GLEN IRIS ESTATE

APPENDIX 7
LANDSCAPE AND PUBLIC OPEN SPACE STRATEGY

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Glen Iris Estate

Landscape Strategy for Local Structure Plan
Eastcourt

April 2022

emerge ASSOCIATES



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1.1 General

The proposed redevelopment of the former Glen Iris golf course has created the need for a planning design to create residential housing including the provision of considerable areas of landscaped open space in a generally somewhat constrained space. The redevelopment includes planning for between 550 and 600 residential dwellings of varying densities in areas between the existing residential uses adjoining and surrounding the site. The use of landscaped open space is critical in providing for the needs of new and providing additional amenity to all existing residents. The project broadly consists of north, central and southern residential precincts.

It was noted during the extensive community consultation phase of the design process that the opportunity exists for a more diversified and broader accessible open space network than the previous fenced and single use golf course. The planning layout and landscape design have worked together to maximise the access and usability of the open space areas as a broader green link network with the aim of connecting precincts both within the new development and with the existing development surrounding the site.

1.2 Landscape Approach

The nature of the project as an infill redevelopment offers the opportunity to both create new existing open space precincts in its own contemporary style and also to be complimentary and mindful of the retention and expression of the sites existing older character. The overall intent of the landscaped open space design is encompassed below:

- To reflect and respond to the key existing landscape elements and character of the site in order to maintain visual continuity between existing and new precincts wherever reasonably possible. This includes built form and landscape treatments within streetscapes and open space.
- To provide safe external environment for the quiet enjoyment of the residents, guests and the general public.
- To best cater for the lifestyle needs and aesthetic desires of the existing residential community within the bounds of the capacity of the development to do so.
- To best cater for the lifestyle needs and expected desires of the new future residential community in reference to their anticipated demographics.
- To provide integrated public access that links with the existing residential, street and path network with a strong sense of movement opportunity, options and legibility as part of a broader open space green link strategy.
- To retain mature trees where ever reasonable and practical to do so within the bounds of the projects delivery and approval requirements.
- To provide a more environmentally sustainable outcome than the prior land use as a golf course, inclusive of the use of sustainable design practices as applied to new works.
- To consider habitat retention and creation in various methods including vegetation retention and replanting.



- To clearly define various landscape design typologies as applicable to all areas of open space to assist in the provision of facilities and legibility.
- To manage fire risk in a creative and aesthetic manner while meeting required standards and obligations.
- To respond to the local colour palette with either matching or complimentary colours and textures with the aim of visually minimizing visual impacts and blending where possible.

1.3 Private Realm Strategy

The project's private realm consists of landscaped open space within private residential lots in both front and rear yards. In the case of higher density strata development areas, the open space consists of common areas for access and the use of those strata residents as well as private open space to balconies and courtyards in accordance with R-Code requirements.

It is envisaged that landscape guidelines will be provided to residents as part of their purchase process to assist them in making informed landscape choices around design, aesthetics, sustainability and maintenance. In all cases the private realm will be under the care and control of the individual resident or the strata body.

1.4 Public Realm Strategy

Generally the public realm includes primarily the landscaped open space and path network within the proposed development and its linkages to the existing adjacent and surrounding open spaces networks and streetscapes. The landscape design aims to:

- Provide clear, direct, safe and compliant access around and through the proposed development
- Positioned to ensure the retention of a significant number of existing mature trees in new parks and linear interface buffers adjoining existing residences.
- Be designed and installed to integrate and manage fire risk to the required areas of the landscape treatment
- Provide open usable informal grass recreation space for new and existing residents visitors and the general public.
- Provide shaded seating as a point of refuge on the pedestrian and cycle networks
- Provide suitably sized central play facility befitting the character and history of the site.
- Provide small informal play area for general public use.
- Provide shady endemic native and exotic trees for respite.
- Provide signage elements for clarity of pedestrian and cycle movement.
- To cater for a range of demographics, user groups and skill levels.



Braithwaite Park, Emerge Associates



Newhaven, Emerge Associates



Secret Harbour, Emerge Associates

1.5 Changing Demographics

The demographics of the existing Glen Iris locality is generally characterized as a mature suburb with a large proportion of long standing residents. There is a lower than average number of children or adolescents and young people living in the locality. It is understood that grandchildren are somewhat present when visiting the existing residents. The anticipated demographics of new residents is younger than the existing Glen Iris age cohort. New residents will bring a range of children ranging in ages from school age children to older teens as part of a general second and third home buyer profile. It is not currently expected that first home buyers will be significantly present within the new development based on proximity, lot size and anticipated pricing structures.

1.6 Open Space Distribution

The proposed open space typologies are arranged to provide a range of experiences and also a range of facilities within both vehicular and walking proximity to all new and existing residents of Glen Iris and Jandakot generally. The landscape plans attached identify the open space distribution and strategy.

1.7 Open Space Typologies

Broadly the open space areas within the project consist of set landscape and use typologies. These typologies are determined by a number of factors including size of the open space, grade / levels and grade within the open space, the amount and location of gravity surface runoff, tree retention ability, habitat retention and creation, usable and safe walkable linkages.

The four open space typologies include:

1. Focal open space

The proposed design consists of four distributed larger open space areas suitable for community gathering and active informal recreation. These four parks are distributed reasonably evenly throughout the proposed redevelopment. These parks cater for a range of informal active recreation uses and a mix of passive recreation uses. These larger areas of open space have the ability to cater for tree retention and larger areas of surface runoff drainage storage and management.

2. Access open space

The proposed design consists of a series of access open space areas. These open space areas are characterized by providing a strong open space link between other open space typologies. In so doing, these open spaces provide a critical role in creation of a continuous green link option for pedestrian and cycle movement around the redevelopment. The linear nature of these open space links allows for the retention of vegetation, while the width of these open spaces enables the inclusion of series of public facilities accessible for existing and new residents.

3. Pocket park open space

The proposed design locates a number of smaller open space areas set within the residential zone. These smaller open space areas are located to provide a range of localized incidental benefits including visual softening among the residential zone, walkability rest and respite via shade and seating, and in some cases specific associated needs such as low point drainage management and existing landmark specimen tree retention.

4. Buffer and linking open space

The proposal consists of a series of linear open space links. The nature of these open space areas ranges from road reserves with a widened verge to one side, to narrow buffers suitable to cater for a linking path and low planting between existing and new residences. The internal function of these spaces is to act as an access link.



