CELL NINE Wattle Grove

LANDSCAPE MASTERPLAN

FINAL

City of Kalamunda

The Cell 9 Wattle Grove Landscape Masterplan has been prepared by

urban | landscape | masterplanning | interpretation | signage

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On behalf of the

City of Kalamunda

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City Documents Referenced

Cell 9 Wattle Grove Outline Development Plan. McDonald, Hales and Assoc with Worley Fraser Pty Ltd, 1996 (adopted 2000).

Hale Road Significant tree Survey Summary Report. Bowden Tree Consultancy 2011.

Hartfield Park Managment Plan. Mick McCarthy Consultant Environmental Officer July 1996.

Abbreviations Glossary

Abbreviation	*Name*
CPTED	Crime Prevention Through Environmental Design
DEC	Department of Environment and Conservation
DUP / SUP	Dual Use path / Shared Use Path
FESA	Fire and Emergency Services
ODP	Outline Development Plan (Structure Plan)
POS	Public Open Space
SP	Structure Plan (ODP)
WBMD	Woodlupine Brook Main Drain
WLS	Woodlupine Living Stream
WSUD	Water Sensitive Urban Design

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01 EXECUTIVE SUMMARY

There is a growing understanding in subdivision design that "building housing without considering its landscape setting will not produce the sustainable communities of the future"[1].The City of Kalamunda has become aware that the development of Wattle Grove, and specifically Cell 9, has proceeded in a manner which has resulted in a poor landscape setting; and that this is in turn affecting residents' amenity.

While progress is being made through the Woodlupine Living Stream project, recommendations from the Community Facilities Study and discussions with developers of a proposed 'Village' centre on Hale Road, a more strategic approach to landscape and urban design issues is required.

Well designed 'Green Infrastructure' elements - parks, street trees, shared use paths, swales, verges, retained bushland etc - have the potential to deliver a range of benefits to the community. This Landscape Masterplan aims to provide recommendations that will result in the maximum benefit gained from green infrastructure, and ensure that the landscape responds to the character and cultural values of the site.

This report includes:

- analysis of the study area and listing of a set of landscape design principles and recommendations to guide future decisions on landscaping;
- a landscape masterplan drawing which sets out the character and facilities in different zones and public spaces (see Attachments);
- recommendations for priority projects and further design work;
- detailed colour, material and plant species palettes, including plants for streetscapes, parks and wetlands.

In brief, priority projects include (not in order):

Demonstration Streetscape

The report recommends that one residential street be selected and fully landscaped with street trees, native verge planting and fence screening to demonstrate the value of an improved streetscape to residents. Further residential street tree planting enhancements would roll out from this project.

Sense of Place Project

A project involving the residents and Nyoongar community to draw out the Nyoongar heritage of Wattle Grove. The first goal of this project should be to decide on names for local parks, features within the POS (such as the amphitheatre) and the waterways / pools so as to make way-finding easier, and to celebrate the history of the subject area.

Woodlupine Living Stream Project

Continuation of the enhancement works to the Woodlupine Creek, with the aim of completing planting of all five sections by 2017.

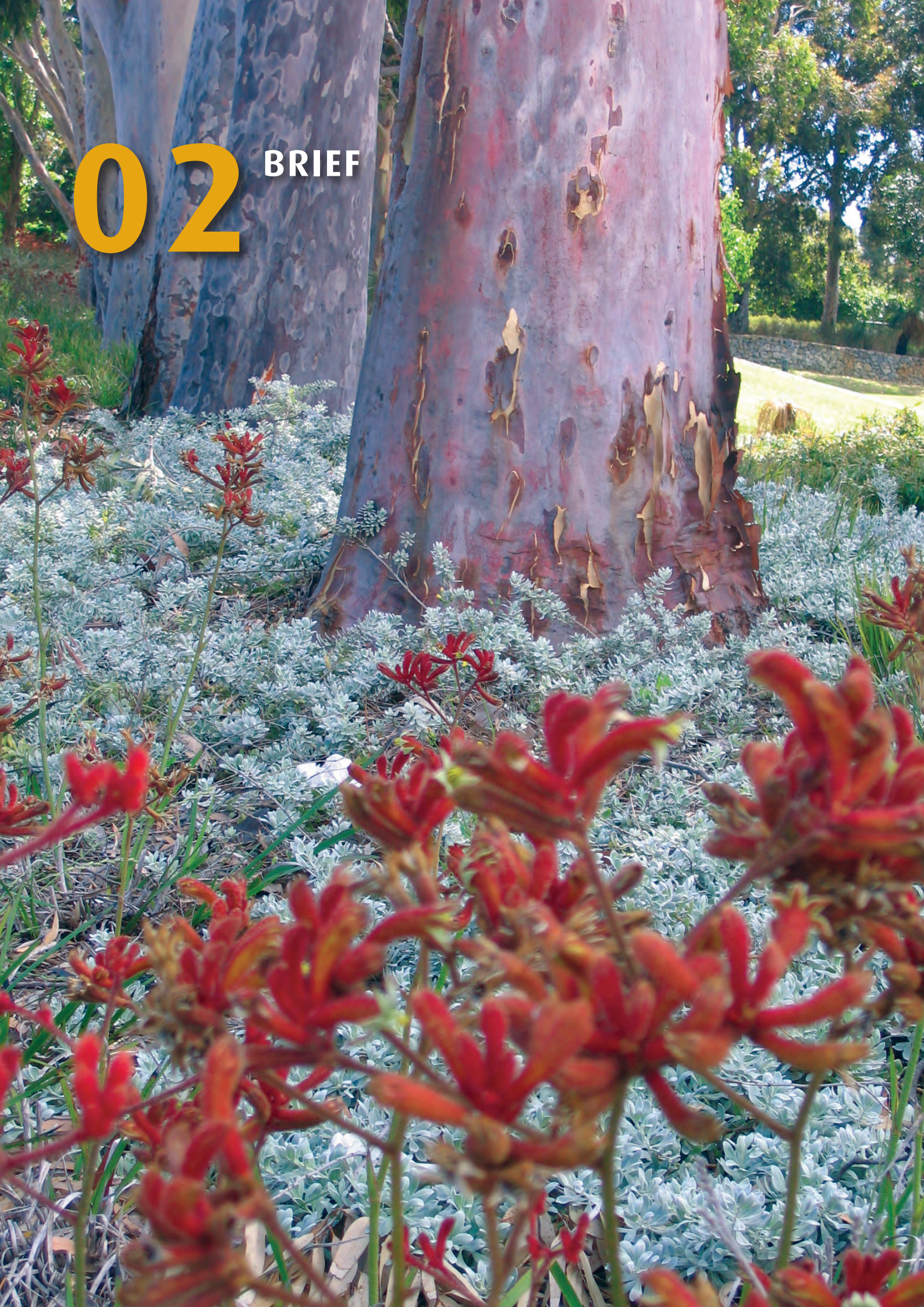
Neighbourhood Park Infrastructure

Prioritisation of works for the Neighbourhood Park (i.e. Children's ball sport oval, off-the-leash dog area, bridges over the creek etc), and an implementation programme. The aim should be to try and install one new element each year for the next five years, and then review outstanding works and set a new programme.

Hale Road Streetscaping

It is recommended that a concept plan be prepared for the widening and streetscaping of Hale Road in line with the recommendations in this report.

1 Landscape Institute (UK) 'Making it home – the power of landscape to create the communities of the future' March 2010.



02 BRIEF

The Project Brief for the Landscape Masterplan for this portion of Wattle Grove was initiated by the City of Kalamunda following identification of a number of issues arising in the study area around a lack of amenity, which are linked to the provision of community facilities and services, as well as to the physical character of streetscapes and public open spaces in the subject area.

At the time of writing (October 2011), the Shire is undertaking a study of community facilities, providing support for environmental projects such as the Woodlupine Living Stream project, working with the Water Corporation on management of the 'drain', and is in discussions with developers over a proposed new commercial facility which would help provide a number of services for the subject area which are currently lacking.

This Landscape Masterplan has taken these matters into consideration as far as possible, however the Masterplan should be seen as a "living document" to be adjusted as the subject area develops.

For this reason a section titled LANDSCAPE GUIDELINES (Section 4) has been included. These guidelines address the Brief in a strategic way, and will guide detailed decisions as they are made in the future by the Shire and developers.

The requirements of the Brief have been grouped into three broad headings which list the goals for landscaping and urban design enhancements in the subject area:

Community

- a place that connects with existing surrounding facilities and services;
- a place that feels welcoming and safe to live in;
- a community, not simply a collection of housing developments;
- a suburb which has links to its cultural and natural history;
- a place with a high degree of amenity that is enjoyable to move about in; and
- a place that provides public spaces which encourage social interaction and help build a sense of community.

Environment

- respect for topography and natural drainage lines;
- protection of significant vegetation and fauna habitat, and inclusion of wildlife corridors in landscaping;
- a cohesive 'Cell 9' landscape address built on the natural character of the area, and developed streetscapes integrated with the more 'natural' Reserves in a complementary way; and
- conservation of the assets of the subject area, including preservation of significant trees on private lots and on road verges.

Economy

- support for proposed retail facilities; and
- enhancement of property values.

03 LANDSCAPE ASSESSMENT

3.1.1 Project Location

Wattle Grove is a suburb of the City of Kalamunda and is situated at the foot of the Darling Scarp. This Landscape Masterplan is primarily concerned with the area known as Cell 9, which was the subject of an Outline Development Plan; (which is referred to as the 'Structure Plan, or SP, in the remainder of this report) prepared in 1996. This plan was subsequently reviewed and adopted in 2000. (A copy of the SP is included in the Attachments.)

The subject area is a rapidly growing residential suburb, located in an area well serviced by major access roads, is positioned close to the airport and significant light industrial facilities, and is adjacent to several large sporting and recreation areas.

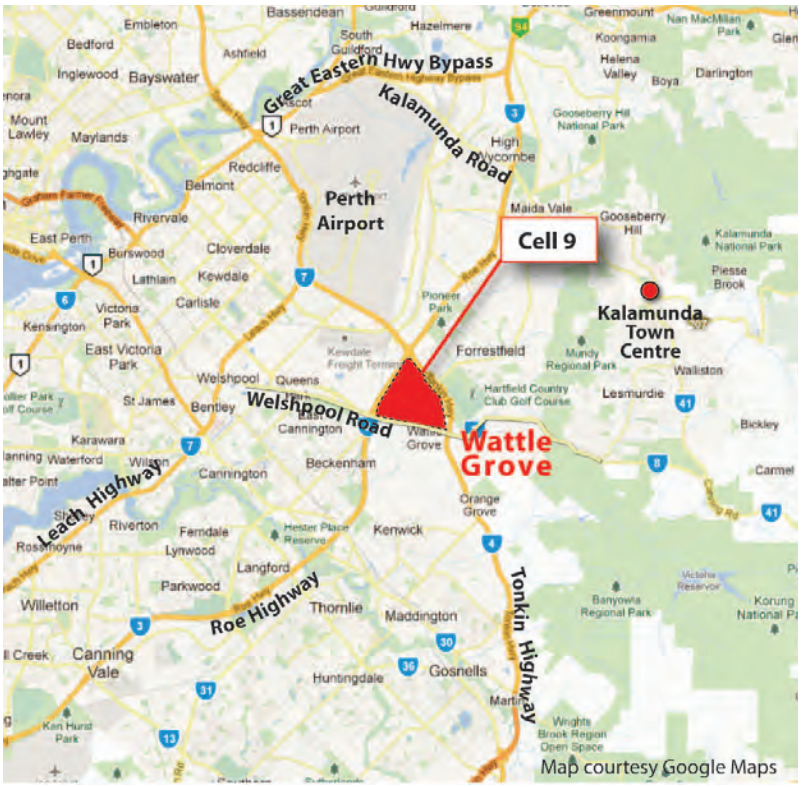


Figure 1; Study Area Location.

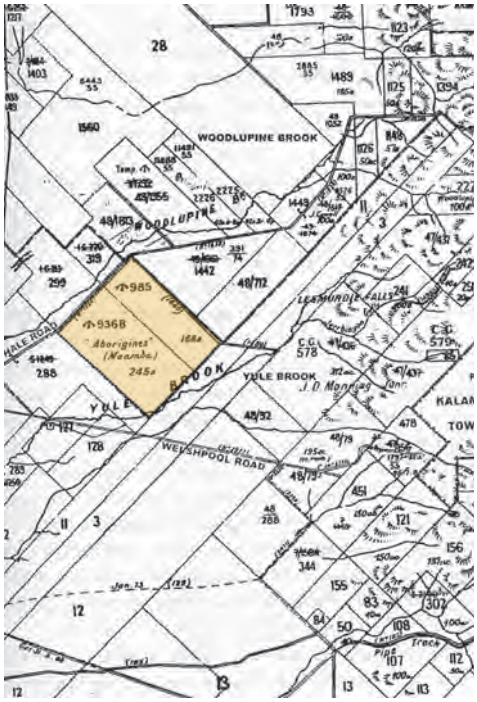
3.1.2 Site Development History

The 'development' history of Cell 9 dates back to the late 1800s when part of the land was set aside for use as a native reserve[2], shown on a 1909 Lands and Surveys Department map as Maamba Reserve.

The name 'Wattle Grove' is possibly derived from a farm which was known to be in the area around 1920. Other suggestions are that wattle trees lined both sides of Welshpool Road in the early 1900s and the district was described as "where the groves of wattle are" by early settlers[3].

In the early days of European settlement, land in Wattle Grove was used for grazing, and later forestry, fruit growing and small agricultural holdings. These agricultural uses continue today in the form of poultry farms, horse agistment paddocks, plant nurseries, pet kennels and small hobby farms.

Livestock can still be found grazing in Cell 9.



The 1905 Lands and Surveys Map showing Maamba Reserve (in yellow).

The subject area was identified by the City of Kalamunda as being suitable for urban development in the late 1900s and the rural uses listed above have gradually been replaced by residential development as the land was rezoned, subdivided and released, subsequent to the recommendations of the SP.

Approximately 70% of the land zoned R20 - R30 has been subdivided and the majority of the lots developed for housing. New lot releases planned for 2011/12 will potentially add another 120 dwellings over the next two years. The SP identified a likely lot yield of 2,079 for Cell 9 which will translate to a population of approximately 5,200 residents (using the ABS average household number of just over 2.5 people per dwelling[4]) once development is complete.

Due to the incremental nature of subdivision and redevelopment, a strategic 'whole of Cell' development (such as happens with large new subdivisions developed by a single owner) and mechanisms such as the pooling of significant funds in lieu of landscaping / POS development have not been available to the City. While some funds have been collected, these have not been sufficient to fund the provision of adequate landscaping and POS development. The consequent unsatisfactory standard of landscape and streetscape amenity has prompted the preparation of the Landscape Masterplan.

The following site analysis provides a more detailed discussion of the key landscape and urban design issues which will need to be addressed to improve resident amenity and landscape character.

2 McDonald, Hales and Assoc March 2000

3 State Library of WA (Our Page in History)

4 www.abs.gov.au

Southern Brown Bandicoot

3.2.1 Fauna

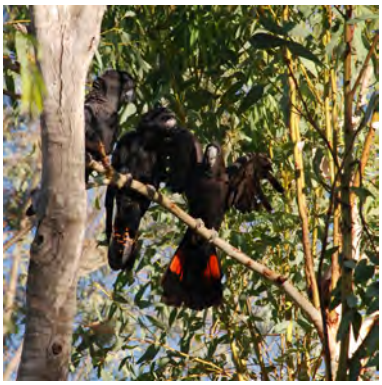
No specific fauna studies have been undertaken for this report, however, the WA Planning Commission's Bush Forever report[5] lists the following grouping of species in its investigations within the Hartfield Park Bushland Reserve:

- structured survey for birds (25 species), of which 3 were significant bird species: category 4;
- native mammals (1 species);
- reptiles (11 species); and
- amphibians (3 species).

The mammal noted was the *Quenda* (or Southern Brown Bandicoot) *Isoodon obesulus fusciventer* which is listed as a significant mammal species and is listed as a priority species by DEC. There is some concern that there has not been a recent siting of Bandicoots in the subject area, although hopefully they continue to find safe haven in the larger adjacent reserves.

Bird species included Carnaby's, Baudins and Red-tailed Black Cockatoo's which are listed as endangered under the federal Environment Protection and Biodiversity Conservation Act 1999. The Red-tailed Black Cockatoos feed on Eucalypt forests, seeds of Marri, Jarrah, Blackbutt, Karri, Sheoak and Snottygobble, also some ornamental eucalypts.

Egret



Red-Tailed Black Cockatoo

Moorehen

A Carnaby Menu!
The Department of Environment and Conservation has produced and extensive list of plants used by Carnaby's Cockatoos for food, nesting and roosting, This is available at www.dec.wa.gov.au, Follow the links from Management and Protection - Threatened Species - Plants for Carnaby's search tool.

3.2.2 Flora

The subject area contains a number of small Reserves and part of the larger Hartfield Park Reserve. These Reserves are identified as part of the Southern River Complex of flora in the City of Kalamunda's Vegetation Complex plan.

The bushland communities of Hartfield Park Bushland Reserve and Tomah Road Swamp are described as consisting of a Conservation Category Wetland of the Southern River vegetation complex; which is both regionally rare, with only 12.4% of the original extent remaining across the Perth Metropolitan Region, and is locally rare with only 11.0% of the original extent remaining in the City[6].

The WA Planning Commission's Bush Forever report adds further detail to this description, and is quoted in the following pages:

5 Bushland Forever Volume 2; 2000.

6 Greenpage, August 2010

Tomah Road Swamp Bushland Flora

***Banksia Menziesii* is found in Tomah Swamp.**

- "Uplands (elevated land): *Eucalyptus calophylla* Woodland.
- Wetlands (seasonally inundated): *Melaleuca rhaphiophylla* Low Forest with emergent *Eucalyptus rudis*; *Banksia attenuata, B. menziesii, B. ilicifolia* and *Kunzea ericifolia* Low Woodland; *Melaleuca rhaphiophylla* Tall Closed Scrub; *Melaleuca viminea* Tall Closed Scrub; *Lepidosperma longitudinale Sedgeland*
- Vegetation Condition: Very Good to Degraded, with areas of severe localised disturbance.
- Significant Flora: none recorded."

Work is currently underway to re-route the drainage line in the adjacent Reserve to the north-east of the swamp.

Tomah Swamp Bushland.

Hartfield Park Bushland Flora

- "Uplands: *Eucalyptus calophylla* and *E. marginata* Low Forest; *Eucalyptus calophylla* Low Woodland; Low Woodlands dominated by *Eucalyptus marginata, Banksia attenuata, B. menziesii* and *Allocasuarina fraseriana* and combinations of these; *Banksia attenuata and B. menziesii* Low Woodland.
- Wetlands: *Eucalyptus rudis* and *E. calophylla* Low Woodland; *Melaleuca preissiana.* Open Low Woodland; Closed to Open Low Heath dominated by *Hypocalymma angustifolium, Pericalymma ellipticum*, *Hakea sulcata* and combinations of these with scattered clumps of *Actinostrobus pyramidalis* and *Beaufortia squarrosa*; scattered clumps of *Melaleuca viminea* over *Meeboldinia coangustatus* closed sedgeland.
- Vegetation Condition: >75% Excellent to Very Good, <25% Good to Degraded, with areas of severe localised disturbance.
- Total Flora: 119 native taxa, 8 weeds (plot-generated list only) (DEP 1996).
- Significant Flora: *Conospermum undulatum* (R); *Isopogon drummondii* (3), *Stachystemon axillaris* (4), *Verticordia lindleyi subsp. lindleyi* (4); *Beaufortia squarrosa, Dasypogon obliquifolius, Hakea conchifolia, Xanthorrhoea drummondii."*

Grass trees are a feature of Hartfield Park Bushland Reserve.

Yule Brook Flora

Yule Brook runs through the south-east tip of the subject area and flows south through a series of Reserves to the Canning River. The Brook is bordered by a local POS / Recreation Reserve within the City's boundaries, and then flows into a much larger and more 'natural' Reserve known as Yule Brook Botany Reserve which is owned by the University of WA and used for botanical research and teaching.

While the portion of land located within the City of Kalamunda is not as floristically intact as the Botanical Reserve located outside the City, it is worth noting the plant types in the Botanical Reserve as a reference, and bearing in mind the connection between the two in terms of revegetation, weed management and habitat.

The Bush Forever survey notes;

- "Uplands: *Eucalyptus calophylla.* Open Forest to Woodland; *Banksia attenuata* and B. *menziesii* Low Woodland.
- Wetlands: *Eucalyptus calophylla* Woodland; *Viminaria juncea* Tall Shrubland; *Melaleuca* Tall Shrublands to Closed Tall Scrub dominated by *Melaleuca viminea, Melaleuca rhaphiophylla, M. uncinata, M. cuticularis* and combinations of these; *Actinostrobus pyramidalis* Closed Tall Scrub to Shrubland; Closed Heaths to Shrublands dominated by *Regelia ciliata, Kunzea recurva, Melaleuca lateritia, Pericalymma ellipticum* and *Astartea sp. Brixton; Verticordia* species and *Calytrix breviseta subsp. breviseta* Low Open Heath; mixed Open Low Heaths to Shrublands; *Halosarcia indica* Low Shrubland; Herblands dominated by *Borya* species, *Tribonanthes* species, *Stylidium* species and others in combination; Sedgelands dominated by *Meeboldinia cana, C. aristatus, M. coangustata, Tremulina tremula, Cyathochaeta avenacea, Lepidosperma rostratum* and combinations of these; *Amphibromus neesii* Grassland."

Marri (*Eucalyptus calophylla*) grow along Yule Brook Botany Reserve.

In Winter, paperbarks in the drainage reserves are completely inundated.

Drainage and Public Open Space Reserves Flora

Woodlupine Brook runs through the Woodlupine Main Drain Reserve and includes a south-east spur draining from Hartfield Park Bushland Reserve. This land is a mix of POS Reserve and drainage Reserves, and is somewhat degraded in character. Flora is a mixture of endemic and assorted Australian species. Work is being undertaken to revegetate and rehabilitate this creek line, but it remains a very altered landscape. Issues of weed infestation are common throughout the drainage Reserves. The Woodlupine Brook Main Drain is under the management control of the Water Corporation, the southern spur (Woodlupine Living Stream) is managed by the City of Kalamunda.

Grass Trees are particularly susceptible to dieback, this plant is dying.

Dieback

Dieback *(Phytophthora cinnamomi);* a soil-borne pathogen, is generally spread with water flows and soil transfer, and is likely to be present in some areas of the site. Surveys would need to be conducted to identify infested areas but in the interim, good dieback management practices should be encouraged.

Bushfire Risk

The SP does not make mention of bushfire risk, possibly because the subject area is predominantly cleared land buffered from adjacent bushland Reserves by significant roads, and remnant bush areas within the subject area are ringed by residential roads. The roads act as fire breaks and allow access and egress in case of fire.

Fuel loads adjacent to residential areas appear low.

3.2.3 Soil Type and Drainage

There has not been a study to identify the risk of acid sulfate soils in the developable portions of the subject area. The majority of the site will be free of acid soils, but areas which have been subject to inundation over a long period of time, or where the water table is high may be at risk.

Generally speaking, soils are a mix of Guilford formation and Bassendean sands, sometimes with the latter laid over the former. These soils are relatively free-draining, and vary over the study area from sandy to clay in some areas.

Evidence of soil contamination in the subject area will be determined at each stage of land release. Some sites - such as the car wreckers' yard - may require further investigation before residential development is undertaken due to the likely presence of contaminants in the soil and possible risk of leaching into the main drain and waterways.

