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JOHN HUNTER HEALTH AND INNOVATION PRECINCT

LANDSCAPE ARCHITECTURAL SSDA

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1 INTRODUCTION

LANDSCAPE ARCHITECTURE

Overview

In June 2019, the NSW Government announced a significant expansion of the John Hunter and John Hunter Children's Hospitals with the $780 million John Hunter Health and Innovation Precinct (JHHIP) project.

The JHHIP will transform healthcare services for Newcastle, the greater Hunter region and northern NSW communities. The infrastructure will provide additional inpatient capacity to the John Hunter and John Hunter Children's Hospitals and create further opportunities for partnerships with industry and higher education providers.

The JHHIP will deliver an innovative and integrated precinct with industry-leading facilities working in collaboration with health, education and research partners to meet the current and future needs of the Greater Newcastle, Hunter New England and Northern NSW regions.

The John Hunter Health and Innovation Precinct Project is being planned and designed with ongoing communication and engagement with clinical staff, operational staff, the community and other key stakeholders with a strong focus on the following:

- Patient-centred care
- Contemporary models of care
- Future economic, health and innovation development opportunities
- Environmental sustainability

Subject Site

The John Hunter Health Campus (JHHC) is located on Lookout Road, Lambton Heights, within the City of Newcastle Local Government Area (LGA), approximately 8km west of the Newcastle CBD. The hospital campus is located approximately 3.5km north of Kotara railway station.

The JHHC comprises the John Hunter Hospital (JHH), John Hunter Children's Hospital (JHCH), Royal Newcastle Centre (RNC), the Rankin Park Rehabilitation Unit and the IPU Unit (Children & Adolescent Mental Health). JHHC is a Level 6 Principal Referral and tertiary Hospital, providing the clinical hub for medical, surgical, child and maternity services within the Hunter New England Local Health District (HNELHD) and across northern NSW through established referral networks. Other services at the campus include the Hunter Medical Research Institute (HMRI), Newcastle Private Hospital and the HNELHD Headquarters.

SSDA Proposal

Approval is being sought for a new Acute Services Building and refurbishment of existing hospital facilities at John Hunter Hospital comprising:

-Construction and operation of a new seven-storey Acute Services Building (plus 4 semi-basement levels) to provide:

- an expanded and enhanced Emergency Department;
- expanded and enhanced medical imaging services;
- expanded and enhanced intensive care services - Adult, Paediatric and Neonatal;
- expanded and enhanced Operating Theatres including Interventional Suites;
- an expanded Clinical Sterilising Department;
- Women's Services including Birthing Unit, Day Assessment Unit and Inpatient Units;
- integrated flexible education and teaching spaces;
- expanded support services;
- associated retail spaces;
- new rooftop helipads;
- new semi-basement car parking;

-Refurbishment of existing buildings to provide:

- additional Inpatient Units;
- expanded support services;
- A new Hospital entry canopy and works to the existing drop off;
- Link bridge to the Hunter Medical Research Institute (HMRI);
- Campus wayfinding and signage;
- Landscape works;
- Site preparation including bulk earthworks, tree removal, environmental clearing, cut and fill;
- Mines grouting remediation works;
- Construction of internal roads network and construction access roads and works to existing at-grade carparking;
- Connection to the future Newcastle Inner City Bypass; and
- Inground building services works and utility adjustments.

The Landscape response establishes the key vision, principles and opportunities for the landscape design of John Hunter Health and Innovation Precinct, ASB design and refurbished JHH.

The landscape responds to the key objectives of the overall masterplan approach, reflecting the existing landscape and local character and considering the proposed facilities, needs of patients, families and staff.

The overarching process for the Landscape design stems from salutogenic/Biophilic design principles that provides for a functional and usable setting for JHHIP that is connected to nature.

Salutogenic is humankind's innate biological connection with nature.

Connection to Nature, Healing Landscapes and Diversity of Precinct set the parameters for the design approach. An approach that fosters positive, everyday interactions and relationships with the natural environment and that emphasises human health, fitness, connection and well-being.

The bushland context is drawn through the site forming a green precinct that provides therapeutic and sustainability properties to reduce stress and anxiety, and affording a place for rest, retreat and contemplation for all users.

Vision

The landscape vision for JHHIP is informed by its location, its local history and its natural environment. It is about connecting people to the landscape and each other.

The key principles of this landscape vision are:

- Place - To Integrate cultural layers. Cultural stories and histories can be told using art, interpretation, vegetation, materiality. These strategies can express a cultural narrative, expressions of regional identity and evolving relationships between people and the natural world, telling the story of place and people.
- Connected – These pedestrian journeys combined with framed views and long vistas from the interior foster direct and indirect connections with nature.
- Accessible and Inclusive - all open space should allow access for all staff, patients and visitors and open space within the hospital to be diverse and agile
- Sustainable - integration of green infrastructure into the built environment and multifunctional urban realm, courtyards and rooftops to produce social, economic and environmental benefits
- Healing - Connection with nature and natural materials, semi-private areas for respite, potential for community access and engagement and places for children, carers, and staff
- Amenity - providing adequate open space for staff, visitors and patients and places for children's play integration of gardens and green spaces

1.1 RESPONSE TO SEARS

This landscape design report complements the architectural design report. There are a number of areas of overlap with other disciplines and this report provides more detail on the landscape design elements. This report outlines the landscape design considerations for the JHHIP. It covers design principles, the SEAR's requirements and associated plans and graphics.

The landscape design inputs are required by the Secretary's Environmental Assessment Requirements (SEARs) for SSD-9351535. This table identifies the SEARs and relevant reference within this report.

	SEARS Item	Report Reference
	2. Policies	
	Draft Greener Places Design Guide (GANSW)	Section 1.5
	3. Built Form and Urban Design	
	canopy tree planting and landscaping as well as any public domain improvements that would contribute to the urban tree canopy	Section 1.6, 2.3 & 3.1
	4. Tree Removal and Landscaping	
	a detailed site-wide landscape strategy, that:	Section 2 (2.3,4,5 & 6)
	– details the proposed site planting, including location, number and species of plantings, heights of trees at maturity and proposed canopy coverage	Section 2 & 3
	- Considers impact on utilities infrastructure	Section 3 (3.2)
	demonstrates how the proposed development would:	Section 2
	– contribute to long term landscape setting in respect of the site and the streetscape	Section 2 (2.3,4,5 & 6)
	– mitigate the urban heat island effect and ensure appropriate comfort levels on-site	Section 2.3 & 3.1
	– contribute to objectives to increase urban tree canopy cover.	Section 2.3 & 3.1
	Relevant Policies and Guidelines: – Draft Greener Places Design Guide (GANSW) – Technical Guidelines for Urban Green Cover in NSW (Office of Environment and Heritage (OEH), 2015).w	Section 1 (1.1 & 1.5)

DESIGN VISION

1.2 HEALING AND WELL BEING BY DESIGN

Design of the modern built environment, places and spaces are proposed:

- Natural Materials
- Natural Light
- Vegetation
- Views to nature, and
- Other experiences of the natural world

Biophilic qualities long engrained in design practice have been handed down over generations, and have evolved over time, however, the built environment has generally lost its way. This is due to the fact that engrained principles have become eroded and often forgotten throughout the industrial age, 20th century designers and developers have devalued biophilic qualities in the built environment, and due to cost pressures and value engineering, biophilic design principles are often the first to be cut.

In order to find our way back, we must increase our understanding of the neurological and physiological benefits associated with contact with nature, increase research linking interactions with nature to healing rates and enhanced learning, identify economic gains, improved productivity, and sales boosts in retail as well as provide evidence of the strengthening of the social fabric of communities.

The Emotional Brief reveals four design principles: That patients, staff and carers have access to nature, being safe and secure, integrity and privacy and access to space. Our design vision for John Hunter is closely linked to the Emotional Brief ensuring that users have accessible and safe access to nature both visually and physically. Places for refuge, and discovery will be incorporated into the outdoor spaces which through planting design creates areas that are safe and ensure privacy. As well as using materiality and patterning to ensure safe accessibility into these spaces, diffusing light and creating pleasant places of refuge.

CONNECTION TO NATURE (VISUAL)

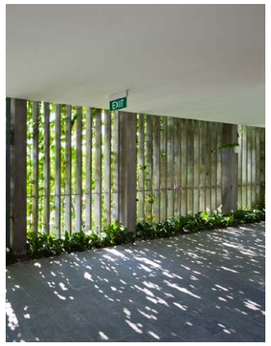
- Lowers blood pressure and heart rate
- Improves mental engagement
- Positive impact on attitude and overall happiness

CONNECTION TO NATURE (TOUCH, SMELL, COLOUR)

- Reduced systolic blood pressure and stress hormones
- Positive impact on cognitive performance
- Improvements in mental health and tranquillity

AIR FLOW AND VENTILATION

- Positive impact on comfort, well-being and productivity
- Positive impacts on concentration
- Improved sense of temporal and spatial enjoyment



DYNAMIC AND DIFFUSED LIGHT

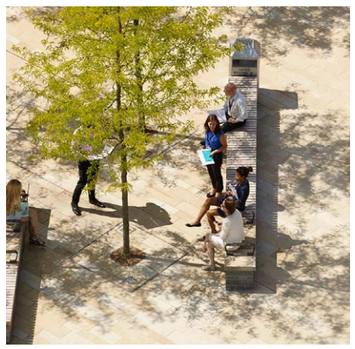
- Positive impact on the circadian system
- Increased visual comfort

PATTERNS AND TEXTURES

- Decreased blood pressure
- Improved creative performance
- Improved comfort

MATERIALITY

- Decreased blood pressure
- Improved creative performance
- Improved comfort



PLACES FOR REFUGE

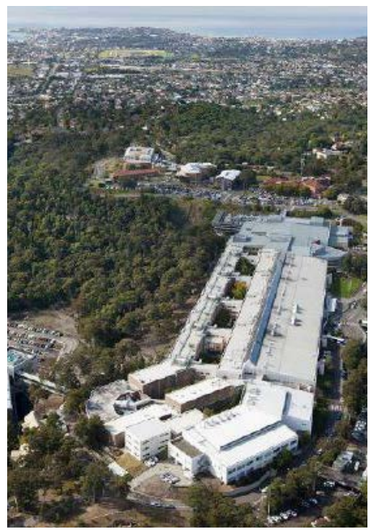
- Improved concentration and attention
- Increased perception of safety
- Reduced stress levels

DISCOVERY

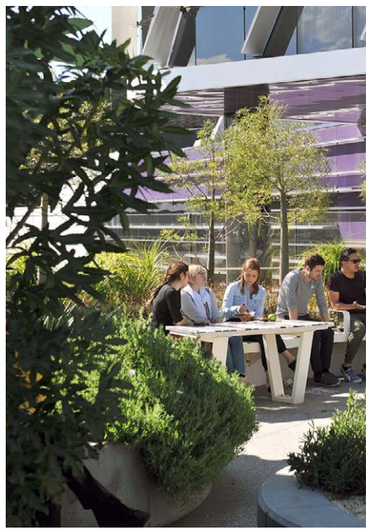
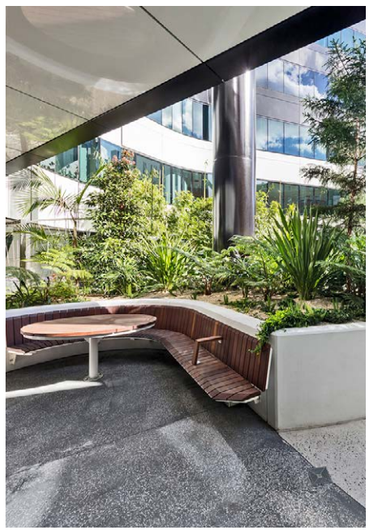
- Reduced stress
- Reduced boredom, irritation and fatigue
- Improved comfort and perception of safety

1.3 DESIGN PRINCIPLES

There are six main masterplan principles guiding the landscape design that are applied to the design of the hospital landscapes.