Bibra Lake Regional Playground, Emerge Associates



Bibra Lake Regional Playground, Emerge Associates

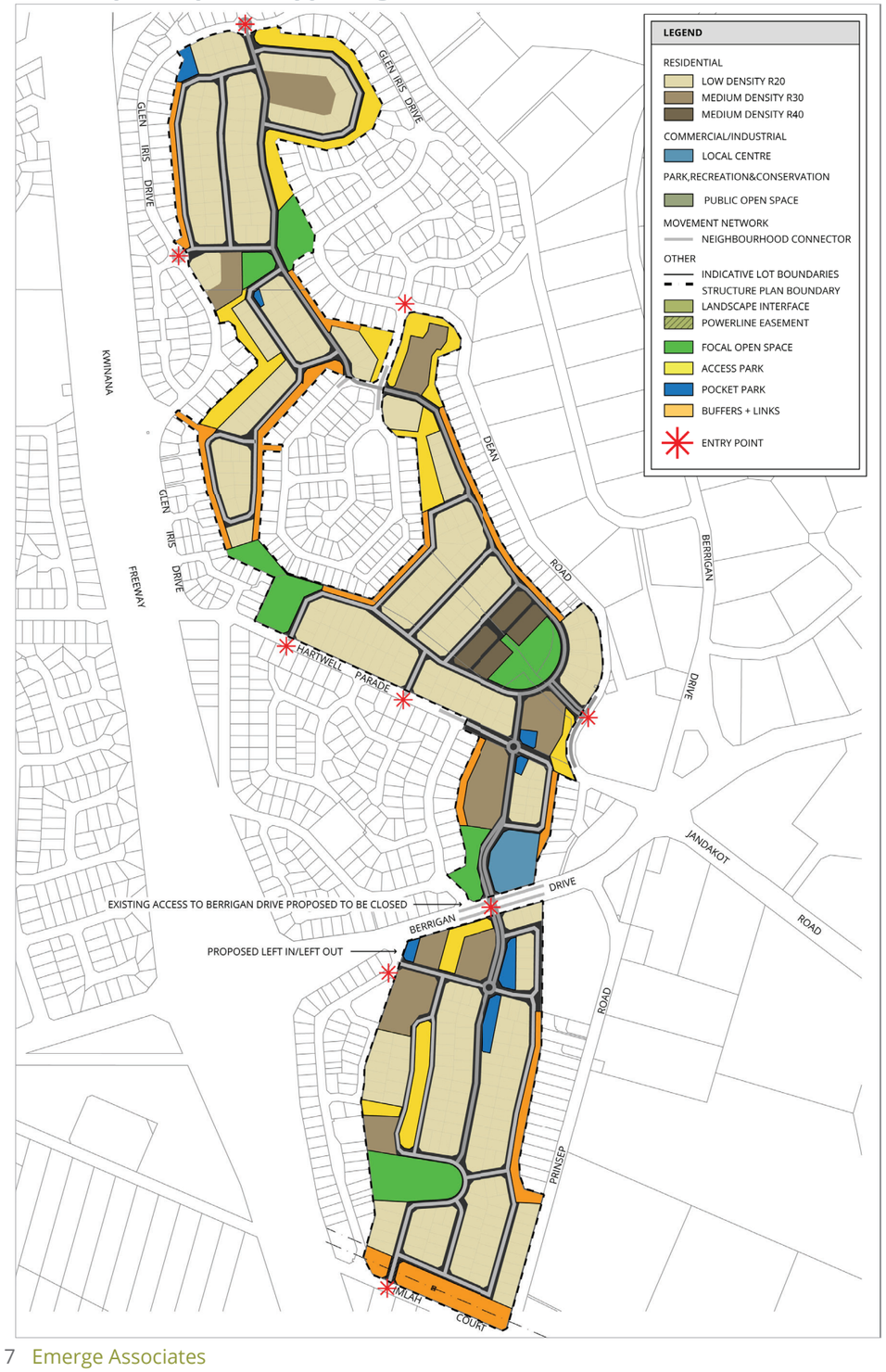


Braithwaite Park, Emerge Associates

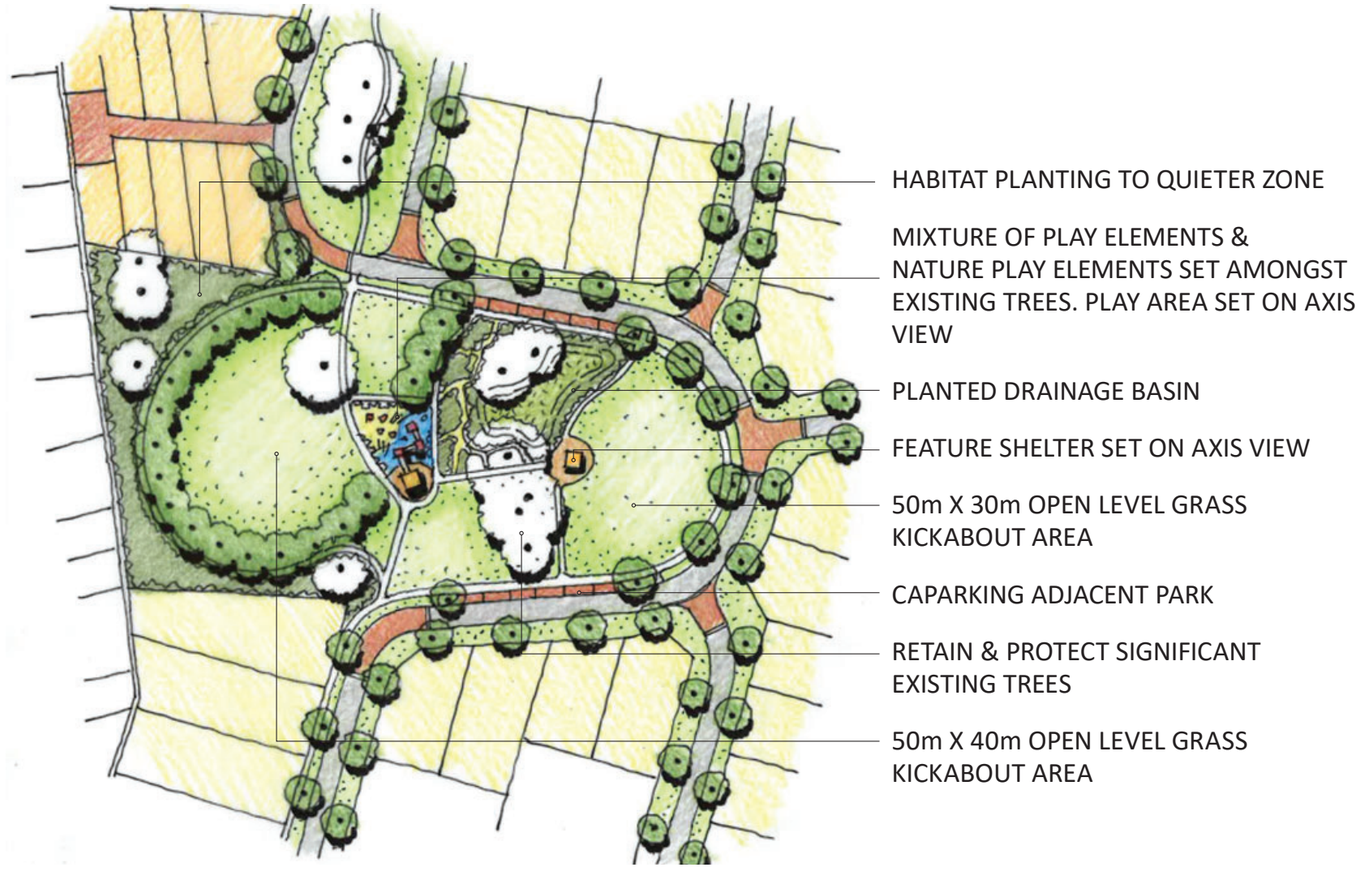


Evermore Heights, Emerge Associates

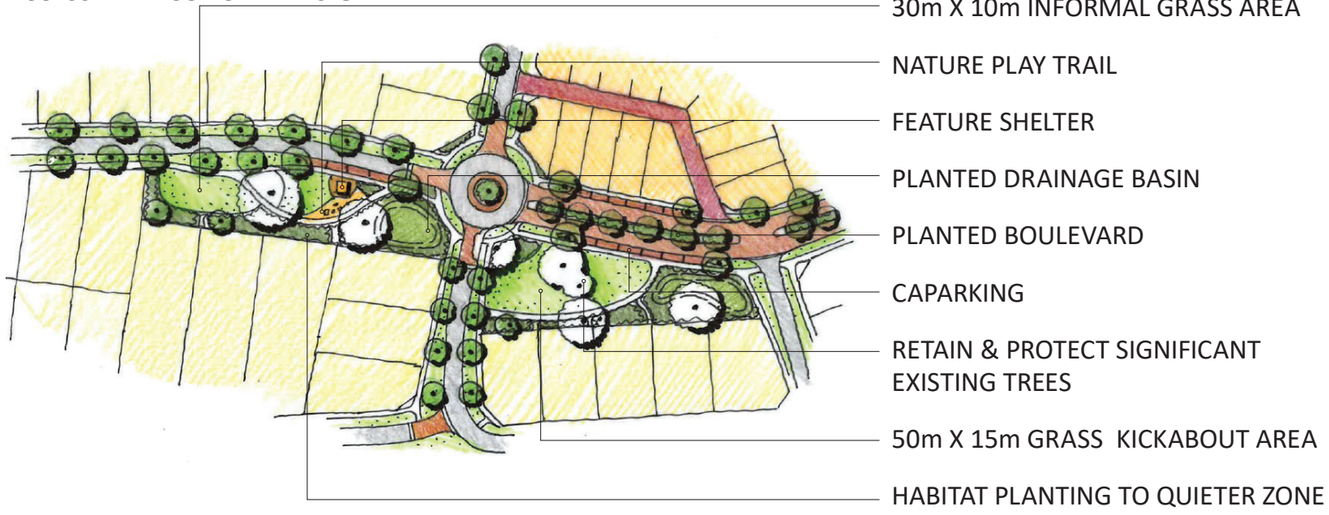
1.8 Open Space Typologies Visual



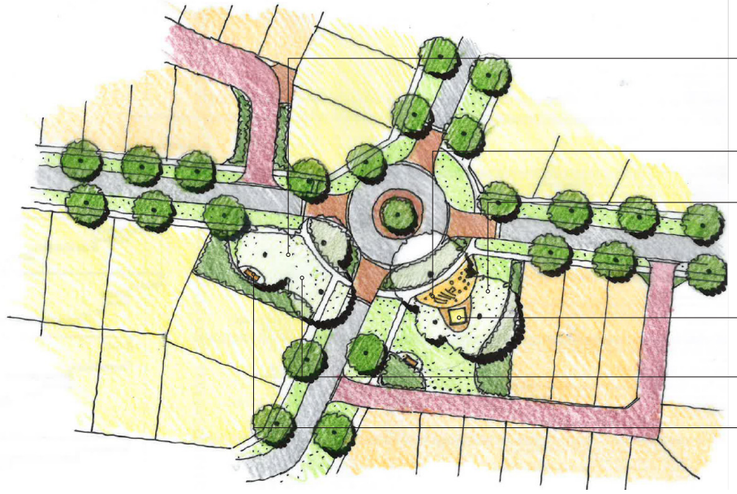
FOCAL OPEN SPACE CONCEPT DESIGN EXAMPLE



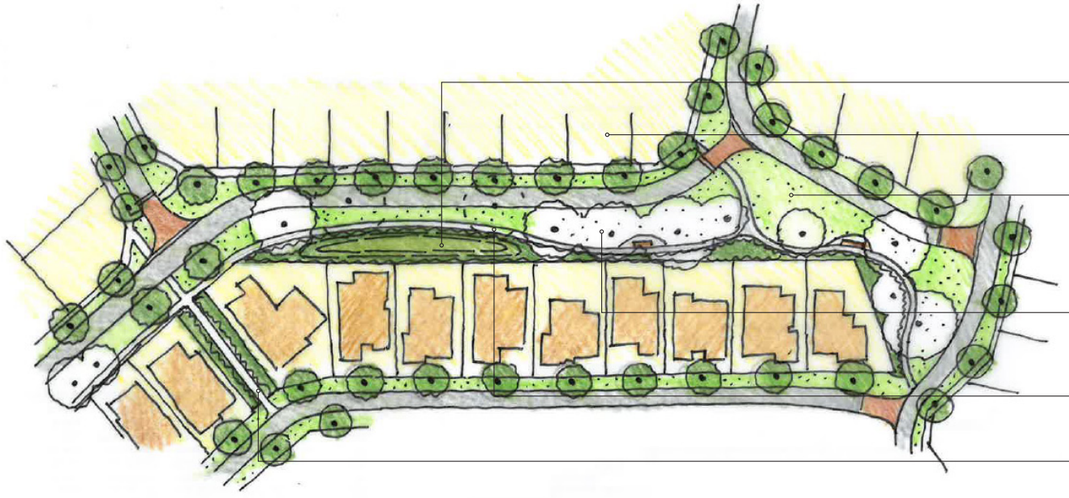
ACCESS PARK CONCEPT DESIGN EXAMPLE



POCKET PARK CONCEPT DESIGN EXAMPLE



LANDSCAPE BUFFER WITH ROAD FRONTAGE CONCEPT DESIGN EXAMPLE



LANDSCAPE BUFFER WITHOUT ROAD FRONTAGE CONCEPT DESIGN EXAMPLE



Glen Iris Estate

1.9 Landscape Masterplan

KWINANA FREEWAY

LAKES BOULEVARD

IMLAH COURT

BERRIGAN DRIVE

TURNBURY DRIVE

PARK

TURNBURY PARK

HARTWELL

PRINSEP ROAD

PRINSEP PARK

YARRA VISTA PARK

LEGEND

- ROADS
- ROAD PAVING
- RESIDENTIAL LOTS
- MEDIUM DENSITY LOTS
- LOCAL CENTRE
- DUAL USE FOOTPATHS
- PUBLIC OPEN SPACE
- SHADE STRUCTURES
- PLAY AREAS
- EXISTING TREES
- PROPOSED STREET TREES