3.2.4 Cultural Heritage

Indigenous Heritage

Nyoongar[7] is the general name for the Aboriginal peoples in the south-west of Western Australia. Of the fourteen Nyoongar language groups, the people who live in the Perth region are known as the Whadjuk people. The Whadjuk land south of the Swan River across the Canning River to the Helena River is Beeloo land. The Nyingarn (echidna) is the totem animal for the Beeloo people[8]

Mundy (or Munday), was the leader of the Beeloo people during the time of European settlement. The Beeloo mainly lived between the Swan and Canning Rivers and the Darling Ranges and had winter camps in the Kalamunda and Mundaring hills. The area around Mundaring Weir was reported as an important meeting place for Nyoongar families.[9]

Anecdotally, the City's name, Kalamunda, comes from local Aboriginal words Cala (home) and Munnda (forest), thus Kalamunda means 'a home in the forest'. We might also wonder if it could mean 'home of Munday'; Cala Munday.

Daisy May Bates in her autobiography 'My natives and I' (later published as 'The Passing of the Aborigines' in 1938)[10] refers to her time camped at Wattle Grove and living at the 'Native Reserve' (Maamba) with the Bibbulmun; most likely Beeloo people.

Following is an excerpt from 'The Passing of the Aborigines':

> *"Joobaitch clung steadily to Maamba, his own ground; even when the doctor urged his removal to hospital. "No,"' said Joobaitch, "I shall die on my own ground, and not in a white man's house. When I die, I shall go down through the sea to Kur'an'nup, where all my people will be waiting on the shore with meat food, my mother and my woman, my father, and my brothers. Before it sets out on its journey, my spirit must be free to rest on the kaanya tree. Since nyitting (cold) times all Bibbulmun spirits have rested on this tree on their way to Kur'an'nup, and I have never broken a branch or flower, or sat in the shade of the tree, because it is the tree of the dead, the sacred tree."*

The Kinjarling Yallors celebrate their cultural heritage.

Daisy Bates, 1921.

7 Nyoongar can also be written as Nyungar or Noongar, different organisations may use different spellings.

7 www.web.clontarf.wa.edu.au/index.php?page=history-and-culture

9 Indigenous history of the Swan and Canning Rivers Student work placement: Curtin University: Debra Hughes-Hallett 2010

10 www.womenaustralia.info/biogs/AWE0050b.htm

One day the cart came to take Joobaitch to hospital. "Don't let them take me!" he pleaded. I said, "It is all right, Joobaitch. You will die before you pass the kaartya tree at Karragullen, and your soul will rest there before it goes to the sea." Joobaitch died as the cart crossed the little creek near Maamba, as he had wished it, still on his own ground, close to the kaanya tree.

So the last of the Perth tribe was buried in the aboriginal section of the old Guildford cemetery, which formed part of his people's home. He had had fifty years of Christianity, but he died in the faith of the Bibbulmun, looking westward to Kur'an'nup.[11]

It is interesting to speculate if the 'little creek' was Yule Brook or one of the branches of Woodlupine Creek.

Daisy Bates is now regarded with some ambivalence, particularly by the Aboriginal community, as her views and writings were of another era and social outlook. Read in today's context, some of her assertions are inappropriate. Her writings do however, provide a record of some of the Beeloo people and their lives in the Wattle Grove area, and it can be argued that she was more of an advocate for Indigenous people than many of her generation.

The Heritage Council of WA, and the City of Kalamunda's Municipal Inventory, list Maamba, (which is now known as the Hartfield Park Reserve) as having Indigenous significance.[12] Part of that site is within the subject area and referred to as the Hartfield Park Bushland Reserve.

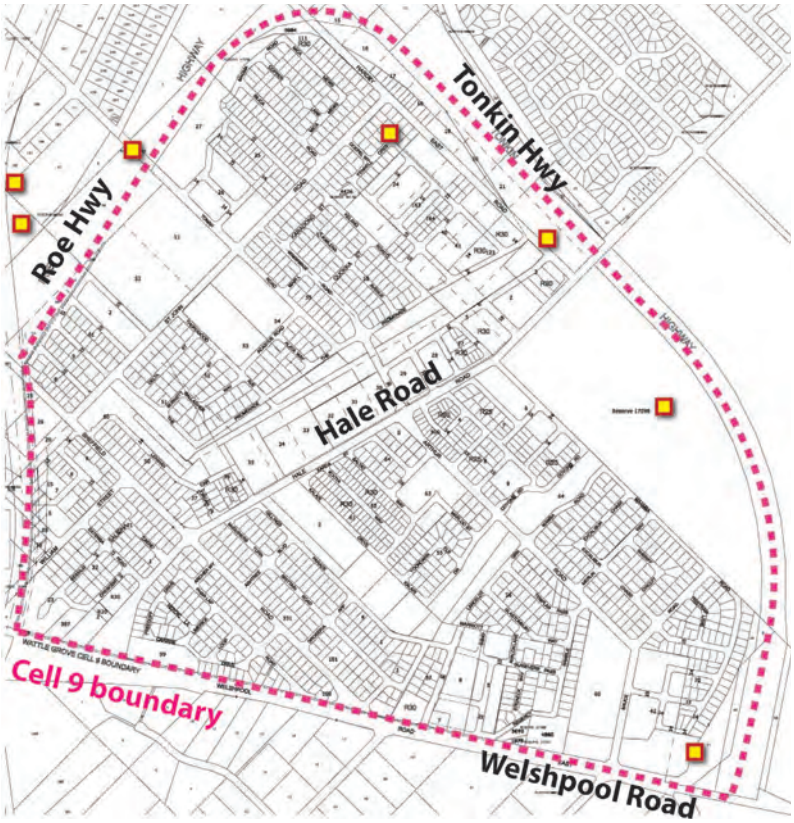


Figure 2; Aboriginal archaeological sites.

11 www.ebooks.adelaide.edu.au/b/bates/daisy/passing/chapter7.html.

12 Place No: 10558 Welshpool Native Reserve Settlement (fmr) site

An investigation into the Aboriginal Heritage of the subject area was commissioned as part of the 2000 SP[13]. The survey reported that four archaeological sites consisting of surface artifact scatters had previously been identified within the subject area (see Figure 2). However, the 2000 survey could not re-identify these sites, possibly due to dense vegetation and ground disturbance. Some artifacts were found near two of the sites - at Yule Brook and Tomah Swamp - and may be related to the original surveyed sites. The report recommends consideration be given to further archaeological work and notes that work being undertaken on the recorded sites will need an application in accordance with Section 18 of the Aboriginal Heritage Act.

The report also recommended that Hartfield Park Bushland Reserve and the area abutting Yule Brook be retained as buffer / conservation zones. These are now zoned POS / Parks and Recreation in the SP.

Non~Indigenous Heritage

The Heritage Council of WA maintains the Places Data Base, which includes heritage places listed in the State Register, the City of Kalamunda's Municipal Inventory, the Commonwealth Register of National Estate and the National Trust's List of Classified Places.

Two places within the subject area are listed in the inventory as having Non-Indigenous heritage significance;

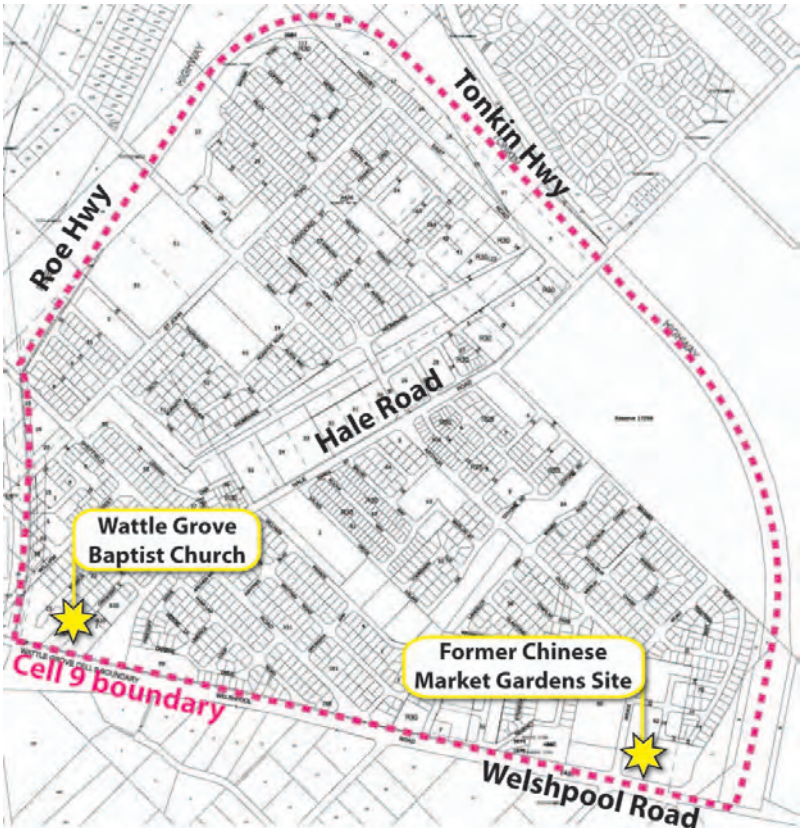


Figure 3; Non-Indigenous heritage sites.

13 McDonald, Hales and Assoc with Worley Fraser Pty Ltd, 2000

Yule Brooke provided a year-round water supply for Chinese market gardens in the early 1900's.

The Wattle Grove Baptist Church.

Areas of Willow Lakes Estate POS are seasonally flooded as part of the storm water management system.

- ***Place No: 10554***
  Name: Chinese market gardens (fmr) - site
  630 Welshpool Rd Wattle Grove

This site was a market garden worked by the Chinese community in the early 1900s and was located on good loamy soil adjacent to Yule Brook; which was used for watering. The site is listed as significant for the historic themes of immigration and market gardening as an example of pre-WW1 Chinese market gardens. The Chinese gardeners had left the area by 1926 and it later became known as the Polo Ground.[14]

The site is identified as a category 'E' site under the City's conservation strategy.

- ***Place No: 01263***
  Name: Wattle Grove Baptist Church
  Between Hale Rd, Welshpool Rd East and the railway line.

This church was built in 1939 and is listed as being significant for the historical themes of technology, religion and local heroes. The building;

> 'demonstrates the effect of WW2 on building construction, when work was forced to be discontinued and completed post war. Important example of public building made of hand poured cement blocks, reflecting a strong community spirit in the district' [13]

The building is identified as a Category 'A' building under the City's conservation strategy.

In addition to the listed heritage of the site, there is evidence that in 1827 the Colonial Botanist Mr Charles Fraser and Captain James Stirling explored the region to evaluate its suitability for farming.[15]

Daisy Bates also camped in the Wattle Grove area (see Indigenous Heritage above). Daisy was appointed Commander of the Order of the British Empire (CBE) for Aboriginal welfare work in 1934.

3.2.5 Public Open Space

The SP identifies 22 hectares of Cell 9 as local POS, which is approximately 11% of the gross subdivisible area; just over the 10% required under planning legislation. The majority of POS abuts the area's drainage system, but also includes a couple of small local parks.

The character of local POS within the subject area is that of predominantly linear parks which follow the natural and engineered drainage lines through the area. Recent works have been undertaken to manage the areas around some of the drainage lines with revegetation and improvements to stormwater basins; and new picnic settings and play equipment have been installed in the south-east branch of Woodlupine Brook. New Shared Use Paths (SUPs) are also being constructed as funds become available.

Regional POS Reserves within the subject area include a corner of the larger Hartfield Park Bushland Reserve (Class 'A'), which is predominantly remnant bush, and Tomah Road Swamp Bushland Reserve, which is a mixture of remnant trees, grassland and pockets of seasonally inundated scrub. These two Reserves add another 29 hectares to the total amount of POS within the subject area.

Immediately adjacent to the subject area are the Hartfield Park recreation areas which include playing fields, a golf course and further areas of remnant bush. Hartfield Park itself is abutted by a linear collection of Reserves which all but link the Park to the Canning River.

14 City of Kalamunda MI; 1996

15 City of Kalamunda

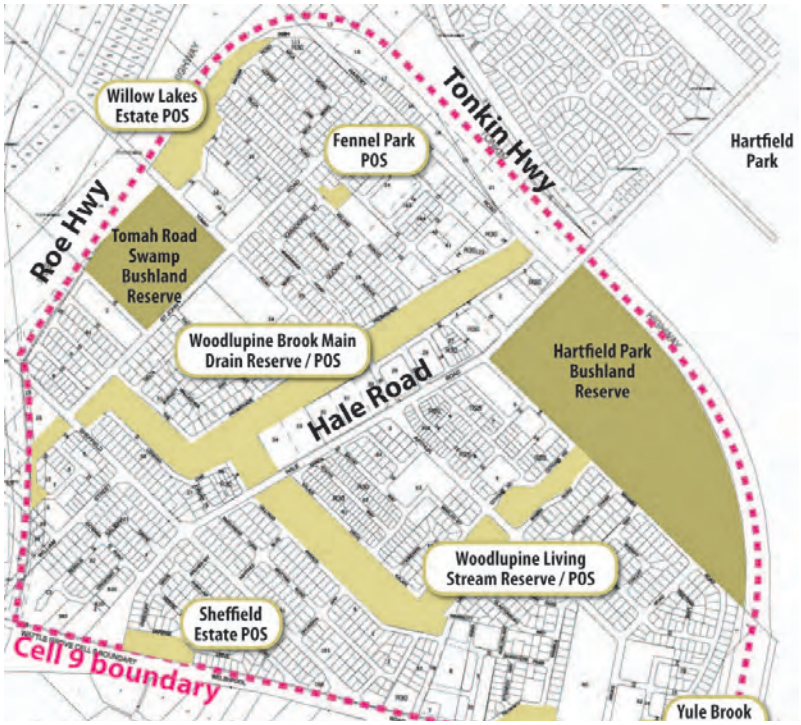


Figure 4; Public Open Space Reserves.

3.2.6 Visual Quality and Landscape Character

The general character of the local POS areas is somewhat uninviting. While the new planting, shelters and paths installed in parts of the POS and the local park on the corner of Hale and Welshpool Roads are attractive, the spaces between are predominantly degraded grassland, weedy drainage channels and thickets of remnant and re-growth trees. The POS of the subject area is below the standard of POS being installed in newly released developments elsewhere in the metropolitan area, and is also below the standard of many parks in established neighbourhoods in the City.

The 'natural' visual character of the POS areas was probably similar to the existing Hartfield Park Bushland Reserve, but with more tree cover. Probable species are listed under FLORA (Section 3.2.2) above. Hartfield Park Bushland Reserve itself is somewhat degraded in parts and contains a complex of buildings (a car club) and what appears to be a trail bike circuit. (This may be a non-conforming use.)

The Sheffield Estate POS is well maintained and enjoyed by residents.

Some POS areas are weedy and subject to erosion.

Existing drains generally follow the original creek lines but, in locations other than those recently revegetated by the City, have little of the visual character of bushland creeks.

The visual quality of streetscapes varies across the subject area and ranges from unkempt and bare, to well-maintained native gardens or grassed verges. On the whole, there are few street trees, and some of the older streets still have overhead power lines.

Weed infestation makes improving the quality of this section of drain difficult.

Revegetation of the Woodlupine Brook Main Drain has improved the drain's visual quality in this location.

The streetscape character of Hale Road - as the main distributor for the subject area - is dominated by large overhead power lines, deep drainage channels and in some locations, residential barrier fencing.

Visually dominant property fences and power poles reduce the visual quality of Hale Road.

Hale Road is bordered by spoon drains and overhead power lines.

Subdivision Amenity

The design of a subdivision (connectivity, lot sizes, etc.) has a direct effect on the amenity and 'liveability' of the completed development. In the case of the subject area, the subdivision design was mainly dictated by original road infrastructure and drainage reserves, and housing has been gradually in-filled into the older 'grid'. In many ways this has resulted in a piecemeal development without a uniting cohesive character for the suburb, as well as a lack of consistency in streetscape standards.

It has also meant that the option to build in a high degree of amenity as a tool for marketing the lot sales has not been available - as would be the situation where one large parcel of land is developed by a single entity. Due to the Wattle Grove urban area operating as a modified guided development Scheme, the provision of cash in lieu funds does not apply in this instance. Funding therefore is provided through municipal funds, thus constraining the amount of funds available for POS enhancement projects.

The potential amenity values of the subject area have therefore not been fully realised. However, it is possible to address elements of shortfall and improve the amenity for residents with a long-term strategic approach to the streetscapes, landscape and POS.

Contributing elements include improved walkability, more interesting streetscapes, the introduction of wildlife conservation zones and retention of bushland, and POS 'bumping places' which allow the community to interact. These elements all add to the liveability of a place.

Other 'public' spaces such as road verges and drainage reserves, entry points to the subdivision off Welshpool Road & Tonkin Highway, and access points to the proposed local 'village' centre, are also key elements in building amenity,

The retention of this significant tree on the corner of Hale and Sheffield Roads helps reduce the visual impact of power poles and provides a beautiful gateway into this section of Cell 9.

and suggested improvements will be addressed in the Landscape Masterplan.

3.2.7 Land Use

Residential lots are mainly zoned R20, with some scattered lots identified for R25 - 30 currently under construction. The subject area includes three lots on Hale Road zoned Mixed Use, and an adjacent two lots zoned Neighbourhood Centre which are currently under consideration for development of a local 'village' centre.

Lots 30-34 are earmarked as a new 'Village' within Cell 9.

Hartfield Park Bushland Reserve is listed as 'Bush Forever' site number 320 and is a Class 'A' Reserve. As noted previously it has a number of buildings and a tracks/trails. It is Reserved for Recreation Purposes, and these apparent non-conforming uses will need reviewing at some time in the future. In addition, Main Roads WA has identified a section of the Reserve for road widening purposes, which may require closer consideration.

The Car Club and apparent trail bike circuit may not be compatible uses in an 'A' Class Reserve.

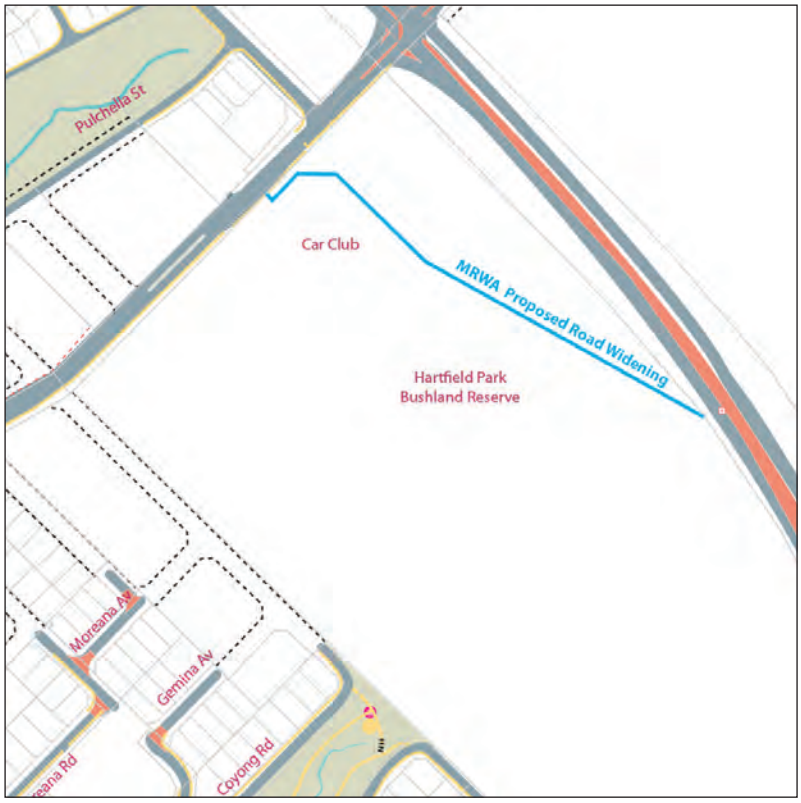


Figure 5; Possible future MRWA road widening alignment.

Tomah Swamp is reserved under the Metropolitan Region Scheme but is not formally listed with a Reserve number and therefore does not have a classification. It is listed as 'Bush Forever' (site No. 282) in the Western Australian Planning Commission's report of the same name. It is owned by the Western Australian Planning Commission and is reserved for the purpose of Parks and Recreation.

The remainder of the subject area includes land zoned for use as a Service Station, some School and Community Use Reserves, and a site zoned for Motel use.

A copy of the Structure Plan is included in the Attachments Section of this report.

3.2.8 Landscape and Urban Design Issues

The background and site analysis of the subject area reveal a number of challenges which need to be addressed in the Landscape Masterplan. Using the headings set out in the Brief, these can be summarized as:

COMMUNITY; How to build social capital?

Social capital is about creating the opportunity for neighbours to interact and for residents to begin to develop a sense of ownership and belonging to the suburb.

So, how are places properly designed for people to come together? Is walking and passive surveillance easy? Are people with a variety of needs and abilities included? Is community 'ownership' of bushland habitat and shared spaces encouraged? Are there links to neighbouring facilities? Are public spaces comfortable and safe to be in? Is there a feeling of a 'sense of place'? Is there a readily-identifiable community "heart"? Is there to be a well-located and accessible convenience store and/or community centre?

ENVIRONMENT; How to enhance the environment?

In the case of the subject area, how to accommodate storm water drainage and plan for usable public open spaces? How to encourage residents to plant attractive verges? How to protect fauna and conserve flora in the reserves?, How to accommodate private homes and gardens without creating weed infestations in bush areas? How to build approximately 2,000 homes and gardens in a way that creates an environmental setting that is a legacy for the future?

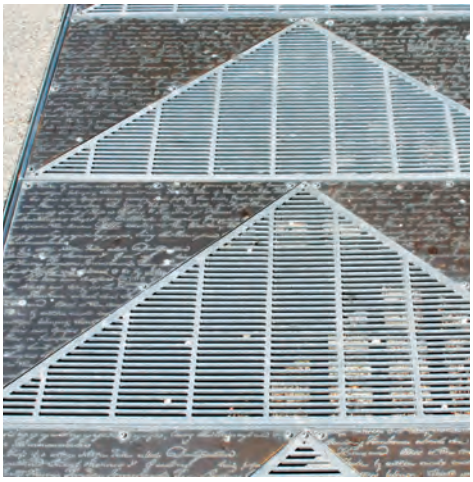
ASSET ENHANCEMENT; How to enhance Ratepayers' Assets?

The most significant investment many residents will make is in their home, and the value of this asset is partly determined by its setting. So how can we improve property values? Is there easy access to suitable infrastructure such as public transport? Is there a viable and vibrant local centre providing convenient retail? Does the suburb have a character and 'address' that is synonymous with amenity and lifestyle?

These key challenges are discussed in more detail in the following section, and recommendations to address each issue are provided. These recommendations underpin the Landscape Masterplan design.

04 LANDSCAPE GUIDELINES

Building cultural meaning into public places adds to the community's enjoyment and understanding of the landscape. [Sue Codee; Mosaic].



This drainage channel in Geelong celebrates European history in design details.

These new picnic shelters and gathering places in Cell 9 will help build community interaction.

Cultural Heritage in the Landscape

The subject area has both an indigenous and non-indigenous cultural history which could become the basis for landscape and urban design elements, helping to create a 'sense of place' for the suburb and adding to the richness of residents' experiences of public spaces.

The writings of Daisy Bates provide a wealth of information on the Maamba Reserve and the Beeloo people living there in the early 1900s, and of the more ancient traditions of the Beeloo - such as their 'Dreaming' stories and totems. These cultural narratives could be woven through the landscape of the suburb.

