectancy (Figure 8).

These trees are suitable for retention on the site as a part of the development of the study area and are worthy of considerable efforts of retention. These trees should generally be accommodated within any development of the site.

Generally these trees are widely separated and can only be protected as individual trees.

The protection and retention of these trees should be considered at four stages of the planning and development process. These four stages are:

1. Site lay out master plan.
2. Physical services planning stage.
3. Subdivision stage.
4. Town planning permit stage.



Figure 8 High Value individual tree

Site layout master plan

Where ever possible public open space, reserves or open drainage lines should be designed to include these trees. While the inclusion of trees within open space may not be possible in most cases, where it can be accomplished it does offer the best possible opportunity for high value tree retention on the site.

Physical services planning

The planning for physical services should be conducted with due regard to these trees and a 20 metre separation should be allowed between any planned physical services and the high value trees.

Where any physical services must be located within a twenty metre radius of any of these trees an arboricultural construction impact assessment should be undertaken for each tree affected.

Subdivision stage

At the subdivision stage an attempt should be made to accommodate these trees within any open space requirement or toward the boundaries for each lot. Where possible these trees should not be located near to the centre of any lots as this will significantly increase the cost of their retention and will almost certainly result in their removal from the site.

Town planning permit stage

Where these trees are located on or within 4 metres of any subdivision site that is the subject of a town planning application an arboricultural construction impact assessment should be undertaken and recommendations developed as required that will enable the retention of the tree/s.

The arboricultural construction impact assessment should consider the undisturbed soil volume requirements of the tree and the impact that the proposed development, including services and other infrastructure, is likely to have on the tree.

High value tree areas

A number of tree areas are located across the site that have been ascribed high value (Figure 7). These areas are thought to contain high value trees but due to limited accessibility this has not been accurately ascertained.

Further assessment of these areas is required to ascertain whether individual trees of high value are located in these areas.

Younger Cypress windrows

These windrows generally exhibit good health and have a long Useful Life Expectancy (Figure 9).

These trees are generally of low or moderate value and should be retained wherever they do not overly constrain the potential for development of the study area.

These windrows have the potential to eventually recreate the old cypress windrows that are iconic of this area and may eventually provide a link to the agricultural history of the site.

However while these trees are of environmental value in terms of carbon sequestration, storm water interception and particulate pollution reduction they have little ecological value.

The amenity and environmental values that these trees provide could generally be replaced by new plantings of species that also provide significant ecological values to the site.



Figure 9 Younger Cypress windrow

Moderate value mixed plantings

Moderate value mixed plantings are generally suitable for retention but are of insufficient value to warrant significant efforts of preservation. Where these trees can be readily accommodated within the development lay out they should be retained but where they will significantly constrain the development they should be removed (Figure 10).

While these trees are of environmental value in terms of carbon sequestration, storm water interception and particulate pollution reduction they have little ecological value.

The amenity and environmental values that these trees provide could generally be replaced by new plantings of species that also provide significant ecological values to the site.



Figure 10 Moderate value mixed planting

Low value mixed plantings

Low value mixed plantings are generally either small or have short Useful Life Expectancies (Figure 11). While a number of these tree features are quite visually impressive they generally exhibit poor health and or structure and are likely to begin to fail over the next 5 – 15 years.

These trees are generally not suitable for retention within any development of the site or do not warrant any efforts of preservation. These trees should be removed as required to facilitate development of the site.

Where larger trees have been described as being of low value it is generally because of poor health and or structure. Within the current site usage these trees do not generally pose a significant risk to persons or property.

However the development of the site will result in considerably increased presence of targets that might be damaged or injured by tree failure. This will therefore significantly increase the arboricultural risk associated with these trees.

It is generally the case that these larger and older low value trees should be removed at the subdivision stage of the development.



Figure 11 Low value mixed planting

Arboricultural constraints

Given the small number of high value tree features on the study area the arboricultural constraints for this site are minor and should have no significant impact on the development potential of the site.

There are few high value trees on the site and these could generally be expected to be incorporated successfully into the development of the site.

Tree preservation process

Tree preservation during the development of the study area should focus primarily on the High and Moderate value trees on the site. The low value trees are either not suitable for retention or not worthy of significant efforts of preservation within the development context.

The preservation of trees within the study area should follow the procedure outlined below.

1. Where possible high value trees should be included in open space reserves, parks and drainage lines.
2. At the physical infrastructure planning stage a separation of 20 metres should be maintained between the services and any high value trees.
 - a. If this is not possible a construction impact assessment should be undertaken to determine the feasibility of retaining the tree through alternative designs or construction methods.
 - b. If the tree cannot be satisfactorily retained and/or the physical services cannot be sufficiently modified then the tree should be removed.
 - c. Moderate value trees should be removed wherever they would significantly constrain the construction of physical infrastructure.
3. As each part of the site is developed an arboricultural assessment of all of the trees within the development area should be undertaken.
 - a. This should have reference to the existing identification of high value trees and should identify and describe all of the trees within the development area.
 - b. All moderate and high value trees with a Useful Life Expectancy of greater than 15 years should be identified and located on the planning drawings.
 - c. The subdivision layout should attempt to locate physical infrastructure away from any high value trees.
 - i. Where infrastructure must be located within 20 metres of any high value trees a construction impact assessment should be undertaken for each tree affected.
 - d. The subdivision layout should attempt to place the high value trees along the boundaries of each lot.
 - i. The location of high value trees toward the centre of any lots should be avoided wherever possible.
 - e. Moderate value trees should be removed wherever they would significantly constrain the subdivision layout.
4. At the town planning permit stage of development an arboricultural construction impact assessment should be undertaken where any moderate or high value trees are located within the site boundaries or within 4 metres of the site boundaries.

Conclusions

The assessment of the arboricultural features on the site has identified a total of 380 arboricultural features comprising 25 individual trees and 12 tree areas of high value, 136 features of moderate value and 207 features of low or very low value. Access to several properties was not available during the field assessment and several potentially high value trees have been identified within these areas. While these areas have been identified within the survey as being of high arboricultural value further investigation is required to accurately ascertain the individual tree value within each area.

Generally the study area is poorly treed with few significant trees located across the site. Most of the larger and more significant trees on the site are located within the Collison Estate and the southern section of the site to the south of Berwick – Cranbourne Road.

While there are a number of large trees located within these areas few have a sufficiently long Useful Life Expectancy to be considered of high value. Many of these trees exhibit poor health and/or structure and are not suitable for retention within most normal development contexts. While the amenity value provided by these trees might currently be high it is unlikely that these trees will continue to provide this level of amenity for a sufficient length of time to warrant their retention within any development on the site.

A number of these trees exhibit poor or very poor structure and these trees can present a significant risk to persons and/or property where targets of value are located close by. Currently these trees generally do not represent a significant risk to persons or property because of the relative lack of targets located in close proximity to the trees. However development of this site will dramatically increase the presence of targets in the area and will therefore also increase the risk associated with these trees.

The majority of the plantings on the site are associated with dwellings or rural shelter belts and have little arboricultural value. These trees are generally of low value and should not constrain the development of this site.

The moderate value tree features on the site are suitable for retention within the development of the study area although they generally are not of sufficient value to warrant significant efforts of preservation.

The high value trees on the site should be preserved wherever possible and these trees should only be removed where the cost of their retention is considered excessive.

The preservation of these trees should be considered at each of the main stages of the development process including the Site Layout Master Plan Stage, Physical Services Planning, Subdivision Stage and the Town Planning Permit Stage.

The preservation of trees within the site should follow the Tree preservation process described above.