	LEGEND
	LAND USE
()	LSP Boundary
	Subject POS Site Boundary
	Existing contours
	Built form
	Existing tree canopy
	Bush Forever Lot
	Environmental Conservation Lot
	Conservation Category Wetland 50m Buffer
	DRAINAGE
	To be read in conjunction with the accompanying cost plan summary
	Drainage basin 1:100 year average recurrence interval (ARI)
	Drainage basin 1:10 year ARI
	Drainage basin 1:5 year ARI
	Drainage basin 1:1 year ARI
	SURFACE TREATMENTS To be read in conjunction with the accompanying cost plan summary
	Turf
	Irrigated planting
	Nutrient-stripping vegetation (estimated by others)
	Revegetation
	Supplementary planting to existing vegetation
	Concrete unit paving
~	Gravel path
~	Concrete path
\sim	Concrete maintenance edge
	ELEMENTS To be read in conjunction with the accompanying cost plan summary
•	Proposed tree
条	Shelter (small)
шцs Æ	Shelter (large)
<u> </u>	Nature play elements
	Play elements
AN C	Photovoltaic lighting
1 Rü	Drink fountain
U	Interpretive signage
	Universally accessible electric barbeque and picnic table
ير ا	Bin enclosure (Litter, recycling and FOGO)
	Bench seating
ن س	Bollards (removeable to paths)
:	Black chainwire fencing to Env. Conservation lots and dog exercise areas
i A	Water hose cock
L.	Electricity supply box
7	Lookout
66 A	
	Dog exercise area with bag dispenser Accessible self-cleaning WC







Forrestfield represents an opportunity to plan for open space of quality in both design and resilience. To achieve this requires an open space network that works harder, with more complexity and adaptability, whilst maintaining expectations of open space functionality and provision.

Design principles

Through site analysis, baseline research and benchmarking a series of themes have been established shown in the diagram above. The themes inform a set of design principles that guide the development of each new open space.

Urban Forest

Trees have always been an important component of open space, however, as urban areas grapple with the impacts of increasing temperatures, they are needed now more than ever for urban cooling. The open space design will identify where open space can support the growth of an urban forest.

Creating a cool environment

space

1. Support tree canopy cover targets across open space



Protect and enhance existing tree planting in, around and between open

Ensure a net gain of trees across open space.

Growing a healthy and resilient forest



4. Support tree planting through passive irrigation using stormwater Provide quality soil volumes and median for healthy tree growth or provide appropriate species for existing soil conditions

- Integrate future-proofing research into species selection that can adapted to forecast climatic changes.
- 7. Protect trees against pest or disease attack or extreme heat events.
- 8. Improve understorey to increase insect/bird diversity and reduce risk of pest and insect attack.

Growing a diversity of tree species

9. Optimise cooling through a mix of tree species with different canopy habit, height and form

- 10. Diversify tree species, genus, age and growth rate 11. Plant trees communally with under story planting where possible
 - 12. Consider tree origin. Broad leaf exotics often provide greater shade and benefit to daily thermal comfort, however native trees support greater biodiversity, increase carbon capture and reduce leaf litter.

Integrating trees into the urban setting

13. Ensure tree planting avoids infrastructure clashes. If clashes are unavoidable, investigate whether infrastructure can be removed, relocated or reconfigured to create sufficient space for trees.



- Ensure appropriate area for root zone establishment and protection is planned, designed and implemented.
- 15. Understand how tree planting will integrate with the surrounding context, build on the character of open space and adds value for the community.

Providing connected cool routes



- 16. Improve sun safety, health and wellbeing through the provision of shaded walking and cycling routes to, through and between open space . Align tree planting with ecological connections between habitat areas
- Route orientation trees on the south side of east-west routes and the east

side on north-south routes will provide the greatest shade benefit.

Ecological

Successful urban ecology is often defined by two main spatial typologies; healthy habitat areas, and a strong network of ecological connections. In urban areas most habitat areas are found in open space. Open Space will deliver a net increase in ecological values (this could be species diversity, lifeforms, landscape types, size of patch, habitats) and develop a more ecologically connected open space network.