The non-indigenous cultural heritage of the subject area includes early Chinese market gardens, agriculture, fruit growing and orchards, and Daisy Bates' anthropological studies of the area. These are elements of Cell 9's history that can be celebrated in urban design and used to inform design decisions.

Social Sustainability

Social sustainability is created when neighbours have good connections. This allows them to 'network' in order to share resources, monitor each other's safety and wellbeing, and to develop a sense of shared ownership and responsibility for their environment. It also has significant benefits for quality of life, and can help break down barriers between different demographic groups.

Activities such as car pooling, passive surveillance, baby sitting, bush-caring and house minding while neighbours are away are easy when neighbours connect on a regular basis and a neighbourhood has a strong sense of community.

The built streetscape and landscape can play a significant role in:

- supporting informal social interaction by creating 'Bumping Places' where people have an opportunity to meet and interact;
- enabling safe, non-intrusive encounters;
- ensuring users with a variety of abilities have access to public spaces; and
- providing settings for special events such as street parties or club gatherings.

As progressive development takes place within the subject area, new residents will be arriving and will be looking for ways to connect to their new community. Facilities, such as the primary school, play an important role in helping to connect people, as will the proposed 'village centre' on Hale Road. The current lack of a local retail/service/community centre that is within walking distance for a significant proportion of residents is a significant impediment to development of social sustainability within the subject area, and the proposed centre needs to be designed in such a way as to maximise the potential for creating social capital for the community.

4.1.1 Social Capital Recommendations

In order to help build social capital, the Landscape Masterplan therefore recommends:

a. enhancing a sense of local identity by using plants, materials and finishes in feature areas that reflect its 'pioneer' uses, such as fruit orchards and market gardens;

b. undertaking a cultural interpretation project to draw out indigenous cultural narratives with the Nyoongar community, possibly with the aim of also selecting names for the parks and creek lines;

c. considering further archaeological work to identify Aboriginal heritage as per the recommendations of the SP;

d. investigating the opportunity to involve local Nyoongar groups in environmental conservation projects within the subject area as part of 'caring for country';

e. planning for future public art / community art projects that draw on Cell 9's heritage and that will involve all residents;

f. providing an environment that supports walking, including walk circuits, direct routes to facilities and public transport, routes that are suitable for parents with prams or people with disabilities, and paths through a variety of settings and with resting places at suitable intervals;

g. providing public open spaces that support community interaction, including:

   i. a native plant showcase garden in one of the Reserves parks,
   ii. POS design that includes opportunities for both active and passive recreation within 400m (walking distance) of every resident:
   iii. facilities for group gatherings in the POS; and
   iv. designated 'off-the-leash' dog exercise areas.

h. providing a community notice board in the proposed 'village centre' to allow residents to network and communicate; and

i. ensuring Crime Prevention Through Environmental Design (CPTED) principles are embedded in new developments (such as housing overlooking public places and paths, visually permeable fences, adequate night lighting, and community 'ownership').

Cultural interpretation in Alice Springs.

This shade structure also interprets farming history [Raphael van der Waag].

Fruit trees once flourished in Wattle Grove, and could provide inspiration for the landscape design.

Introduction

Guidelines for the enhancement and management of the environment within the subject area need to address a wide variety of environmental and landscape characters. For ease of management, these have been grouped into five broad landscape types and recommendations made for each – although there is a degree of cross-over in some respects. Elements which are in common, such as irrigation and dieback management, are discussed at the end of this section.

The management zones are listed below in order from the least disturbed to the most developed:

1. Bushland Reserves;
2. Woodlupine Living Stream and drainage wetlands;
3. Woodlands;
4. Parkland; and
5. Streetscapes.

The following Sections outline principles for the management of these zones, and give guidelines for landscape design decisions in the more developed areas such as the residential street verges.

Zone One - Bushland Reserves

This zone includes the Hartfield Park Bushland Reserve and Tomah Swamp Reserve (although the latter Reserve is not managed by the City). Hartfield Park is listed as number 8 on the City's Biodiversity Strategy (see p 16; Figure 4 for reserve locations).

Fauna Habitat Protection

The subject area is a significantly altered landscape and therefore indigenous fauna numbers are likely to be low. However, it does include two Bushland Reserves and there is a possibility that animals such as the Southern Brown Bandicoot still inhabit the area. Birds are definitely present and these, along with other native species, will benefit from habitat protection measures such as retention of large trees, planting of species that provide food, the creation of habitat corridors, control of introduced predators, and obviously the protection of remnant bushland and revegetation.

Flora and Vegetation Protection

Protection of the bushland reserves will be achieved under the City of Kalamunda Local Biodiversity Strategy (2009). The Strategy outlines actions for the management and conservation of the reserves.

BUSHLAND

Hartfield Park Bushland Reserve.

Hartfield Park Bushland Reserve is a Class 'A' Reserve for Parks and Recreation. Class A Reserves are the most protected type of Crown (public) land in Western Australia and are usually created for a specific purpose. Once created, the Reserve cannot be used for anything other than that specific purpose unless a proposal to change is passed by both Houses of Parliament.

The Tomah Swamp is Reserved under the Metropolitan Region Scheme (MRS) but does not have a reserve number or classification. It is owned by the Western Australian Planning Commission and is Reserved under the MRS for the purpose of Parks and Recreation.

The EPA noted in its 1993 response to the Metropolitan Regional Scheme Amendment No. 925/33 - The Foothills, that Tomah Swamp was a significant wetland and recommended that it be evaluated and managed under EPA Bulletin 686; *"A Guide to Wetland Management in the Perth and Near Perth Swan Coastal Plain Area"*[16]. This document has now been superseded by evaluation and management guidelines available on the DEC website.[17]

4.2.1 Bushland Fauna Protection Recommendations

The Landscape Masterplan recommends the following design measures to support fauna habitat:

a. A planting palette has been prepared for the subject area, (see 6.3 Planting Palette). This palette takes into account the different character zones and zone roles, and recommends species that support native fauna as habitat or food producing. Only endemic species should be planted in bushland reserves and as many food and habitat plants as possible should be used;

b. Remnant dead trees and on-ground debris in reserves should be retained for habitat and nesting hollows where possible. Nesting boxes can also be provided and branch loping done to provide hollows (See box below right);

c. Banksia and Jarrah fruit are an important food source for Black Cockatoos, as well as other native species, but are a particularly susceptible to Dieback. In-fill revegetation planting of these species should be carried out in the bushland reserves in areas which appear dieback-free to ensure fauna food supply remains in the longer term;

d. Over-planting for expected loss is another strategy that can be used, and dieback prevention and management measures must be used in reserves;

e. Access to the bushland Reserves needs to be managed to prevent degradation of habitat areas. Fencing, revegetation of excess or redundant tracks, and well-located formal walk paths are essential tools in preventing multiple 'desire lines' from being created. Dogs should not be walked in bushland reserves, predators such as cats need to be controlled and trail bikes should be excluded;

f. Interpretive information on local native species and their protection should be provided at trail entry points to bushland reserves; and

g. Recommendations in the Hartfield Park Bushland Reserve Management Plan (1996) for habitat, biodiversity protection and weed management should be followed.

Trails in reserves need to be managed to protect adjacent vegetation.

Gates can be designed to discourage trail bikes but allow walkers to access bush trails.

Pruning for Nesting Hollows

Bowden Tree Consultancy note in their report to the City (Hale Road Significant Tree Survey, August 2011) that branch stubs less than 300mm long should be retained when removing dead branches, as potential habitat. The City may like to consider cutting medium to large branches to 300mm long stubs when pruning is neccessary, to increase the potential number of nesting hollows in Wattle Grove.

16 EPA Bulletin 708, October 1993

17 www.dec.wa.gov.au/content/category/31/781/1556/

This path at Harvest Edge Estate is adjacent to wetland planting, and doubles as a buffer to prevent turf invading wetland revegetation areas.

4.2.2 Bushland Flora Protection Recommendations

The Landscape Masterplan recommends the following design measures to support flora and vegetation conservation:

a. The City of Kalamunda's weed species list will be consulted and no species from this list, or the National weed list[*] will be included in landscaping;

b. Dieback interpretation and mapping in Hartfield Park be completed and treatment measures (such as anti-fungals) be determined and added into annual maintenance budgets;

c. The current Reserves Management Plan for Hartfield Park be reviewed in accordance with the findings and recommendations contained in the environmental and heritage studies currently being undertaken;

d. A Habitat Management Plan for the Reserves could be prepared, and guidelines such as the Department for the Environment's[***] recommendations for Black Cockatoos referred to, DEC also have data on habitat species for native animals;

e. A mechanism for funding ongoing flora and habitat conservation and bushland management should be established and include support of the 'Friends Of WLS' group to encourage additional local stewardship of the environment;

f. Strategic fencing of the reserves to discourage illegal weed dumping and vehicle and trail bike access. Signage should be included to encourage people to stay on paths and trails; and

g. Fire breaks may need to be maintained at the perimeter of some reserves; seek FESA advice on the necessity and specifications for these.

* www.dec.wa.gov.au
** Author; Mick McCarthy Consultant Environmental Officer. July 1996
*** www.environment.gov.au/epbc/publications/wa-black-cockatoos

Zone Two - Woodlupine Living Stream and drainage wetlands

This character and management zone includes the Woodlupine Living Stream (WLS), Woodlupine Brook Main Drain (WBMD) and Yule Brook. (See aerial plan page 11.) Both the Woodlupine Brook Main Drain and Yule Brook are managed under the City's District Conservation Strategy.

WETLAND

Wetland areas are flooded in Winter, and often dry out over Summer.

Flora and Fauna

These drainage reserves act as wildlife corridors; connecting the bushland reserves of Hartfield Park, Tomah Swamp and the Yule Brook Botany Reserve. They also play a role in recharging wetland areas and ground water reserves.

In May 2009, Council endorsed the "Woodlupine Living Stream Project" and has since been working towards revegetating the Woodlupine Living Stream, improving water quality and creating a more natural wetland character along the margins of this southern branch of the WBMD. Stage 1 of this project has been completed with the assistance of a "Friends of WLS" group. This work has the potential to help build biodiversity, manage weedy infestations, provide additional habitat, control erosion and bank scouring and improve the quality of the water entering the Main Drain and wetland areas.

The Woodlupine Brook Main Drain acts as the subject area's primary storm water management system, and as such is subject to controls set down by the Water Corporation. The WBMD is a much more engineered structure than the WLS, with straight creek lines, steep banks, a series of weirs and control points and minimal native vegetation. However, the City has recently completed a project with the Water Corporation to create a more natural drainage alignment at the section abutting St John's Road. Areas of pooling water, habitat islands and revegetated 1:6 contoured banks have been installed, along with public facilities. While the engineered sections provide little advantages in terms of flora and fauna habitat, the newly 'renovated' sections have an excellent potential to contribute to the wildlife corridors noted above.

Yule Brook is the other important waterway which passes through the subject area. Its management is monitored by the WA Department of Water and the Swan River Trust, which undertake monitoring of the Brook's downstream health with a view to improving the quality of water discharged into the Canning River. Likewise, Yule Brook has the potential to become an important habitat corridor.

The City has two water quality monitoring sites (tested twice a year), one on the WBMD near St John Road, and one on Yule Brook close to the Grass Trees Australia property.

4.2.3 Wetland Flora and Fauna Recommendations

The Landscape Masterplan recommends the following design measures to support flora and fauna habitat:

a. Where possible, aim to 'naturalise' the margins of the creeks, streams and drains by contouring banks to a more gentle grade, replacing straight drainage lines with meandering routes, revegetating with local riparian and wetland species, creating ponds and habitat islands, and managing weed infestations;

b. Select plants from the planting palette (Section 6.3) which will provide habitat benefits for native animals, and aim for a majority of endemic species;

c. Undertake community education to encourage residents to assist with maintaining water quality and understanding the effects of litter and pollution;

d. Design trails and footpaths so that these provide a buffer between revegetated stream banks and turfed areas to assist in weed management; and

e. When designing new stream alignments (i.e. to remove engineered straight lines) aim to conserve mature endemic trees wherever possible.

This island near St Johns Road helps provide habitat; it needs to be better separated by deeper water from the bank to exclude predators however.

The rush planting in this development (Verta) creates a beautiful vista even when the creek is not flowing.

DEC has classified specific areas within the Cell 9 wetland system for management purposes. Please refer to their Wetland management and mapping site for more information on the above listings.

Living with Quendas

The Department of Conservation in its brochure 'Living with Quendas" recommends providing dense, low shrubbery with abundant flowers to provide cover and attract insects for Quendas. Hollow logs can also be scattered through landscapes to provide refuges from predators.

This dry-stone creek bed at Heron Park Estate is easy to keep weed and rubbish free.

This grassed swale at Heron Park helps manage storm water.

The new erosion management rock banks at Yule Brook have failed and need reviewing and repair.

4.2.4 Wetland Landscape Design Recommendations

While a more 'natural' character is the aim for drainage reserves, they are part of a developed residential environment, and facilities for public use need to be provided:

a. Aim to install bridge crossings at natural desire lines; ideally there should be a crossing every 300m or so;

b. Provide trails along creek lines, both to help buffer turfed areas, and also to allow residents to enjoy the natural environment. Nature trails need not be hard paved; and

c. Provide rest points with views to habitat areas and ponds, and interpretation information to assist people to protect the environment and to add to their enjoyment of the setting.

4.2.5 Storm Water Management Recommendations

The drainage reserves are part of the subject area's stormwater management system, and landscape initiatives need to be designed to support this system:

a. In new developments and road reserves, a 'treatment train' approach to run-off should be adopted through the use of water sensitive urban design and developemnt of a Local Stormwater Management Plan. Initiatives such as permeable pavers, buffers strips, bioretention swales, rain gardens, biofiltration pockets, median swales, gross pollutant traps and infiltration basins should be used to manage stormwater flows and improve water quality;

b. Eroded and scoured creek banks be contoured and/or stabilised to prevent further degradation; and

c. The City may like to consider the appropriateness of further ground water abstraction in Wattle Grove, given

Zone Three - Woodlands

The drainage channels run through wide reserves which also act as the subject area's Public Open Space (POS) Reserves. Running parallel to the streams and wetlands are bands of woodlands made up of remnant endemic bushland trees, and more recently planted Australian native species. These trees are set in a grassed understorey, which is mown regularly to manage growth.

WOODLAND

4.2.6 Woodland Flora and Fauna Recommendations

The woodland areas have a variety of tree species, many of which are large enough to provide habitat benefits to wildlife. The Landscape Masterplan recommends:

a. The retention wherever possible of dead trees where these provide nesting hollows and wildlife protection;
b. Mass planting of woodland areas to increase canopy cover, to create runs of contiguous canopy and to provide additional habitat;
c. A Habitat Management Plan for the Public Open Spaces (including those in the Wetalnd and Woodland Management Zones) could be prepared, and guidelines such as the Department for the Environment's recommendations for Cockatoos and Quendas referred to;
d. Management of weed species, including the removal of the majority of the non-native grass / turf and weed species trees;
e. The use of predominantly endemic tree species, with an emphasis on trees which provide food for native species; and
f. Underplanting of the understorey with low growing (to 1m) native plants in bands to provide cover for native animals moving at ground level.

4.2.7 Woodland Landscape Design Recommendations

The woodland areas form part of the subject area's POS system and need to be managed for public use. The Landscape Masterplan recommends:

a. Constructing trails through the woodlands to provide access. Trails need not be paved where a 'bush walk' experience is desirable;
b. Designing the trails so they provide a buffer to the revegetated creek edges and assist with weed management;
c. Including interpretation and trail (direction) signage;
d. Designing the woodland to create a landscape character of clear views through attractive tree trunks under a leafy canopy (pruned up to 2.5m), with a ground cover and mulched understorey;
e. Controlling all non-endemic grasses (kikuyu, couch etc), particularly prior to deep mulching; and
f. Designing the understorey planting to be bands of native shrubs, creepers and ground covers to 1m, planted into a thickly mulched surface. The planted bands can be interspersed with bands of deep mulch to reduce planting and maintenance costs and allow for 'desire lines' through the woodland.

Existing mown understorey.

A ground cover understorey provides habitat and requires less maintenance once established.

There is an excellent variety of water-wise native species available for understorey planting.

Tracks can be on natural surfaces in woodland areas.

Interpretation signage can add to residents' enjoyment and understanding of the woodland areas.

Zone Four - Parkland

Developed parklands in the subject area present a much more modified environment than other reserves, but still have an important part to play in habitat conservation, fauna linkages and storm water treatment.

PARKLAND

Typical Cell 9 parkland.

The local parks in the subject area are generally managed as open space recreation areas, with grassed areas, shade planting, POS infrastructure and small water features. Some of the park areas have suffered from illegal weed dumping, infestation of Doublegee (*Emex australis*) and loss of turf resulting in sandy, wind scoured areas. Management of these areas is part of the City's ongoing POS schedule.

As the character of parklands is more 'developed' and has a higher degree of public use than the Bushland, Wetland and Woodland areas, plants other than endemic species can be used to provide colour, seasonal change, landmark specimen trees, and exotic planting to interpret Wattle Grove's history.

This park adjacent to a residential street in Cell 9 would be greatly enhanced with avenue tree planting.

Neighbourhood Parks

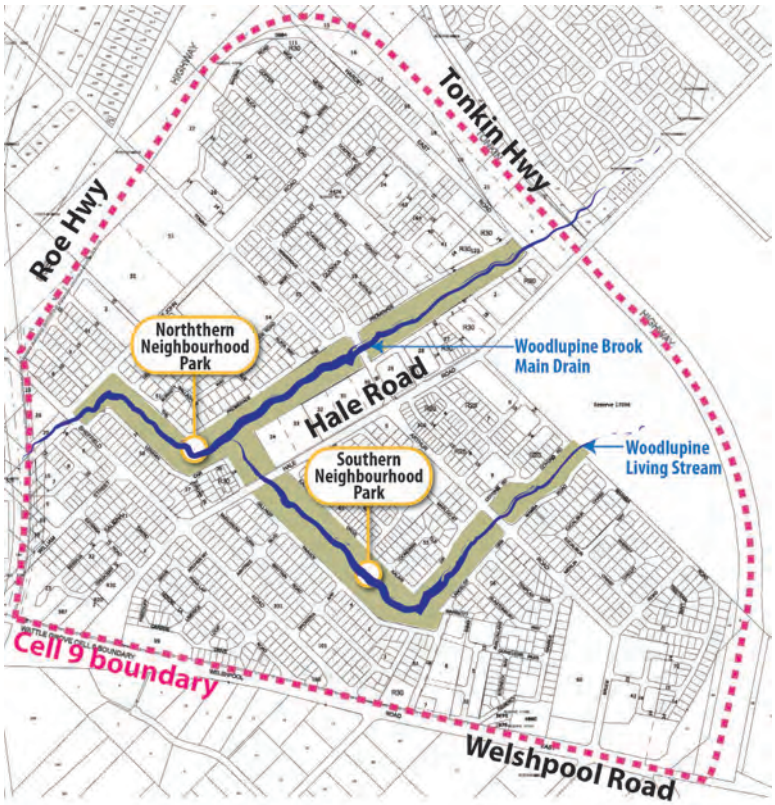


Figure 6; Neighbourhood Parks

The draft 'City of Kalamunda Community Facilities Plan' has identified the open space areas on Kalari Drive and between the Promenade and Lenihan Corner as Neighbourhood Parks. The planning standard for a neighbourhood park is as per the table below;

PARKS	FUNCTION AND DESCRIPTION	PLANNING AND DESIGN CRITERIA	RATIO	BUILDING AREA	SITE AREA
Neighbourhood Park	Neighbourhood Parks provide a well designed play space with equipment and natural play opportunities that provide both active and passive opportunities to assist children and young people develop their physical, cognitive and social skills. Neighbourhood Parks provides an environment for causal recreation, physical activity and relaxation for all age groups and also provide a focal point for community interaction and neighbourhood activity.	• Within a 800 metre radius or 10 minute walk of most dwellings • Minimum site area 1 ha • Street frontage on all sides, maximum 25% of perimeter abutting development • Rectangular in shape and minimum width of 50 metres • Playground equipment/play space(s) with manufactured and designed elements capable of catering for: o 0-3 yr olds o 3-5 yr olds o 5-7 yr olds o 8-12 yr olds o 12+ year old • Designed space for young people incorporating passive and physical activity/play equipment • Custom designed play piece(s), community art • Outdoor gym/exercise equipment (2 pieces) • Include quiet space with shade, views and bench seating • Grassed areas and natural landscaping/elements • Amenities – natural or artificial shade, picnic table/seating, bench seating, BBQ , drinking fountain, lighting, pathways to play/other spaces, walking path, 5 car bays. Public toilets provided if co-located with community centre or sports ground. • Involve the surrounding area in the design of the park • Design elements to reflect the identity and culture area	1:6,000		1.5 ha

Neighbourhood Park Criteria (Community Facilities Plan)

Community art can be included in play areas.

"Natural" play is an option to standard equipment.

4.2.8 Neighbourhood Parkland Landscape Design Recommendations

Regarding neighbourhood parks, the Landscape Masterplan recommends:

a. They be planned and designed as per the Community Facilities Plan table above;

b. Fenced 'off-the-leash' dog exercise areas be provided, both to protect wildlife, and to provide an area where dog owners can exercise their pets where they won't foul childrens' playgrounds. These areas should have a tap for dog drinks and hand washing, and dog waste disposal bins. A dog agility course may be an option for one of the areas if there is community support;

c. An informal amphitheatre be provided at one of the neighbourhood parks to allow for community events. The location and design of this facility will need to take into consideration parking, power, lighting, buffer planting to neighbouring homes and 'mounding' of the seating area to allow views to a stage;

d. An accessible public toilet with baby change, drinking water and hand washing facilities be provided at one of the neighbourhood parks;

e. A children's ball sports area be provided at one of the neighbourhood parks for active play;

f. Colourful planting be installed at the main entry points to parks;

g. Large 'iconic' tree species are planted in selected areas;

h. Lighting be considered at main entry points, picnic and BBQ areas – possibly on a timer to discourage inappropriate late night use; and

i. Signage be installed to provide directional maps, park use information and interpretation of Wattle Grove's cultural and environmental history.

Local Parks

Local parks are developed and managed according to the Community Facilities Plan recommendations as per the table below. The two categories of local parks are identified in Figure 7.

PARKS	FUNCTION AND DESCRIPTION	PLANNING AND DESIGN CRITERIA	RATIO	BUILDING AREA	SITE AREA
Local Park - Developed	Developed Local Parks provide a well designed play space with equipment and natural play opportunities that provide both active and passive opportunities to assist children develop their physical, cognitive and social skills. Developed Local Parks provides an environment for causal recreation, physical activity and relaxation for all age groups.	• Within a 400 metre radius or 5 minute walk of most dwellings • Minimum site 0.5 ha • Street frontage on all sides, maximum 25% of perimeter abutting development • Rectangular in shape and minimum width of 50 metres • Playground equipment/play space(s) capable of catering for: o 0-3 yr olds o 3-5 yr olds o 5-7 yr olds o 8-12 yr olds • Incorporate natural and designed play elements • Quiet space with shade, views and bench seating • Grassed area in most local parks • In natural/bush local parks softfall or synthetic surface • Amenities – natural or artificial shade, bench seating, pathways on to the park and to the play space • Involve the surrounding local area in the design of the park • Design elements to reflect the identity and culture area	1:2,000		0.5 ha
Local Park – Semi Developed	Semi Developed Local Parks provides a green or natural open space that provides good visual characteristics and/or environmental qualities and some opportunity for passive enjoyment.. Semi Developed Local Parks are often linear open spaces and can also perform a drainage function when this is landscaped. Semi Developed Local Parks can contain seating and walking paths but does not contain formal play spaces or any play ground equipment.	• Minimum site 0.3 ha • Street frontage on all sides, min 25% of perimeter abutting development • If park land is linear, residential development fronting both sides for the most part is preferable • Typically natural bush or a combination of bush and grassed areas with linear open space • Amenities – shaded seating areas and may contain natural or constructed pathways	1:6,000		0.5 ha

Local Park Criteria (Community Facilities Plan)

Figure 7; Local Parks

4.2.9 Local Parkland Landscape Design Recommendations

In parks generally the Landscape Masterplan recommends:

a. A new local park be developed along Yule Creek once this land comes into City ownership;

b. Additional tree planting be undertaken with species being selected from the lists included in Section 6.3. Trees should be chosen so as to reveal the history of the site, use occasional large 'iconic' specimen trees, and add colour and shade; and

c. Modest areas of irrigated turf be provided for play and picnicking, with these being designed to prevent weedy grass incursion into neighbouring woodlands and wetlands, and managed to be free of prickle species.