0 75 m

SCALE **1 : 3000 @ A3**

KWINANA FREEWAY

GLEN IRIS DRIVE

PARADE

KOORALBYN VALLEY

FAIRWAY PARK

CRESCENT

DEAN ROAD

GLEN IRIS DRIVE

CAPRICORN PARK

LAKES WAY

Glen Iris Estate

1.10 Functional Layout Masterplan



KWINANA FREEWAY

GLEN IRIS DRIVE

PARADE

KOORALBYN

FAIRWAY PARK

VALLEY CRESCENT

GLEN IRIS DRIVE

CAPRICORN PARK

DEAN ROAD

LAKES WAY

1.11 Public Facilities

The development proposes to build upon existing public facilities whilst catering for new residents via a range of new publicly accessible facilities. The extensive community consultation process and discussions with the City of Cockburn technical staff have identified a number of desirable public facilities including:

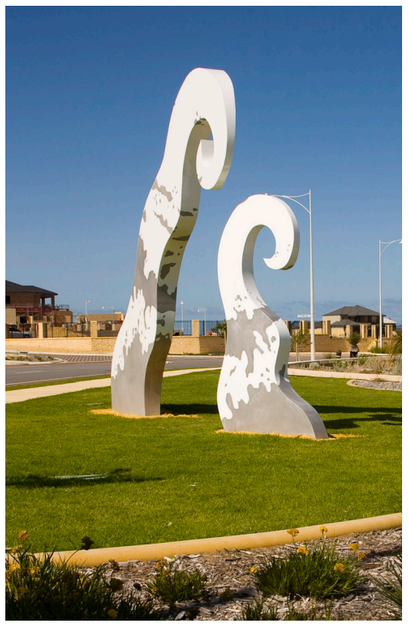
1. Informal larger play areas disbursed through the focal parks to cater for informal recreation activities eg: informal touch football, ball games, unstructured training, frisbee, kite flying, dog exercise and the like.
2. Defined personal training areas. It is envisaged that areas set aside for small gatherings of residents and visitors to allow for use/hiring for personal training and bootcamp type events. This is intended to cater for a variety of local age groups and skill levels. The landscape design can provide definition to these areas via small level changes and path and wall layouts.
3. 3. Playground facilities – it is noted that the need for a major regional facility is already catered for externally to the development area. It is proposed that a mid order play facility is located within the development to cater for the expected increase in local use and change in demographics. The aim is to design play elements that complement the existing retained play elements within Glen Iris rather than copy them, this will better provide a range of user experiences.
4. 4. Smaller play elements generally associated with nature play items located in discrete locations along the green links as part of a broader play trail running through the proposed development. This caters for smaller residential local precincts and also acts as a combined whole with each nature play area having a different type of play offering to those retained play elements currently in the Glen Iris.
5. Shelter structures with picnic settings to select locations where residents are encouraged to stop and stay for a while. These are generally associated with play elements and view axis lines from adjacent roads.
6. Electric BBQs are proposed to a couple of select locations as part of a social gathering and mixing initiative catering for smaller family groups and family scaled events.
7. Fitness elements are proposed as part of the broader green link design approach. This is in response to community feedback gained from the community consultation process.
8. Walking trails are proposed to occur through the green link network and are to be denoted via signage and colour coded elements to identify trails of various lengths and difficulty to suit a variety of users (eg: 1km, 3km, 5km, 7km). It is envisaged these trails will form a key tool in encouraging greater social interaction between existing and new residents.
9. Cycle trails are proposed to meander through the proposed development primarily on a path system with suitable signage and in some locations this may also occur partly onto the road system where low vehicle flow is to occur.
10. Dog walking trails and facilities are proposed to be included generally in alignment with the walking trails. These may include rest points in shade, taps and fixed dog bowls and discrete areas containing dog agility elements as part of a broader walking network.
11. A hard surface ball court is proposed to provide an active focus for teens. The final location of these facilities will be subject to detail design to mitigate noise impacts to adjacent residents but also to maintain clear and open view lines for passive surveillance.
12. Embayment carparking is proposed adjacent to the larger areas of open space and along certain streets. The car bays will cater for local visitors and a variety of social events and informal activities.
13. Street furniture is proposed to occur to defined set locations for the comfort of open space users. This will be inclusive of seating, table settings, drink fountains, select bollards and the like.
14. Public art is proposed to occur either as a larger landmark element on key view lines or as smaller discrete art elements to be discovered as part of the green link approach perhaps set into paving or on to low walls and the like.
15. A 3 phase power outlet is proposed for the larger open community gathering grass space to cater for possible periodic larger scaled community events.



Dalyellup Beach, Emerge Associates



Evermore Heights, Emerge Associates



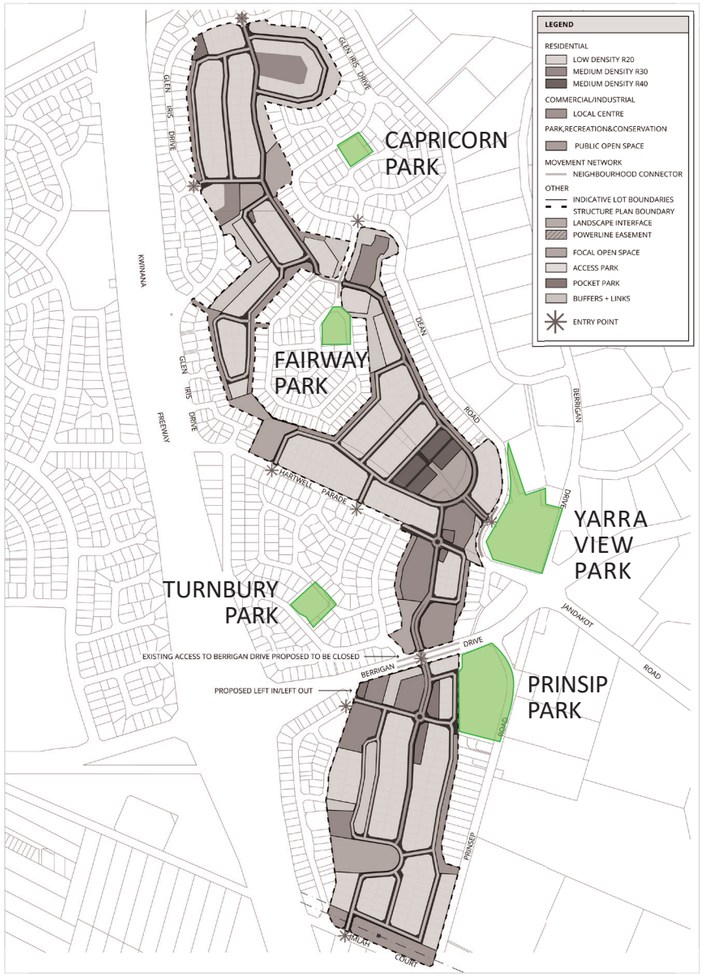




Osprey Waters, Emerge Associates

1.12 Existing Open Space Facilities

Glen Iris has 5 existing parks that form part of the current local urban layout that are well used and loved by the local community. Each has differing sizes and facilities catering for the local population and visiting public as summarised below. It is not proposed that any reduction in the existing public open space areas is to occur. The new open space network aims to be complimentary to the existing parks and their facilities.



A. Prinsep Park

This is a large neighbourhood scale park with minimal facilities. There is a large open grass kickabout area centrally located to the park bounded by clumps of taller native trees and stands of native bushland shrub vegetation forming bushland. The park appears to be well maintained but somewhat underutilised for its scale with limited public facilities. A simple path system and a shelter and table setting front onto the central grass area. Access into the park is currently difficult as it occurs mainly off major roads and intersections bounding the park.

It is noted that officers from the City of Cockburn have indicated there is the current need for a formal oval playing surface somewhere in the Glen Iris area as part of a broader growing need within Jandakot and Treeby. One possible option suggested by the City is its inclusion by reimagining the existing Prinsep Park on the corner of Berrigan Drive and Prinsep Road given the parks size can cater for an oval. Should the City wish to pursue this option it will be subject to a separate application process led by the City and is not part of the proponents proposal.





B. Yarra View Park

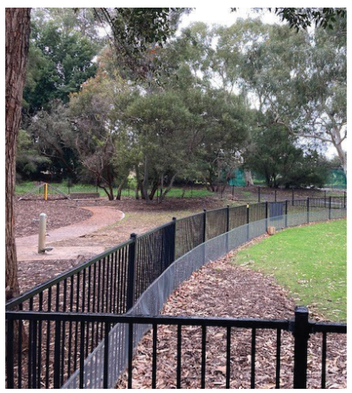
This is a large neighbourhood scale park with numerous facilities including a dedicated carpark for approx 20 cars. Existing native mature trees are located internally within the park with mature exotic street trees located to street edges. There is a large grass kick about area that doubles as a drainage overflow basin. There are 2 off lead fenced dog agility areas that exist with gate access and a variety of dog agility elements that cater for local and visiting dog walkers.