PLACE

- Celebrate the surrounding native bushland
- allowing the surrounding landscape to inform the design decisions in the internal courtyards
- ensure that the urban realm, courtyards reveal an understanding of place

CONNECTED

- Providing green spaces throughout the precinct
- defining a heirachy of public domain, courtyards
- enhancing connectivity to open space

ACCESSIBLE & INCLUSIVE

- All open space should allow access for all staff, patients and visitors
- open space within the hospital must be diverse and agile

SUSTAINABLE

- Integration of green infrastructure into the built environment
- multifunctional urban realm, and courtyards to produce social, economical and environmental benefits

HEALING

- Connection with nature and natural materials
- semi private areas for respite
- potential for community access and engagement
- places for children, carers, and staff

AMENITY

- Providing adequate open space for staff, visitors and patients
- places for childrens play

1.4 DESIGN FRAMEWORK

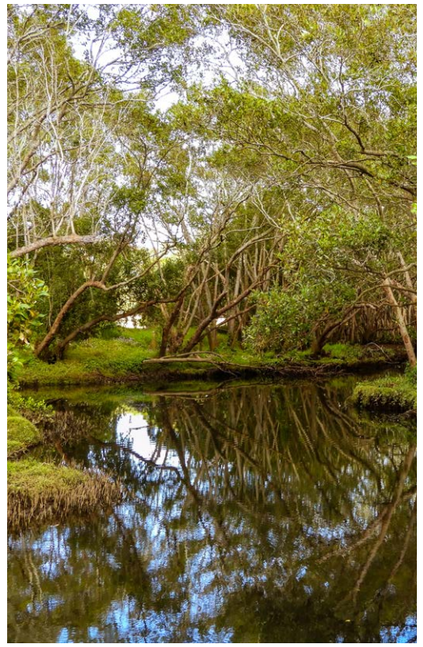
The project will be a manifestation of the broader geographical region's amazing cross section of natural and constructed landscapes

DISTINCT SHAPES & FORMS

Forms inspired by the natural and unique setting of surrounding New Lambton bushland. The terrain, mottled mixture of sandstone and untouched natural outlook will help set the defining characteristic for the forms and shapes of the landscape and public realm within the hospital.

AN ENDEMIC BUSHLAND GARDEN

A cross section of the New Lambton bushland natural landscapes will be demonstrated across the landscape and public realm with inspiration being drawn from the bushland, watercourses, wetlands and escarpments.

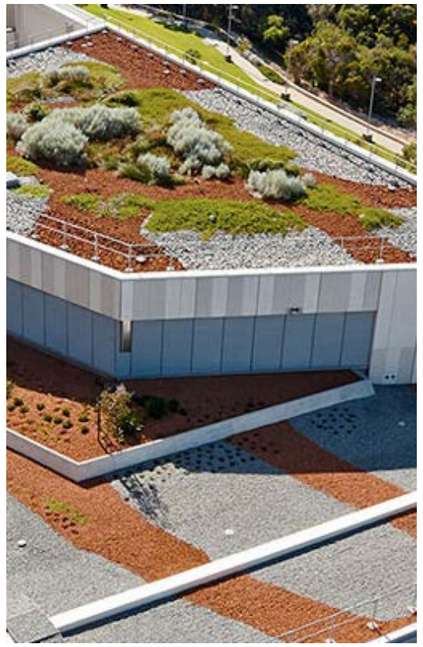


GREEN + BLUE (BROWN)

The landscape will embrace a bushland setting with tree species and basins which will in time establish the hospital as a green precinct. This network of green and blue architecture will leave a lasting legacy for generations providing shade, clean air and urban cooling to maximise healing.

MULTI-FUNCTIONAL AND FLEXIBLE

Every public realm space should have multiple uses. Plazas should be able to convert into community places and courtyards into health retreats.



SMART & SUSTAINABLE

Using technology and natural resources to the benefit of the environment and the local community is a core value of the hospital and should be explored as a system that is connected and inter-related.

1.5 ALIGNMENT WITH 'GREENER PLACES' - GOVERNMENT ARCHITECT NSW DOCUMENTS

The Greener Places Design Guide is a design framework produced by GANSW to guide the planning, design, and delivery of green infrastructure in urban areas across NSW. It aims to create a healthier, more liveable, and sustainable urban environment by improving community access to recreation and exercise, supporting walking and cycling connections, supporting and maintaining Aboriginal culture and heritage, and improving the resilience of urban areas.

This design framework has been incorperated into the design to ensure sustainable design of the JHHIP following the guiding principles;

01 CONNECTIVITY

Create an interconnected network of open space

02 PARTICIPATION

Involve stakeholders in development and implementation of neighbourhood initiatives

03 INTEGRATION

Combine green infrastructure with urban development and grey infrastructure

04 MULTI-FUNCTIONALITY

Deliver multiple ecosystem services simultaneously to improve health and wellbeing

The landscape design offers the following provisions

CONNECTIVITY

- Provision of safe and comfortable connections though the site to significant new open spaces that offer passive surveillance with activated uses such as cafes and retail

-Provision of a shared path along the Northern Road and Hospital Access Road offers walking, cycling and jogging opportunities that connect into the wider network

- Provision of pedestrian focus arrival forecourt that provides for equitable access and clear demarcation of movement

- Provision of public domain to provide a series of connected spaces, that starts with the new front door, internal link and elevated garden

PARTICIPATION

- Ability to hold events and sermonise within the Elevated Garden to encourage varied programming and use of open space

INTEGRATION

- Bring the bushland up to the JHH front door, turning grey (concrete) to green (landscape planters) whilst providing an improved landscape setting

- Opportunity for WSUD raingardens to landscape median to JHH arrival

-Surface water treatment through landscaped bioretention basins and increase biodiversity values

-Provide endemic tree species to ensure tree canopies contribute and extend the landscape character

MULTI-FUNCTIONALITY

- Provision of varied landscape spaces that offer interaction and stewardship, and sense of connectedness

- Creation of a new open space, Elevated Garden that connects the new and old building providing a new green heart for individual and community gathering

- Provision of spaces and connections that support a diverse range of activities.

-Provision of planting throughout the ASB to improve microclimatic conditions and visual amentity

enhances the new project through high quality, high performing green space

- Provision of passive recreation amenity within areas of turf and seating walls amongst felxible open space

- Landscape courtyards emblematic of the local bushland setting

1.6 TREE CANOPY COVER

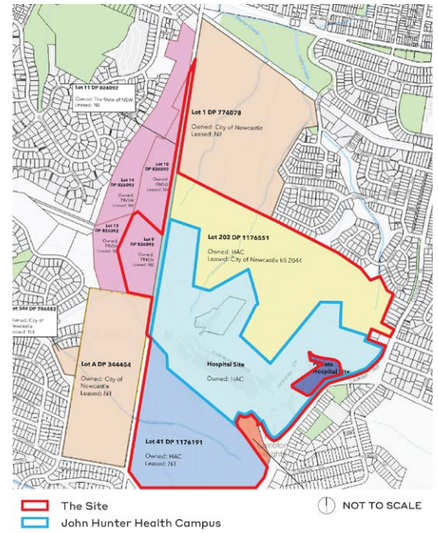
In response to reviewing the urban tree canopy cover a high level review of the baseline conditions against the proposed development has been undertaken which sees a 7.6% reduction in site wide tree canopy cover.

The calculations take each Land Lot that fails within the "project site" as listed;

- Lot 2 DP1228246
- Lot 1 DP1228246
- Lot 202 DP1176551
- Lot 11 DP826092
- Lot 9 DP826092
- Lot 41 DP 1176191

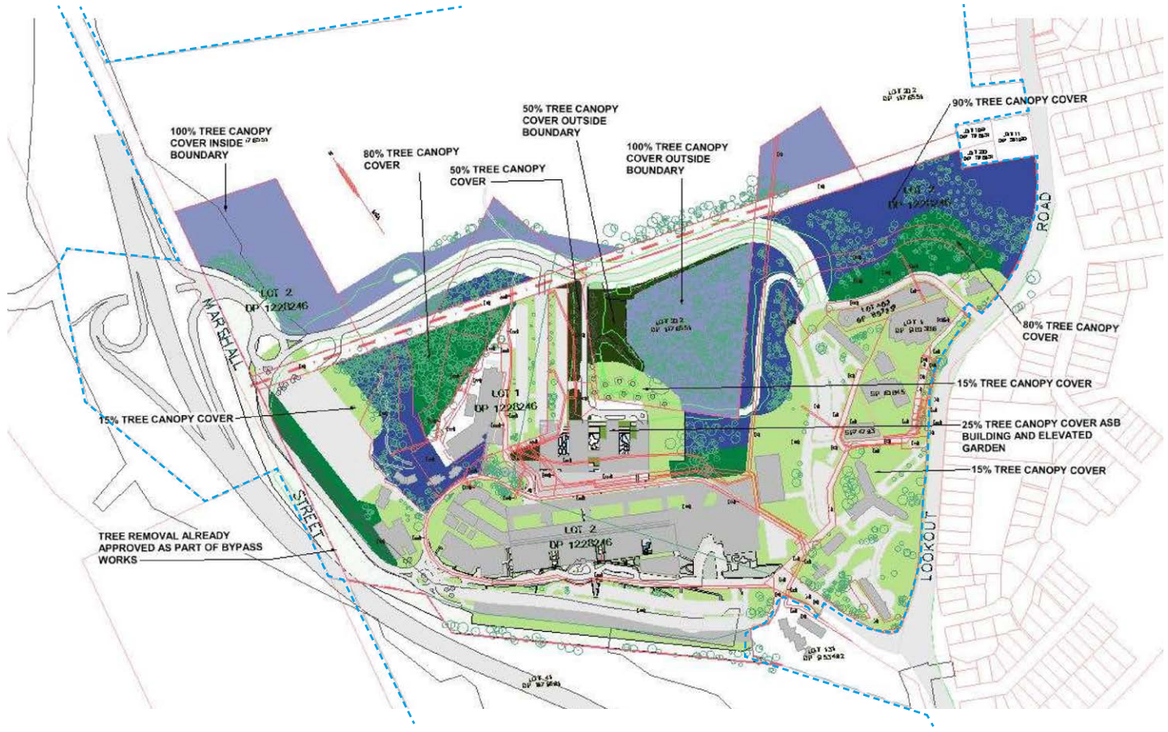
and minuses TfNSW approved project area for NICB Bypass, and removes areas of permanent tree canopy clearing due to JHHIP project, as well as applies reduces rates base on design constraints i.e. APZ area.