Both Neighbourhood and Local parks are large enough to provide an opportunity to plant large 'iconic' tree species, something which is increasingly difficult to do in urban areas. Beautiful, large trees add immeasurably to the quality of the landscape and residents' enjoyment of parks.

Zone Five - Streetscapes

The fifth and most 'developed' area of landscape in the subject area comprises the road reserves. This zone can be broken into two areas; Hale Road, which is the major vehicular connector route to and through Wattle Grove, and the smaller residential access streets.

Hale Road and many of the residential streets have significant existing plantings of mature trees in some locations. However, in most of the newly subdivided areas the road reserves are almost completely bare of trees, and verges present a character of patchy grass, exposed boundary fences and expanses of hard paved areas. Hale Road and some of the older residential streets also have overhead power lines, which has resulted in restricted tree planting opportunities.

Landscaping in the road reserves should be more formal and structured, and planting needs to be designed to meet specific criteria.

Hale Road

Hale Road is dominated by large overhead power lines, deep drainage channels and in some locations, residential barrier fencing.

This strip of mature trees should be retained to provide a leafy avenue along Hale Road in future widening and development.

4.2.10 Hale Road Streetscape Recommendations

For Hale Road, the Landscape Masterplan recommends:

a. Investigation of opportunities to underground powerlines, in the first instance along Hale Road's north-west edge;

b. Existing appropriate tree avenues in the road reserve and adjacent properties be retained where possible;

c. Road widening and infrastructure works should be designed where possible to accommodate and conserve existing healthy trees;

d. Trees for use under power lines should be small growing (see Planting Palette 6.3);

e. A strong formal avenue character should be the goal for Hale Road so as to provide visual 'friction' to slow traffic speeds, soften hard paved and fence frontages, add colour and shade, highlight the road as a significant route and provide clear trunks with a canopy above truck and bus heights;

f. Planted median islands could be provided adjacent to the POS reserves to provide crossing points for wildlife and park users, and to cue drivers to reduce speeds;

g. Colourful planted median islands could be installed at the east and west entries as 'entry statements' to the subject area. These could be planted with wattles and modest entry signage and feature lighting installed;

h. Landmark trees should be planted in roundabouts on Hale Road, see Planting Palette 6.3 for species options;

i. Feature landscaping should be designed adjacent to the proposed 'village centre' development to highlight this community focal point and create a pedestrian-friendly environment; and

j. A concept plan for the proposed future widening of Hale Road should be prepared ahead of development proposals, to address tree conservation, footpath location, adequate verge and median widths for avenue planting and landscaping, bus embayments, adjacent internal access streets and pedestrian and cyclist access routes.

This planted median in the Swan Valley helps slow traffic at a turn-off and provides an "entry statement" to a residential area.

These beautiful Eucalypts on Hale Road are an asset to the landscape.

Streets in this new subdivision were designed to conserve existing mature trees as an asset to the streetscape.

New avenue planting in "Vertu" gives this residential street a high amenity value.

Verge planting can be used to screen unsightly street facing boundary fences along roads.

Residential Streets

Residential streets are generally 'open' in character and lacking street tree avenues or verge landscaping. Some newer streets have underground power and feature intersection paving, while older streets still have overhead powerlines.

The incremental nature of development in the subject area has meant that the installation of a coordinated landscape character and streetscapes has not been possible. In short, the landscape character of street verges in the subject area is below the standard that would be expected in a new residential area or planned 'estate' - particularly given current trends in subdivision development. The City has limited ability to influence private landscapes; although landscape and urban design plans can be required for new developments. The City can, however, have a significant role in improving the visual quality of streetscapes.

4.2.11 Residential Streetscape Recommendations

In residential streets, the Landscape Masterplan recommends:

a. Investigating under-grounding of power lines;

b. A staged planting programme to coordinate residential street tree planting on verges using street trees from the recommended list attached (see Section 6.3). This project should commence with planting one or two streets as 'model streets' to demonstrate the advantages of street trees, and to encourage residents to work with the City in caring for their street trees;

c. The use of a colour, material and furniture palette to help build a coordinated 'Wattle Grove' streetscape character;

d. Planting of low growing species only under power lines (see Section 6.3).;

e. Encouraging and supporting residents to plant native, water wise verges - starting with the amendment/expansion of the City of Kalamunda by-law "Street lawns and gardens ENV8; 1982" to be more 'user friendly' and to clearly permit native verge planting. The production of a simple brochure to illustrate restrictions (for motorist visibility etc.) and opportunities for water wise native verge planting may be helpful to residents;

f. Landscaping of intersections in particular to soften hard paved areas, while still retaining motorists' view lines; and

g. Careful assessment and alignment of new residential streets and development set-outs to conserve existing trees.

Private Development Landscapes

In addition to the five Shire-controlled 'zones' discussed above, the private landscape also plays a key part in the character and amenity of the subject area.

Due to the incremental nature of development in the subject area, the opportunity to assess the area as a whole and to design lots and new roads so that significant existing trees can be retained has not been available. Contemporary residential 'estates' elsewhere in the Perth metropolitan area and in regional centres are designed to retain existing trees in recognition of their monetary and amenity values. This approach enables subdivisions to be presented to the market with mature trees, established landscapes, and an amenity and character that improves land prices and residents' lifestyle.

Unfortunately in Wattle Grove, almost without exception, where a new subdivision has been created, all trees and plants are cleared from the lots, and in some cases the developer has also 'trespassed' onto the City verge and removed mature trees from public land. This culture of clear-felling, along with small lot sizes with homes built close to the boundaries, has resulted in a landscape in the private sphere which is devoid of tree canopies and minimally landscaped.

However, there is an opportunity to address this issue in future subdivision applications, with the cooperation of developers, who could be shown that tree retention can have a positive financial benefit for their development in improving land value and lot attractiveness to buyers.

4.2.12 Private Lot Landscape Recommendations

The Landscape Masterplan recommends:

a. That a tree survey be undertaken of the entire subject area to identify significant trees that must be conserved, avenues and specimens that can be accommodated in adjusted boundary alignments, and species that can be harvested and relocated (such as Xanthorrhoea);

b. That the City develops a 'policy' that rewards developers for conserving significant trees [*](including non-endemic, but not weedy species), and works with those developers in retaining remnant landscapes;

c. That the City requires developers to contribute financially towards a verge planting programme so that residential streets can be landscaped once construction of homes is complete; and

d. Where clearing is necessary for development, plants not suitable for harvesting and relocation should be chipped and stored as a mulch stockpile on site. Mulch must be allowed to age (raw mulch leaches nitrogen from the soil and has a detrimental effect on plants). Dieback & weed management hygiene must be undertaken in mulch treatments.

* The Council Policy 'Tree and Vegetation Preservation ENV9', will assist with tree preservation, but is primarily concerned with endemic species. Cell 9 also has valuable non-endemic trees which warrant protection, and so a specific policy for Cell 9 may be required.

These trees in the City Road Reserve in Cell 9 were mature and healthy.

Unfortunately they were cut down during development work on the lot opposite.

This aerial shows mature trees prior to private lot development in Cell 9.

Parking bays at Challenge Lakes Estate have been visually softened with planting.

Sadly no trees remain, a loss of a significant asset to residents and the landscape character.

General

The following elements of landscape management should be considered for all the above five management zones, and ideally in the design of private lots as well.

Dieback *(Phytopthora cinnamomi)*

Dieback has been identified in Hartfield Park and Yule Brook bushland. Further mapping and interpretation is currently being undertaken in Hartfield Park, and this data will help inform treatment and control measures. Unfortunately, it is not possible to eradicate *Phytopthora* once it has infected the soil, so environmental management must focus in the first case on preventing its introduction and spread, particularly in bushland Reserves.

Banksias are particularly susceptible to dieback infection.

4.2.13 Dieback Control Recommendations

The Landscape Masterplan recommends:

a. Protection of dieback-free areas, particularly in the bushland Reserves, through development of a dieback management plan. This would include measures such as dieback hygiene, restricting access to specific managed trails and control of dumping of waste in bushland;

b. Planning for possible infection by selecting dieback-resistant plants in landscaping, including treatment regiems in budgets and over-planting of susceptible species; and

c. Practicing good soil hygiene in road and lot construction, particularly in areas adjacent to Reserves.

Bushfire

Management of bushfire risk is an element that is increasingly of interest to Citys and residents. Wattle Grove is ringed by three large roads, which essentially have the potential to act as fire breaks and allow excellent access to the subject area. Most areas of bush within the area also abut roads and cleared road reserves. In addition the newer subdivisions have little vegetation and tree canopy, suggesting that the fuel load from vegetation will be very low.

Stone mulch can be used to reduce fuel load in high fire risk areas.

4.2.14 Bushfire Management Recommendations

While no specific bushfire risk assessment has been undertaken, it seems likely that the subject area would be a low fire risk, however, the Landscape Masterplan recommends:

a. That a bush fire risk management be undertaken in accordance with the recommendations of City's Local Planning Strategy (2011) for the subject area, and management methods for ongoing risks recommended;

b. That trees from the 'fire resistant' list in the planting palette (see section 6.3) be considered for street verges in areas assessed to be at risk;

c. That surface materials and finishes in areas deemed to be at risk be utilised as an attractive method to reduce continuity of fuel (such as stone mulch banding); and

d. Residents in areas deemed to be at risk are provided with information (such as FESA's guide[*])to assist them in managing

Water Sensitive Urban Design

Water Sensitive Urban Design (WSUD) relates to both the management of storm water and run-off, and the use of water in the landscape. Storm water management has been discussed in earlier sections and so the following discussion and recommendations will address the use of water in the landscape.

Reticulation

Some other residential subdivision developments in the Perth metropolitan area are able to harvest and store storm water for re-use in landscape irrigation in the form of large constructed 'lakes'. In the subject area, the creek / drain system is used in the management of storm water; but is also an important part of wetland systems and is connected to downstream creek lines that spill into the Canning River. It may not be appropriate then to dam this water resource and use it for City POS landscape irrigation. Additional licensed extraction of bore water may also be unsustainable, given the need to maintain wetland health.

However, quality landscapes in new developments require irrigation for establishment and supplementary watering in extended dry periods. While the use of 'water-wise' plants can reduce the need for irrigation in the long term, irrigation of high use public spaces, landscaped verges and entry point plantings will be necessary for establishment.

Figure 8; Irrigated Areas. The dark green areas above indicate areas to be irrigated. Medians and entry planting on Hale Road (pink) will also require irrigation.

The mean rainfall per annum in Perth is 752mm; although this may be falling. In 2010 only 503mm of rain fell over 65 days, one of the lowest on record. The recorded monthly minimum (mean) is 6.7mm and the monthly maximum (mean) is 152 mm.[18]

Wattle Grove's rainfall conditions may be closer to those recorded at the Perth Airport than the Perth Metro site, and the Bureau of Meteorology notes 'Perth Airport registered 122 continuous days without measurable rain from 21

18 Australian Bureau of Meteorology

November 2009 to 22 March 2010, breaking the previous longest dry spell of 83 days between 24 December 1947 and 15 March 1948.'

These trends indicate that it is critical to design low water use landscapes, and to be aware of the need to protect natural wetland water systems.

Many water wise planting options for gardens and landscapes are available.

4.2.15 Reticulation Recommendations

The Landscape Masterplan recommends:

a. Investigating the appropriateness of approving future private garden bores adjacent to wetland reserves;

b. Scheduling any new planting for late Autumn to early Spring so as to take advantage of natural rainfalls;

c. Conditioning the topsoil with wetting agents and organic matter to increase water retention;

d. Surface mulching of landscapes to retain moisture;

e. Rationalising areas of irrigated turf to high-use POS areas only and using 'hydrozoning' principles in landscape design and planting plans (i.e. higher water use plants planted adjacent to irrigated turf areas where plants will benefit from any over-spray and irrigation availability;

f. Rationalising areas of irrigated garden beds to feature planting entry gardens and median islands on Hale Rd only;

g. Specialist design of irrigation systems, with a view to detailing cheaper temporary establishment irrigation in some zones, sub-surface and dripper systems, systems which can be seasonally adjusted and are easily maintained by the City, and designs that can be 'rolled out' with each stage of POS enhancement; and

h. Planting designs that utilise local and low water need plants in hydro-zones for more effective irrigation design.

Colourful, water-wise garden beds.

Visual Quality

Visual quality relates to the character, condition, and quality of a landscape or streetscape and how it is valued by the public. As discussed previously, the visual quality in the subject area could be enhanced considerably, partly through landscaping as per the recommendations for the management zones, but also through the following measures:

4.2.16 Visual Quality Enhancement Recommendations

The Landscape Masterplan recommends:

a. Undertaking future planting as per the recommendations in each management zone above and using the palette of plants in Section 6.3 so as to build a cohesive character and quality in the landscape over time;

b. The use of materials that will harmonise with the sandy soils of the site; laterite stone is not compatible for instance. Stabilised limestone, precast sand blocks, sandy coloured concrete pavers with exposed aggregate or walls rendered with sand tones are more suitable;

c. That landscape structures sit lightly in the environment and respect the topography. Tall retaining walls should be avoided and large paved surfaces need to be broken up with patterning and landscaping;

d. The use of highlight materials that have a 'rural' character that reflects the suburb's historic agricultural and orchard uses, i.e. weathered timber, corrugated iron, 'rusty' steel and cast iron;

e. The use of colours that reflect the suburb's setting. In the local bush, bright colours are found in smaller proportions and are there to attract attention. Streetscape and landscape colour can be used in a similar way, i.e. bins coloured to be less prominent, and signage or a comfortable bench given a bright, welcoming colour; and

f. The use of a set of standard street furniture items for the subject area, painted in the recommended colour palette (see Section 6).

Street furniture and complimentary hardscape materials at Challenge Lakes Estate help build a cohesive character in the suburb.

4.3 ASSET ENHANCEMENT

This leafy water-wise front garden in Cell 9 is an asset to the street.

No shade, hard paved areas, brick chips and synthetic grass mean the temperatures in summer around this home may reach 75°C.

Water wise verge planting.

Natural verge planting..

When aiming to build a vibrant community, it is important to ensure that economic considerations are included in the mix of social and environmental values. These considerations would include aspects such as property values, a viable local shopping/community centre, a suitable rate base and equitable access to public services such as transport and recreation facilities.

Residents in suburbs which have improving land values are more likely to undertake work to enhance their property. Homes which are well connected to an attractive, viable local centre attract good rents, and suburbs which are well serviced by public transport and quality POS are sought-after residential addresses.

Likewise, local shopping centres that are designed to be the heart of a community are more commercially viable, and in turn provide better services to local residents.

These economic factors can work together in an upward spiral which in time enhances the rate base for the City, helping to provide more funds to finance City services, and at the same time enhancing home-owners' property assets. The reverse is a downward spiral which at its worst can lead to empty homes, run down streetscapes and poorly serviced communities.

One of the tools that can be employed to leverage an upward spiral of asset enhancement is quality landscape and urban design; on both public and private land. For example, there is a well recognised correlation between enhanced land values and leafy established streets; and some real estate agents advise owners that one of the best ways to improve their property values is to plant a verge tree and encourage neighbours to do the same.

Developers in new suburbs and residential 'estates' are 'designing in' the retention of mature trees, planting advanced trees and transplanting established trees to provide a landscape character that they know will return better prices on their lots. Suburbs are now marketed with ready-made parks, generous footpaths and excellent connections to schools and transport hubs

4.3.1 Asset Enhancement Recommendations

These tools are also available to the subject area. The Landscape Masterplan recommends:

a. Residential and commercial private developers should be required to adopt, as a matter of course, good urban design principles (consistent with the "Liveable Neighbourhoods" guidelines[*]) and install attractive landscapes;

b. Developers contribute to a fund for the landscape enhancement of the subject area;

c. Mature, existing trees should be retained wherever possible;

d. Private home owners should be encouraged to contribute to their streetscape by caring for street trees and planting front and verge gardens;

e. An accessible and clearly legible walking and cycling network linking public transport, the primary school and the proposed local 'village centre' should be consolidated from existing footpath networks; and

f. The opportunity for a 'bus hub' should be investigated for the site at the junction of Hale and Welshpool Roads. A hub would support public transport use and provide a location where residents on the fringes of Cell 9 can be dropped off closer to the main bus routes.

* Ministry for Planning or at www.planning.wa.gov.au/publications/919.asp

05 LANDSCAPE MASTERPLAN

The following section summarises the design concepts which flow out of the landscape management recommendations in previous Section 4. These have been ordered into the same five management zones and should be read in conjunction with the Landscape Masterplan Drawing included in the attachments.

The concept sketches following are taken from the Landscape Masterplan, which includes a full legend for symbols and concept notations.

5.1.1 Bushland Reserves

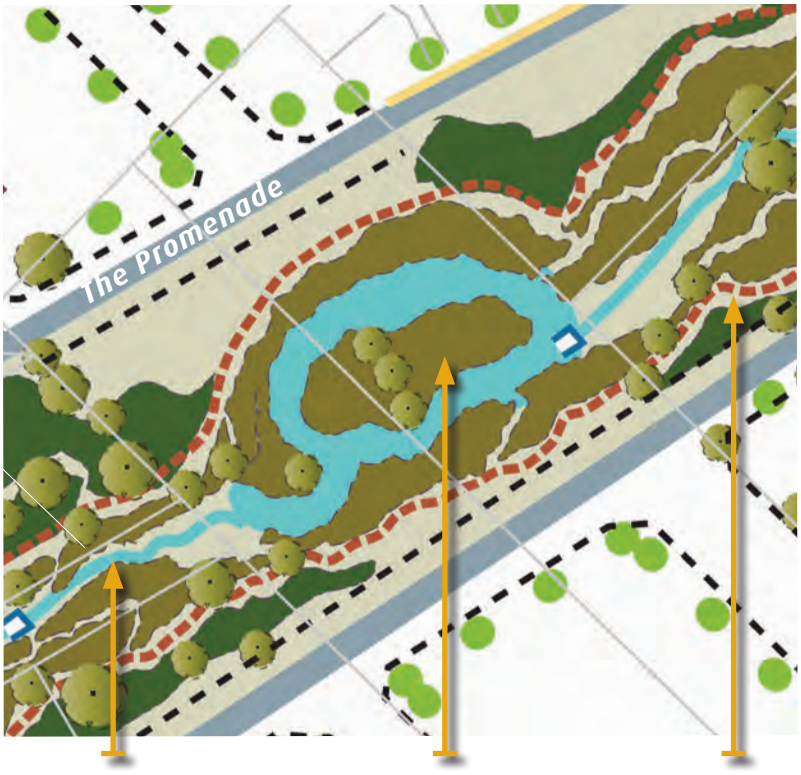
These areas should be managed as natural reserves as per 4.2.1 and 4.2.2, and so little 'design' is needed. New elements could include the rationalisation and formalisation of existing bush trails, interpretation, and a revegetation and bushland management programme.

5.1.2 Woodlupine Living Stream and Drainage Wetlands

The design of these areas should continue the work of the WLS group in reconstructing the formal drains to appear as more "natural" waterways and revegetation of wetland areas. Work could include;

- New trails, paths and bridge crossings;
- Interpretation and signage; and
- Viewing decks and landscaped rest points.

Boardwalks over wetland streams.



More naturalistic banks

Habitat Island

Bush trails

5.1.3 Woodlands

Woodland areas should be landscaped to strengthen their existing character. In time they could be planted with thickets of Australian native trees so that clear views through beautiful tree trunks are framed by a shady canopy above and informal bands of low growing native ground covers below.

New elements could include:

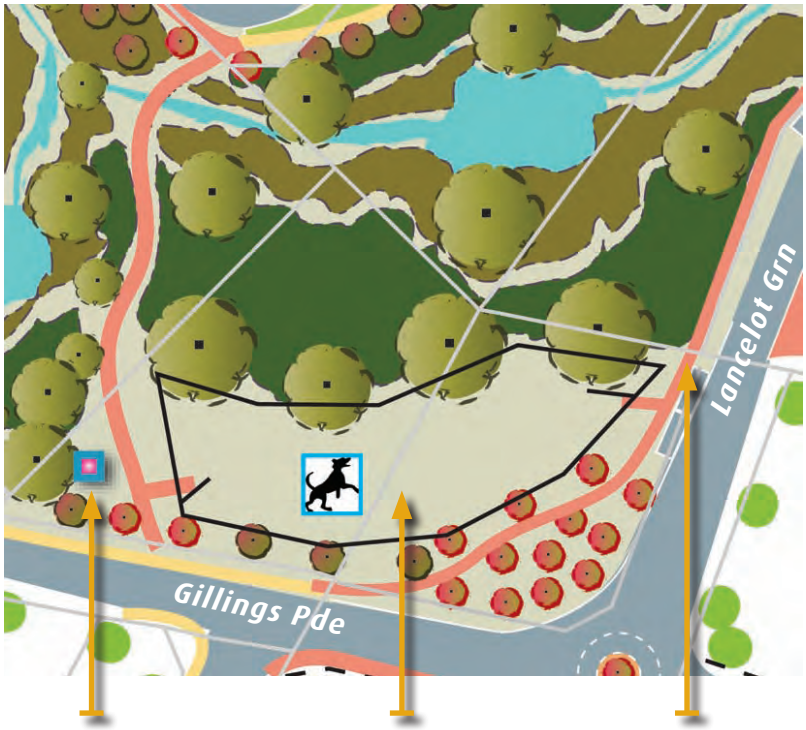
- Mulched 'bush walk' trails to give residents access through the woodlands, and to assist with weed management;
- Interpretation and signage; and
- Removal of all areas of non-native grass (turf).

The natural beauty of Cell 9 wooldands can be enhanced by mulching and planting ground covers.