An existing off the shelf plastic playground is set in a sand base which caters for a variety of play and user ages from 4 to 10. Individual standalone small play elements exist in grass outside of the main play area for 2 – 4 year old users. Bench seating is set into the park near existing path system and there is a picnic shelter and table setting overlooking the usable grass area. There is a partly fenced basketball court in a raised area within the park that caters for teens.











C. Turnbury Park

This is a local scale park that is well maintained with central open grass kickabout area and numerous exotic shade trees set in grass. A central off the shelf plastic playground currently caters for 2-10 years of age and includes an off the shelf climbing wall and swings. A small basketball half court caters for teens as active semi formal play. There is a BBQ located in the park but no table setting. There is bench seating located under trees overlooking the grass area.

A large feature brick arbor at the main entry point adds formality and shade but has no particular usability or shaded seating. Hedge planting along the road edge limits some views from Turnbury Park Drive. The park has its own bore. Residents directly side onto the park and view over park inclusive of areas of detailed exotic shrub planting in a domestic character and scale.







D. Fairway Park

Generally the park consists of a central open grass kickabout area bounded by a variety of shrubs and hedges interspersed with a variety of mature native and exotic nature trees. A children's play area caters for toddlers and young children in a fairy garden character inclusive of off the shelf play items and with a small amount of specialised themed equipment for imagination play with a seesaw all set in a white picket fence. The park contains a bore and is well maintained and is overlooked by adjacent residences and bounded in part by a residential scaled road system.





E. Capricorn Park

The park is located on a hilltop location with views to the surrounding area. Pockets of retained mature native vegetation inclusive of mature native trees exist with mature exotic trees located along adjacent street edges. A meandering concrete path is set into pockets of sloped grass set among native planting beds. An off the shelf playground set in a sand surface is nestled into bushland adjacent to residents side boundary fence with a single solar light located nearby. The playground appears well maintained and caters for children 2 - 10yrs and generally the park is in good condition. The park has low passive surveillance and is not particularly safe with limited street visibility. No seating is evident within the park.





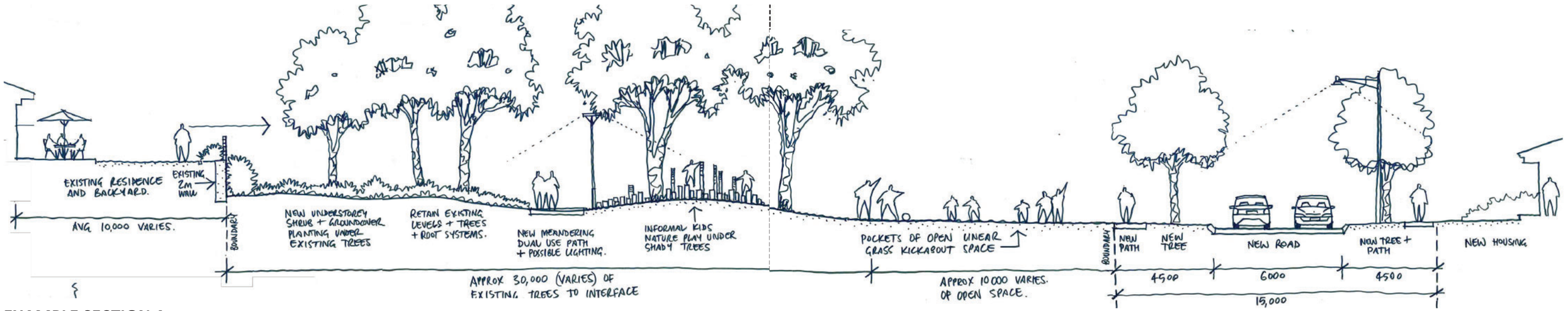
Glen Iris Estate



Sunrise, Emerge Associates



Brighton, Emerge Associates



EXAMPLE SECTION A


Braithwaite Park, Emerge Associates


Spire, Emerge Associates




Braithwaite Park, Emerge Associates


Allara, Emerge Associates

1.13 Interface to Existing Residences

The former golf course was directly backed onto by existing one and two storey residential housing. Some of the adjoining existing residential land is elevated above the subject site. In all instances, private rear fences along the boundary interface generated the safety and security necessary for the respective residence. Under the proposed development approvch the edge treatment between the existing residences and the new development will be managed in a variety of ways including:

- Upgrading to the existing rear wall and fencing where suitable and necessary subject to need, levels and impact with the work to be managed by the developer at 50/50 shared expense in consultation with individual affected adjoining landowners.
- The creation of new walling and/or fencing where suitable and necessary subject to levels and the impact of any alterations proposed by the development.

The design of the interface may be managed in a variety of ways including but not limited to:

- The backing of new housing directly onto the rear of the existing residence creating a typical residential rear boundary interface.
- The creation of a road and streetscape to the rear boundary of the existing residence.
- The creation of open space to the rear boundary of the existing residence.
- The creation of an access and buffer strip to the rear boundary of the existing residence.

1.14 CPTED & Passive Surveillance Approach

The landscape design of open space and streetscapes will take into consideration various crime prevention through environmental design (CPTED) principles. Noting the extent of open space and the connected nature of the path system, passive surveillance over the open space areas is a key part of the developments safety and security approach. The design of the open space landscape treatments combined with orientation of the open space to roads, paths and new and existing residences enables passive surveillance over parks.

The height of rear boundary fencing and possible semi permeable detailing enables interaction. In addition the use of level changes where required allows for some overlooking of open space areas. The location of trees, furnishings, and play elements will be arranged to not impede views to smaller open space areas.

Shrub planting will typically be lower shrubs and groundcovers to minimize the ability for hiding. The location of key facilities will be set ion key view lines from adjacent streets inclusive of car headlights illuminating various elements. The use of lighting has been described elsewhere within this document.

1.15 Existing Adjacent Public Open Space Upgrades

The Glen Iris precinct has a number of existing parks throughout the existing residential areas that are well used and loved by the local community. It is not proposed that any reduction in the existing public open space areas is to occur.