The percentage change is then calculated based on the overall remaining total tree canopy areas.



EXISTING TREE CANOPY COVER

PROPOSED TREE CANOPY COVER



EXISTING

THE SITE	Lot 202 DP 1176551	Lot 9 DP 826092	Lot 11 DP 826092	Lot 41 DP 1171691	JHHIP Hospital Site Lot 1 DP1228246 & Lot 2 DP1228246	TOTAL Tree cover area (m2)	
Total Lot size (m2)	342,648	60,692	26,614	269,013	483,870		
TfNSW Approved Tree Clearance	2,505	60,340	25,197	87,387	12,360	N/A	
Total Lot minus TfNSW area (m2)	340,143	352	1,417	181,626	471,510		
100% Tree canopy cover average	340,143	352	1,417	181,626	53,610	577,148	
90% Tree canopy cover average					99,155	99,155	
80% Tree canopy cover average					42,566	42,566	
15% Tree canopy cover average					37,880	37,880	
					233,211	**756,749**	Total area of tree canopy cover

PROPOSED

THE SITE	Lot 202 DP 1176551	Lot 9 DP 826092	Lot 11 DP 826092	Lot 41 DP 1171691	JHHIP Hospital Site Lot 1 DP1228246 & Lot 2 DP1228246	TOTAL Tree cover area (m2)	
Total Lot size (m2)	342,648	60,692	26,614	269,013	483,870		
TfNSW Approved Tree Clearance	2,505	60,340	25,197	87,387	12,360	N/A	
Total Lot Minus TfNSW area (m2)	340,143	352	1,417	181,626	471,510		
JHHIP Project / Impact	5,653		1,417				
100% Tree canopy cover average	334,490	352	0	181,626	40,422	556,890	
90% Tree canopy cover average					66,201	66,201	
80% Tree canopy cover average					29,526	29,526	
50% Tree canopy cover average					3,210	3,210	
25% Tree canopy cover average					3,673	3,673	
15% Tree canopy cover average					39,427	39,427	
					182,459		
Tree canopy cover reduction per lot	1.7%	0%	100%	0%	21.7%		
						699,927	Total area of tree canopy cover
						-7.6%	Total percent of tree canopy cover reduction

NOTE- Numbers are best approximation based on avaliable base line data

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2
SITE WIDE LANDSCAPE CONCEPT

LANDSCAPE & OPEN SPACE DESIGN

2.1 LANDSCAPE AND OPEN SPACE DESIGN

Connection to Nature, Healing Landscapes and Diversity of Precinct have set the parameters for the design approach. An approach that fosters positive, everyday interactions and relationships with the natural environment and that emphasises human health, fitness, connection and well-being.

Though an iterative design process, refinements have been made to optimise open space opportunities, providing a diverse range of destinations, facilities and focal points, which will provide an accessible, connected network of open spaces that supports safe and convenient movement within the precinct allowing for recreational opportunities and a "sense of place" that welcome users.

High quality external spaces will afford patients, staff and visitors for views to nature, access to daylight, places to socialise and seek respite, and achieve a balance of hard and soft surfaces on the site, whilst supporting natural surveillance and establishing defined public, semi-public and private spaces.

The bushland context is drawn through the site forming a green precinct that provides therapeutic and sustainability properties to reduce stress and anxiety, and affording a place for rest, retreat and contemplation for all users.

Design of the modern built environment, places and spaces are proposed:

- Natural Materials
- Natural Light
- Vegetation
- Views to nature, and
- Other experiences of the natural world

Biophilic qualities long engrained in design practice have been handed down over generations, and have evolved over time, however, the built environment has generally lost its way. This is due to the fact that engrained principles have become eroded and often forgotten throughout the industrial age, 20th century designers and developers have devalued biophilic qualities in the built environment, and due to cost pressures and value engineering, biophilic design principles are often the first to be cut.

In order to find our way back, we must increase our understanding of the neurological and physiological benefits associated with contact with nature, increase research linking interactions with nature to healing rates and enhanced learning, identify economic gains, improved productivity, and sales boosts in retail as well as provide evidence of the strengthening of the social fabric of communities.

Empirical evidence shows that positive emotions and mental restoration and other benefits can occur in as little as 5 to 20 minutes of immersion in nature1. The power of healing gardens is compelling. Numerous hospitals across Australia such as Bendigo Hospital and Royal Adelaide Hospital have incorporated large-scale healing gardens into their design. Healing gardens provide patients with a sense of control, physical movement, and access to nature as a positive distraction.

2.2 SITE WIDE LANDSCAPE PLAN

This site wide landscape design will:

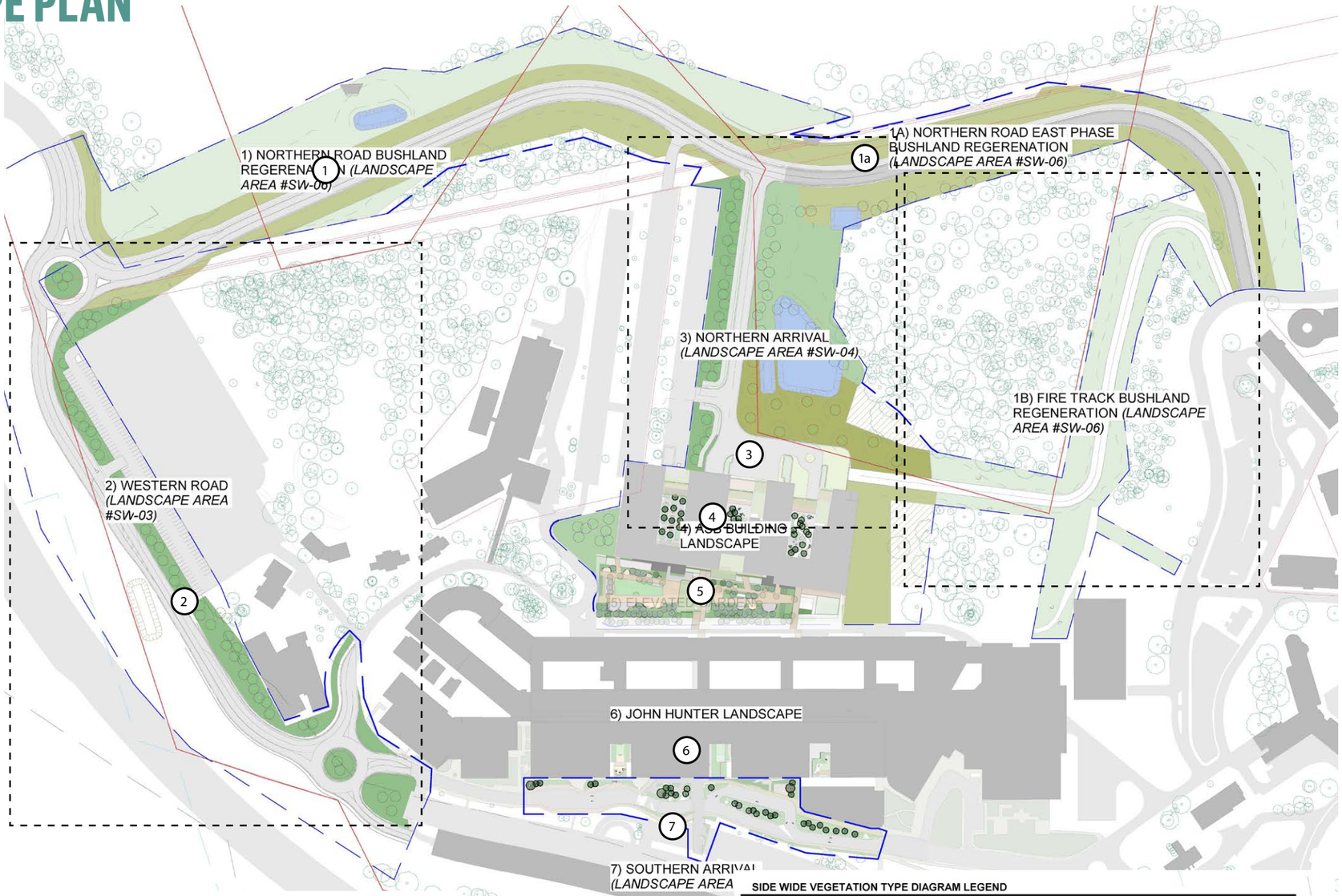
- Re-establish bushland through natural regeneration and mass seeding
- Provide entry and arrival landscapes to be celebrated
- Encourage a sense of place and community through indigenous planting
- Integrate green infrastructure with walking and cycling to promote healthy living
- Water Sensitive Urban Design (WSUD) principals have been realised into the landscape design in a way that celebrates a sustainable water cycle
- Provide a 10m APZ buffer to either side of the Northern Road (New road) along its length

Accessibility & safety

Paving materials, inclusion of tactiles and other relevant measures will be implemented as part of the landscape works for compliance with the relevant standards and all pedestrian accessible areas will be designed to meet relevant Australian Lighting Standards.

Planting

- To increase the number of indigenous species planted
- To reduce the use of noxious weeds of potentially invasive species
- To use plants in such a way to foster energy efficient development that relies on passive energy principles for heating and cooling
- To reduce maintenance and water consumption through appropriate species selection
- To create buffer zones and add to existing areas of remnant vegetation with locally indigenous species.
- The site wide planting for the site will aim for 100% of indigenous species
- water sensitive planting species.
- Tree planting has been incorporated to provide shade along new roads and act as a buffer to the newly exposed bushland edge and further visual softening and screening.
- Irrigation will be provided in key areas, connected to the rainwater detention tank, but the species have also been selected for their relatively low water needs.