5.1.4 Parklands

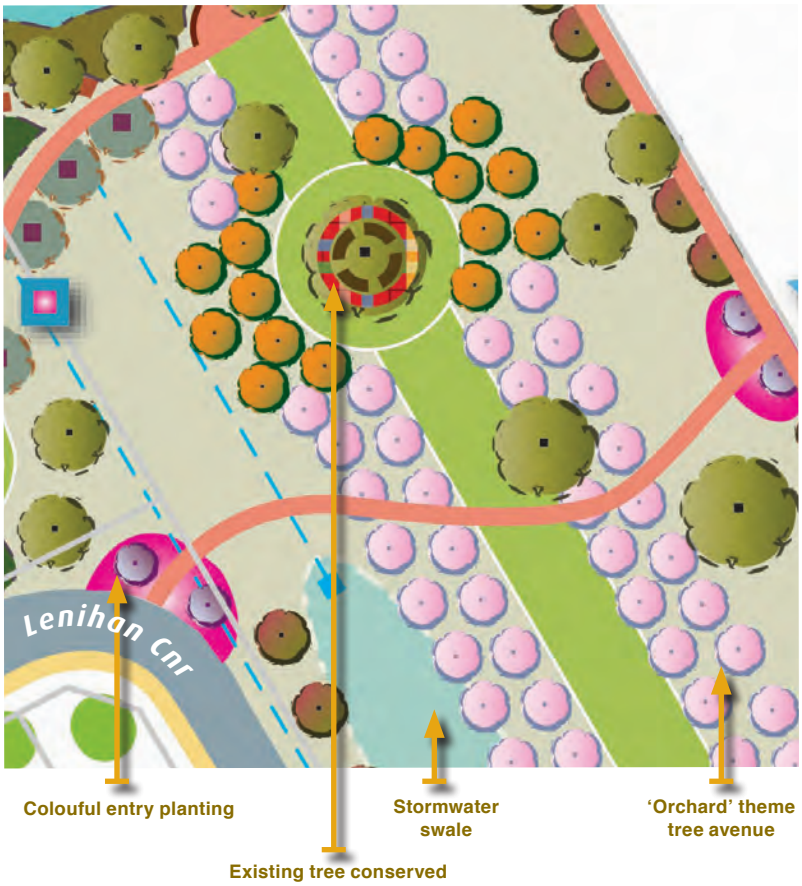
A linear Neighbourhood Park linked across Hale Road should be developed over time. This park could be equipped in a manner consistent with the guidelines of the City's Community Facilities Plan, and could also include:

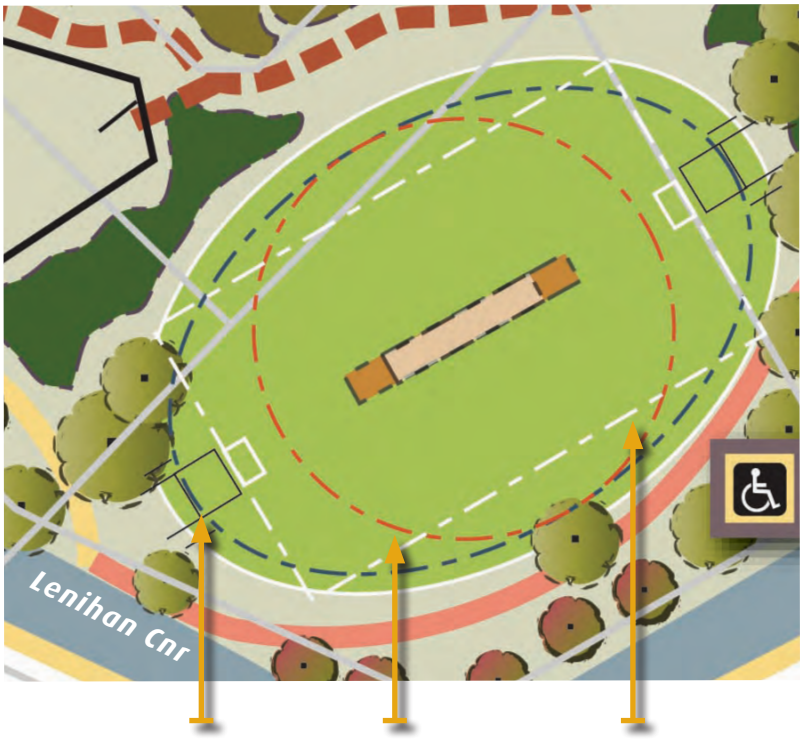
- Fenced 'off-the-leash' dog exercise areas;
- An informal amphitheatre;
- An accessible public toilet with baby change, drinking water and hand washing facilities;
- Naming of areas to assist with way-finding and to reflect Wattle Grove's cultural heritage;
- A children's ball sports area; and
- Lighting, signage and landscape interpretation of Wattle Grove's cultural and environmental history.



In Margaret River, this magnificent existing tree has been conserved as a landscape feature.

A double avenue of 'orchard' trees is a play on the agricultural history of Wattle Grove and adds seasonal colour to the landscape.





Proposed future public open space along Yule Brook.

A new local park is proposed in the SP for the ***Yule Creek Reserve*** as a long term goal. The the history of the site as a Chinese Market Garden could be revealed through public art and interpretation. Currently this area includes Reserves 27722 and 47406. Additional Reserves for future acquisition are identified in the SP.

Opportunities at ***Fennel Park*** (Reserve 46710) could be investigated with the aim of increasing the size and street frontages of the POS to reflect standards of a local park; as funding and purchase of adjacent lots allows.

The Reserve known as the ***Willow Lakes Estate POS*** (including Reserve 47590) is classified as 'semi-development' under the City's Community facilities plan. This area should be managed as a local park with a shared use path, seating and shade provided. The opportunity for a developer to fund a small playground at the junction of Silica and Magma Roads may arise with future residential subdivision. An area 15m x 12m would be adequate for this purpose. The man-made lake adjacent to Magma Rd is listed by DEC as a 'Resource Enhancement Wetland' and is part of a drainage line running through this reserve. The opportunity to create a more naturalistic 'wetland' and woodland could be considered with a view to improving water quality entering the Tomah Swamp and managing weedy escapes into the Tomah Swamp Bushland Reserve.

No changes are proposed for ***Sheffield Park***.

The termination of ***Sheffield Rd at Welshpool Rd*** is set in a large road reserve. If this land is no longer required for roads, consideration could be given to either; moving some of this land into use as a pocket park and landscaping it, or re-zoning some of the land for residential development. The Masterplan shows landscaping (including possible riparian planting) as an interim concept while the options are explored.

5.1.5 Streetscapes

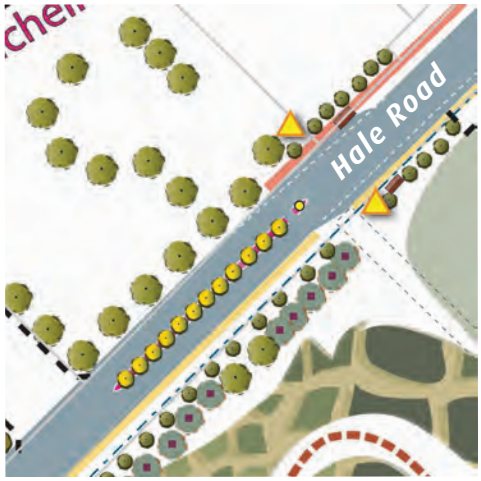
Streetscapes in the subject area are divided into two key character zones; (i) Hale Road and (ii) all other (residential) streets.

(i) Hale Road

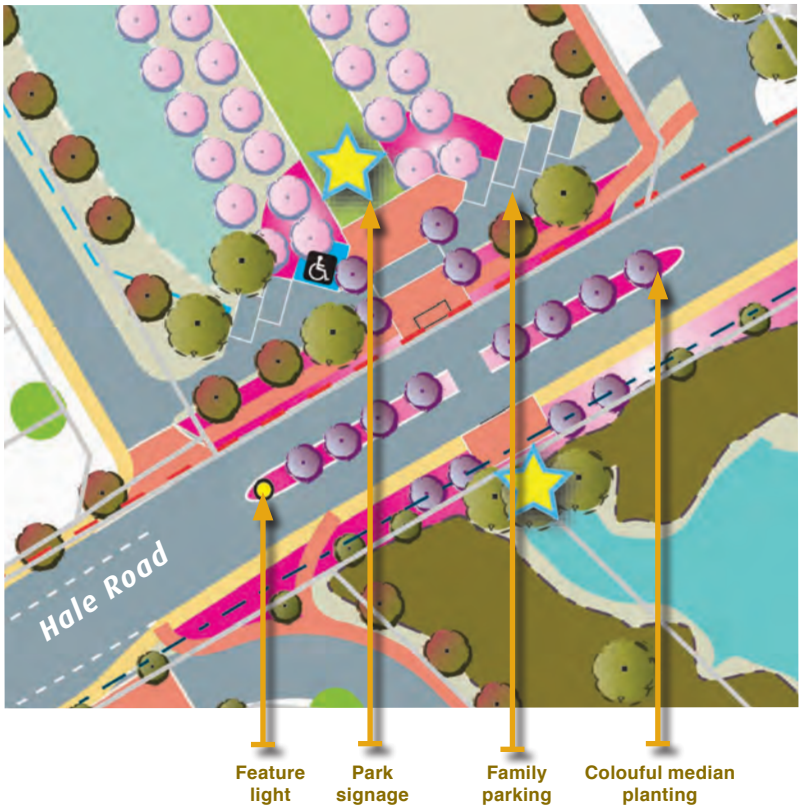
Hale Road is likely to be widened and powerlines placed underground on the north verge in the medium to long term. This will provide an opportunity to undertake major streetscape improvement works, including:

- The development of significant avenues using existing and new trees;
- Planted median islands and roundabouts;
- 'Entry statements' to the subject area;
- Feature landscaping adjacent to the proposed 'Village Centre' development;
- Improved pedestrian and cyclist access; and
- Well designed traffic management elements (such as turning pockets).

The southern entry to Hale Rd off Welshpool Rd could be landscaped with modest, but colourful planting and entry signage and a feature light installed. See the Planting and Furniture Palettes for recommendations.



The northern entry to Hale Rd off Tonkin Hwy could also be landscaped and a median island constructed. The location of this 'gateway' will depend on possible future MRWA road works to Tonkin Hwy.



(ii) Other Streets

In all other (residential) streets, the streetscapes should be enhanced by:

- Planting of trees in all verges;
- Residents being supported in planting native, water-wise verges;
- Landscaping of intersections to soften hard paved areas; and
- Careful assessment and alignment of new residential streets and development set-outs to conserve existing mature trees.

This existing avenue in the Vertu development was conserved and has made a significant contribution to the value and amenity of adjacent properties.

The Landscape Masterplan includes over 100 recommendations for the design and management of the subject area's public places. While some of these recommendations are actions already being undertaken (such as the WLS project), it is clear that implementation of all the recommendations will take some years to achieve, and require the allocation of significant City funds.

The following recommendations from the Landscape Masterplan are listed as priority actions (in no particular order) which should ideally be implemented or substantially commenced over the next five years.

5.2.1 Demonstration Streetscape

It is recommended that one residential street be selected and fully landscaped with street trees, native verge planting, fence screening and footpaths (if necessary) to demonstrate the value of an improved streetscape to residents.

It is acknowledged that there may be an existing culture in some parts of the subject area of 'bare earth' verges, and it will be necessary to build an understanding of the benefits of a beautiful streetscape so that residents take ownership of street trees and care for them, and begin to work with the City in improving the amenity of their suburb.

A competition should be held to reward the first street where 80% of its residents sign a 'Tree Treaty'. This street would be the first to be planted with street trees, and residents could receive free plants and mulch for their verge or front garden. The City would work with each resident to plant the tree in the best location to suit them. It may also be possible to give residents a choice of tree, and the residents could collaborate to vote for which species they wanted for their street.

In return each household would be asked to care for the trees, particularly over summer.

A public education programme should be run before and after the competition to raise awareness and help build a culture of caring for street trees and celebrating neighbours who have come together to enhance their streetscapes. Sponsorship / donations may be available from nurseries in the suburb, and the City may also choose to consider running a small garden advice event to provide information and assistance to residents on how to manage verges and street trees.

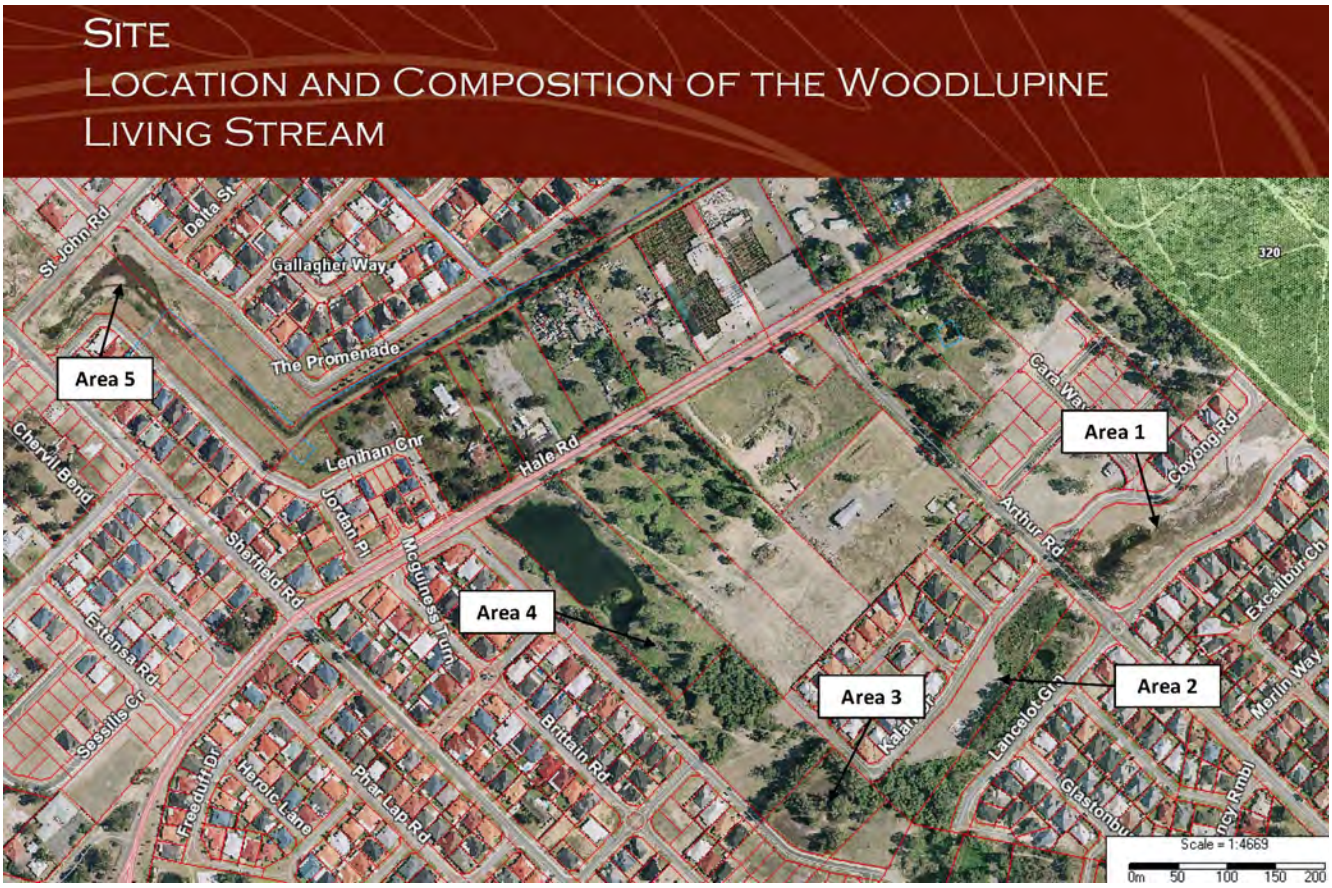
Once this initial 'demonstration street' has been successfully planted, a programme of street tree planting should be progressively implemented, possibly using the same model whereby those streets containing a majority of residents supporting the programme are given priority.

5.2.2 Sense of Place Project

It is recommended that a joint project involving the residents and local Nyoongar community be implemented to draw out the Nyoongar heritage of the subject area . The aim of this project should be to decide on names for local parks, features within the POS (such as the amphitheatre) and the waterways / pools so as to make way-finding easier, and to celebrate the history of the subject area. This project should also form a base for future initiatives such as interpretation and public art projects (see Section 4.1.1).

5.2.3 Woodlupine Living Stream Project

It is recommended that the programme of enhancing the Woodlupine Creek be continued, with the aim of completing planting of all five sections by 2017. The project should then be extended along the full length of the Woodlupine Main Drain lying within the subject area.



Aerial showing the Area Numbers for staged works in the Woodlupine Living Stream project.

5.2.4 Neighbourhood Park Infrastructure

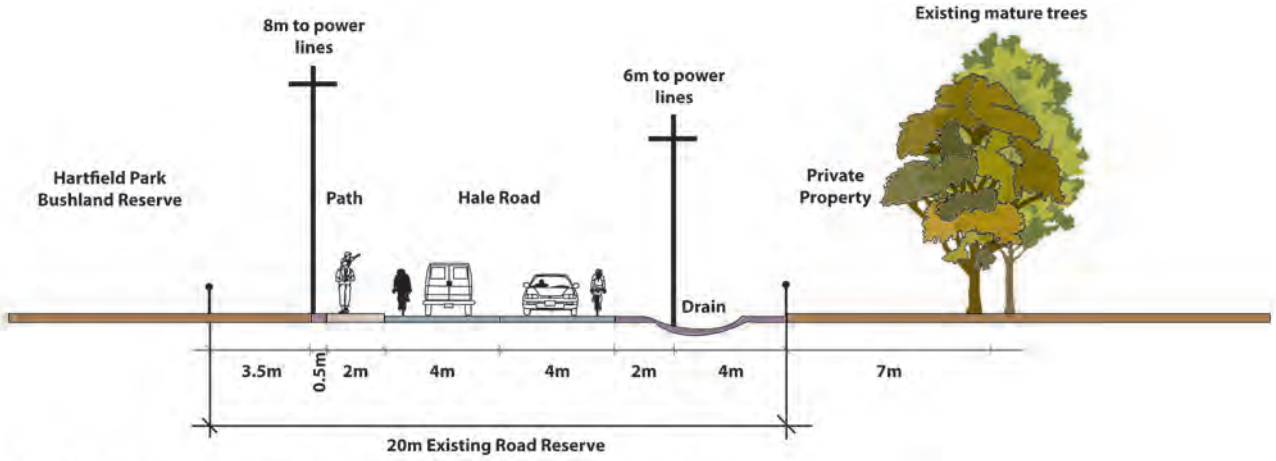
It is recommended that works for the Neighbourhood Park (i.e. children's ball sport oval, off-the-leash dog area, bridges over the creek etc), be prioritised and costed, and an implementation programme developed. The aim should be to try and install one new element each year for the next five years, and then review outstanding works and set a new programme.

5.2.5 Hale Road

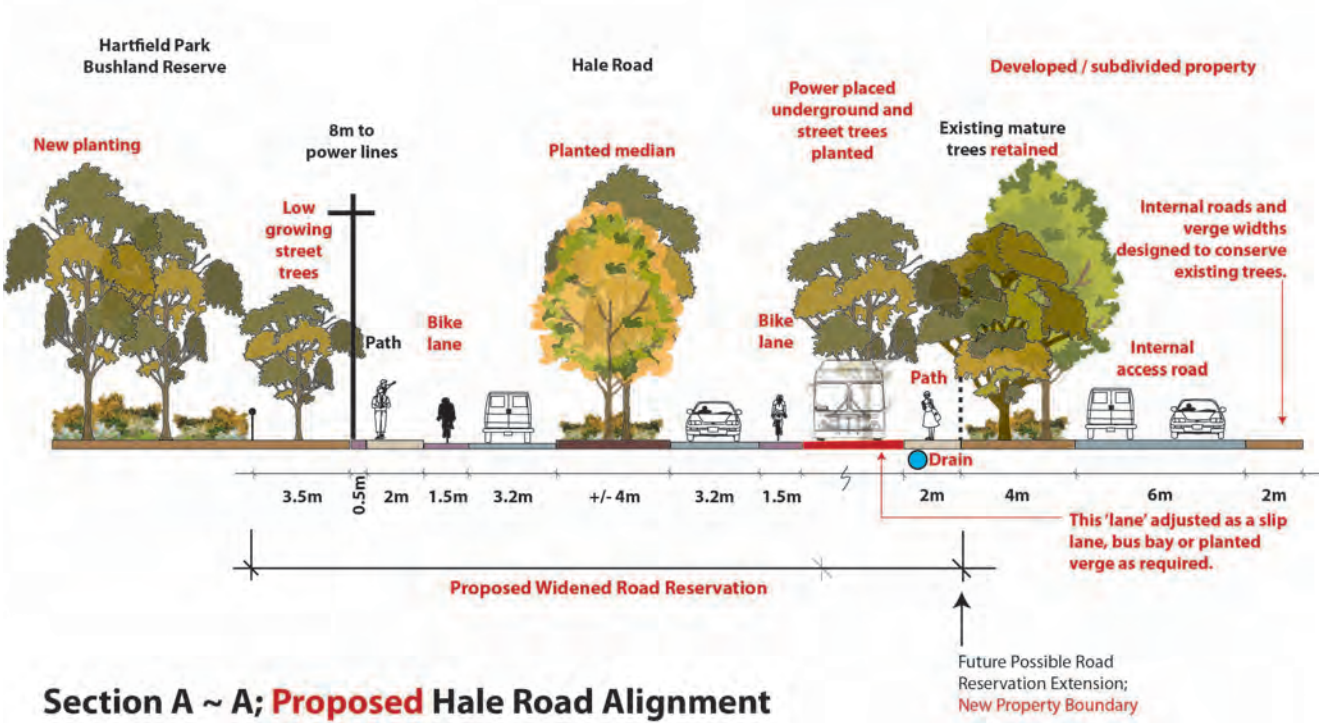
It is recommended that a concept plan be prepared for the widening of Hale Road in line with the recommendations in 4.2.10 above. The concept design should be costed, and the process of negotiating with various authorities, land owners and developers commenced. The aim should be to approach the widening project pro-actively so as to gain an excellent streetscape outcome, to conserve significant existing tree avenues, to plan for adequate funding, and ideally to have the street trees grown-on in nurseries so that larger pots are available and advanced planting can be undertaken ahead of the actual widening works.

The sections below illustrate the existing Hale Road streetscape, and a concept for widening which would accommodate conserving existing trees and allow new street tree planting and streetscape enhancements.

Section A ~ A; aerial view.



Section A ~ A; Existing Hale Road Alignment



Section A ~ A; Proposed Hale Road Alignment

Figure 9; Hale Road Concept Design

Designers of the Harvest Edge development identified existing trees for retention and accommodated them in the road design; creating a loop and 'mini' park which also filters storm water.

5.2.6 Tree Conservation Programme

It is recommended that an in-house workshop be held to identify ways in which developers and private land owners can be encouraged, and rewarded, for retaining healthy, mature trees on their sites. The existing approach where blocks are cleared of all existing trees is robbing Cell 9 of an important asset, resulting in a suburb with very poor visual quality. Ironically, the suburb's name - Wattle Grove - is not reflected in the landscape reality of the area, there being less and less 'groves' over time.

The City could possibly seek the assistance of an expert in this field, or collaborate with other Citys which have had experience in managing tree conservation on private properties and in new residential estates. Care needs to be taken not to approach this initiative in such a way that land owners believe they will be disadvantaged, causing them to destroy trees before the City has an opportunity to manage their conservation.

The recently completed "Hale Road Significant Tree Summary Report" (Bowden August 2011), provides an excellent resource and start point from which to commence tree conservation in development.

The Harvest Edge retained tree avenue (aerial above) seen from the street view.

This private lot in Cell 9 on Hale Rd has significant mature trees. Ideally, at least some of these should be retained during development.

The Role of Public Art

Public art has the potential to help build on the character of a place and add a layer of richness and meaning that improves the quality of life of residents and visitors.

Well planned public art should aim to:

- build community capacity and engagement;
- provide civic leadership – by celebrating what the community values;
- enhance the quality of life for residents;
- enrich the natural and built environment;
- enhance community pride and identity, and
- raise the profile and visual quality of the locality – which benefits land sales and property values.