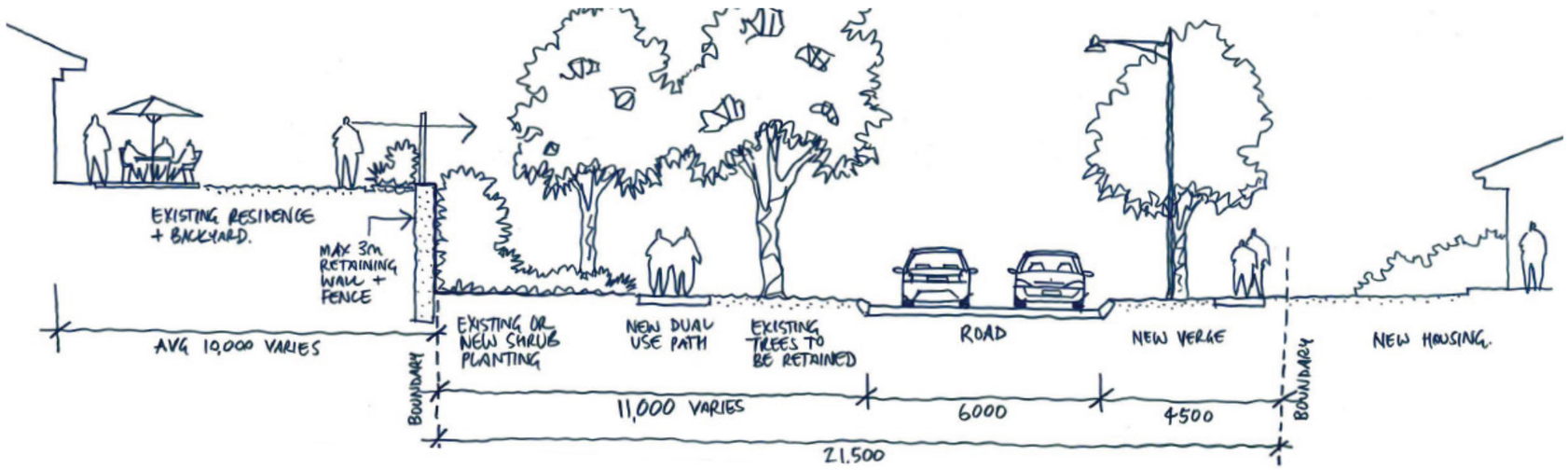
Osprey Waters, Emerge Associates



The Sanctuary, Emerge Associates



The Sanctuary, Emerge Associates



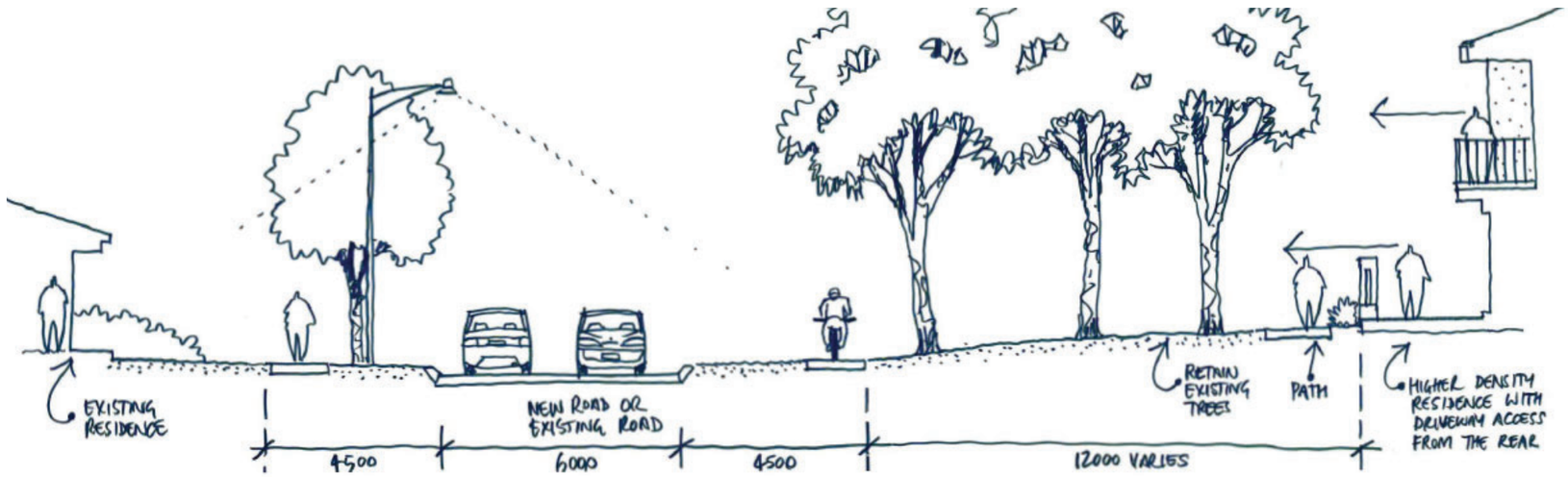
EXAMPLE SECTION B

Glen Iris Estate


The Sanctuary, Emerge Associates


Heritage Park, Emerge Associates

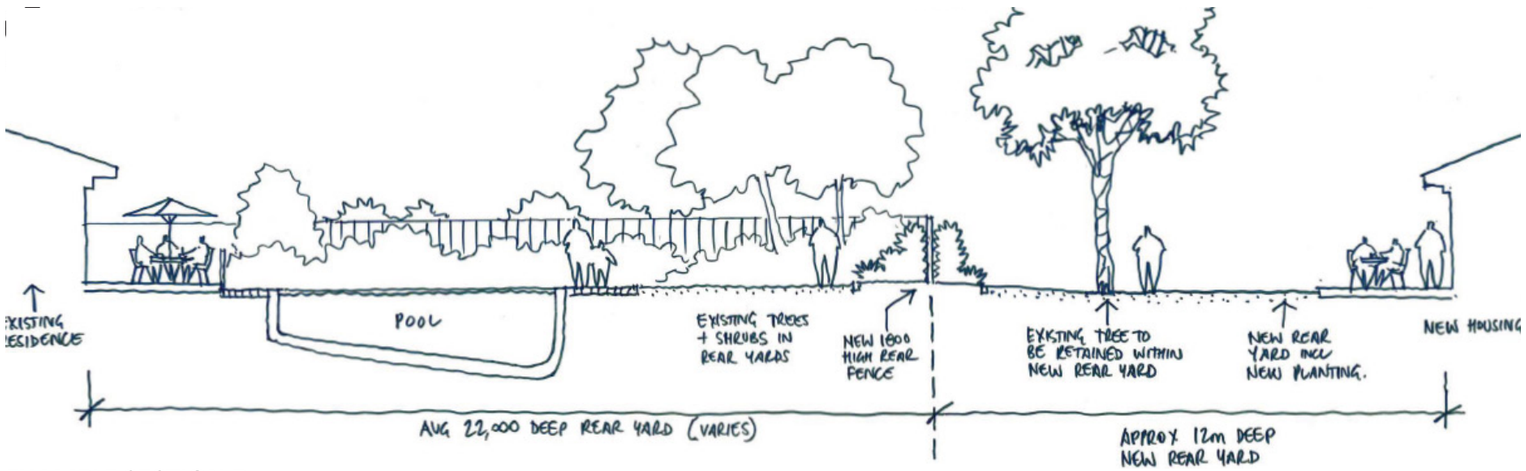

Shoreline, Emerge Associates



EXAMPLE SECTION C



Lakeway, Claremont



EXAMPLE SECTION D



Lakeway, Claremont

1.16 Streetscapes

Road Hierarchy

The proposed road network will consist of a variety of typologies to better define planning legibility to the user, including:

- A series of entry points into the proposed development that will aim to define the edge of the new works without being completely divorced from the character, colour and finish of the existing Glen Iris residential area.
- Collector roads. These will distribute traffic into and out of the proposed development, these will have defined larger future tree stock to recreate the meandering shady drive as the most travelled roads. The opportunity for drainage management exists based on the generally wider road verges.
- Residential streets landscape type 1: These streets are generally longer and more direct in their layout and will have a series of tree species befitting this street type.
- Residential streets landscape type 2: These are smaller shorter residential streets which act as much more localized road element in some cases as cul-de-sacs.

In all cases the provision of shade and canopy cover is paramount and in keeping with urban green canopy coverage aims and the reduction of the urban heat island effect wherever possible.

Existing Streets

The existing streetscapes in Glen Iris are one of its key defining character and landscape features. The intention is to retain the existing streetscapes as is, and to aim to replicate elements of this avenue approach in the proposed streets where possible. It is proposed that in the order of 500 existing mature trees will be retained within the proposed open space areas, and more than 1,000 new trees will be planted across the new development in open space and streetscape areas. This is in addition to the trees to be retained within existing streetscapes in and around the surrounds of the site.

Widened Road Reserves

Select streets are proposed to have an offset road carriageway and a widened verge to cater for a widened 2.5m dual use footpath and a shady double tree avenue either side of the path, which will act as a key part of the broader safe and secure green link movement network through the proposed development. This enables access to occur off street and can cater for visitors carparking in select locations in addition to flush kerbing and drainage swales in select locations - subject to future detail design.

New Roads

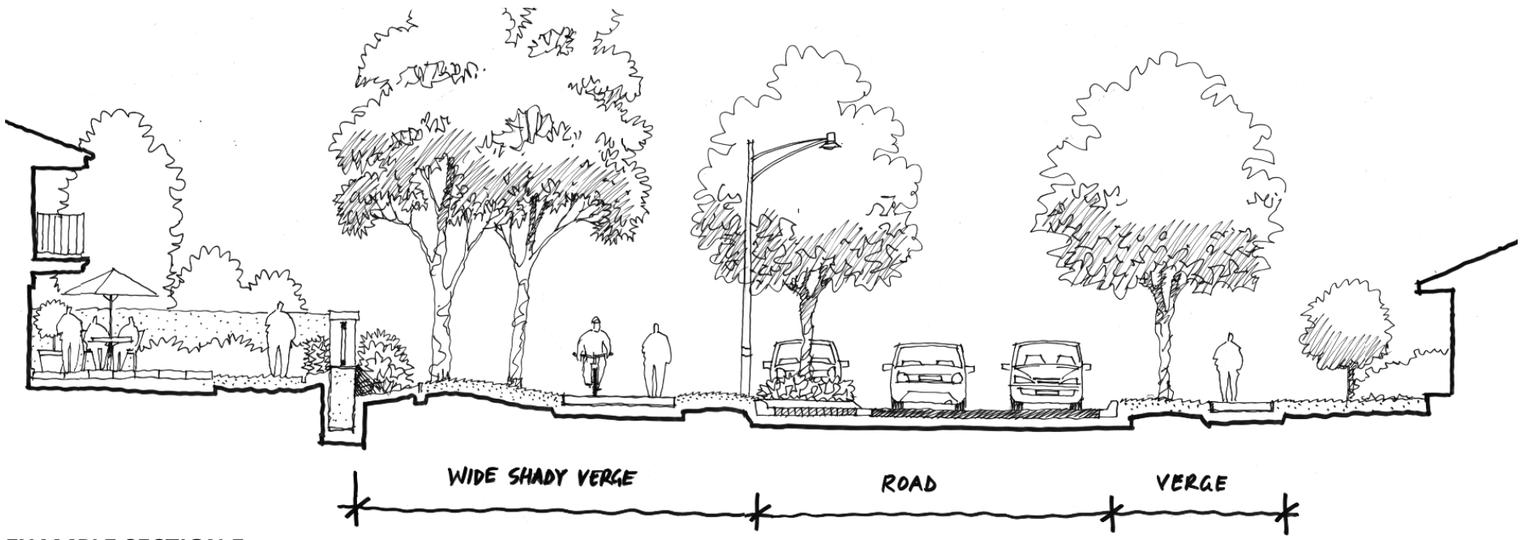
New road design will cater for street tree planting and the broader safe and secure green link network. Street tree planting will be selective and will be variable to bring a variable character to different streets.

Traffic Calming

In locations of longer lengths of straight residential roads the inclusion of traffic calming may be employed to assist in slowing traffic speeds and allowing crossing points are suitable locations and allow for additional landscape softening. Locations of traffic calming will need to pay due regard to driveways and lot access and footpath road crossings.