LANDSCAPE ZONES

1	Northern Road Bushland Regenderation
1a	Northern Road - East Phase Bushland Regenderation
2	Western Road Landscape
3	Hospital Arrival Landscape
4	ASB Building Landscape
5	Elevated Garden
6	JHH Landscape
7	Southern Arrival Landscape

SIDE WIDE VEGETATION TYPE DIAGRAM LEGEND

NATIVE BUSHLAND PLANTING

- SMOOTH-BARKED APPLE - RED BLOODWOOD OPEN FOREST SEEDING MIX A - SEEDING (100%)
- SMOOTH-BARKED APPLE SYDNEY PEPPERMINT TURPENTINE FOREST SEEDING MIX A1 - SEEDING (75%) - TUBE STOCK (25%) AND SCATTERED TREES AS SHOWN
- SMOOTH-BARKED APPLE SYDNEY PEPPERMINT TURPENTINE FOREST SEEDING MIX A2 - SEEDING (65%) - TUBE STOCK (35%) AND SCATTERED TREES AS SHOWN

APZ BUFFER PLANTING

- APZ PLANTING SMOOTH-BARKED APPLE - RED BLOODWOOD OPEN FOREST - SEEDING (100%) - GRASSES ONLY
- APZ PLANTING SMOOTH-BARKED APPLE - RED BLOODWOOD OPEN FOREST- SEEDING (90%) - SHRUB TUBESTOCK (10%) AND SCATTERED TREES AS SHOWN
- BIORETENTION PLANTING TREES, SEEDING AND TUBESTOCK TO BASIN. SCATTERED SHRUBS AND TREES E.G. EUCALYPTUS UMBRA, CAREX APPRESSA, ISOLEPSIS NODOSA
- EXTENT OF SELECTIVE TREE CLEARANCE FOR APZ REFER TO BUSHFIRE REPORT

- PROPOSED TREE PLANTING
- EXISTING TREE TO BE RETAINED
- TfNSW EXTENT OF WORKS LINE
- JOHN HUNTER HEALTH CAMPUS BOUNDARY
- SITE BOUNDARY

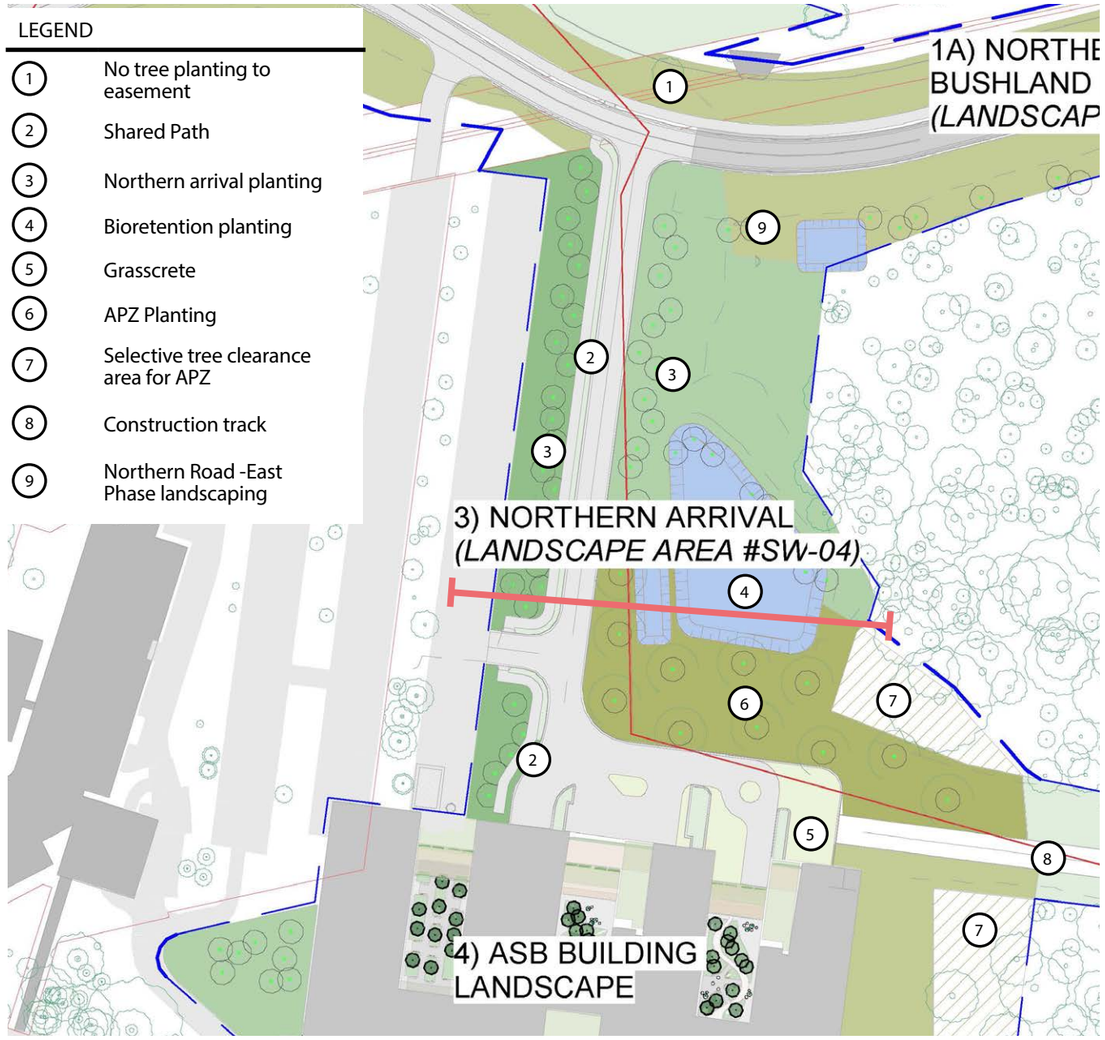
NOTE: Where 'regeneration' is noted, this is seeding only unless otherwise stated.

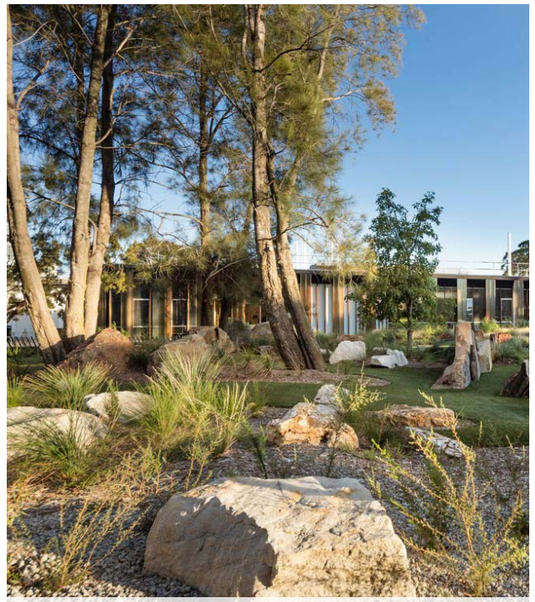
2.3 SITE WIDE - NORTHERN ARRIVAL

The planting scheme will introduce existing bushland species into the northern arrival to tie in with the surrounding bushland. The new road and shared path will provide access from the proposed Bypass to the ASB carpark and end of trip facilities.

A new streetscape will use the existing vegetation community of Smooth-barked Apple - Red Bloodwood open forestand applyed via hydroseeding, tube stock, planting and tree planting to provide an open canopy with shrub and ground cover bushland edge.

The west side of the road is landscaped to offer a more established landscape that reinstates the current level of landscaping with additional shade trees (200L and some @400L) to the new shared path, encouraging walking and cycling.




Native planting, rocks and mulch

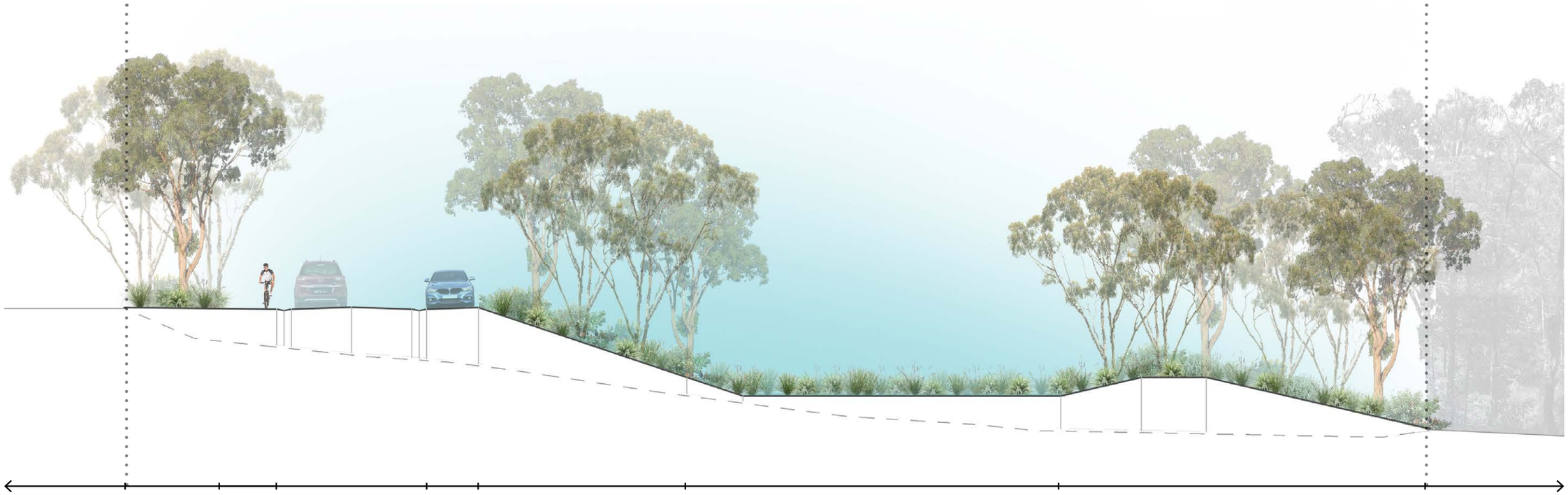

APZ landscape


Arrival landscape


Bioretention Basin

TYPICAL SECTION

Note: Tree growth shown at year 10



-Hydroseeding

-Scattered stock tube planting for layered landscaping

-Tree planting in clumps located along new road

-Hydroseeding (seed broadcasting) used for areas of new road cutting/embankments

-Stock tube planting scattered throughout revegetation area for structured bushland establishment