Liveable Neighbourhoods Objective

• To ensure the provision of adequate land to protect, and to provide public access to, river, creek, lake and ocean foreshores.

Increasing healthy habitat area





Protecting and enhancing ecology

Restore, protect and enhance natural assets within open space Exclusively native planting apart from turfed areas



- Ensure compatibility between human open space uses and nature, such as
- lighting, noise and human activity

Improving ecological connectivity

Understand where links to and between open space should be improved or created for ecological connectivity Increase tree and understorey planting along ecological corridors.

Encouraging community participation



social resilience and wellbeing

Provide a balance between conservation and active and passive recreational uses in open space;



Social

Integrate green infrastructure in place of hard infrastructure where possible Expand on existing core habitat by providing buffer areas

Open Space is where we meet, celebrate, gather, play, meditate, stay active and is an important part of our shared living experience. Providing a range of social and recreational experiences and settings in open space is critical in supporting a tolerant,

diverse and inclusive community. Liveable Neighbourhoods Objective • To ensure that public open space of appropriate quality and quantity is provided

- in a timely manner to contribute towards the recreational and social needs of the community in appropriate locations.
- To facilitate the provision of land for community facilities where appropriate, as part of land ceded for public open space.
- To provide public open space that is safe and overlooked by nearby buildings.
- To facilitate the provision of the public open space contribution and its development as part of the subdivision process and to enhance local amenity. To provide a practical cash-in-lieu mechanism for open space allocation and improvements
- To provide for regional variations that best reflect local community requirements.

Providing open space appropriate to its context



- Develop a network of integrated open space that support community hubs Celebrate reconciliation, belonging and coexistence through socially inclusive open space
- Deliver unique open space, in line with neighbourhood character
- 4. Ensure open space is universal in design and inclusive

5. Provide safe open space that responds to safety by design standards. 6. Maintain clear sight lines for overlooking nearby buildings for visual surveillance.



Creating a network of open space settings and uses Provide flexible open space appropriate for multi-use that works harder for

> the community Provide divers open space uses.

Incorporating open space amenity

- Provide local children's play that is reflective of the development structure, including small local parks or special purpose parks 10. Develop facilities for teenagers and young adults
 - 11. Incorporate shade, seating, and drinking water in open spaces where possible. 12. Provide resting places for the elderly or disabled people in appropriate circumstances

Enhancing sport and recreation facilities



leisure 4. Develop the multipurpose nature and shared use of sport, recreation and leisure assets to maximise usage

15. Provide for district parks for a combination of passive (informal play areas) and active (formal playing fields)

16. Provide for neighbourhood parks for active (informal play areas) and passive

Hydrological

In understanding the influence of urban development on the natural hydrological systems there is growing need for open space to play a role in supporting stormwater and flood water management with the additional of improved water quality, urban greening and cooling outcomes. Open space has the capacity to become a blue-green network.

Liveable Neighbourhoods Objective

- To integrate urban water management functions with public open space.
- To protect and conserve margins of watercourses, water bodies and wetlands and establish public foreshores along the coast and watercourses adjacent to urban development.

Harvesting stormwater in open space

- 1. Incorporate drainage wherever practicable using contemporary urban water management principles Ensure open space is identified within a catchment and opportunities for HARVES stormwater harvesting integrated appropriately
 - 3. Improve water security by harvesting and irrigating open space through passive irrigation using stormwater run-off
 - 4. Accommodate water-sensitive urban design in open space where usability for recreation purposes has not been compromised or where conservation values are enhanced.
 - 5. Use sports grounds and passive recreational areas as part of the urban water management system to provide temporary detention areas during storm events.
 - 6. Use open space for the detention of storm water during and immediately
 - following a greater than five year average recurrence interval 7. Use restricted open space for the detention of stormwater for a greater than one year average recurrence interval.