Public art can be introduced at three different stages of the design and development process:

- during the initial detailed landscape and streetscape design stage before construction, in which an artist/s can be brought onto the team to provide a fresh perspective to the design, and to "build in" details and a layer of meaning that becomes embedded in the streetscapes;
- after the infrastructure (roads, street furniture etc.,) has been designed and installed, for example to work in a specifically defined space (such as the centre of a roundabout or in a playground), and/or
- at a later stage when the area has developed to a degree where dwellings have been built and residents have moved in. For example an artist could be employed to work with residents of the suburb to develop artworks that involve them, which have meaning for them, and which help to bring the community together and give residents a sense of ownership of their suburb.

The approach taken by the City could involve one or a combination of the above, but the key should be that the artworks are site-responsive. 'Neutral' artworks that could be placed in any location and have no meaning for the Wattle Grove community should be avoided.

Artworks may range from a highly 'intellectual' character; such as a beautiful abstract sculpture, to utilitarian in character; such as a bench with skillfully crafted details. The artists' brief should make it clear what is required.

The ongoing maintenance and management of the artwork(s) also needs to be considered in the project brief stage, and appropriate amounts of funding set aside to care for public artworks over time.

Whimsical art from 'Sculpture by the Sea' Cottesloe.

Public art can be playful and impermanent, as with this 'wool bombed' tree in Alice Springs.

Interpretive signage presented in an imaginative way in Leonora. (Brampton & Maher)

Bushland interpretation signage at Alice Spring's Desert Park.

The Role of Interpretation

When people move about a site they require information on two levels; firstly to use the space and find their way, and secondly to understand their environment. This understanding is achieved though interpretation, which draws out the sense of place, history and narratives of a site.

Interpretation is most commonly provided in written form on a sign or in a brochure but can also be:

- oral, through recordings or a tour guide;
- electronic, through the internet or via mobile phone link; or
- artistic, through public artworks, performances or design details.

The aim is to provide people with easily accessed details that add to their enjoyment of a place as well as improve their understanding, and in some cases, modify their behaviour.

Interpretation should:

- extend the community's understanding of a place;
- record and conserve local knowledge;
- provide insights into natural heritage;
- highlight cultural significance;
- provide a dialogue between the past and the present; and
- help create places which are rich with meaning and valued by the community.

Interpretation can be undertaken:

- during the detail design stage of a landscape project, so that infrastructure such as signage, trail markers and shelters can be built as part of the project; or
- retrofitted once the project is completed and elements such as viewing platforms or pathways are finished and their level of use can be assessed.

This Landscape Masterplan recommends three specific interpretive landscape elements:

- The Native Waterwise Plant Showcase garden at Point 1 in the Landscape Masterplan Drawing (refer to the Attachments Section). The aim is to showcase native water-wise and 'bush tucker' plants so as to encourage and support their use in private gardens and verges. Interpretation of traditional Nyoongar plant use, interesting facts on the plant's biology and information about its relationship to native fauna could be included. The garden needs to be designed in an engaging, attractive way with shaded seats, features to attract birds, and possibly a small shelter and artwork elements. The SERCUL publication "Bush Tucker Plants for Your Garden" many be a good resource for this garden.
- The site of the Chinese Market Garden at Yule Creek could be interpreted with a public art piece, signage, or landscape elements such as vegetable 'imprints' in paving, tree species selection or specially designed street furniture.
- The 'Orchard' (see Landscape Masterplan Point 7) interprets the history of Wattle Grove as a fruit growing area. The plant palette provides an option to use fruiting or ornamental fruit trees planted in formal orchard-like avenues which will change with the seasons.

In addition, the Landscape Masterplan recommends interpretation at entry points to Reserves, and at selected locations in POS areas, such as path intersections and park gateways.

06 LANDSCAPE PALETTES

Background

A cohesive and locally responsive colour and material palette has the potential to help build on the 'sense of place' and create a characteristic style for built elements that ties a suburb together over time.

The colours and materials recommended following have been chosen specifically for Cell 9 in Wattle Grove and are designed to allow for:

- the strong light in WA, which 'washes out' paler colours;
- the natural backdrop of the Darling Range with its soft purple/grey green tones;
- the historic use of the site for orchards and agriculture;
- a play on the name *Wattle Grove*; and
- the need to include highlights for special features.

The palettes can be used for shelters, street furniture, signage, interpretation & artworks and built elements such as retaining walls.

6.1.1 Colours

The colour selections below have been inspired by the natural environment at Wattle Grove and have been grouped into sets which work together, or can be mixed across the sets so as to provide a wider choice of effects. They have colours in common with colour palettes already prepared for the City of Kalamunda so as to help build consistency across the City.

When choosing paint colours, adjacent material colours must be taken into account and trials using paint samples is recommended[11]. The colours below have been listed from the DULUX for ease of identification, but other paint companies can match these colours.

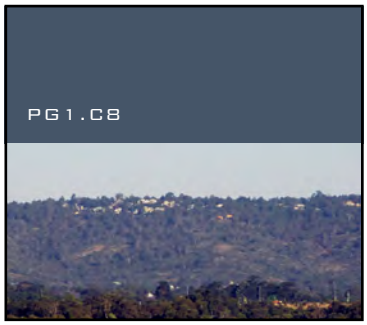
Base Colours

Highlight Colours

Wattle Palette

Banksia Palette

Darling Palette



11 Printed colours in this report will not be accurate

6.1.2 Materials

The materials below have been selected for their suitability for elements such as street furniture and their references to the cultural history of the site as an agricultural and orchard growing area. Sustainability and affordability has also been considered and therefore some materials have been selected for use as feature materials only, where they are likely to be used in smaller amounts and in a detailed way.

Feature Materials

'Farm' Details Weathered Steel

Bronze

Timber

Mini-Orb

Base Materials

Retaining and Feature Walls

Limestone | Rammed earth (Light coloured) | Rendered blocks

Pavements

Asphalt | Concrete; insitu / unit pavers | Stabilised sand / limestone

Building Materials

Painted Timber | Rammed earth / rendered walls | Colorbond

6.2 Furniture Palette

The street furniture selections below are a mix of items currently in use in Wattle Grove and items from the Central Kalamunda Streetscape Catalogue (April 2010).

Street furniture in the study area should be painted in the colour palette illustrated in point 6.1.1; with base colours used for utilitarian items like bins, and highlight colours saved for special features. The feature light is for use on Hale Road in locations identified on the Landscape Masterplan Drawing, banners are optional.

Benches are an indicator of the degree of 'welcome' in a suburb and add amenity to a streetscape. As benches are arguably the most used item of street furniture in a street, it is worthwhile selecting high quality benches and locating them for winter sun, summer shade and great views.

General Park and Streetscape Items

Double Electric BBQ; by Christies

Bin Enclosure; 'Walter' by Landmark

Bike Rail

Pedestrian Grab Rail

Drinking Fountain

Road Pavements

Roads and Car parks

Feature Intersections

Pedestrian Crossing points

Feature Elements

Bench

Feature Light

Signage

Information / Interpretation

Direction

Signage (directional and interpretive) will be needed in parks (see the Landscape Masterplan Drawing for suggested locations) and should ideally be part of a City 'set' for ease of maintenance and cohesion with a Kalamunda style.

The suppliers are listed below for some items, others are from the Central Kalamunda Streetscape Catalogue (April 2010), which has details of other suppliers and additional items (such as bollards) which may be needed at some time in the future.

General Park and Streetscape Items

Patterns have been introduced into picnic area paving in Wattle Grove, this turtle is part of the new facilities near St John Rd.

Picnic Shelters: by Landmark, Whyalla (L) and Driftwood (R).

Picnic Tables: by Landmark, Parkway (with Nuvoe battens) and Althorpe

Deck/Bridge: by Landmark, Timaru timber boardwalk with Einwood Decking

Boardwalks/Bridges (supplier unknown)

6.3 PLANTING PALETTE

The following planting palettes have been collated:

- to suit the growing conditions in Cell 9;
- to allow overlap of species between zones for continuity and transition;
- to reflect the character envisaged for the landscape; and
- meet specific requirements, such as height under power lines and interpretation of the study areas' history.

In addition:

- their likely resistance to dieback has been noted (DR);
- their provenance identified (Pr.) so that locally endemic plants can be selected if desired, and
- they have been checked against the Department of Agriculture 'Declared Plants Database' and the DEC 'Weeds of National Significance' species lists to ensure that no weed species are recommended.

Plant Supply

The City of Kalamunda is blessed with several excellent nurseries, and Cell 9 itself also has a nursery:

- Domus;
- Xanthorrhea;
- Dawsons; and
- Grove Propagation Nursery, Hardy Rd East, Cell 9.

In addition:

- Ellenby tree farm stocks exotic and deciduous trees;
- Australian Wildflower Nursery, (141 King Road, Oakford. Ph (08) 9525 1324, www.australiaplants.com.au) has an extensive range of endemic species and can advise on wattles, and grow-on plants;
- Tube stock can be grown to order by EMS, Plantrite, Menn of the Trees and the Mundaring Garden Centre; and
- Lulfitz Nurseries.

An issue currently facing WA nurseries is the Myrtle Rust outbreak in the Eastern States, which has meant strict quarantine measures and as a result, a reduction in the number and type of plants available in WA. The grafted *Corymbias* in particular are difficult to source. The advice is that (all being well) the quarantine is likely to be lifted in late 2012 / early 2013. The City might like to pre-order plants to be grown on and held ready for release if these species are chosen.

Pre-ordering and growing-on feature trees is strongly advised as this ensures adequate supply and quality can be controlled more easily.

The plant lists following are grouped into:

- Bushland;
- Wetland and Living Stream;
- Woodland;
- Parkland;
- Streetscapes; and
- Fire resistant trees.

Key
Pr. = Provenance
DR = Likely dieback *(Phytopthora)* resistance.
En = Endemic species
WA = Native to WA
Au = Native to Australia
Ex = Exotic species

Plant Table 1~ Bushland Recommendations

The plants in this list are a selection of species endemic to the Cell 9 area. The list is not intended to be definitive, but as a start point for revegatation and landscape works.

The aim for this zone is to use only plants that are endemic to the bushland reserves, overplant for species that are susceptible to dieback and ensure that excellent numbers of food and habitat plants are used (See DEC lists for Carnaby's food plants etc).

Latin name	Common Name	Ht (m)	Features	Pr.	DR
Australian Native Trees:					
Acacia alata	Winged Wattle	to 2	Creamy pale yellow flowers April to Dec.	En	Y
Acacia dentifera	Tooth-bearing acacia	to 3	Suited to clay soils and watercourses, yellow flowers.	En	Y
Acacia extensa	Wiry Wattle	to 3	Tolerates damp soils, slender shrub.	En	Y
Acacia microbotrya	Manna Wattle	to 7	Grows in sandy loam, often near watercourses, yellow flowers.	En	Y
Acacia urophylla	Taile-leaved Acacia	to 5	Vreamy yellow flowers, prefers damp conditions.	En	Y
Allocasuarina fraseriana	Fraser's Sheoak	to 8	Hardy for most soils. Fast growing. Flowers May to Oct.	En	N
Banksia attenuata	Slender Banksia	to 6	Dark green toothed leaves. Yellow flower spikes Oct-Feb. Butterfly & bird attracting.	En	N
Banksia menziesii	Firewood Banksia	to 8	Long, toothed leaves. Pink to red flowers in autumn & winter. Bird attracting.	En	N
Corymbia calophylla	Marri	to 40	Cream flowers in summer & autumn. Good shade tree.	En	Y
Eucalyptus marginata	Jarrah	to 60	Susceptible to root rot.	En	N
Native Shrubs 1.5 to 5m					
Actinostrobus pyramidalis	Actinostrobus pyramidalis	to 4	Compact, pyramidal conifer.	En	N
Kingia australis	Kingia australis	to 4	Tall palm like with grass like leaves. Very slow growing.	En	Y

Bushland Cont.

Latin name	*Common Name*	*Ht (m)*	*Features*	*Pr.*	*DR*
Kunzea recurva	Kunzea recurva	to 2	Aromatic foliage. Bird attracting. Mauve-pink flowers in spring.	En	Y
Melaleuca viminea	Melaleuca viminea	to 3	Perfumed creamy white flowers late winter to summer. Beetle and bird attracting.	En	Y
Melaleuca lateritia	Robin redbreast bush	to 1.5	Outstanding orange -red bottlebrush flowers late spring and summer.	En	Y
Xanthorrhoea preisii	Grasstree	to 4	Trunk like stem to 4 M with tall green inflorescence from Aug to Nov.	En	N
Native Shrubs Less than 1.5m					
Acacia drummondii	Drummond's Wattle	to 1	Tolerates sandy soils, bright yellow flowers June to oct.	En	Y
Astartea sp Brixton	Astartea	to 1	Small heath like leaves, white flowers in spring.	En	Y
Calytrix breviseta subsp breviseta	Calytrix	to 1.5	Aromatic foliage, white starry flowers in spring. Well drained soils.	En	Y
Conospermum undulatum	Smoke bush (Declared Rare Flora)	0.6 to 2	Erect, compact shrub. White flowers May to Oct.	En	Y
Grevillea bipinnatifida	Fuchsia Grevillea	to 1	Green/orange/red flowers winter to early summer.	En	N
Grevillea wilsonii	Native Fuchsia	to 1	Red flowers late summer to early spring.	En	N
Hakea conchifolia	Hakea conchifolia	to 1	Cluster white or pink flowers winter and spring.	En	Y
Isopogon drummondii	Isopogon drummondii	0.4 to 1	Erect lignotuberous shrub. Flowers yellow/cream Feb to June.	En	Y
Lambertia multiflora var. darlingensis	Lambertia	to 1.5	Yellow or red flowers in spring. Rounded stiff shrub.	En	N
Stachystemon axillaris	Stachystemon axillaris	to 1.2	Dense shrub. Flowers green/yellow/purple Feb to Oct.	En	Y
Verticordia species (V. plumosa and V. densiflora)	Feather flower	to 1.5	Feathery yellow, white, mauve and pink flowers in spring. Well drained soils.	En	N

Key
Pr. = Provenance
DR = Likely dieback *(Phytopthora)* resistance.
En = Endemic species
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Ex = Exotic species

Plant Table 2~ Living Stream & Drainage Wetlands

The plants in this list are a selection of species that are suitable for seasonal wetlands.

The aim for planting in this zone is to 'naturalise' drainage lines as much as possible, use predominantly endemic plants, but make use of Australian Native plants where these will help improve the riparian environment. Excellent weed management should be in place prior to wetland planting.

Latin name	Common Name	Ht (m)	Features	Pr.	DR
Australian Native Trees:					
Acacia alata	Winged Wattle	to 2	Creamy pale yellow flowers April to Dec.	En	Y
Acacia dentifera	Tooth-bearing acacia	to 3	Suited to clay soils and watercourses, yellow flowers.	En	Y
Acacia extensa	Wiry Wattle	to 3	Tolerates damp soils, slender shrub.	En	Y
Acacia microbotrya	Manna Wattle	to 7	Grows in sandy loam, often near watercourses, yellow flowers.	En	Y
Acacia urophylla	-	to 5	Vreamy yellow flowers, prefers damp conditions.	En	Y
Banksia attenuata	Slender Banksia	to 6	Dark green toothed leaves. Yellow flower spikes Oct-Feb. Butterfly & bird attracting.	En	N
Banksia ilicifolia	Holly-leaved Banksia	to 10	Flowers cream and pink. Prefers good drainage with underground moisture.	En	N
Banksia litoralis	Swamp Banksia	to 20	Rough bark. Yellow. flowers late summer to late winter	En	N
Banksia menziesii	Firewood Banksia	to 8	Long, toothed leaves. Pink to red flowers in autumn & winter. Bird attracting. Requires good drainage.	En	N
Callistachys lanceolata	Callistachys lanceolata	to 7	Erect tree or shrub, orange-yellow flowers Sept to Dec. Sandy soils in damp areas & swamps.	WA	Y
Corymbia calophylla	Marri	to 40	Cream flowers in summer & autumn. Good shade tree.	En	Y

Wetlands Cont.

Latin name	*Common Name*	*Ht (m)*	*Features*	*Pr.*	*DR*
Eucalyptus rudis	Flooded Gum	to 25	Graceful habit, small white flowers April to November. Wetter soils.	En	Y
Melaleuca cuticularis	Melaleuca cuticularis	to 10	Creamy white flowers late Spring and early Summer. Attractive specimen.	En	Y
Melaleuca preissiana	Stout Paperbark	to 15	Flowers white to pale yellow cylindrical spikes from Nov. to Jan. Swamp areas.	En	Y
Melaleuca raphiophylla	Freshwater Paperbark	to 15	Creamy white flowers spring and early summer. Swampy areas.	En	Y
Viminaria juncea	Native broom	to 6	Yellow pea flowers in spring. Pendulous habit. Suitable to poorly drained areas.	En	Y
Native Shrubs 1.5 to 5m:					
Acacia celastrafolia	Glowing wattle	to 3	Glabrous, bushy shrub. Yellow flowers Apr to Aug.	WA	Y
Acacia drummondii	Drummond's Wattle	to 1	Tolerates sandy soils, bright yellow flowers June to oct.	En	Y
Acacia xanthina	White stemmed wattle	to 4	Dense shrub, yellow flowers Aug to Oct.	WA	Y
Actinostrobus pyramidalis	Actinostrobus pyramidalis	to 4	Compact, pyramidal conifer. Hardy in moist soils.	En	N
Beaufortia squarrosa	Sandplains Brush myrtle	to 2	Tufted brilliant red flowers in Jan-April. Bird attracting. Well drained soils.	En	Y
Kunzea ericifolia	Kunsea ericifolia	to 3	"Heath like foliage, creamy yellow flowers in spring. Tolerates poorly drained soils.	En	N
Melaleuca uncinata	Broombush	to 2	Cream flowers in Spring. Hardy for drier areas.	En	Y
Melaleuca viminea	Melaleuca viminea	to 3	Perfumed creamy white flowers late winter to summer. Beetle and bird attracting. Hardy in most soils.	En	Y
Pericalymma ellipticum	Swamp Teatree	to 3	Erect, open shrub. Flowers white - pink Oct - Dec. Swampy site.	En	N

Wetlands Cont.

Latin name	Common Name	Ht (m)	Features	Pr.	DR
Regelia ciliata	Regelia ciliata	0.8 -2	Erect shrub. Pink/ purple flowers Jan -Dec.	En	Y
Xanthorrhoea drummondii	Grass Tree	to 4.5	Trunk to 4.5. Long needle like foliage. Cream white flower spike Sept to Nov.	En	N
Native Shrubs Less than 1.5m:					
Astartea sp Brixton	Astartea	to 1	Aromatic foliage, whitish pink flowers most of the year. Tolerates dryness.	En	Y
Hakea sulcata	Hakea sulcata	to 1	Needlelike leaves, cream flowers in spring. Tolerates wetter soils.	En	Y
Hypocalymma angustifolium	White myrtle	to 1	Aromatic foliage, white or pink flowers late winter and spring. Nectar provides food for beetles. Tolerates wet soils.	En	y
Melaleuca lateritia	Robin redbreast bush	to 1.5	Orange-red bottlebrush flower late spring and summer. Hardy in well drained soils.	En	Y
Verticordia species (V. plumosa & V. densiflora)	Feather flower	to 1.5	Feathery yellow, white, mauve and pink flowers in spring. Well drained soils.	En	N
Groundcovers and Grasses:					
Amphibromus neesii	Southern Swampgrass	to 1.2	Erect densely clustered perennial grass. Flowers brown Oct - April.	Au	Y
Austrodanthonia caespitosa	Common Wallaby Grass	to 0.3	Native prerenial winter grass.	En	Y
Baumea preisii	Broad Twig Sedge	to 1	Broad flattened stems & leaves arising from creeping rhizomes.	Au	Y
Baumea articulata	Jointed Twig-rush	to 2	Can grow in water up to 1m deep.	En	Y
Cyathochaeta avenacea	Cyathochaeta	0.4 - 1.6	Tufted perennial grass like sedge/ herb Brown flowers Nov - Dec. Peaty swamps.	En	Y

Wetlands Cont.

Latin name	*Common Name*	*Ht (m)*	*Features*	*Pr.*	*DR*
Ficinia nodosa	Knobby Club Rush	to1	Upright often arching dark green stems. Brownish globular flower heads through the year.	Au	N
Juncus kraussii	Shore Rush	to 1.2	Perennial herb. Large clump. Stems from creeping rhizome. Bronze flowers Nov - Dec.	Au	Y
Juncus pallidus	Pale Rush	to 2	Perennial rush which can tolerate wet conditions and poor soils.	En	Y
Juncus subsecundus	Finger Rush	to 1	Wiry blue-green to grey stems, rust coloured flowers		
Lepidosperma longitudinale	Local Pithy Sword	0.5 -2.0	Excellent for wet areas. Upright strappy foliage. Brown flowers May - Oct.	En	Y
Lepidosperma rostratum	Lepidosperma	to 0.5	Tufted perennial, grass like sedge/ herb. Brown flowers.	En	Y
Lomandra longifolia	Spiny-headed Mat-Rush	to 1	Green strappy leaves. Upright habit. Masses of creamy flowers.	Au	Y
Microlaena stipoides	Weeping Grass	to 0.3	Prefers moist well drained soils and semi shade	En	Y
Neurachne alopecuroidea	Foxtail Mulga	to 0.8	Tufted grass, flowers Oct - Dec.	En	Y
Schoenoplectus validus	Lake Club Sedge	to 2	Blue green circular stems. Pom pom flower spikelets Dec-Jan.	WA	Y
Stylidium species	Trigger Plant	to 0.3	Tufted plant .Flower colours vary, red, pink, white in Spring.	WA	N
Tremulina tremula	Tremulina tremula	0.3 - 1.5	Rhizomatous, erect perennial herb. Flowers brown Jan - Mar. Wet sites.	En	Y

Key
Pr. = Provenance
DR = Likely dieback *(Phytopthora)* resistance.
En = Endemic species
WA = Native to WA
Au = Native to Australia
Ex = Exotic species

Plant Table 3~ Woodlands

The plants in this list have been chosen to provide a landscape character of a shady canopy above clear trunks, with low growing species and ground covers at ground level. They are a mix of WA and Australian native plants. Plants from Table 1: Bushland may also be used where appropriate if more endemic species are required.

Latin name	Common Name	Ht (m)	Features	Pr.	DR
Australian Native Trees:					
Agonis flexuosa	WA weeping peppermint	to 7	Aromatic foliage, small white flowers in spring and summer. Bird attracting.	WA	Y
Corymbia 'Summer Beauty', 'Summer Red'	Flowering gum	5 to 8	Hybrid eucalypt. Spectacular trusses of flowers pinks, orange and reds in summer. Butterfly & bird attracting.	WA	Y
Eucalyptus cladocalyx 'Nana'	Bushy Sugar gum	to 9	Hardy spreading tree. Suits most soils.	Au	Y
Eucalyptus leucoxylon 'Rosea'	Yellow Gum	to 15	Blue green leaves. Masses of pink flowers autumn to summer. Bird attracting.	Au	Y
Eucalyptus leucoxylon dwarf 'Magnet'	Yellow Gum Dwarf	to 6	Grey green leaves. Pink/red/cream flowers late autumn to early summer.	Au	Y
Eucalyptus macrandra	Long flowered Marlock	to 7	Leaves bright green. Flowers yellow to yellow-green Dec-March. Bird attracting.	WA	Y
Eucalyptus microtheca 'Snow Queen'	Coolabah	to 7	White bark, specimen tree.	Au	Y
Eucalyptus nicholii	Narrow-leafed peppermint	to 10	Pendulous habit, good street tree.	Au	Y
Eucalyptus sideroxylon 'Rosea'	Pink Flowered Ironbark	15 to 20	Grey green foliage. Pink flowers in Spring & Summer. Weeping habit. Bird attracting.	Au	Y
Eucalyptus torquata	Coral Gum	to 8	Specimen tree. Pink flowers spring and summer. Bird attracting.	WA	Y
Melaleuca leucadendra	Northern Weeping Paperbark	to 25	Attractive papery bark, pendulous habit. Cream flowers. Tolerates poorly drained soils.	WA, Qld, NT	Y

Woodlands Cont.