Bushmead



EXAMPLE SECTION E



Jacob's Ridge, Queensland

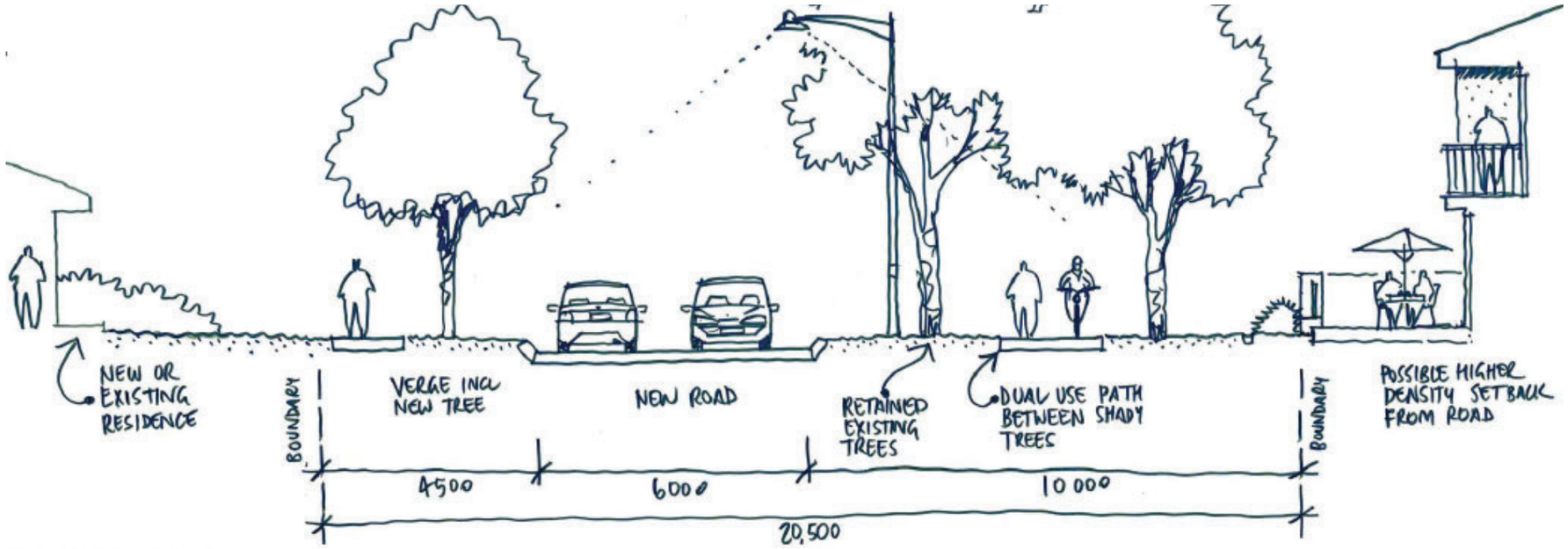


Lakeway, Claremont



Newhaven, Emerge Associates


Baldivis Town Centre, Emerge Associates



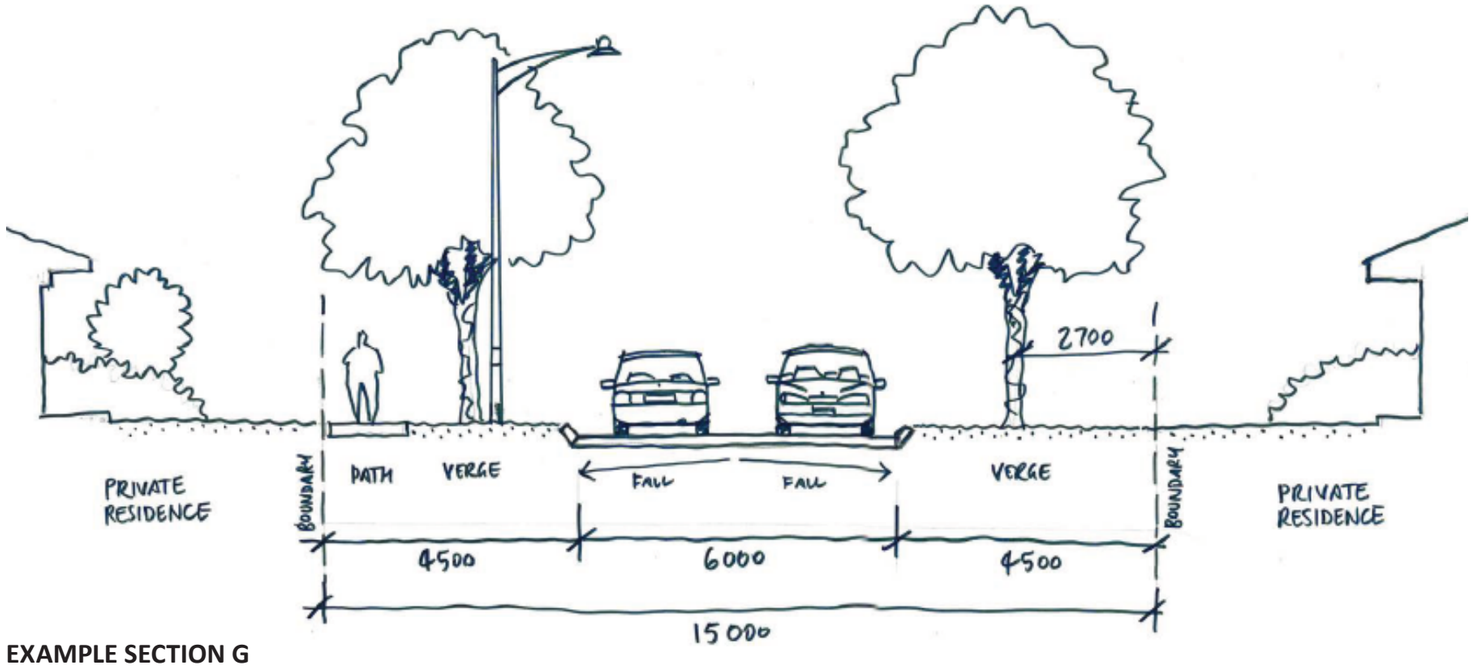
EXAMPLE SECTION F


Baldivis Town Centre, Emerge Associates


Vale, Emerge Associates



Bushmead



EXAMPLE SECTION G


Honeywood, Emerge Associates


Lakeway, Claremont

1.17 Tree and Plant Species

An indicative plant list and select imagery has been included within the attached drawings in support of the proposal. While the list is subject to refinement in consultation with the City of Cockburn, it clearly defines the plant species approach and intent. Planting will consist of a mix of mature stock for specific uses and high profile location purposes, and smaller nursery hardened off stock for mass planting purposes.

The planting strategy consists of the following three principal approaches:

a. Retained trees. The retention of existing trees from the golf course rough areas in between the various former fairways is proposed. This creates instant visual effect, retains shade and habitat and maintains an element of the site's former use.

b. Transplanted trees. The preparation and transplanting of existing trees is possible based on the diversity of species currently located on the site. Existing transplantable trees include but are not limited to: Norfolk Island Pines, Plane trees, Palms of various species, Cape lilacs (subject to approval), WA Peppermints, Liquidambers, casuarinas, ficus species, melaleuca species and grass trees.

c. New tree planting. The proposed development intends on undertaking a new tree planting regime for streetscapes and parkland areas. The final extent and species mix will be subject to approvals and availability. In addition to planting in public areas, the planting of trees is also encouraged in the private realm noting the generally larger sized residential lots proposed for this development.

The new planting selections are aimed at achieving the below criteria:

- Being of local character.
- Preferably being endemic and native to the site area.
- Not being invasive by habit and not containing any declared weed species.
- Being hardy to local soils, wind and salt tolerant and with lower water needs.
- Where required and suitable, being of low fire fuel creation and load as a key part of fire management to the margins of the development.
- Promoting the local ecosystem as habitat for a range of endemic fauna.
- Being of a series of attractive and contrasting foliage, colour and form to enable design based planting and displaying the diversity of the local environment.
- Having a selection of species that ideally enable some to be seasonally flowering at all times of the year.
- Being of suitable form and habit to promote shade where suitable and to either open or screen select views.
- Being of species that are readily commercially accessible and available for future replenishment.









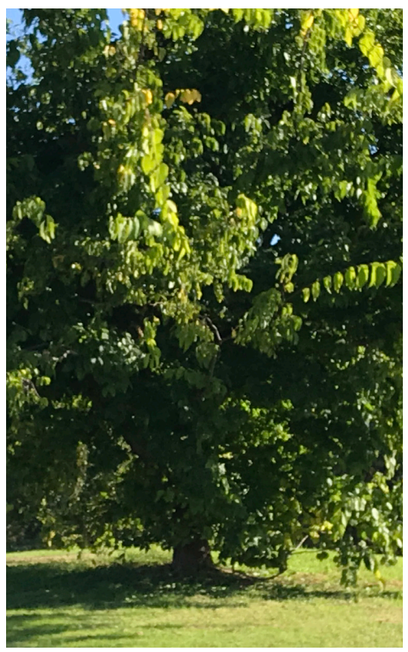
















Verge Planting




Scaevola ‘Purple Fanfare’




Melaleuca incana ‘Nana’




Adenanthos cuneatus ‘Coral Carpet’




Hemiandra pungens



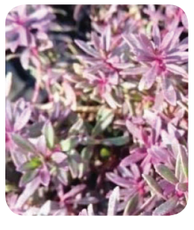

Grevillea obtusifolia prostrate




Westringia mundi




Eremophila glabra

Myoporum parvifolium purpurea




Lomandra tanika

Feature Planting




Grevillea obtusifolia prostrate



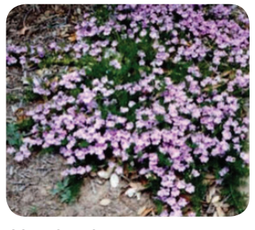

Beaufortia squarrosa orange




Westringia fruticosa ‘Smokey’




Scaevola ‘Purple Fanfare’




Hemiandra pungens purpurea




Lomandra tanika

Broad Planting




Adenanthos sericea




Pimelia ferruginea




Eremophila nivea ‘Spring Mist’




Grevillea olivacea




Grevilea olivacea




Dampiera linearis




Acacia lasiocarpa




Acacia saligna ‘Green Mulch’




Acacia pulchella




Hemiandra pungens purpurea




Chamelaucium unicnatum




Calothamnus quadrifidus




Hypocalymma angustifolium




Thryptomene baeckeacea




Grevillea thelemanniana




Beaufortia squarrosa orange




Westringia fruticosa ‘Jervis Gem’




Adenanthos cuneatus




Ricinocarpus ‘Bridal Star’




Callistemon phoeniceus

1.18 Habitat Approach

The former fenced golf course created the opportunity for native fauna to use the area as part of a broader habitat area with access to shelter, shade, food and water and some degree of protection. The conclusion of the golf course use may alter aspects of this until such time as the new open space can be created and established. The City has indicated its support for the creation of a series of smaller habitat zones within the proposals open space areas that encourage the survival and retention of native fauna in the area. The final locations will be determined based on existing vegetation, suitable seclusion from humans.