Improving water quality through open space







10. Increase evapo-transpiration by managing water on the surface, exploring soil capillary rise systems and enabling irrigation during the peak summer periods

Use stormwater to irrigate trees supporting healthy canopy shade

Improving permeability open space



12. Reduce the use of impermeable surfaces

Naturalise stormwater drains and increase surface permeability to retain more water in open space.

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Movement & Access

A network of well distributed, accessible and functional open space also needs to be well-connected. The public and active transport systems provide sustainable connections to and between open space. Networks can occur along street, laneways, drainage lines, environmental corridors and through open space.

Liveable Neighbourhoods Objective

• To ensure that public open space is integrated into the urban structure to produce both land use efficiency and long-term sustainability.

Ensuring safe travel through and to open space

- Provide cool routes for thermal comfort and sun protection
- Safely connect pedestrians to open space across vehicular routes Link bike lanes to open space
- Provide a clear path hierarchy within open space for cyclists and pedestrians. 4. Support legibility of the urban environment and the establishment of neighbourhood identity by incorporating natural and cultural features and landmarks:

Prioritising sustainable transport and infrastructure

- 5. Make walking and cycling and other modes of active transport the easiest, most desirable option to travel to open space
- Allow the use of open space to produce seamless connections and incorporate land for connected or linear open space for walking and cycling;
- Provide bicycle parking in all open space 8. Provide high quality, sustainable pathways for cyclist and pedestrians in open space.

Sustainability

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While materials choice needs careful thought, it is important to also consider the bigger picture. Materials are just one piece of the sustainability puzzle and need to be balanced with many other issues such as energy performance, water use, asset upkeep, sense of Identify adjacent catchment stormwater that can be cleansed in open space place and social and ecological impacts. Making the 'right' material choice for public open space is no longer based purely on structural efficiency but a balance across a number of different factors.

SPP 7.0 Design of the Built Environment - Measure 5

• Good design optimises the sustainability of the built environment, delivering positive environmental, social and economic outcomes

Materials, furniture and assets



- 1. Ensure efficient design and material specification to reduce the demand for excess material use thus equating to a lower environmental impact. Select materials that are fit for purpose and durable - In addition to meeting the necessary structural performance criteria (eg strength and deflection), materials selection should consider materials that require minimal maintenance, and which can accommodate future adaptation, significantly reducing its environmental impact during its lifetime.
- 3. Use lifecycle analysis and environmental product declarations to assess the likely cradle to grave impact of a building material to ensure low environmental impact, low embodied energy, capacity to store carbon and use of recycled content. This will include issues such as consumption of raw resources, embodied carbon, water consumption, pollution impacts, etc.
- 4. Thought should be given to specification of materials that are appropriate given the environmental conditions and skills of the local labour force.
- 5. As well as selecting the most appropriate material it is important to consider the chain of custody and responsible sourcing of materials and the environmental credentials of the product supplier. This includes certification of timber to ensure that it has come from a legal source and responsibly managed forests.
- 6. Consideration should be given to how the structure will be constructed to ensure that construction waste is minimised eg through use of prefabrication and standard material units.
- 7. Consider the end of life (deconstruction) management of materials, first to whether materials can be reused in their original form, repurposed or, where this is not possible, how they can be recycled in a manner that limits future waste going to landfill to an absolute minimum.
- 8. Source materials as locally as possible to reduce transportation and reference the existing site reinforcing the sense of place tied to the local area.



	LEGEND LAND USE
<u>(</u>)	LSP Boundary
$(\overline{})$	Subject POS Site Boundary
	Existing contours
Š	Built form
	Existing tree canopy
	Bush Forever Lot
	Environmental Conservation Lot
()	Conservation Category Wetland 50m Buffer
	DRAINAGE To be read in conjunction with the accompanying cost plan summary
	Drainage basin 1:100 year ARI
	Drainage basin 1:5 year ARI
	SURFACE TREATMENTS To be read in conjunction with the accompanying cost plan summary
	Turf
	Irrigated planting
	Nutrient-stripping vegetation (estimated by others)
	Revegetation
	Supplementary planting to existing vegetation
~	Gravel path
~	Concrete path
\sim	Concrete maintenance edge
	ELEMENTS To be read in conjunction with the accompanying cost plan summary
•	Proposed tree
	Shelter (large)
	Nature play elements
	Play elements
ſ	Photovoltaic lighting
<u>f</u> fä	Drink fountain
	Interpretive signage
	Universally accessible electric barbeque and picnic table
	Bin enclosure (Litter, recycling and FOGO)
Ę	Bench seating
	Bollards (removable to paths)
;-·′ ^	Fencing
	Water hose cock
66	Lookout