Latin name	*Common Name*	*Ht (m)*	*Features*	*Pr.*	*DR*
Melaleuca viridiflora	Red flowering broad leaf paperbark	to 10	Red flowers. Bird attracting.	Au	Y
Native Shrubs less than 1m:					
Acacia drummondii	Drummond's Wattle	to 1	Tolerates sandy soils, bright yellow flowers June to oct.	En	Y
Acacia pulchella	Prickly Moses	to 1	Feathery pinnate leaves with sharp spines. Flowers in golden balls in spring.	WA	Y
Acacia lasiocarpa	Dune Moses	to 1	Golden yellow flowers June to Oct.	WA	Y
Acacia cognata Limelight' and 'Green Mist'	Dwarf form of River Wattle	to 1	Fine pendulous green foliage. Hardy shrub for landscape feature.	Au	Y
Adenanthos cuneatus prostrate 'Coral Carpet'	Adenanthus cuneatus	to 1	Foliage highlight with silver leaf and reddish/pink tips. Bird attracting.	WA	N
Anigozanthos flavidus 'Big Red', 'Yellow Gem'	Tall Kangaroo paw	leaf to 1	Green reed like foliage. Tubular red or yellow flowers. Bird attracting.	WA	Y
Anigozanthus 'Bush Gem' series	Kangaroo paw	leaf to 0.6	Tubular bright yellow, red, and orange flowers. Bird attracting.	WA	Y
Anigozanthus manglesii	Red & Green Kangaroo Paw	leaf to 0.4	Grey-green strap like leaves. Red & green flowers on tall 2 m flower spikes in winter and spring. Bird attracting.	WA	Y
Banksia nivea	Couch Honeypot	to 1	Dark green foliage, golden brown flower heads in late winter and spring. Bird attracting.	WA	N
Calothamnus quadrifidus 'Little Ripper'	Common net bush	to 1	Pine like leaves, long red flower spikes spring summer & autumn.	WA	Y
Conostylis candicans	Grey Cottonheads	to 0.5	Strappy grey foliage. Yellow flowers spring and summer. Butterfly attracting.	WA	Y

Woodlands Cont.

Latin name	*Common Name*	*Ht (m)*	*Features*	*Pr.*	*DR*
Callistemon phoeniceus	Fiery Bottlebrush	to 3	Scarlet flowers in late spring and again in late summer. Prefers moist conditions.	En	Y
Eremophila densifolia burgundy	Eremophila densifolia	to 0.5	Grey green foliage. Small mauve to purple flowers spring & summer.	WA	Y
Grevillea thelemanniana 'Green Gem'	Spider net Grevillea	to 0.5	Spreading small shrub. Fresh green foliage, red flowers winter and spring. Bird attracting.	WA	Y
Grevillea crithmifolia prostrate 'Green Carpet'	Grevillea crithmifolia	to 1	Soft pine like foliage. White to light pink flowers in winter and spring.	WA	Y
Grevillea lanigera 'Dwarf Green Cape'	Grevillea lanigera	to 0.6	Compact shrub, cream pink flowers.	WA	Y
Hardenbergia comptoniana '	Native wisteria	to 0.5	Compact shrub, purple flowers late winter and spring. Butterfly attracting.	En	Y
Kennedia prostrata	Scarlet Runner	to 0.3	Prostrate or twining shrub with bright red pea flowers between April and November.	En	Y
Leptospermum 'Fore Shore'	Leptospermum 'Fore Shore'	to 0.5	Grey green foliage with bronze coloured new growth.	WA	Y
Leptspermum sericeum 'White Wave'	Leptospermum White Wave'	0.5	Cascading habit. White flowers in spring. Bird Attracting.	WA	Y
Leucophyta brownii 'Canal Rocks' & 'Silver Nugget'	Leucophyta	to 0.6	Striking silver foliage. Yellow flowers spring and summer.	Au	Y
Olearia axillaris 'Ghost Town'	Diasybush	to 0.7	Contrast plant. Spiky grey foliage.	Au	Y
Olearia axillaris 'Little Smokie'	Daisybush	to 0.7	Compact upright shrub. Grey foliage. Tiny white/mauve flowers.	Au	Y
Pimelea rosea	Rose Benjine	to 1	Pale- deep pink flowers Aug-Nov.	Au	Y
Verticordia chrysanthella	Feather Flower	to 0.5	Deep green needle like leaves, bright yellow feather flowers in spring.	WA	Y

Woodlands Cont.

Latin name	Common Name	Ht (m)	Features	Pr.	DR
Wistringea 'Mundi'	Coastal rosemary	to 0.4	Small grey green foliage. White flowers in spring & summer. Extremely hardy.	Au	Y
Native Groundcovers and Grasses:					
Banksia blechnifolia		to 0.5	Deeply lobed grey green leaves. Reddish flower spikes early summer. Bird attracting.	WA	Y
Casuarina glauca 'Cousin It'	Casuarina 'Cousin It'	to 0.1	Lime green foliage. Leafless stem. Extremely hardy goundcover.	Au	Y
Dianella 'Little Rev'	Flax lily	to 0.6	Blue grey flax like leaves. Blue flowers spring and early summer.	Au	Y
Dianella 'Silver Streak'	Flax lily	to 0.6	Green strappy leaves with white stripes.	Au	Y
Eremophila glabra 'Prostrate Yellow '	Common Tar bush	to 0.5	Silver foliage. Yellow tubular flowers spring to autumn. Bird attracting.	WA	Y
Eremophila glabra 'Amber Carpet'	Common Tar bush	to 0.2	Small green oval leaves. Neat form. Orange flowers spring & summer.	WA	Y
Eremophila 'Roseworthy'	Eremophila	to 0.25	Narrow green leaves, pink/red flower spikes in winter. Hardy.	WA	Y
Ficinia nodosa	Knobby Club Rush	to1	Upright often arching dark green stems. Brownish globular flower heads through the year. Tolerates dry & moist soils.	Au	Y
Grevillea obtusifolia 'Gin Gin Gem'	Grevillea	to 0.3	Red flowers most of the year.	WA	Y
Grevillea nudiflora		to 0.3	Long, slender trailing, leafless branches. Bright red flowers in spring.	Au	Y
Hemiandra pungens	Snakebush	to 0.25	Rigid pointed green foliage, mauve flowers spring & summer.	WA	Y
Hibbertia scandens	Snake vine	to 0.4	Dark green foliage. Showy buttercup flowers most of the year.	Au	Y

Woodlands Cont.

Latin name	*Common Name*	*Ht (m)*	*Features*	*Pr.*	*DR*
Kennedia coccinea	Coral vine	to 0.1	Vigorous groundcover with masses of orange-red pea flowers Aug - Nov.	WA	Y
Lomandra longifolia 'Tanika'	Lomandra 'Tanika' & 'Seascape'	to 0.5	Fine green leaf, weeping habit. Attractive yellow flower heads in spring.	Au	Y
Lomandra longifolia 'Katrinus' or 'Tilga'	Lomandra	to 0.7	Green strap like leaves, yellow flower spikes in spring.	Au	Y
Myoporum parvifolium 'Yareena', also flat, fine and purple leaf varieties.	Creeping Boobialla	to 0.3	Bright green foliage. White star flowers in spring & summer. Bird & butterfly attracting. Hardy.	WA	Y
Orthrosanthus laxus	Morning Iris	to 0.6	Long slender leaves. Pale or deep blue flowers in spring.	En	Y
Patersonia occidentalis	Native Iris or Purple Flags	to 0.5	Narrow grass like leaves, purple flowers spring to early summer. Bird & butterfly attracting.	Au	N

Plant Table 4 ~ Parklands

The character of park in the study area is more 'developed' and has a higher degree of public use than the Bushland, Wetland and Woodland areas. Plants other than endemic species can be used to provide colour, seasonal change, landmark specimen trees and exotic planting to interpret Wattle Grove's history. This table includes a mix of exotic and Australian native plants.

Key
Pr. = Provenance
DR = Likely dieback *(Phytopthora)* resistance.
En = Endemic species
WA = Native to WA
Au = Native to Australia
Ex = Exotic species

Latin name	Common Name	Ht (m)	Features	Pr.	DR
Feature Trees:					
Agonis flexuosa	WA weeping peppermint	to 7	Aromatic foliage, small white flowers in spring and summer. Bird attracting.	WA	Y
Eucalyptus leucoxylon 'Rosea'	Yellow Gum	to 15	Blue green leaves. Masses of pink flowers autumn to summer. Bird attracting.	Au	y
Eucalyptus microtheca 'Snow Queen'	Coolabah	to 7	White bark, specimen tree.	Au	Y
Eucalyptus nicholii	Narrow-leafed peppermint	to 10	Pendulous habit, good street/shade tree.	Au	Y
Eucalyptus sideroxylon 'Rosea'	Pink Flowered Ironbark	15 to 20	Grey green foliage. Pink flowers in spring & summer. Good shade tree.	Au	Y
Ficus microcarpa var. 'Hilli'	Hill's Fig	to 20	Rounded crown with glossy elliptical leaves.	Au	Y
Ficus rubignosa	Port Jackson Fig	to 40	Large spreading tree, leaves shiny above and rusty hairs underneath.	Au	Y
Ficus macrophylla	Morton Bay Fig	to 40	Large spreading tree with buttresses.	Au	Y
Melaleuca leucadendra	Northern Weeping Paperbark	to 25	Attractive papery bark, pendulous habit. Cream flowers. Tolerates poorly drained soils.	WA	Y
Magnolia garndiflora	Magnolia	to 25	Evergreen, glossy green foliage with white perfumed flowers through spring and summer.	Ex	Y
Platanus acerifolia	London Plane	to 25	Large spreading deciduous tree.	Ex	Y
Quercus palustris	Pin Oak	to 15	Elegant deciduous tree. Useful for winter wet and summer dry conditions.	Ex	Y

Parklands Cont.

Latin name	Common Name	Ht (m)	Features	Pr.	DR
Quercus robur	English Oak	to 25	Majestic tree. Deciduous.	Ex	Y

Fruiting and Ornamental Trees:

These trees are for use in the 'Orchard' and other areas to interpret the fruit growing history of Wattle Grove. A choice of fruiting and ornamental trees has been provided.

Crataegus monogyna 'Horizontal'	Horizontal hawthorn	to 5	Small spreading tree. Masses of white flowers in spring. Attracts nectar feeding insects. Hardy.	Ex	Y
Citrus limonum 'Eureka Lemon'	Lemon	to 4	Evergreen. Thornless, bearing fruit most of the year round. Susceptible to fruit fly in warmer months if in the area.	Ex	Y
Citrus Orange Washington Navel	Orange	to 3	Evergreen, nicely shaped tree. Fruit ripen from May to Sept. Susceptible to fruit fly in warmer months if in the area.	Ex	Y
Prunus 'Mariposa'	Plum	to 4	Pollinates with Ruby Blood or Satsuma Dark red skin & flesh maturing mid Jan. Not susceptible to fruit fly.	Ex	Y
Pyrus 'Hood' or 'Bonza'	Pear (dwarf)	to 3	Pollinates with 'Sunshine'. Large fruit yellow green skin, attractive foliage. Not susceptible to fruit fly.	Ex	Y
(Note: 'Hood' & 'Sunshine can be planted in the same hole 300mm apart & staked. Similarly 'Mariposa' & 'Ruby Blood')					
Malus floribunda	Japanese crabapple	to 5	Deciduous. White & reddish pink flowers in spring. Bright green leaves turning yellow in autumn. Hardy.	Ex	Y
Malus spectabilis 'Plena'	Chinese crabapple	to 5	Open spreading deciduous tree. Double flowers in pinks & reds in spring. Decorative berries.	Ex	Y
Prunus cerasifera 'Nigra'	Purple flowering plum	6	Burgundy black glossy foliage small pink flowers early spring.	Ex	Y

Parklands Cont.

Latin name	*Common Name*	*Ht (m)*	*Features*	*Pr.*	*DR*
Pyrus usseriensis	Manchurian pear	8 to 10	Deciduous. Dark green foliage, autumn colour, white flowers in spring.	Ex	Y
Pyrus nivalis	Snow pear	5 to 8	Attractive silver foliage, white flowers. Long flowering period.	Ex	Y
Colourful Garden Beds:					
Adenanthos cuneatus prostrate	Adenanthus cuneatus	to 1	Foliage highlight with silver leaf and reddish/pink tips. Bird attracting.	WA	N
Anigozanthos flavidus 'Big Red', 'Yellow Gem'	Tall Kangaroo paw	to 1.5	Green reed like foliage. Tubular red or yellow flowers. Bird attracting.	WA	Y
Anigozanthos 'Bush Gem' series	Kangaroo paw	to 1	Tubular bright yellow, red, and orange flowers. Bird attracting.	WA	Y
Callistemon 'Little John'	Bottlebrush	to 1	Grey green foliage. Dark red flowers for most of the year. Bird attracting. Hardy.	WA	Y
Conostylis candicans	Grey Cottonheads	to 0.5	Strappy grey foliage. Yellow flowers spring and summer. Butterfly attracting.	WA	Y
Chrysocephalum apiculatum	Common everlasting	to 0.3	Green to silver leaves with clusters of small golden flowers from spring to autumn.	Au	Y
Dampiera linearis 'True Blue'	Dampiera 'True Blue'	to 0.3	Bright blue flowers in spring & summer.	WA	Y
Dianella 'Little Rev'	Flax lily	to 0.6	Blue grey flax like leaves. Blue flowers spring and early summer.	Au	Y
Dianella 'Silver Streak' or 'Wyeena'	Flax lily	to 0.6	Green strappy leaves with white stripes.	Au	Y
Eremophila 'Kalbarri Carpet'	Smooth Emu bush	to 0.3	Silver grey foliage. Hardy .Bird attracting.	Au	Y
Grevillea 'Gilt Dragon'	Grevillea 'Gilt Dragon'	to 0.5	Red flowers in autumn/winter on grey foliage. Bird attracting.	Au	Y

Parklands Cont.

Latin name	*Common Name*	*Ht (m)*	*Features*	*Pr.*	*DR*
Grevillea 'Bonnie Prince Charlie'	Grevillea 'Bonnie Prince Charlie'	to 0.6	Red-orange flowers spring to summer on attractive green foliage.	Au	Y
Leucophyta brownii 'Canal Rocks' & 'Silver Nugget'	Leucophyta brownii	to 0.6	Striking silver foliage. Yellow flowers spring and summer.	Au	Y
Lomandras, dwarf forms such as 'Tanika', 'Tilga' & 'Seascape'	Lomandra species	to 0.6	Green to light green accent foliage. Can tolerate dry and periodic wet conditions	Au	Y
Meterosideros 'Tahiti'	NZ Christmas bush (dwarf)	to 1	Silvery green leaves, bright red flowers from autumn to spring. Bird attracting.	Ex	Y
Olearia 'Ghost town'	Olearia languginosa	to 0.7	Unique spiky grey foliage, white/ mauve daisy flowers Oct - March. Very hardy.	Au	Y
Orthrosanthus multiflorus	Morning Iris	to 0.6	Long slender leaves. Pale or deep blue flowers in spring.	WA	Y
Patersonia occidentalis	Native Iris or Purple Flags	to 0.5	Narrow grass like leaves, purple flowers spring to early summer. Bird & butterfly attracting.	Au	N
Pimelea 'Pink Solitaire'	Rice flower	to 0.5	Compact shrub, magenta -pink flowers.	WA	Y
Wistringea 'Smokie'	Wistringea 'Smokie'	to 0.8	Small compact shrub, grey green foliage. Mauve flowers in spring.	Au	y

Plant Table 5~ Streetscape

Landscaping in the road reserves should be more formal and structured including tree avenues and colourful garden beds at key locations. Where trees are being planted under power lines, low growing species need to be selected, and generally, large trees are not appropriate for residential streets either.

In residential streets, one species should be selected for a street and continued along its length.

On Hale Road a wider variety of species can be chosen so as to:

- highlight the proposed village centre;
- add colour in median islands and roundabouts;
- create a visual link between the POS areas across Hale Road; and
- allow the option for a matching pair [PAIR] of small growing (under the power line) and taller trees (where power has been put underground) to be planted to create a formal avenue (see Figure 9: Hale Road Concept Design).

"Wattle" trees are suggested for median islands at entry points to Cell 9. These trees are not particularly suited to formal avenue planting and can be short-lived, but they do provide wonderful seasonal colour and are a play on the suburb's name so are worth considering. One approach would be to inter-plant with other species so as to ensure some longer-lived trees in the median to balance repeat plantings of the shorter-lived Acacia trees. Acacia ground covers have also been suggested to provide colour at the ground level in median islands and verges.

This table includes a mix of exotic and Australian native plants.

Latin name	*Common Name*	*Ht (m)*	*Features*	*Pr.*	*DR*
Street Trees Hale Road:					
Acacia acuminata	Jam Tree	to 7	Yellow flowers Jul to Oct. Suited to a variety of soils.	WA	Y
Acacia lasiocalyx	Silver Wattle	to 7	Open weeping tree. Yellow flowers Jun to Oct.	WA	Y
Callistachys lanceolata	Callistachys lanceolata	to 7	Erect tree. Orange-yellow flowers Sept to Dec.	WA	Y
Corymbia ficifoia	Red Flowering Gum PAIR	to 9	Attractive tree with profusion of flowers varying from white to red & orange in summer. Bird attracting.	WA	Y
Corymbia 'Summer Beauty' & 'Summer Red'	Flowering gum	5 to 8	Hybrid eucalypt. Spectacular trusses of flowers pinks, orange and reds in Summer. Butterfly & bird attracting.	WA	Y
Eucalyptus cladoclayx 'Vintage Red'	Sugar Gum	10 to 12	Burgundy, purple foliage. Contrast foliage specimen tree.	Au	Y

Key
Pr. = Provenance
DR = Likely dieback *(Phytopthora)* resistance.
En = Endemic species
WA = Native to WA
Au = Native to Australia
Ex = Exotic species

Streetscape Cont.

Latin name	*Common Name*	*Ht (m)*	*Features*	*Pr.*	*DR*
Eucalyptus leucoxylon 'Rosea'	Yellow Gum	to 15	Blue green leaves. Masses of pink flowers autumn to summer. Bird attracting.	Au	Y
Eucalyptus leucoxylon dwarf 'Magnet'	PAIR Yellow Gum Dwarf	to 6	Grey green leaves. Pink/red/cream flowers late autumn to early summer.	Au	Y
Eucalyptus nicholii	Narrow-leafed peppermint	to 10	Pendulous habit, good street/shade tree.	Au	Y
Melaleuca quinquinervia	Broadleaf paperbark	to 12	Excellent for damp conditions. Creamy white flowers. Bird attracting.	Au	Y
Melaleuca viridiflora red	PAIR Red flowering broad leaf paperbark	to 6	Neat upright growth, deep red bottle brush flowers in autumn. Hardy.	WA	Y
Fraxinus velutina	Velvet Ash	less than 10	Drought tolerant once established. Supberb street tree.	Ex	Y
Prunus cerasifera 'Nigra'	Purple flowering plum	6	Burgundy black glossy foliage, small pink flowers early spring.	Ex	Y
Pyrus calleryana 'Chanticleer', 'Cleveland Select'	Ornamental pear	8 to 10	Deciduous. Dark green foliage. Autumn colour, white flowers in spring.	Ex	Y
Pyrus calleryana 'Oakville Crimson Spire'	Ornamental pear	8 to 10	Stunning purple autumn foliage. Upright habit.	Ex	Y
Pyrus nivalis	Snow pear	5 to 8	Attractive silver foliage, white flowers. Long flowering period.	Ex	Y
Residential Street Trees:					
Agonis flexuosa	WA weeping peppermint	to 7	Aromatic foliage, small white flowers in spring and summer. Bird attracting.	WA	Y
Corymbia 'Summer Beauty' & 'Summer Red'	Flowering gum	5 to 8	Hybrid eucalypt. Spectacular trusses of flowers pinks, orange and reds in Summer. Butterfly & bird attracting.	WA	Y

Streetscape Cont.

Latin name	Common Name	Ht (m)	Features	Pr.	DR
Eucalyptus macrandra	Long flowered Marlock	to 7	Leaves bright green. Flowers yellow to yellow -green Dec-March. Bird attracting.	WA	Y
Eucalyptus microtheca 'Snow Queen'	Coolabah	to 7	White bark, specimen tree.	Au	Y
Fraxinus velutina	Velvet Ash	less than 10	Drought tolerant once established. Supberb street tree.	Ex	Y
Gleditsia tricanthos inermis 'Sunburst'	Honey locust	10	Deciduous. Fern like foliage green turning golden in autumn.	Ex	Y
Jacaranda mimosifolia	Jacaranda purple	10	Deciduous, lilac flowers. Spectacular avenue tree.	Ex	Y
Lagerstroemia indica	Chinese Crepe myrtle	to 8	Ornamental bark, flowers white, pink to deep pink in the autumn. Deciduous.	Ex	Y
Melaleuca viridiflora red	Red flowering broad leaf paperbark	to 6	Neat upright tree with deep red bottle brush flowers in autumn.	WA	Y
Ulmus parvifolium 'Todd'	Chinese Elm	to 10	Attractive foliage & shaped tree. Semi deciduous.	Ex	Y
Shrubs and Grasses to 1m:					
Acacia lasiocarpa prostrate	Dune Moses	to 1	Golden yellow flowers June to Oct.	WA	Y
Adenanthos cuneatus prostrate 'Coral Carpet'	Adenanthus cuneatus	to 1	Foliage highlight with silver leaf and reddish/pink tips. Bird attracting.	WA	Y
Anigozanthos flavidus 'Big Red', 'Yellow Gem'	Tall Kangaroo paw	leaf to 1	Green reed like foliage. Tubular red or yellow flowers. Bird attracting.	WA	Y
Anigozanthos 'Bush Gem' series	Kangaroo paw	leaf to 0.6	Tubular bright yellow, red, and orange flowers. Bird attracting.	WA	Y
Anigozanthos manglesii	Red & Green Kangaroo Paw	leaf to 0.4	Grey -green stappy leaves. Red and green flowers on tall 2m flower spikes in winter & spring. Bird attracting.	WA	Y

Streetscape Cont.