Avian fauna will be able to access the site and use its existing retained trees as it always has done, albeit noting that works may see some degree of disturbance. Ultimately new tree planting will rise to provide generational change to the existing tree stock currently providing habitat. The retention of trees individually, in clumps and in avenues, encourages the retention of existing fauna.

Ground dwelling native fauna will have access to the site noting that construction will occur in stages allowing fauna to adjust to newly created open space areas as the environment transitions over time. As the landscaped areas are installed and mature over time, it is envisaged that native fauna will return to the site from adjacent bushland areas. The proposed retention of two smaller areas of existing banksia bushland provides some continuity for habitat and cover for native fauna.

The landscape design aims to provide areas suitable for fauna to reside and move through the development over time. This will be accomplished by planting types and densities, continuous cover, pockets of refuge for example logs and rocks to lesser used areas of open space, planted drainage basins with infrequent domestic animal and human use. Education of the local existing and new community around risks to native fauna and what individuals can do to promote preservation. An item possibly worthy of examination as part of future detail design is the creation of defined native fauna refuge zones with controlled suitably sized access that limits domestic animal access.

1.19 Sustainability Approach

The landscape approach will have embedded within it a series of sustainable initiatives to be further refined at the detail design stage. These include, but are not limited to:

- Tree retention above and beyond that typical for greenfield development within parks and streetscapes.
- Transplanting of existing mature tree stock saving from destruction and retaining habitat and creating instant shade.
- Larger percentage of open space (22.9% total proposed green space) beyond that typical for greenfield development.
- A variety of storm water management initiative, techniques and inclusions to provide at source recharge including possible subsurface storage tanks.
- Planted detention basins inclusive of nutrient stripping capability in place of sumps.
- A major reduction in the existing long term groundwater draw and licensing needs for public open space maintenance, and significant reduction in the use of fertilizers and herbicides and pesticides.
- Removal of existing lined lakes and their groundwater top up resulting from evaporation and use by the former golf course for irrigation purposes.
- Relocation of native fauna (as may either be temporary or permanent)
- A variety of water wise initiatives applied to the public and private realm inclusive of a new, more efficient irrigation system.
- Retention of two small pockets of existing Banksia woodland.
- Reuse of timber removed from the site as both nature play elements and in mulch and possible select public art elements.
- Preference for use of low embodied energy materials where possible and suitable.
- Use of select LED /and solar lighting where possible and suitable.
- Creation of possible fauna habitat opportunities within open space and retention of trees suitable for avian fauna.
- A maintenance minimisation in design approach to limit cost and time impacts.
- A series of maintenance initiatives to reduce pesticides, herbicides and chemical use generally.
- The aim of creating a continuous tree canopy coverage to limit urban heat island effect and maximise green canopy coverage.
- Use of predominantly native shrub and groundcover vegetation endemic to the Swan coastal plain.

1.20 Wayfinding & Signage Approach

Wayfinding

The design of the development is proposed to be undertaken to encourage intuitive orientation and movement through the development. This is to be undertaken through the use of materials and colours to define particular movement routes, visibility to key features and elements, open viewsheds to desirable destinations and screened viewsheds to assist in directing users and promote privacy where necessary. The design of the path system is aimed at promoting connectivity through the development in an expanded, safe and efficient manner.

Signage

Signage to the development will be unified in its materials and form. Signage is proposed to be located at key decision points including points of arrival, intersections of roads and paths and at reinforcement locations along longer paths.

Signage is proposed to consist of:

- Directional signage to facilitate efficient movement within the precinct.
- Educational signage relating to the local area its habitat, features and history.
- Orientation signage pertaining to direction and distances to local places of interest inclusive of information pertaining to users' fitness and outdoor activities.









1.21 Landscape Materials & Furnishings

Landscape materials will be common to the proposed development area to bring design and character unity to the precinct while also marking quality of the new development area. External landscape materials will be generally selected to be complimentary to the local character in texture, colour and style. The attraction of the local area is intended to be reflected in the materials used. In all instances materials will be robust and fit for purpose with consideration on durability, longevity and maintenance minimization over the longer term inclusive of minimized replacement, local availability and all relevant warranties and guarantees.

Furnishings will all be off the shelf proprietary elements available locally inclusive of parts, replacements, and all suitable guarantees and warranties.

The proposed range of landscape includes:

- Stone paving finish to select higher use and feature areas and to select dry stacked look limestone feature walls befitting of a more handcrafted finish.
- A mix of exposed aggregate and plain concrete finishes to select areas.
- A mix of fencing materials fit for purpose.
- Off form concrete to select feature walls and stairs.
- Metal frames decking and structures with a variety of materials panels and finishes.
- Stabilised gravel paving to select lower use paths.
- Galvanised metal finish to select landscape elements.
- Natural loose gravel paths to select private access points.
- Natural treated timber materials for nature play elements.
- Red asphalt for select paths and higher use road areas.
- A combination of large stone, concrete and steel and/or plastic garden edging.
- Minimal timber to reduce maintenance and extend longevity.
- Low fuel mulches including sand, gravels, select organic mulches to defined areas.

1.22 Landscape Lighting Strategy

Lighting to the landscaped areas will be kept to the minimum necessary to enable safe access to select key routes and areas. The intention is that lighting is subtle but effective, directed rather than broad. There is proposed to be minimal light overspill and light pollution generated by the development.

In the main, landscape lighting will be solar and/or LED or similar low electricity use equivalent and will typically be lower directed lighting to signage, doorways, roads and key paths and access routes as opposed to lighting to all access routes. Street lighting will be managed by the civil design package.

1.23 Bushfire Risk Management Landscape Response

The fire setback zone occurs around most of the margins of the development where they abut a bushland fire threat. Two small areas of existing banksia bushland are proposed to be retained within the design. The resulting landscape design will respond to the projects BAL line in these two smaller defined locations and will employ the use of compliant fire management techniques to meet fire management obligations.

The landscape response will include, but not be limited to, the below in all selected effected fire management zone areas:

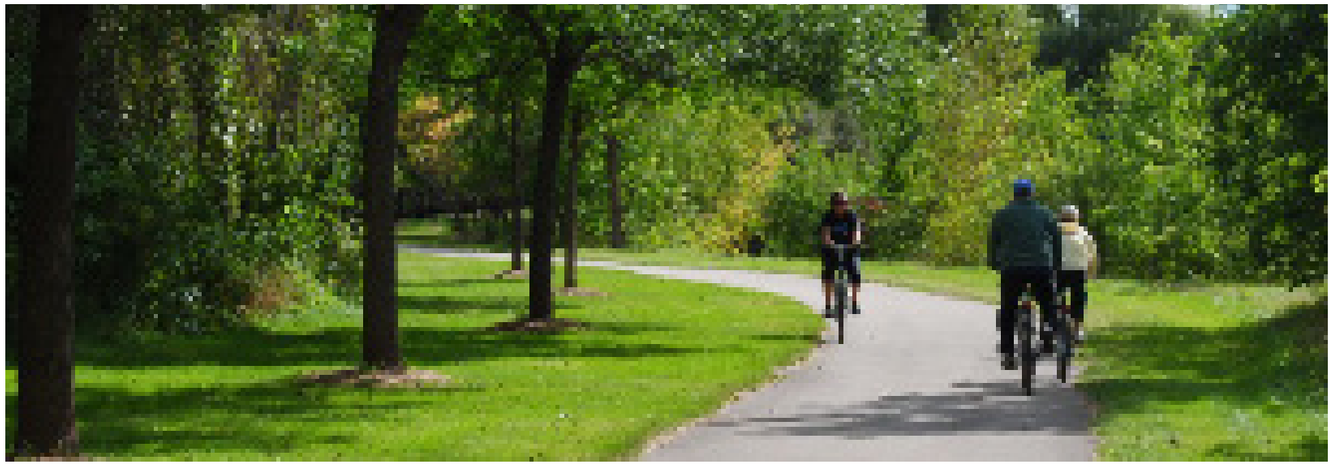
- Use of endemic plants and native species identified by the Department of Fire and Emergency Services (DFES) as being low fire fuel species.
- Selection, arrangement and spacing of shrub planting to meet low fire risk principles and requirements.
- Selection, arrangement and spacing of trees to meet low fire risk principles and requirements.
- Use of noncombustible and low combustible landscape materials within the fire setback zone including hard paving, gravels as paths and mulches in select areas, limited organic material, rocks and boulders.
- Provision of access for fire and emergency vehicles.
- Incorporation of a fire setback zone management and maintenance approach inclusive of removal of necessary vegetative fuel and debris at standard required intervals.






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Somerly, Emerge Associates



- Proposed inclusion of irrigation to fire zones for use in advance of fire emergency. Should fire management may require fire mitigation measures in addition to setbacks, the installation of irrigation sprays to defined locations can assist in the suppression of fire prone material and flames within the fire buffer zone. The installation of a dedicated fire management line with fixed tall 1.2m high metal rotating knocker sprays at regular overlapping intervals with significant water reach can occur. This will be able to douse local vegetation with water either prior to fire arriving or during a fire within the effected zone. The dedicated irrigation line can be managed from the irrigation controller or remotely as it is typically on its own dedicated station. Periodic inspection is recommended to ensure all is in good working order leading into peak threat periods.

1.24 Irrigation Strategy

The former golf course has a large irrigation allocation suitable for the preparation and maintenance of healthy greens and fairways over a larger area than that proposed for the new development. This irrigation allocation remains in place.

With the removal of the golf course it is anticipated that the use of ground water will significantly decline. Initial expectations are in the vicinity of up to a 70% reduction in water usage which may be on-sold, traded and / or returned to the groundwater aquifer.

The exiting irrigation system will be removed and replaced with a new integrated irrigation system designed and installed to meet the standards of the City of Cockburn. This may include a system of sprays, drippers and bubblers to suit various circumstances and planting regimes. The existing bores are expected to be reviewed and reworked to maximise water extraction efficiency and to meet new standards. Additional bores may also be considered/ required to better distribute extraction and more efficiently cater for water distribution. Ultimately the groundwater licence and infrastructure required for the new parks will be transferred to the City.