	LEGEND
	LAND USE
()	LSP Boundary
	Subject POS Site Boundary
	Existing contours
5	Built form
13	Existing tree canopy
	DRAINAGE To be read in conjunction with the accompanying cost plan summary
	Drainage basin 1:100 year average recurrence interval (ARI)
	Drainage basin 1:10 year ARI
	Drainage basin 1:5 year ARI
	SURFACE TREATMENTS To be read in conjunction with the accompanying cost plan summary
	Turf
	Irrigated planting
	Nutrient-stripping vegetation (estimated by others)
	Revegetation
	Supplementary planting to existing vegetation
\sim	Concrete path
\sim	Concrete maintenance edge
	ELEMENTS To be read in conjunction with the accompanying cost plan summary
·	Proposed tree
	Photovoltaic lighting
	Bin enclosure (Litter, recycling and FOGO)
÷	Bench seating
·····	Bollards (removeable to paths)

🖶 Directional signage







	LEGEND
	LAND USE
()	LSP Boundary
	Subject POS Site Boundary
	Existing contours
	Built form
	DRAINAGE To be read in conjunction with the accompanying cost plan summary
	Drainage basin 1:100 year average recurrence interval (ARI)
	Drainage basin 1:10 year ARI
	Drainage basin 1:5 year ARI
	Drainage basin 1:1 year ARI
	SURFACE TREATMENTS To be read in conjunction with the accompanying cost plan summary
	Nutrient-stripping vegetation (estimated by others)
	Revegetation
~	Gravel path
	ELEMENTS To be read in conjunction with the accompanying cost plan summary
	Photovoltaic lighting

Bin enclosure (Litter, recycling and FOGO)

🛱 Bench seating

Bollards (removeable to paths)





LEGEND LAND USE Subject POS Site Boundary Existing contours Built form Existing tree canopy

DRAINAGE

To be read in conjunction with the accompanying cost plan summary

Drainage basin 1:100 year average recurrence interval (ARI)

Drainage basin 1:5 year ARI

Drainage basin 1:1 year ARI

SURFACE TREATMENTSTo be read in conjunction with the accompanying cost plan summary

Turf

- Irrigated planting
- Nutrient-stripping vegetation (estimated by others)
- Revegetation
- Supplementary planting to existing vegetation
- Concrete unit paving
- Concrete path
- Concrete maintenance edge

ELEMENTS To be read in conjunction with the accompanying cost plan summary

- Proposed tree
- <u> </u>Shelter (large)
- Play elements
- Photovoltaic lighting
- Թ Drink fountain
- 📴 Interpretive signage
- $\widehat{\mathbb{R}}$ Universally accessible electric barbeque and picnic table
- 🛗 Bin enclosure (Litter, recycling and FOGO)
- 🛱 Bench seating
- Bollards (removeable to paths)

Fencing

- 🚫 Water hose cock
- $\cancel{2}$ Electricity supply box
- Directional signage
- $\| \hat{\mathbb{Q}} \|$ Accessible self-cleaning WC