Latin name	*Common Name*	*Ht (m)*	*Features*	*Pr.*	*DR*
Banksia nivea	Couch Honeypot	to 1	Dark green foliage, golden brown flower heads in late winter and spring. Bird attracting.	WA	N
Calothamnus quadrifidus 'Little Ripper'	Common net bush	to 1	Pine like leaves, long red flower spikes spring summer & autumn.	WA	Y
Conostylis candicans	Grey Cottonheads	to 0.5	Strappy grey foliage. Yellow flowers spring and summer. Butterfly attracting.	WA	Y
Callistemon 'Little John'	Bottlebrush	to 1	Grey green foliage. Dark red flowers for most of the year. Bird attracting. Hardy.	WA	Y
Eremophila densifolia burgundy	Eremophila densifolia	to 0.5	Grey green foliage. Small mauve to purple flowers spring & summer.	WA	y
Grevillea thelemanniana 'Green Gem'	Spider net Grevillea	to 0.5	Spreading small shrub. Fresh green foliage, red flowers winter and spring. Bird attracting.	WA	Y
Grevillea crithmifolia prostrate 'Green Carpet'	Grevillea crithmifolia	to 1	Soft pine like foliage. White to light pink flowers in winter and spring. Hardy.	WA	N
Grevillea 'Gilt Dragon'	Grevillea 'Gilt Dragon'	to 0.5	Red flowers in autumn/winter on grey foliage. Bird attracting.	Au	Y
Grevillea 'Bonnie Prince Charlie'	Grevillea 'Bonnie Prince Charlie'	to 0.6	Red-orange flowers spring to summer on attractive green foliage.	Au	Y
Hardenbergia comptoniana 'Little Mini' or 'Meema'	Native wisteria	to 0.5	Compact shrub, purple flowers late winter and spring. Butterfly attracting.	WA	Y
Leptospermum 'Fore Shore'	Leptospermum 'Fore Shore'	to 0.5	Grey green foliage with bronze coloured new growth.	WA	Y
Leptspermum sericeum 'White Wave'	Leptospermum	0.5	Cascading habit. White flowers in spring. Bird Attracting.	WA	Y
Leucophyta brownii 'Canal Rocks' & 'Silver Nugget'	Leucophyta	to 0.6	Striking silver foliage. Yellow flowers spring and summer.	Au	Y
Olearia axillaris 'Ghost Town'	Diasybush	to 0.7	Contrast plant. Spiky grey foliage.	Au	Y

Streetscape Cont.

Latin name	Common Name	Ht (m)	Features	Pr.	DR
Olearia axillaris 'Little Smokie'	Daisybush	to 0.7	Compact upright shrub. Grey foliage. Tiny white/mauve flowers.	Au	Y
Pimelea 'Pink Solitaire'	Rice flower	to 0.5	Compact shrub, magenta -pink flowers.	WA	Y
Verticordia chrysanthella	Feather Flower	to 0.5	Deep green needle like leaves, bright yellow feather flowers in spring.	WA	Y
Wistringea 'Mundi'	Coastal rosemary	to 0.4	Small grey green foliage. White flowers in spring & summer. Extremely hardy.	Au	Y
Groundcovers and Small Grasses:					
Banksia blechnifolia	Groundcover banksia	to 0.5	Deeply lobed grey green leaves. Reddish flower spikes early summer	WA	Y
Casuarina glauca	Casuarina 'Cousin It'	to 0.1	Lime green foliage. Leafless stem. Extremely hardy goundcover.	Au	Y
Dampiera 'True Blue'	Dampiera 'True Blue'	to 0.3	Bright blue flowers in spring & summer.	WA	y
Dianella 'Little Rev'	Flax lily	to 0.6	Blue grey flax like leaves. Blue flowers spring and early summer.	Au	Y
Dianella 'Silver Streak'	Flax lily	to 0.6	Green strappy leaves with white stripes.	Au	Y
Eremophila glabra 'Prostrate Yellow '	Common Tar bush	to 0.5	Silver foliage. Yellow tubular flowers spring to autumn. Bird attracting.	WA	Y
Eremophila glabra 'Amber Carpet'	Common Tar bush	to 0.2	Small green oval leaves. Neat form. Orange flowers spring & summer.	WA	Y
Eremophila 'roseworthy'	Eremophila	to 0.25	Narrow green leaves, pink/red flower spikes in Winter. Hardy.	WA	Y
Ficinia nodosa	Knobby Club Rush	to1	Upright often arching dark green stems. Brownish globular flower heads through the year. Tolerates dry or moist conditions.	Au	Y
Grevillea obtusifolia 'GinGin Gem'	Grevillea 'GinGin Gem'	to 0.3	Red flowers most of the year.	WA	Y

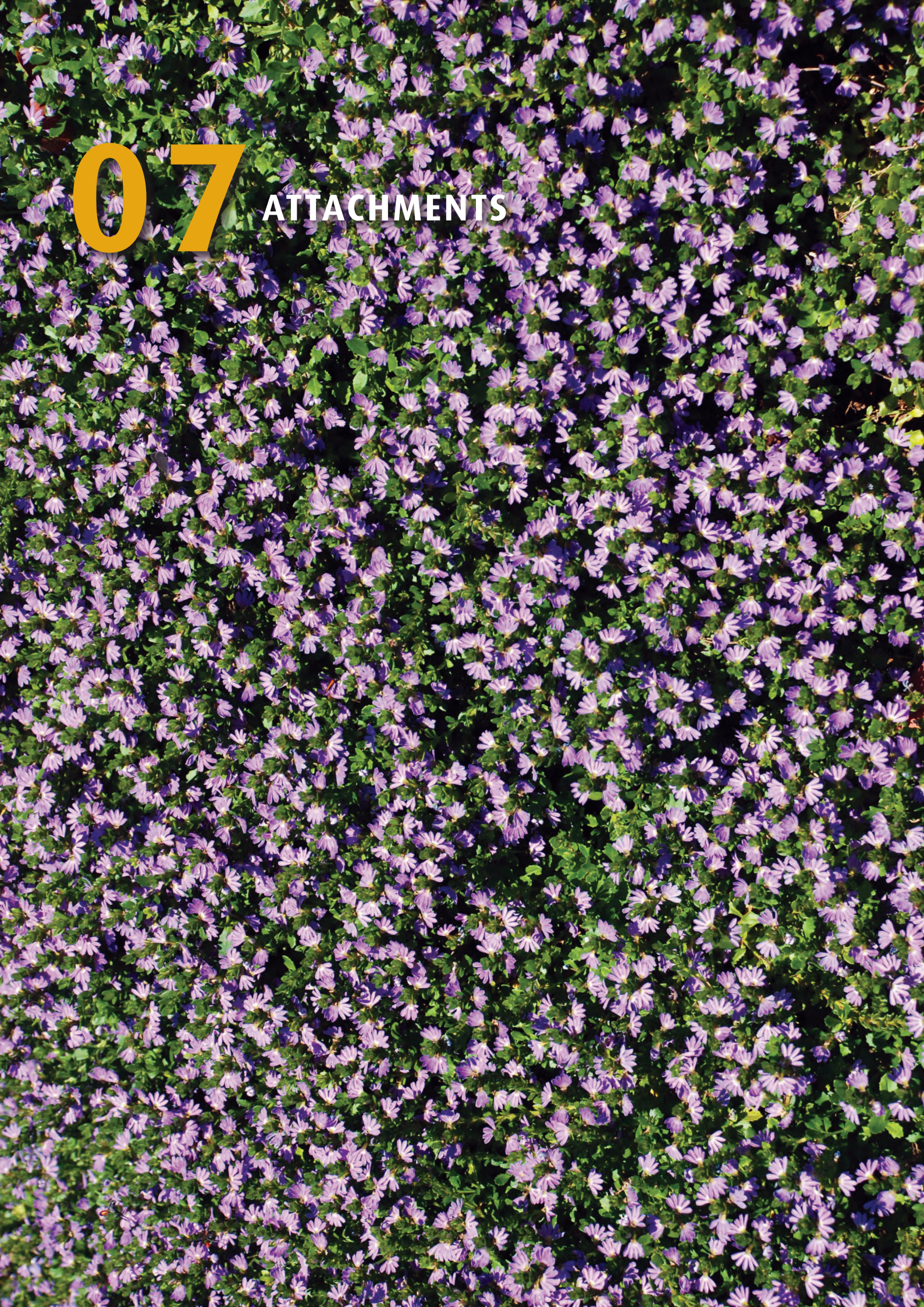
Streetscape Cont.

Latin name	*Common Name*	*Ht (m)*	*Features*	*Pr.*	*DR*
Grevillea' Bronze rambler'	Grevillea 'Bronze rambler'	to 0.3	Attractive foliage with bright red flowers in spring.	Au	Y
Hemiandra pungens	Snakebush	to 0.25	Rigid pointed green foliage. Mauve flowers spring & summer.	WA	Y
Hibbertia scandens	Snake vine	to 0.4	Dark green foliage. Showy buttercup flowers most of the year.	Au	Y
Lomandra longifolia	Lomandra 'Tanika' & 'Seascape'	to 0.5	Fine green leaf weeping habit. Attractive yellow flower heads in spring.	Au	Y
Lomandra longifolia 'Katrinus' or 'Tilga'	Lomandra spp.	to 0.7	Green strap like leaves, yellow flower spikes in spring.	Au	Y
Myoporum parvifolium 'Yareena'	Creeping Boobialla (also also flat, fine and purple leaf varieties."	to 0.3	Bright green foliage. White star flowers in spring & summer. Bird & butterfly attracting. Hardy	WA	Y
Wistringea 'Smokie'	Wistringea 'Smokie'	to 0.8	Small compact shrub, grey green foliage. Mauve flowers in spring.	Au	Y

Plant Table 6 ~ Fire Resistant Trees

The following list of trees that are hard to burn is taken from the City of Armadale guide: 'Selecting plants for a more fire-retardant garden' March 2011. Further advice is also available from FESA and the Small Tree Farm in Ballingup.

Latin name	Common Name
Trees:	
Acer trifidum	Trident Maple
Acmena smithii	Lilly Pilly
Cercis siliquastrum	Judas Tree
Crataegus phaenopyrum	Washington Thorn
Fraxinus Oxycarpa 'Raywood'	Claret Ash
Fraxinus velutina	Velvet Ash
Hymenosporum flavum	Native Frangipani
Largestromia indica	Crepe Myrtle
Liquidambar styraciflua	Liquidambar
Morus alba	Mulberry
Nyssa sylvatica	Tupelo
Paulownia fortunii	Paulownia
Pyrus ussurensis	Manchurian Pear
Pyrus calleryana 'Glenn's Form'	Glenn's Form Pear
Quercus robur	English Oak
Quercus phellos	Willow Oak
Ulmus chinensis	Chinese Elm



07 ATTACHMENTS

This structure plan is prepared under the provisions of the City of Kalamunda of Local Planning Scheme No. 2

IT IS CERTIFIED THAT THIS STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON:

16 March 2001

In accordance with Schedule 2, Part 4, Clause 28 (2) and refer to Part 1, 2. (b) of the *Planning and Development (Local Planning Schemes) Regulations 2015.*

Date of Expiry: 19 October 2025

Amendment No.	Amendment Site/Summary	WAPC Endorsed Date
	Original Approved Outline Development Plan (ODP)	16 March 2001
1	Lot 24 Hardey Road East Wattle Grove - Density increase from Residential R20 to Residential R40 over a portion of the site.	27 November 2012
2	Lot 34 Hale Road Wattle Grove - Increasing the portion of the site nominated as Neighbourhood Centre, therefore decreasing the amount of land allocated for Public Open Space (POS).	17 December 2012
3	Lots 33 and 34 Hale Road Wattle Grove - Rear portion of Lot 33 changed from Public Open Space (POS) to Commercial, whilst retaining a 11m wide portion of POS along the rear boundary. Zoning changed from Neighbourhood Centre to Commercial over both lots.	01 May 2013
4	Lot 57 Welshpool Road Wattle Grove - Increasing the density of the site from Residential R20 to Residential R30	25 September 2013
5	Lot 101 Sheffield Road Wattle Grove - Increasing the density of the site from Residential R20 to Residential R30	16 June 2014
6	Lots 5 and 6 Hale Road Wattle Grove - Increasing the density of a portion of the site from Residential R20 to Residential R40; and road layout modification and realignment	01 November 2015
7	Lot 20 Hardey Road Wattle Grove - Increasing the density of a portion of the site from Residential R20 to Residential R30	06 April 2016
8	Lot 8 Hale Road Wattle Grove - Increasing the density of a portion of the site from Residential R20 to Residential R30	21 January 2016
9	Lots 192-194 Hale Road Wattle Grove - Change of zoning from Mixed Use to Commercial.	18 January 2021
10	Lot 900 William Street Wattle Grove - Changing the designation of the southern parcel of the subject land from Road to Residential with a density code of R20.	30 June 2022

Subject land

The combined shop-retail floor space for the entire commercial land use designation associated with portions of 30, 31 & 32 Hale Road and adjoining 33 & 34 is not to exceed 6000m2 except where justified through a Retail Sustainability Assessment prepared in accordance with State Planning Policy 4.2 and where it is supported through the determination of an application for development approval.

At the time of subdivision the shire will recommend to the Western Australian Planning Commission that a notification be placed on the certificate of title on lots within the 20-25 ANEF contour that the lot is subject to aircraft noise.

Proposed residential Lots located in close proximity to railway line may currently or in the future be affected by noise from freight transportation on the railway line.

Proposed residential Lots located in close proximity to Perth Airport are currently affected or may in the future by aircraft noise. Noise exposure levels are likely to increase in the future as a result of increases in numbers of aircraft using the airport, changes in aircraft type or other operational changes, such as construction of the parallel runway.

WATTLE GROVE CELL 9 BOUNDARY

LEGEND

- RESIDENTIAL R20
- RESIDENTIAL R25 -R 30
- RESIDENTIAL R40
- PUBLIC OPEN SPACE / PARKS & RECREATION (MRS)
- SCHOOL
- COMMUNITY
- COMMERCIAL
- MIXED USE
- MOTEL
- SERVICE STATION
- PRIMARY REGIONAL ROADS
- SCHEME EXTENT
- EXISTING ROAD
- HALE ROAD WIDENING
- PROPOSED ROAD
- EXISTING LOT
- PROPOSED LOT
- SUPER LOT
- RAILWAY
- DONGARA TO PINJARA GAS PIPELINE
- EASEMENT OVER GAS PIPELINE
- AIRCRAFT NOISE EXPOSURE FORECAST

REVISED LOCAL STRUCTURE PLAN

LOT 20 WILLIAM STREET
WATTLE GROVE

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Urban Development Institute of Australia WESTERN AUSTRALIA

PIA Planning Institute Australia

CPP CERTIFIED PRACTISING PLANNER

SCALE: 1:8500 @ A3

DATE: 4th MARCH 2022

FILE: 1198_04.03.2022.dwg

DRAW: - SB

CHECKED: -

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DYNAMIC PLANNING AND DEVELOPMENTS

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N W E S

At A3:

1:5,000

1 Native Water-wise Plant Showcase Garden
This area is adjacent to a new paved look-out and is an ideal place to showcase plant species that residents can use in their gardens and verges to save water, support wildlife and add to the landscape character of the suburb.

2 Picnic Area
This newly installed set of shelters, picnic tables and feature paving provides an ideal location for neighbours to meet. Facilities such as a BBQ, drinking fountain and lighting could also be installed, as per the recommendations of the Shire's Community Facilities Plan. Additional shade trees and small areas of colourful native garden beds could also be planted.

3 Off-The-Leash Dog Area
Many pet owners in Wattle Grove would appreciate a designated and fenced 'off-the-leash' area . This area will help avoid pets soiling children's playgrounds, provide a safe area for dogs to be allowed a free run and importantly, help protect wildlife from dogs. A tap for dog drinks and hand washing should be provided, along with bags and bins for dog waste.

4 Mini-Oval
If the current Woodlupine Brook Main Drain alignment is relocated (along with other drainage enhancement works proposed) adequate space for active ball games for children can be provided. The area shown could possibly accommodate play space equal to:
- an Auskick 9 aside or 6 aside football oval;
- a 5 - 8 yr junior cricket pitch; and
- an under 8 yrs soccer pitch.

The new playing area needs to be irrigated, prickle-free and designed to fit between existing shade trees and the contours needed for the Main Drain.

5 Playground
A significant neighbourhood community playground is proposed for this location. The playground could cater for children ages 0 - 12+ in appropriate age groupings, incorporate elements of community art , include some natural play and specifically designed play elements as well as off-the-shelf equipment, and be designed to utilise existing shade planting. Parking for parents with young children could be provided adjacent, along with a toilet and baby change facilities.

6 Feature Seating and Public Artwork
When this site is developed for parkland, existing significant trees should be conserved as features in the landscape. A purpose-designed bench with interpretive elements could sit in this tree's shade and look out on a public artwork located on the proposed 'island' in Woodlupine Brook.

7 The Orchard
Wattle Grove has a history as a fruit growing area for citrus and stone fruit. This history can be interpreted in the landscape design with a double avenue of fruiting trees framing a long grassy walk. Trees that give a wonderful spring flowering and an autumnal change of colour could be used. The Landscape Masterplan Report contains a selection of suggested species.

8 Proposed 'Village Centre' Development
These lots are zoned to allow for a new community hub with commercial facilities to be developed. Cell 9 lacks a 'heart' and this development could be designed to create meeting places for neighbours, include a community building, incorporate residential developments and accommodate service as well as retail outlets. How this new development interfaces with Hale Road will be critical, and elements such as traffic management, service access, pedestrian amenity, conservation of significant trees and landscaping to Hale Road will need to be considered carefully in the set-out of the development.

The proposed development also faces public open space on two boundaries, and the interface between these and new buildings needs to be designed so as to make the most of the landscape.

9 Tree Conservation
Many of the large lots in Cell 9 are likely to be subdivided into smaller residential lots, and new roads constructed. Where possible, existing mature trees should be conserved by adjusting road alignments or creating median islands; as could be the case in this location. Mature trees add to the value of properties, enhance the character of a subdivision and have many environmental benefits.

10 Drainage Enhancements
The Shire is working with Water Corporation to improve the appearance of the Woodlupine Brook Main Drain. This includes creating habitat islands, contouring the Brook's banks for a more natural slope, revegetating with wetland plants, managing weeds and enhancing water quality. This new 'island' is located to conserve existing Marri and Jarrah trees and include deep water channels either side to exclude predators such as cats.

11 Bus Hub
Cell 9 is serviced by two main bus routes via Hale Road and Welshpool Road. There is space in the road reserves in this location to provide a 'Kiss and Ride' facility which could include drop-off and collection bays for public transport users, bike lockers and a small amount of short-term parking. Bus shelters could also be provided to improve users' comfort.

Masterplan Aims
This Landscape Masterplan aims to help create a setting for Cell 9: Wattle Grove which enhances the character of the area, improves amenity for residents and reflects the history and natural setting of the suburb.

Detailed recommendations for preservation of Cell 9's assets, building a sense of community, improvements to streetscapes and enhancement of park facilities are included in the Landscape Masterplan Report, which should be read in conjunction with this drawing.

Water-wise, native garden beds can be used to highlight gateways into Cell 9 and enhance the streetscape.

Drainage channels can be planted with native species that provide habitat, improve water quality and are beautiful.

The history of Cell 9's orchards could be interpreted in the landscape with elements such as a flowering 'fruit tree' avenue.

Retaining existing significant trees in a new development is a tool used in many new subdivisions to enhance the landscape.

12 Gateway Landscaping
Tree planting has begun in the widened road reserve at the junction of Welshpool and Hale Roads. This planting can be continued and augmented with bands of colourful native garden beds. If the beds are arranged in bands at 45 degrees to oncoming traffic, they will provide a colourful impact without the need to plant large areas. Plant species are suggested in the Landscape Masterplan Report. Entry signage may also be appropriate at this point.

13 Exercise Circuits
Two conjoined exercise circuits around the northern and southern neighbourhood parks are proposed. Outdoor exercise equipment could be installed approximately every 500m so as to provide a variety of circuits and a return trail length of as little as 500m or as much as 3km. The shared use path could also have 500m interval markers to give runners and walkers an indication of distances covered.

14 Outdoor Amphitheatre
A space for group gatherings, small festivals, screening of outdoor movies and community events (such as Christmas Carols) would be an asset for the Wattle Grove community. This site could accommodate a grassy open space with an artwork, terraced grass seating and a small stage area framed by shade trees. Traffic and parking, supply of power for events and managing any noise impact on neighbouring properties will need to be considered in the design of this space.

15 Park Entry Points
The plan proposes new shared use paths to formalise existing pedestrian desire lines and create walk circuits around parks. At the main path entry points to each of the parks, an area with colourful planted beds, seating, bins and signage is suggested as a 'gateway' to the park. Interpretive information can be included in signage as well as information on the proposed exercise circuit, playgrounds and off-the-leash areas. Each park area could be named and signed so as to make way-finding and meeting friends easier.

16 Wetland Revegetation
The Shire of Kalamunda has been undertaking major revegetation and weed management as part of the Woodlupine Living Stream project south of Hale Road. The work commenced here could be continued throughout the wetland areas and additional resources allocated to allow regular weed management care and ongoing revegetation works.

17 Bushland Management
Management of bushland reserves could include closing and revegetating excess tracks, creating narrower bush walking trails, undertaking dieback management initiatives, providing interpretive signage on endemic plants and animals and revegetating degraded areas.

18 Gateway Landscaping
There is an opportunity with future undergrounding of power lines and widening of Hale Road to create a landscaped entry point to Cell 9 at this location. An avenue of mature trees already exists on the northern edge, and these can be matched with significant planting in the reserve and creation of a median island with feature lighting . Plants in the median could include wattles - as a reference to Wattle Grove's name.

19 Shared Use Path Link
An opportunity to create a cycle and walking path link between Cell 9 and the Hartfield Park playing grounds could be explored. An underpass would need to be created under Tonkin Highway.

20 Yule Brook Park
Future improvements to Yule Brook Park could include a small irrigated area of grass ringed by feature trees, and shade planting adjacent to paths. Much of this area is currently in private ownership and so new planting and facilities are part of a longer term plan for the area.

21 Public Transport Links
Future works to this area (and others in Cell 9) could consider providing footpath links to bus stops. A bridge over Yule Brook could be provided, along with a small public open space and a piece of community art interpreting this location's history as the site of a Chinese market garden in the early 1900's.

22 Local Parks (Zone Four)*
Smaller local parks in Cell 9 can be managed as per the Shire's Community Facilities Plan (which outlines facilities to be provided) and landscaped with new tree planting. These parks provide an opportunity to plant large iconic trees, which are becoming increasingly rare in suburban areas.

23 Streetscaping (Zone Five)*
Residential streets could be enhanced with street tree planting and by encouraging residents to plant verges with low growing native species. Green streets with street-facing side fences screened with shrubs, shady tree avenues and well-kept verges improve resident amenity as well as property values.

Hale Road would also benefit from a major streetscape and landscape enhancement project. Opportunities to underground power, enclose drains, plant street trees, improve pedestrian crossing points, provide cycle lanes and plan for adjacent developments so as to conserve existing mature trees could be investigated and a concept plan drawn up.

LEGEND

TREES & LANDSCAPE
- Existing tree
- Native feature tree
- Native street tree
- Native street tree under power line &
- Endemic revegetation tree
- Wattle 'Gateway' planting
- 'Orchard' citrus tree
- 'Orchard' cherry tree
- 'Orchard' feature tree
- Residential street trees
- Street trees under power lines
- Feature Garden Beds

- Bushland (Zone One)*
- Wetland (Zone Two)
- Woodland (Zone Three)
- Irrigated turf
- Non-irrigated turf

*Zones refer to Management Zones in the Masterplan Report.

FEATURES
- Public Artwork
- Park Signage
- Exercise circuit equipment
- Public toilet with baby change
- Entry statement signage
- Bus shelter
- Play equipment
- Existing picnic shelter
- Existing shared use path
- New shared use path
- New boardwalk / bridge
- Existing bridge
- New bushland trail

SERVICES
- Feature street light
- Overhead Power lines

This drawing has been collated from a number of base plans and will not be 100% accurate. Locations of street trees and features are conceptual only, and detailed design will be needed to determine final set-outs and alignments.

Prepared for the Shire of Kalamunda by Sally Malone Design

Cell 9; WATTLE GROVE
LANDSCAPE MASTERPLAN

N JANUARY 2012 scale 0 50 100 Metres

shire of kalamunda