# THE KING DAVID SCHOOL SPORTS AND WELLNESS FACILITY LANDSCAPE ARCHITECTURAL TOWN PLANNING DESIGN REPORT

CLIENT: JCB ARCHTECTS DATE: MARCH 21 2022 STATUS: FOR APPROVAL

# ADVERTISED PLAN

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PREPARED	BY	WS
APPROVED	BY	ММ

## **1.1 Existing Conditions and Tree Removal Plan**

## 1.1.1 Project Scope

The King David School is seeking to provide a consolidation and enhancement of its faciltiies at the Senior Campus at 519 Orrong Road, Armadale.

This will involve construction of a multi level sports and wellness facility on the footprint of an existing sports court.

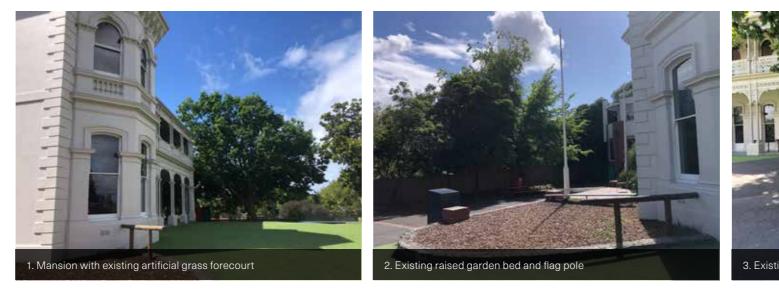
The project also involves an enhancement of the school outdoor open space with the provision of new access ramps, seating bleachers, and a raised deck with table settings, as well as new drinking fountains, waste and recycling bins, seating and feature pavement surfacing.

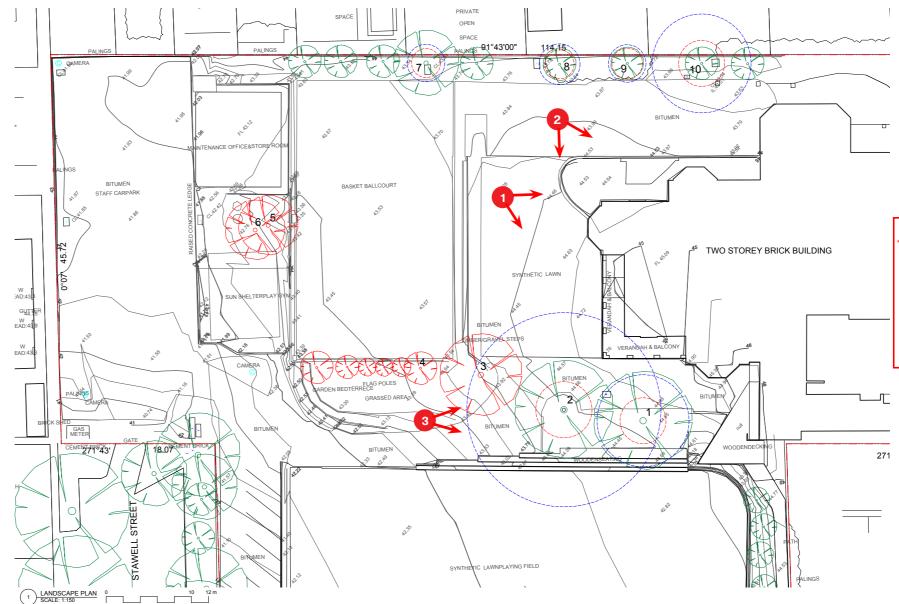
There are currently a number of existing trees, some of which will need to be removed in order to accomadate the new building.

Two large and significant shade trees will be retained as features within the new deck.

Additional tree plantings will be provided to offset the loss of the existing tree canopy to be removed.

Refer to the Tree Protection Management Plan by Civica 15 November 2021 for a full description of tree retention value, significance, useful life expectancy, and quantification of the tree protection and structural root zones.









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# **1.2 Landscape Design Precedents**







- 1 New tree planting for canopy shade
- 2 Access ramp
- 3 New deck and table setting
- 4 Vertical garden to sports court building facade
- 5 Pavement line marking super graphics



## **1.3 Planting Palette**

### SHADE TREES



The tree species selected have been chosen for the small to medium size, visual amenity, and shade canopy.

The inclusion of several flowering species will encourage the return of birds and other wildlife to the area, as well as provide pollination habitat for bees, adding to the biodiversity value of the landscape.

## **Vertical Greening**

The species selections for the vertical greening are twining climbers that will quickly and readily attach themselves to the tensile mesh of the building facade, and extend upwards.

It is anticipated that they will gain approximately 500-1000mm of height per year and reach 4-6m high.

These selections will be refined positioned in the detail documentation phase to best tollerate the sun and wind exposure for each of the aspects they are located.