POS 08





	LEGEND
	LAND USE
()	LSP Boundary
	Subject POS Site Boundary
	Existing contours
	Built form
-	Existing tree canopy
	DRAINAGE To be read in conjunction with the accompanying cost plan summary
	Drainage basin 1:100 year average recurrence interval (ARI)
	Drainage basin 1:5 year ARI
	Drainage basin 1:1 year ARI
	SURFACE TREATMENTS To be read in conjunction with the accompanying cost plan summary
	Turf
	Irrigated planting
	Nutrient-stripping vegetation (estimated by others)
	Revegetation
	Supplementary planting to existing vegetation
\sim	Concrete path
\sim	Concrete maintenance edge
	ELEMENTS To be read in conjunction with the accompanying cost plan summary
•	Proposed tree
	Photovoltaic lighting
	Bench seating
æ	Bollards (removeable to paths)
	Fencing
Uni.	Dog exercise area with bag dispenser
ප්	

🖶 Directional signage





	LEGEND
	LAND USE
$\langle \rangle$	LSP Boundary
$\left(\begin{array}{c} \end{array} \right)$	Subject POS Site Boundary
	Existing contours
9	Built form
	Existing tree canopy
	Environmental Conservation Lot
	SURFACE TREATMENTS To be read in conjunction with the accompanying cost plan summary
	Revegetation
	Supplementary planting to existing vegetation
	ELEMENTS

To be read in conjunction with the accompanying cost plan summary

- 🖩 Bin enclosure (Litter, recycling and FOGO)
- 🛱 Bench seating
- Bollards (removeable to paths)

Fencing





City of Kalamunda

FFN DCP POS COSTINGS

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POS Concept Plan

POS 09



N Client: The City of Kalamunda

Date: 2/11/2021 Scale: 1:250 @ A1

L08A

	LEGEND
<i>.</i>	LAND USE
()	LSP Boundary
	Subject POS Site Boundary
	Existing contours
	Built form
-	Existing tree canopy
	Bush Forever Lot
	Environmental Conservation Lot
	DRAINAGE To be read in conjunction with the accompanying cost plan summary
	Drainage basin 1:100 year average recurrence interval (ARI)
	Drainage basin 1:5 year ARI
	SURFACE TREATMENTS To be read in conjunction with the accompanying cost plan summary
	Turf
	Irrigated planting
	Nutrient-stripping vegetation (estimated by others)
	Revegetation
	Supplementary planting to existing vegetation
~	Gravel path
\sim	Concrete path
\sim	Concrete maintenance edge
	ELEMENTS To be read in conjunction with the accompanying cost plan summary
•	Proposed tree
s S	Shelter (small)
<u> </u>	Nature play elements
	Play elements
	Photovoltaic lighting
Ŕ	Universally accessible electric barbeque and picnic table
	Bin enclosure (Litter, recycling and FOGO)
÷	Bench seating
· · · · ·	Bollards (removeable to paths)







LD POS T02

FFN DCP POS COSTINGS

POS Concept Plan



	LEGEND
	LAND USE
()	LSP Boundary
	Subject POS Site Boundary
	Existing contours
S	Built form
3	Existing tree canopy
	Bush Forever Lot
	Environmental Conservation Lot
	DRAINAGE To be read in conjunction with the accompanying cost plan summary
	Drainage basin 1:100 year average recurrence interval (ARI)
	Drainage basin 1:5 year ARI
	Drainage basin 1:1 year ARI
	SURFACE TREATMENTS To be read in conjunction with the accompanying cost plan summary
	Turf
	Irrigated planting
	Nutrient-stripping vegetation (estimated by others)
	Revegetation
	Supplementary planting to existing vegetation
~	Gravel path
\sim	Concrete path
\sim	Concrete maintenance edge
	ELEMENTS To be read in conjunction with the accompanying cost plan summary
•	Proposed tree
	Photovoltaic lighting
	Bin enclosure (Litter, recycling and FOGO)
F	Bench seating
····'	Bollards (removeable to paths)