-Selected scattered tree planting in clumps to be placed around detention basin

Hydroseeding

-Hydroseeding

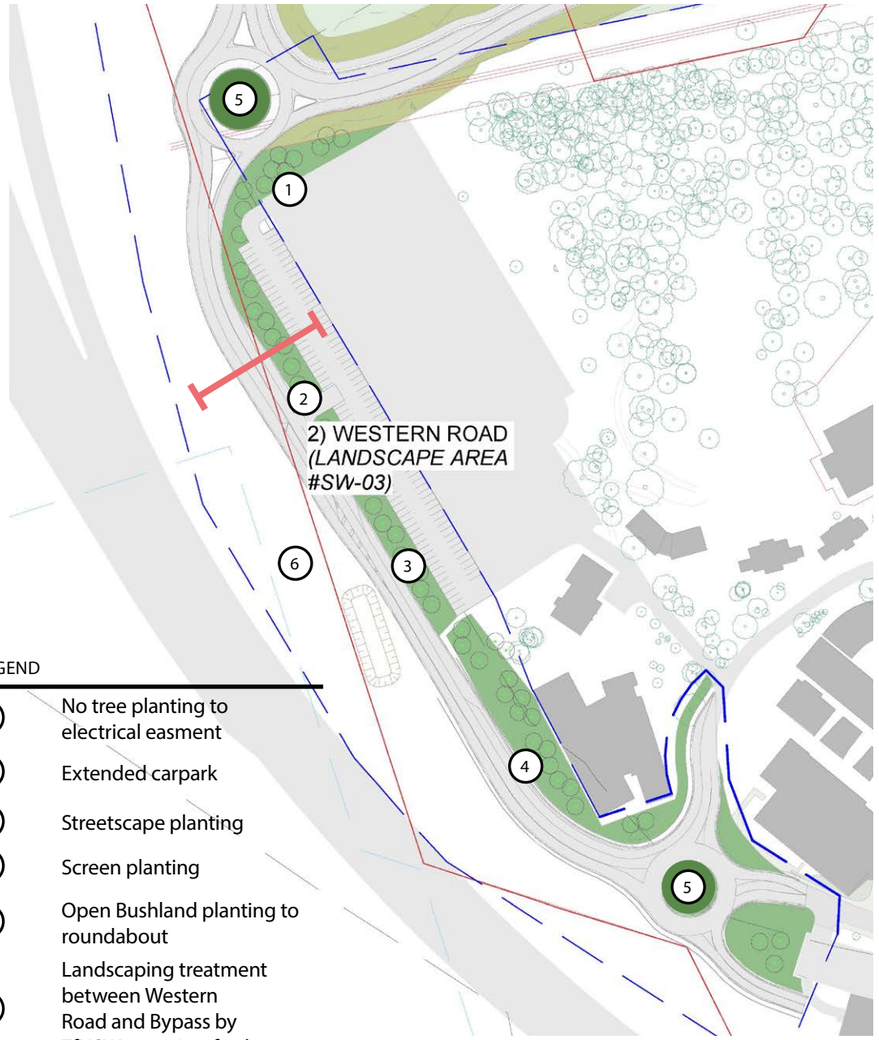
-Stock tube planting scattered throughout revegetation area for structured Bushland establishment

-Selected scattered tree planting in clumps to be placed around detention basin

Bushland regeneration to cleared areas adjacent to existing Bushland

2.4 SITE WIDE - WESTERN ROAD

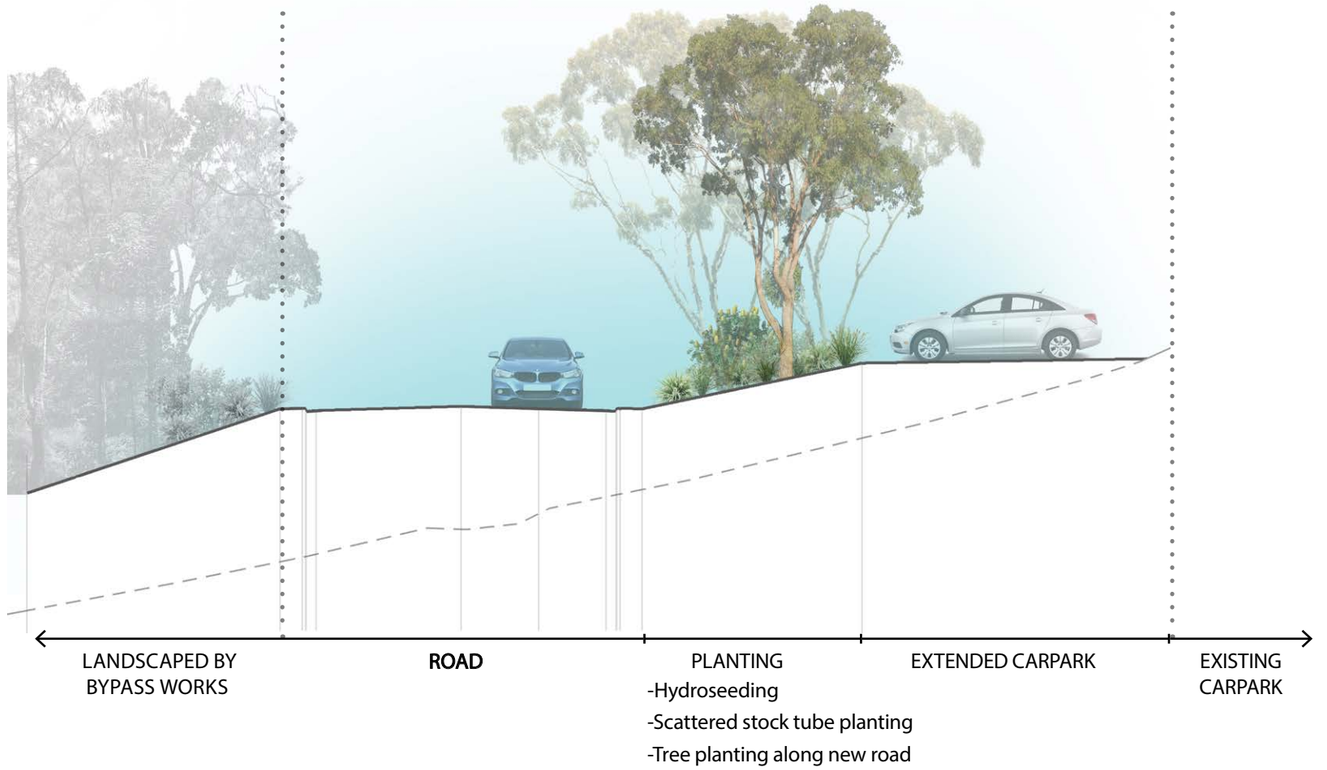
The planting scheme will introduce existing bushland species into the western road to tie in with the surrounding bushland. The new road will provide access from the proposed Bypass to the extended carpark and beyond to the ASB and JHH Southern Arrival . A new streetscape will use the existing vegetation community of Smooth-barked Apple - Red Bloodwood open forestand applyed via hydroseeding, tube stock and small tree planting

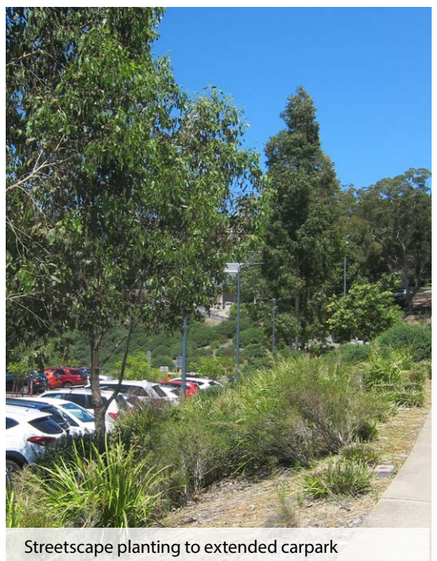


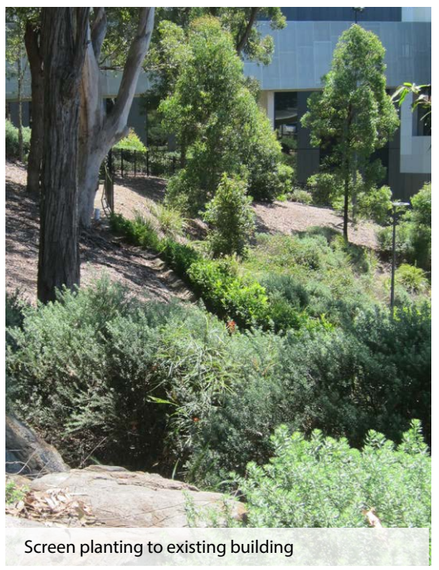
LEGEND

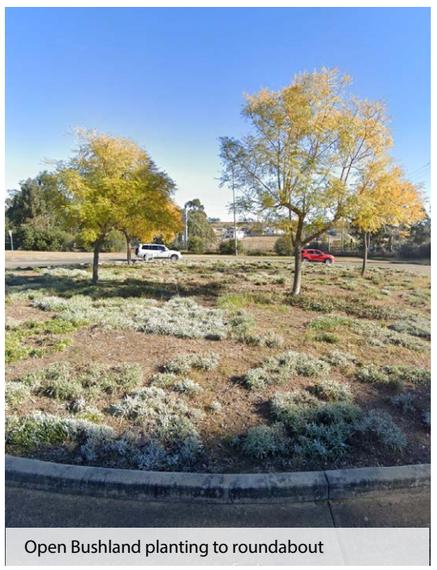
1. No tree planting to electrical easment
2. Extended carpark
3. Streetscape planting
4. Screen planting
5. Open Bushland planting to roundabout
6. Landscaping treatment between Western Road and Bypass by TfNSW - requires further coordination