The irrigation water source is proposed to be from the existing (or new) bore system and will be separately metered. The irrigation system will have a range of inbuilt sustainable measures including, but not limited to, rain gauges, water use monitoring, partial drip systems and hydro zoning as part of the design process, inclusive of manual override to respond to periods of excessive rain or lengthy dry periods. Conscious of continuing staged house and road construction, there is also the opportunity to consider a mainline loop system with reverse flow or to be linked to a variety of bores in order to maintain water flow irrespective of any possible future break.

The irrigation system is proposed to include a series of larger sprays strategically set to the retained banksia bushland edges as an additional bush fire management measure which can be activated manually when determined necessary.

Individual residences may apply for a domestic bore or uitilise mains scheme water as suitable and will be separately metered accordingly. The individual on lot and verge irrigation system will be under the care and control of the resident. In the main, the planting species palette will be local endemic species / native species requiring less water than existing system.

1.25 Landscape Surface Drainage Strategy

Generally the site has a good drainage infiltration rates and good soil permeability reducing the need for extensive drainage and water storage infrastructure. Where possible, the development will opt for at source drainage solutions to distribute drainage throughout. Landscape zones will include planted basins at key low point locations within the development and also will utilize the existing drainage basins where possible. Overflow onto adjacent grass areas may occur to cater for defined irregular larger storm events.

The residential lots and the medium density sites will seek to manage their drainage and infiltration within their lot or strata area. Where open space areas are somewhat limited in space to cater for surface drainage management, underground storage solutions are proposed in accordance





with relevant standards and subject to detail design, to ensure maximum open space areas are available for the community.

Roads and paths will be generally graded to sheet drain inclusive of a mix of infiltration basins, raingardens in select locations and swales where suitable. Final drainage design will be subject to detail engineering design. The streetscapes will seek to have flush kerbing in select locations adjacent to grass swales or planted swales inclusive of defined rain gardens to select locations.

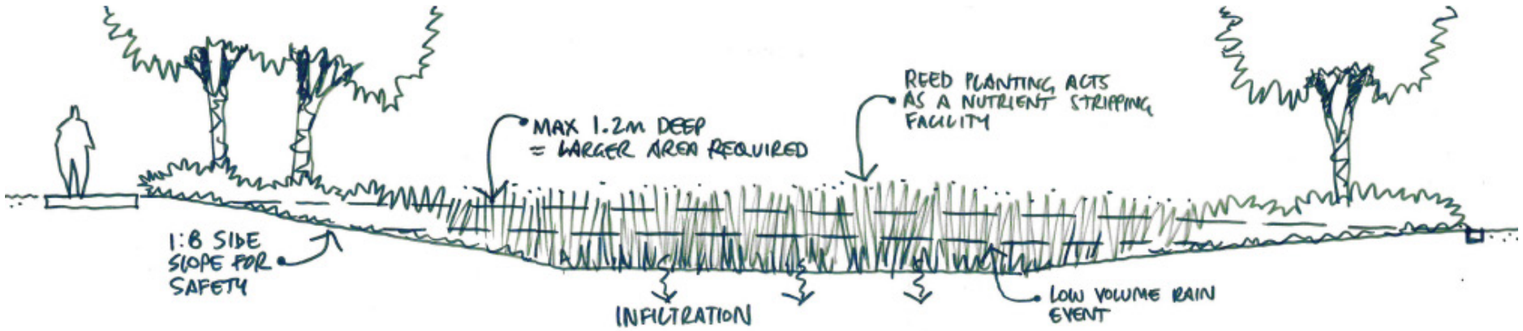
1.26 Maintenance Strategy

In all cases, a maintenance regime will be in place inclusive of general maintenance minimization through design practices and will aim to use sustainable maintenance practices. This includes, but is not limited to, defined edges and borders, minimal and preferably alternate approaches to pesticides, controlled and minimized fertilizer use.

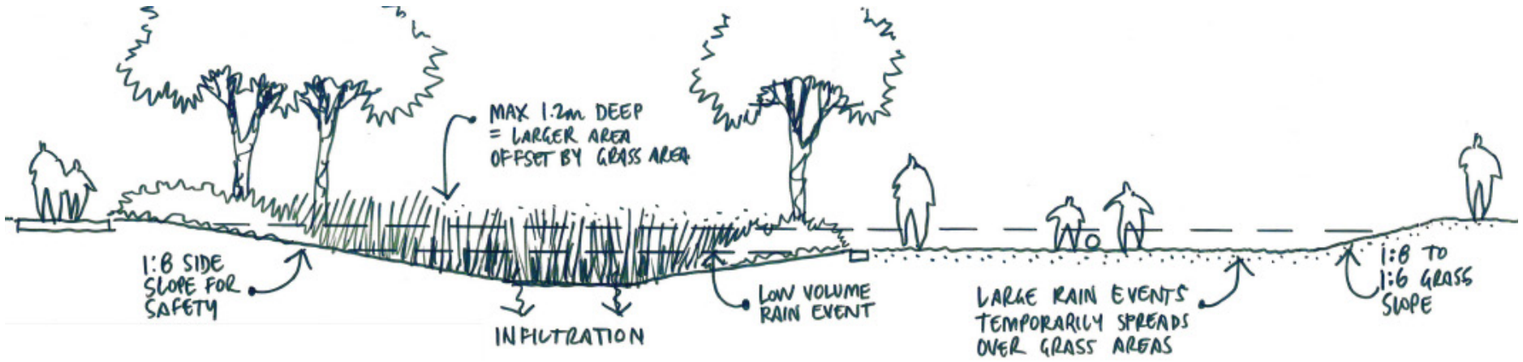
Planted revegetation areas and managed vegetation zones will include a maintenance regime as part of its bushfire management obligations. This will include but is not limited to required periodic removal of natural fuel, review of planting densities to ensure continued compliance with fire regulations and checking and testing of irrigation sprays.

Maintenance will be undertaken via general access to all

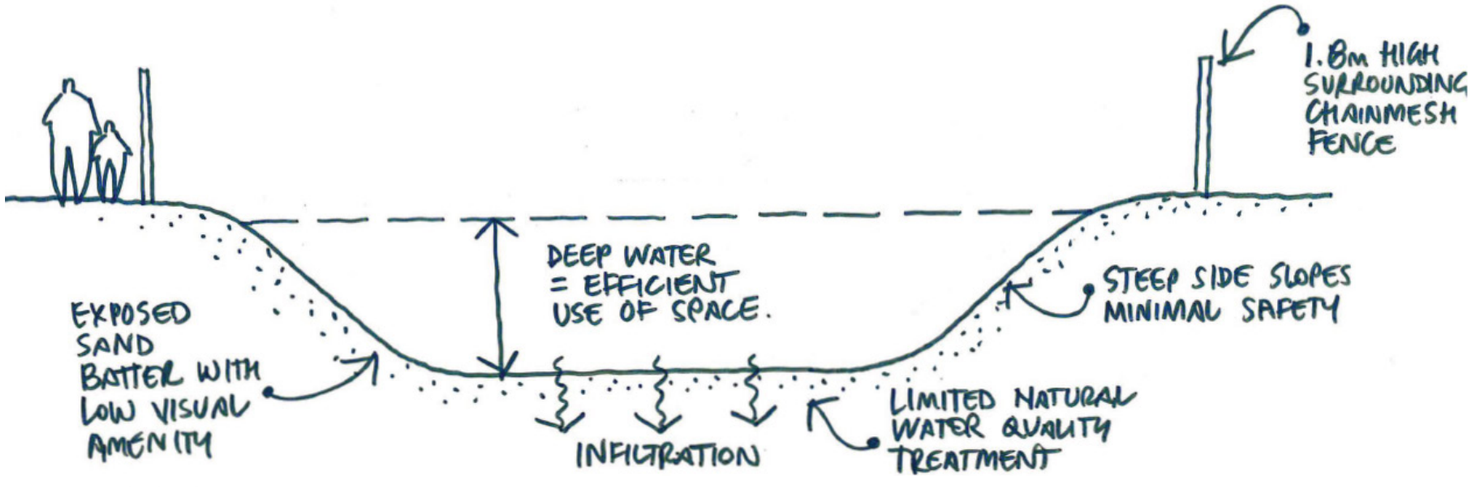

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EXAMPLE SECTION H



EXAMPLE SECTION I



EXAMPLE SECTION J

public accessible areas. Light maintenance vehicles can access all public areas and can adjoin all private areas within the development. This will occur initially via the road system and then by careful access over landscaped grass areas and select areas of the pedestrian path system. Use of removable bollards will limit and control unauthorize access to link areas between roads.

Maintenance will be managed by the development for the first 2 years minimum. The 2 year maintenance timeframe may be extended in certain locations at the developers discretion in liaison with the City.

The increased volume of open space will see additional expenditure occur as necessary in order to maintain the increase in area of open space. This additional cost is somewhat offset by the content of the additional open space (which will mainly be linear widened streetscape areas) which will not generally be complex in layout, detail design or material selection thus minimising maintenance costs.

The proponent has been advised by the City that the City's current typical maintenance rate is approximately $2.00/m2. Preliminary calculations indicates that the likely maintenance cost for the proposed design is approximately $2.50/m2 average.

The additional maintenance required to deliver the proposed design may be met by either:

a. The City agreeing to undertake additional maintenance based on the larger volume of open space in response to the existing residents requests and concerns as identified through the community consultation process and the resulting proposed masterplan.

b. The City agreeing to a special area rate to be applied to the new residential lots in addition to their usual rates in order to meet the additional costs over and above Council typical expenditure. This arrangement would be disclosed to the purchasers of new lots at the time of sale and written into the sale contract annexures. This arrangement requires confirmation that the City's expenditure of these funds occurs within the Glen Iris precinct.



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