P Directional signage





City of Kalamunda

FFN DCP POS COSTINGS

POS Concept Plan

L10A

	LEGEND
	LAND USE
()	LSP Boundary
	Subject POS Site Boundary
	Existing contours
	Built form
13	Existing tree canopy
	Bush Forever Lot
	Environmental Conservation Lot
	DRAINAGE To be read in conjunction with the accompanying cost plan summary
	Drainage basin 1:100 year average recurrence interval (ARI)
	Drainage basin 1:5 year ARI
	Drainage basin 1:1 year ARI
	SURFACE TREATMENTS To be read in conjunction with the accompanying cost plan summary
	Nutrient-stripping vegetation (estimated by others)
	Revegetation
	Supplementary planting to existing vegetation
~	Gravel path
	ELEMENTS To be read in conjunction with the accompanying cost plan summary
	Photovoltaic lighting
	Bin enclosure (Litter, recycling and FOGO)
÷	Bench seating
	Bollards (removeable to paths)







	LEGEND
<i>.</i>	LAND USE
()	LSP Boundary
	Subject POS Site Boundary
	Existing contours
	Built form
3	Existing tree canopy
	Bush Forever Lot
	Environmental Conservation Lot
	DRAINAGE To be read in conjunction with the accompanying cost plan summary
	Drainage basin 1:100 year average recurrence interval (ARI)
	Drainage basin 1:5 year ARI
	Drainage basin 1:1 year ARI
	SURFACE TREATMENTS To be read in conjunction with the accompanying cost plan summary
	Turf
	Irrigated planting
	Nutrient-stripping vegetation (estimated by others)
	Revegetation
	Supplementary planting to existing vegetation
~	Gravel path
~	Concrete path
\sim	Concrete maintenance edge
	ELEMENTS To be read in conjunction with the accompanying cost plan summary
•	Proposed tree
	Nature play elements
	Photovoltaic lighting
	Bin enclosure (Litter, recycling and FOGO)
æ	Bench seating
	Pellerde (remeveelele te methe)

- Bollards (removeable to paths)
- 리 P Directional signage







	LEGEND
	LAND USE
()	LSP Boundary
	Subject POS Site Boundary
	Existing contours
0	Built form
13	Existing tree canopy
	Bush Forever Lot
	Environmental Conservation Lot
	SURFACE TREATMENTS To be read in conjunction with the accompanying cost plan summary
	Turf
	Irrigated planting
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	Supplementary planting to existing vegetation
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\sim	Concrete maintenance edge
	ELEMENTS To be read in conjunction with the accompanying cost plan summary
•	Proposed tree
	Photovoltaic lighting
	Bin enclosure (Litter, recycling and FOGO)
÷	Bench seating
;····`	Bollards (removeable to paths)
,	

Fencing

⊂ ₽ Directional signage







	LEGEND
	LAND USE
	Subject POS Site Boundary
	Existing contours
0	Built form
23	Existing tree canopy
	Bush Forever Lot
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	SURFACE TREATMENTS To be read in conjunction with the accompanying cost plan summary
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	ELEMENTS To be read in conjunction with the accompanying cost plan summary
•	Proposed tree
<u>گ</u>	Shelter (small)
s @	Nature play elements
ſ	Photovoltaic lighting
	Interpretive signage
	Universally accessible electric barbeque and picnic table
	Bin enclosure (Litter, recycling and FOGO)
	Bench seating
····	Bollards (removeable to paths)
·-·′	Fencing
\bigcirc	Water hose cock
G.	Dog exercise area with bag dispenser
	Directional signage
Ш	









	LEGEND
. .	LAND USE
()	LSP Boundary
	Subject POS Site Boundary
	Existing contours
	Built form
•	Existing tree canopy
	Bush Forever Lot
	Environmental Conservation Lot
	DRAINAGE To be read in conjunction with the accompanying cost plan summary Drainage basin 1:100 year average recurrence interval (ARI)
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	Drainage basin 1:1 year ARI
	SURFACE TREATMENTS To be read in conjunction with the accompanying cost plan summary
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\sim	Concrete maintenance edge
	ELEMENTS To be read in conjunction with the accompanying cost plan summary
•	Proposed tree
	Nature play elements
	Photovoltaic lighting
	Interpretive signage
	Bin enclosure (Litter, recycling and FOGO)
F	Bench seating
[.]	Bollards (removable to paths)
;'	Fencing