Note: Tree growth shown at year 10




Streetscape planting to extended carpark


Screen planting to existing building

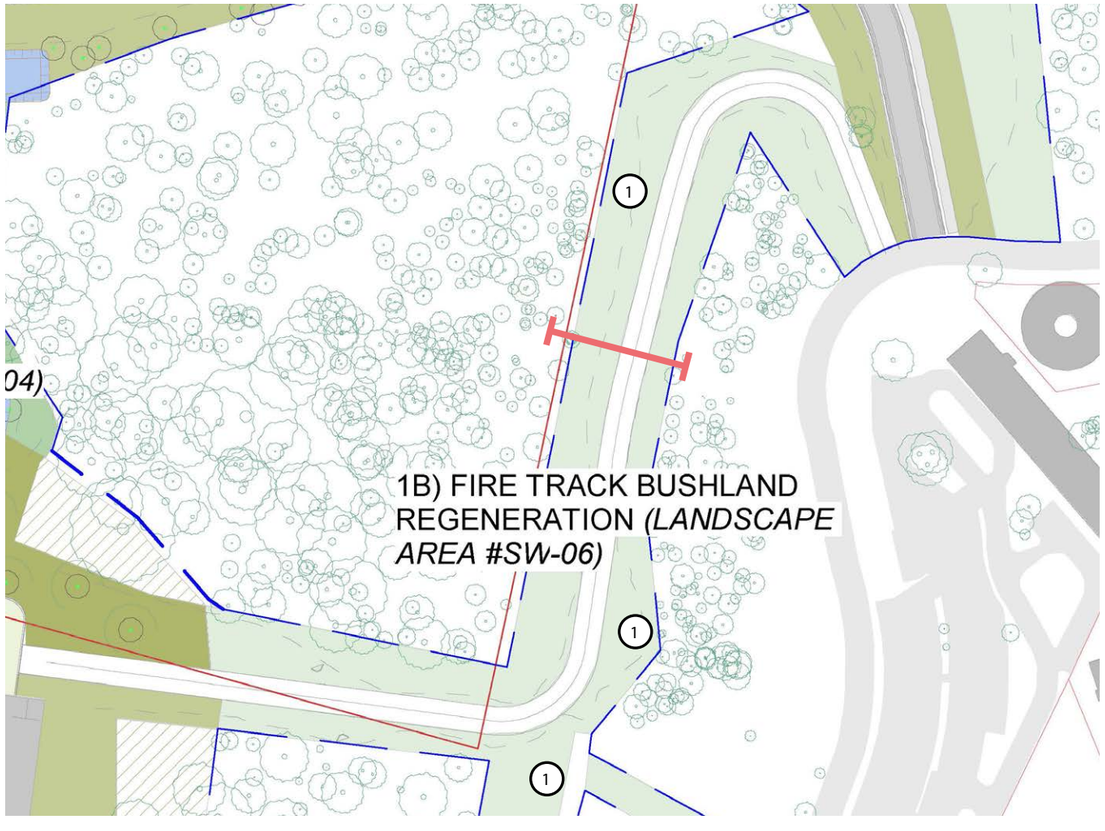

Open Bushland planting to roundabout

2.5 SITE WIDE - CONSTRUCTION ROAD (FUTURE FIRE ACCESS TRAIL)

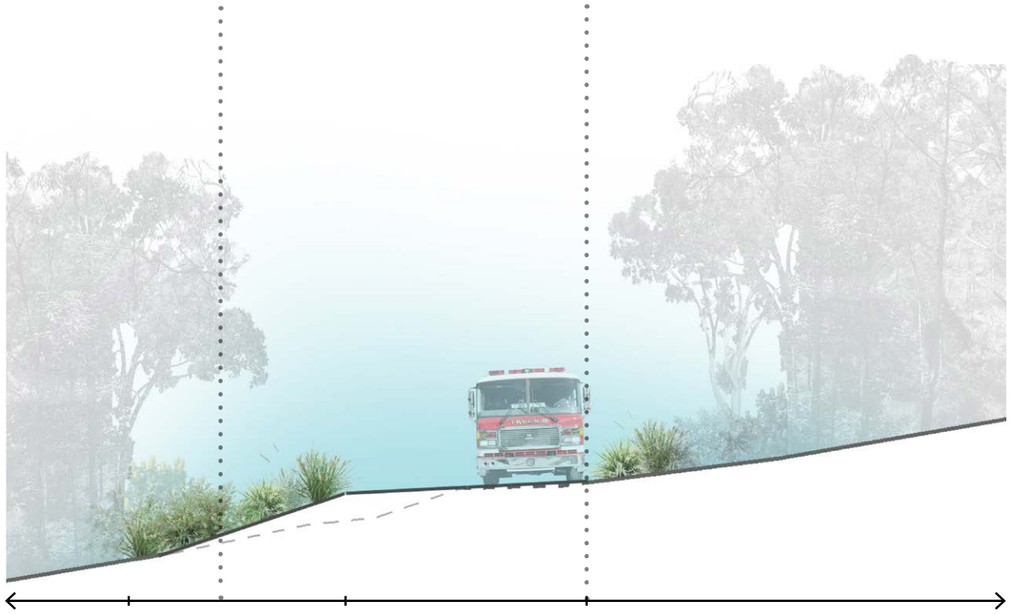
The planting scheme will introduce the existing bushland species into the site to tie in with the surrounding bushland. The existing fire trail will be re-established to provide for construction access track. The scheme uses the existing vegetation community of Spotted gum- grey ironbark open forest. The application of this vegetation community will be applied via hydroseeding.

LEGEND

① Seeding to embankments and cuttings



Note: Tree growth shown at year 10



Access road through bushland

2.6 TREE RETENTION / REMOVAL

The proposed development will require the removal of trees that lie within the Extent of Works areas. Only trees within the APZ area been surveyed by an Arborist and their categorisation values.

Trees within the Extent of Works area are required for removal to allow for a new road network for vehicular, bicycle and pedestrian access to JHHIP. This new network requires associated batters and basins to be constructed to allow for current level changes and water management across the site. There is also some on grade carparking that will require tree clearance, this combined with the above will all need an off set to allow construction access and compounds to be located defining an extent of works boundary.

Most trees required to be removed are untouched bushland and will be replaced by a seed mix of Smooth-Barked Apple-Red Bloodwood open forest. The Landscape Site wide strategy looks to provide a future closed canopy to all revegetated areas.

The landscape area between the bypass and proposed access road (Western Road) clearing will be completed by Transport for NSW as approved through the EIA for the Bypass.

Landscape treatment and tree removal between Western Road and proposed Bypass by TfNSW - Requiring further resolution in DD

PLANTING STRATEGY

The planting scheme will introduce the existing bushland species into site to tie in with the surrounding bushland communities of Smooth Barked Apple - Red Bloodwood Open Forest, Smooth Barked Apple Sydney Peppermint - Turpentine Forest and the Spotted Gum Ironbark Open Forest over time.

The proposed planting mix is preliminary and subject to further refinement during detail design

SITE WIDE NORTHERN ROAD AND FIRE ACCESS LANDSCAPE

SEEDING MIX A - SEEDING 100% - SMOOTH-BARKED APPLE - RED BLOODWOOD OPEN FOREST

AREA- 26712.20 m2

PLANT CODE	BOTANICAL NAME	COMMON NAME	MATURE HEIGHT AND SPREAD	CONTAINER SIZE	PLANTS PER M2
SHRUBS					
ACA ter	Acacia terminalis	Sunshine Wattle	3m x 2m	Seeding	0.01 grams
ACA uli	Acacia ulicifolia	Prickly Moses	2m x 2m	Seeding	0.01 grams
BAN spi	Banksia spinulosa	Hairpin Banksia	3m x 2.5m	Seeding	0.01 grams
LEP tri	Leptospermum trinervium	Slender Tea- tree	6m x 1-6m	Seeding	0.01 grams
LOM sal	Lomatia salicifolia	Wild Parsely	6m x 3m	Seeding	0.01 grams
PER lev	Persoonia levis	Broad-Leaved Geebung	3m x 1m	Seeding	0.01 grams
PER lin	Persoonia linearis	Narrow Leaved Geebung	3m x 0.7m	Seeding	0.01 grams
PUL euc	Pultenaea euchila	Large-flower Bush-pea	1.5m x 2m	Seeding	0.01 grams
PITT und	Pittosporum undulatum	Sweet Pittosporum	12m x 7m	Seeding	0.01 grams
XAN lat	Xanthorrhoea latifolia	Grass Tree	2m x 1.5m	Seeding	0.01 grams
TET jun	Tetratheca juncea	Black-eyed Susan	0.5m x 0.3m	Seeding	0.01 grams
GRASSES & GROUNCOVERS					
ENT str	Entolasia stricta	Wiry Panic	0.50m x 0.30m	Seeding	0.01 grams
IMP cyl	Imperata cylindrica	Blady grass	1.0m x 0.3m	Seeding	0.01 grams
THE aus	Themeda australis	Kangaroo Grass	1m x 0.5m	Seeding	0.01 grams
PTE esc	Pteridium esculentum	Bracken Fern	2m x 1.2m	Seeding	0.01 grams
LOM obl	Lomandra obliqua	Twisted Matrush	0.50m x 0.50m	Seeding	0.01 grams

NOTE- Trees as shown - Large tree pot sizes to be dispursed evenly throughout the area.

SITE WIDE NORTHERN ARRIVAL LANDSCAPE

SEEDING MIX A1 & A2 - SMOOTH-BARKED APPLE - SYDNEY PEPPERMINT - TURPENTINE FOREST

AREA- 8256.30 m2

PLANT CODE	BOTANICAL NAME	COMMON NAME	MATURE HEIGHT AND SPREAD	CONTAINER SIZE	PLANTS PER M2
TREES					
ANG cos	Angophora costata	Smooth-Barked Apple	25m x 15m	100L, 200L, 400L	as shown
EUC glo	Eucalyptus globoidea	White Stringybark	20m x 15m	100L, 200L	as shown
EUC pip	Eucalyptus piperita	Sydney Peppermint	20m x 15m	100L, 200L, 400L	as shown
SYN glo	Syncarpia glomulifera	Turpentine	16m x 8m	100L, 200L	as shown
ALL tor	Allocasuarina torulosa	Forest Oak	10m x 7m	100L, 200L	as shown
SHRUBS					
ACA myr	Acacia myrtifolia	Red-Stemmed Wattle	3m x 3.0m	300mm	0.5
BAN spi	Banksia spinulosa	Hairpin Banksia	3m x 2.5m	300mm	0.5
BRE obl	Breynia oblongifolia	Coffee Bush	3m x 3m	300mm	1
DAV uli	Daviesia ulicifolia	Gorse Bitter Pea	2m x 1m	300mm	0.3
DOD tri	Dodonaea triquetra	Large-Leaf Hop Bush	3m x 2m	300mm	1
LEP pol	Leptospermum polygalifolium	Lemon Scented Tea Tree	3m x 2m	300mm	1
LEU lan	Leucopogon lanceolatus	Lance-leaved beared heath	2m x 1m	300mm	0.5
ZIE smi	Zieria smithii subsp smithii	Sandfly zieria	2m x 1m	300mm	0.1
GRASSES & GROUNCOVERS					
DIA cae	Dianella caerulea var. producta	Blue Flax Lily	1m x 2m	150mm	4
DIC rep	Dichondra repens	Kidney Weed	0.15m x 1.8m	150mm	4
ENT str	Entolasia stricta	Wiry Panic	0.50m x 0.30m	150mm	2
IMP cyl	Imperata cylindrica	Blady grass	1.0m x 0.3m	150mm	1
MIC sti	Microlaena stipoides	Weeping Rice Grass	0.30m x 0.50m	150mm	2
PRA pur	Pratia purpurascens	Whiteroot	0.20m x 2m	150mm	1
VIO hed	Viola hederacea	Ivy-leaved Violet	0.15m x 1m	150mm	4
XAN lat	Xanthorrhoea latifolia	Grass Tree	2m x 1.5m	150mm	2

SITE WIDE WESTERN ROAD LANDSCAPE

SEEDING MIX A2 - SEEDING (65%), TUBESTOCK (35%) & TREES SMOOTH-BARKED APPLE - SYDNEY PEPPERMINT - TURPENTINE FOREST

AREA- 6521.04 m2

PLANT CODE	BOTANICAL NAME	COMMON NAME	MATURE HEIGHT AND SPREAD	CONTAINER SIZE	PLANTS PER M2
TREES					
ANG cos	Angophora costata	Smooth-Barked Apple	25m x 15m	100L. 200L	as shown
EUC glo	Eucalyptus globoidea	White Stringybark	20m x 15m	100L	as shown
EUC pip	Eucalyptus piperita	Sydney Peppermint	20m x 15m	100L, 200L	as shown
SYN glo	Syncarpia glomulifera	Turpentine	16m x 8m	100L	as shown
ALL tor	Allocasuarina torulosa	Forest Oak	10m x 7m	100L	as shown
SHRUBS					
ACA myr	Acacia myrtifolia	Red-Stemmed Wattle	3m x 3.0m	300mm	0.5
BAN spi	Banksia spinulosa	Hairpin Banksia	3m x 2.5m	300mm	0.5
BRE obl	Breynia oblongifolia	Coffee Bush	3m x 3m	300mm	1
DAV uli	Daviesia ulicifolia	Gorse Bitter Pea	2m x 1m	300mm	0.3
DOD tri	Dodonaea triquetra	Large-Leaf Hop Bush	3m x 2m	300mm	1
LEP pol	Leptospermum polygalifolium	Lemon Scented Tea Tree	3m x 2m	300mm	1
LEU lan	Leucopogon lanceolatus	Lance-leaved beared heath	2m x 1m	300mm	0.5
ZIE smi	Zieria smithii subsp smithii	Sandfly zieria	2m x 1m	300mm	0.1
GRASSES & GROUNCOVERS					
DIA cae	Dianella caerulea var. producta	Blue Flax Lily	1m x 2m	150mm	4
DIC rep	Dichondra repens	Kidney Weed	0.15m x 1.8m	150mm	4
ENT str	Entolasia stricta	Wiry Panic	0.50m x 0.30m	150mm	2
IMP cyl	Imperata cylindrica	Blady grass	1.0m x 0.3m	150mm	1
MIC sti	Microlaena stipoides	Weeping Rice Grass	0.30m x 0.50m	150mm	2
PRA pur	Pratia purpurascens	Whiteroot	0.20m x 2m	150mm	1
VIO hed	Viola hederacea	Ivy-leaved Violet	0.15m x 1m	150mm	4
XAN lat	Xanthorrhoea latifolia	Grass Tree	2m x 1.5m	150mm	2

SITE WIDE BIO RETENTION LANDSCAPE

TREES, SEEDING (75%) & TUBESTOCK (25%)

AREA- 3067.63 m2

PLANT CODE	BOTANICAL NAME	COMMON NAME	MATURE HEIGHT AND SPREAD	CONTAINER SIZE	PLANTS PER M2
TREES					
ANG cos	Angophora costata	Smooth-Barked Apple	25m x 15m	400L	as shown
COR gum	Corymbia gummifera	Red Bloodwood	30m x 10m	400L	as shown
EUC cap	Eucalyptus capitellata	Brown Stringybark	20m x 10m	100L	as shown
EUC glo	Eucalyptus globoidea	White Stringybark	20m x 15m	400L	as shown
EUC pun	Eucalyptus punctata	Grey Gum	25m x 10m	100L	as shown
SYN glo	Syncarpia glomulifera	Turpentine	16m x 8m	100L	as shown
ALL tor	Allocasuarina torulosa	Forest Oak	10m x 7m	400L	as shown
GRASSES & GROUNCOVERS					
BAU jun	Baumea juncea	Bare Twig Rush	1.0m x 1.0m	Seeding and 50mm Tubestock	0.01 grams / 6
CAR app	Carex appressa	Bluedale	1.0m x 1.0m	Seeding and 50mm Tubestock	0.01 grams / 6
GAH sie	Gahnia sieberiana	Red-fruit saw-sedge	2.0m x 2.0m	Seeding and 50mm Tubestock	0.01 grams / 0.5
IMP cyl	Imperata cylindrica	Baldy Grass	1.0m x 0.3m	Seeding and 50mm Tubestock	0.01 grams / 4
ISO nod	Isolepis nodosa	Knobby Club Rush	1.0m x 2m	Seeding and 50mm Tubestock	0.01 grams / 0.5
JUN usi	Juncus usitatus	Tassel Sedge	1.0m x 1.0m	Seeding and 50mm Tubestock	0.01 grams / 1
LOM lon	Lomandra longifolia	Spiny-head-mat-rush	1.2m x 1.0m	Seeding and 50mm Tubestock	0.01 grams / 1

APZ PLANTING

TREES, SEEDING & TUBESTOCK - SMOOTH-BARKED APPLE - RED BLOODWOOD OPEN FOREST

AREA- 27240.5 m2

PLANT CODE	BOTANICAL NAME	COMMON NAME	MATURE HEIGHT AND SPREAD	CONTAINER SIZE	PLANTS PER M2
TREES					
ANG cos	Angophora costata	Smooth-Barked Apple	25m x 15m	100L	as shown
COR gum	Corymbia gummifera	Red Bloodwood	30m x 10m	100L	as shown
EUC cap	Eucalyptus capitellata	Brown Stringybark	20m x 10m	100L	as shown
EUC glo	Eucalyptus globoidea	White Stringybark	20m x 15m	100L	as shown
EUC pan	Eucalyptus paniculata	Grey Ironbark	25m x 15m	100L	as shown
SYN glo	Syncarpia glomulifera	Turpentine	16m x 8m	100L	as shown
ALL tor	Allocasuarina torulosa	Forest Oak	10m x 7m	100L	as shown
SHRUBS					
ACA ter	Acacia terminalis	Sunshine Wattle	3m x 2m	Seeding and 50mm Tubestock	0.01 grams / 0.5
ACA uli	Acacia ulicifolia	Prickly Moses	2m x 2m	Seeding and 50mm Tubestock	0.01 grams / 0.5
BAN spi	Banksia spinulosa	Hairpin Banksia	3m x 2.5m	Seeding and 50mm Tubestock	0.01 grams / 0.5
LEP tri	Leptospermum trinervium	Slender Tea- tree	6m x 1-6m	Seeding and 50mm Tubestock	0.01 grams / 1
LOM sal	Lomatia salicifolia	Wild Parsely	6m x 3m	Seeding and 50mm Tubestock	0.01 grams / 0.3
PER lev	Persoonia levis	Broad-Leaved Geebung	3m x 1m	Seeding and 50mm Tubestock	0.01 grams / 1
PER lin	Persoonia linearis	Narrow Leaved Geebung	3m x 0.7m	Seeding and 50mm Tubestock	0.01 grams / 1
PUL euc	Pultenaea euchila	Large-flower Bush-pea	1.5m x 2m	Seeding and 50mm Tubestock	0.01 grams / 0.5
PITT und	Pittosporum undulatum	Sweet Pittosporum	12m x 7m	Seeding and 50mm Tubestock	0.01 grams / 0.1
XAN lat	Xanthorrhoea latifolia	Grass Tree	2m x 1.5m	Seeding and 50mm Tubestock	0.01 grams / 0.8
TET jun	Tetratheca juncea	Black-eyed Susan	0.5m x 0.3m	Seeding and 50mm Tubestock	0.01 grams / 4
GRASSES & GROUNDCOVERS					
ACA ter	Acacia terminalis	Sunshine Wattle	3m x 2m	Seeding and 50mm Tubestock	0.01 grams / 0.5
ACA uli	Acacia ulicifolia	Prickly Moses	2m x 2m	Seeding and 50mm Tubestock	0.01 grams / 0.5
BAN spi	Banksia spinulosa	Hairpin Banksia	3m x 2.5m	Seeding and 50mm Tubestock	0.01 grams / 0.5
LEP tri	Leptospermum trinervium	Slender Tea- tree	6m x 1-6m	Seeding and 50mm Tubestock	0.01 grams / 1
LOM sal	Lomatia salicifolia	Wild Parsely	6m x 3m	Seeding and 50mm Tubestock	0.01 grams / 0.3
PER lev	Persoonia levis	Broad-Leaved Geebung	3m x 1m	Seeding and 50mm Tubestock	0.01 grams / 1
PER lin	Persoonia linearis	Narrow Leaved Geebung	3m x 0.7m	Seeding and 50mm Tubestock	0.01 grams / 1
PUL euc	Pultenaea euchila	Large-flower Bush-pea	1.5m x 2m	Seeding and 50mm Tubestock	0.01 grams / 0.5
PITT und	Pittosporum undulatum	Sweet Pittosporum	12m x 7m	Seeding and 50mm Tubestock	0.01 grams / 0.1
XAN lat	Xanthorrhoea latifolia	Grass Tree	2m x 1.5m	Seeding and 50mm Tubestock	0.01 grams / 0.8
TET jun	Tetratheca juncea	Black-eyed Susan	0.5m x 0.3m	Seeding and 50mm Tubestock	0.01 grams / 4

The schedule should be read in conjunction with landscape drawings. The drawings take precedence over the schedule. The quantites set out in this schedule are provided as a guide only, it is the Contractors responsibility to confirm all quantities

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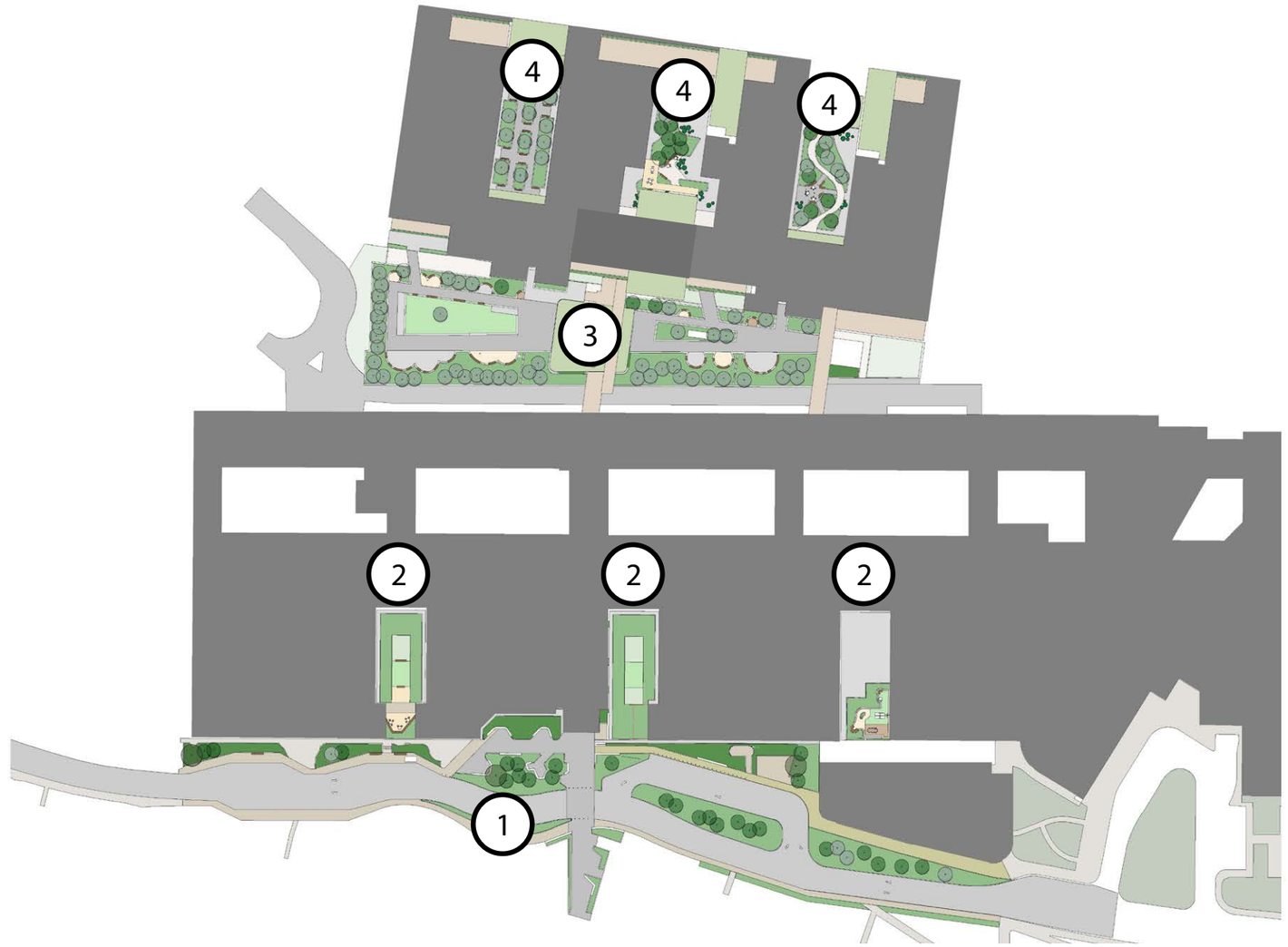
3 KEY LANDSCAPE AREAS

PUBLIC DOMAIN & LANDSCAPE

3.1 LANDSCAPE MASTERPLAN

The new public domain and landscape associated with JHHIP present exciting opportunities to provide a series of connected spaces, that starts with a new front door, internal link, an elevated garden to multiple courtyards within the ASB.

These spaces cross over numerous building levels and orientations. The relationship between these opportunities and the levels of the building are highlighted below:



LEGEND

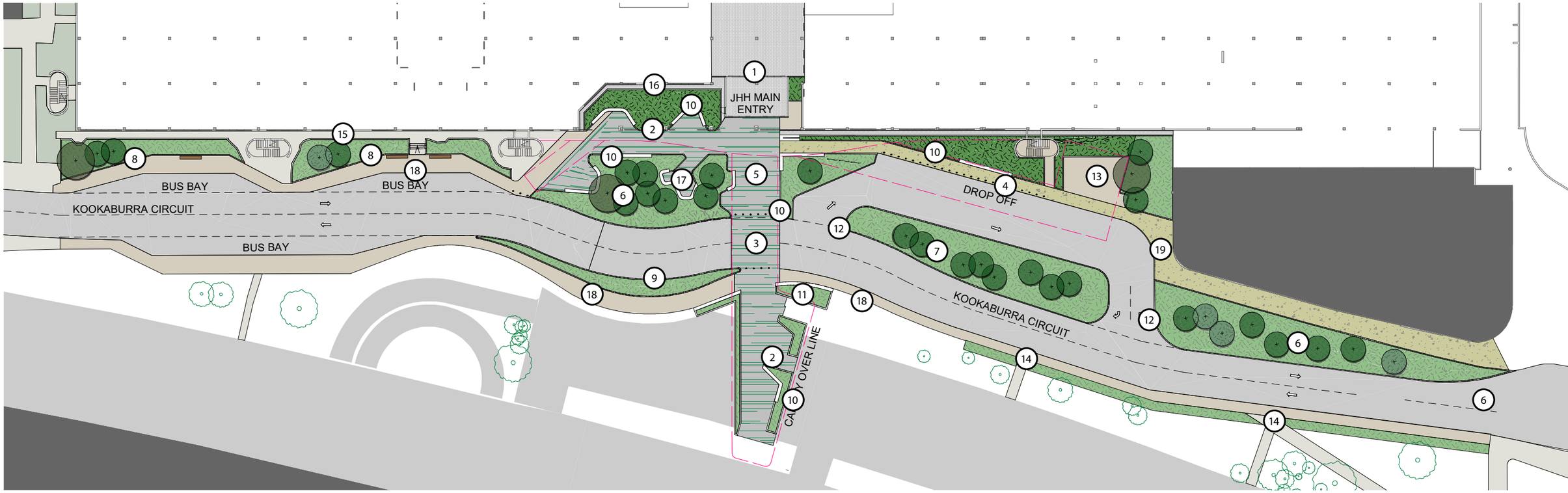
1. Southern Arrival Forecourt
2. JHH Refurbishment Courtyards
3. Elevated Garden
4. ASB Courtyards

1:400@ A3

0 5 10 15 20

3.2 JHH ARRIVAL FORECOURT

The main entrance of JHH Hospital has been converted from a concrete environment to a refreshed, vibrant and pleasant spacious forecourt with greenery and bushland planting inspired by the surrounding landscape, visitor parking, public drop-off area and has a new prominent pedestrian crossing that is wider, safer and is a clearly defined pedestrian priority area that offers a high quality public domain finish. A walkway canopy connects the hospital entrance with the exisiting carpark and new lifts. The area adjacent to the main entrance is an intimate waiting area with a range of gathering and seating opportunities.



LEGEND

1. Main JHH building entry
2. Varied seating opportunities for waiting and gathering
3. Primary pedestrian connection between Carpark and JHH entry
4. Public drop-off waiting area
5. Trafficable small format unit paving to crossing and dwelling spaces
6. Open Bushland mass planting raised bed with grasses, groundcovers, and shrubs on mounded soil with kerb and seating walls
7. Landscape median Open Bushland planting with trees, shrubs and grasses on mounded soil with kerb and seating walls
8. Concrete retaining seating wall with Open Bushland planting
9. Open Bushland understory planting to carraigeway median strip
10. Mensonry seating wall
11. Mass planting of grasses and shrubs to planter edge for screening
12. Low height open bushland planting to junctions and crossings for clear sightline
13. Bicycle parking shelter
14. Upgrade pedestrian access to Carpark
15. Retain footpaths to building and fire exits
16. Seating and shade tolerant planting to undercover waiting areas
17. Stepped seating
18. In situ concrete footpaths
19. In situ coloured concrete footpaths

1:400@ A3

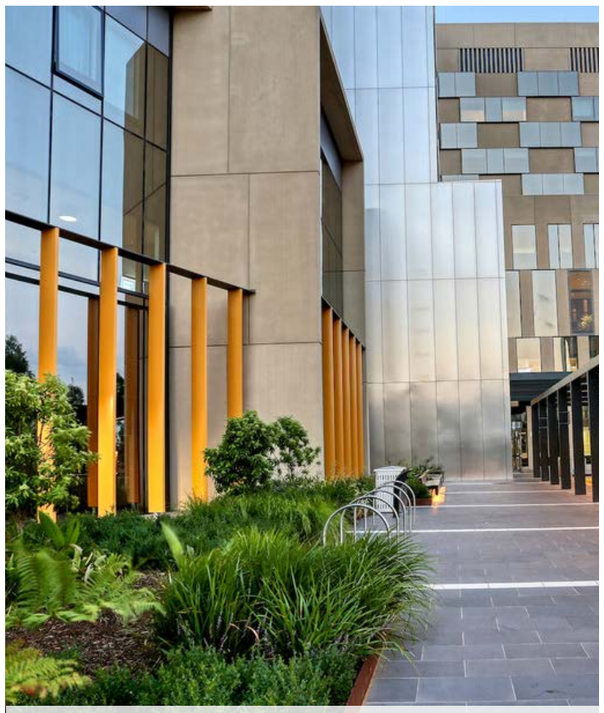
0 5 10 15 20

PRECEDENT IMAGES

Seating and Mass Native Planting

Native planting, rocks and mulch

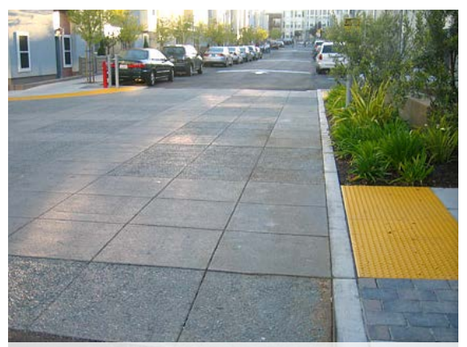
Open Bushland Planting



Entry Landscape

Kerbs to planting beds

Concrete retaining wall timber top seating

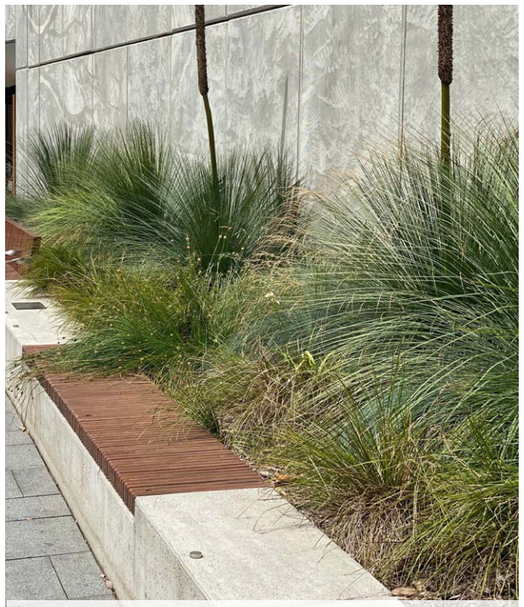


Raised crossing

MATERIAL PALETTE

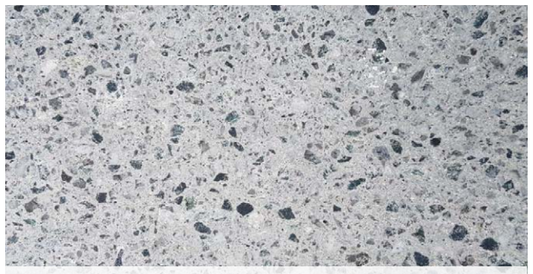
The surface treatment material choices consist of high quality, robust paving materials to act as a precedent for future development through the precinct. These materials are a considered composition of natural and composites on a restrained palette of timber, stone, gravel and concrete, allows the planting to dominate, reinforcing the feeling of a lush and refined oasis.

Concrete Kerb (200mm)

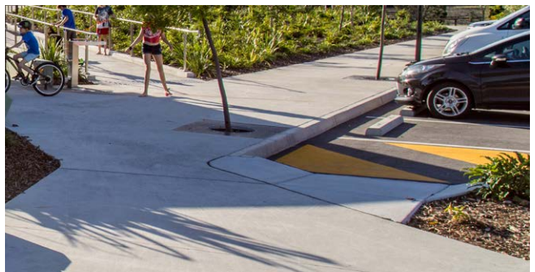


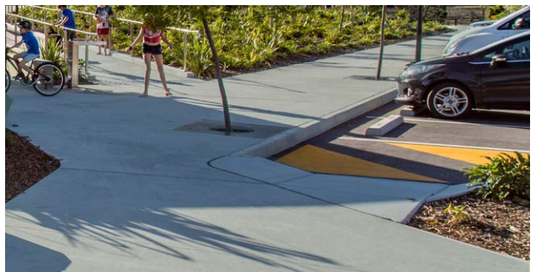
Concrete seating wall (450mm)

Paving patterning



Precast concrete paver with exposed aggregate





Paving lights to seating walls

Primary Paving - Precast Concrete Pavers

Secondary Paving - In situ concrete footpaths

Track Paving - In situ coloured concrete footpaths