## **Garden Bed Planting**

The plant palette nominated for the for the ground level understory is primarily composed of robust but decorative species which are suited to the sun and shade conditions of the positiion.

In locations where a mid story planting can be accomodated, a selection of strucutrally attractive flowering shrubs has been made.



Ulmus parvifolia (Chinese Elm ULM.PAR)

#### VERTICAL GREENING



Hibbertia scandens - trellis

#### **GARDEN BED PLANTING - LOW COVER**





libbertia scandens - close up



Alyxia buxifolia

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Chrysocephalum apiculatum

Chamelaucium uncinatum

Correa pulchella











Hakea laurina

Leucodendron salignum 'Safari Sunset'

Hebe 'Wiri Jov

Westringea 'Grey Box'





nelospermum jasmionoides - trellis

Waterhousia floribunda (Weeping Lilly Pilly WAT.FLO)





Trachelospermum jasmionoides - close up





Banksia integrifolia "Dwarf Form'





Leucodendron 'Cream Delight

# **1.4 Indicative Planting Schedule**

PLANTING	SCHEDULE					
Life Form	Botanical Name	Common Name	Mature Size (H x W) m	Install Size	Spacing (m)	Density (per m2)
TREES						
CUP.ANA	Cupaniopsis anacardioides	Tuckeroo	4 x 3	45L 1.8m ht. 30mm Caliper	as shown	N/A
ULM.PAR	Ulmus parvifolia	Chinese Elm	10 x 8	100L 2.5m ht. 40mm Caliper	as shown	N/A
WAT.FLO	Waterhousea floribunda	Lilly Pilly	12 x 10	100L 2.5m ht. 40mm Caliper	as shown	N/A
CLIMBERS						
	Hibbertia scandens	Climbing Guinea Flower				
	Trachelospermum jasmionoides	Star Jasmine				
SHRUBS, G	RASSES & GROUNDCOVERS MIX					
	Alyxia buxifolia	Sea Box	1 x 1	200mm pot	0.75	1.8
	Banksia integrifolia 'Dwarf Form'	Dwarf Coast Banksia	0.5 x 2	200mm pot	0.75	1.8
	Chamelaucium uncinatum	Geraldton Wax Flower	0.3 x 0.1	140mm pot	0.4	6.25
	Chrysocephalum apiculatum	Yellow Buttons	0.3 x 0.2	140mm pot	0.4	6.25
	Correa pulchella	Native Fuchsia	0.5 x 0.4	140mm pot	0.5	4
	Dianella cerulea	Dianella	0.5 x 0.4	140mm pot	0.5	4
	Dieties grandiflora	Native flag	0.7 x 0.7	140mm pot	0.5	4
	Hakea laurina	Pincushion Hakea	3 x 3	200mm pot	0.5	4
	Hebe 'Wiri Joy'	Hebe	1.5 x 1.5	200mm pot	0.5	4
	Leucodendron 'Cream Delight'	Leucodendron	2-4 x 2-4	200mm pot	1.5	0.44
	Lomandra hystrix	Green Mat-rush	1 x 1	200mm pot	0.5	4
	Lomandra Tanika	Tanika	0.5 x 0.4	140mm pot	0.5	4
	Myoporum parvifolium	Creeping Boobialla	0.4 x 0.1	140mm pot	1	1
	Westringea 'Grey Box'	Native Rosemary	0.7 x 0.7	140mm pot	0.75	1.8

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## 1.5 Landscape Concept Plan



## 1.4.1 Design Statement

The landscape design seeks to provide enhanced amenity for students through the provision of quality fixtures and furniture, shade, and activation of the spaces between the new building, the Mansion, and the existing sports court being retained.

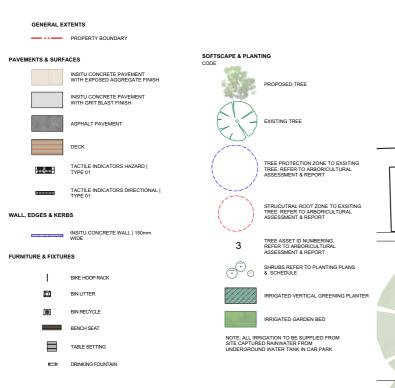
New seating bleachers are provided to replace the existing ones and integrate the change of level form the car park to the upper forecourt of the Mansion.

The provison of new tree plantings will off set the loss of existing tree canopy for shade, visual amenity, and biodiversity.

The space beneath the significant existing trees no 1& 2 will be provided with an expansive deck that will accomodate table settings for use during lunch and sports events.

The new building will be provided with a 'veil' of living greenery with planters mounted on the building supporting the growth of climbers which will attach themselves to the tensile mesh trellis that will form the facade of the new building and sport courst. This will provide shade for the users of the sports courts, while at the same time attenuating the temperature and airflow of within the courts.

This greenery will also contribute to a positive outlook onto the building from the adjacent properties.

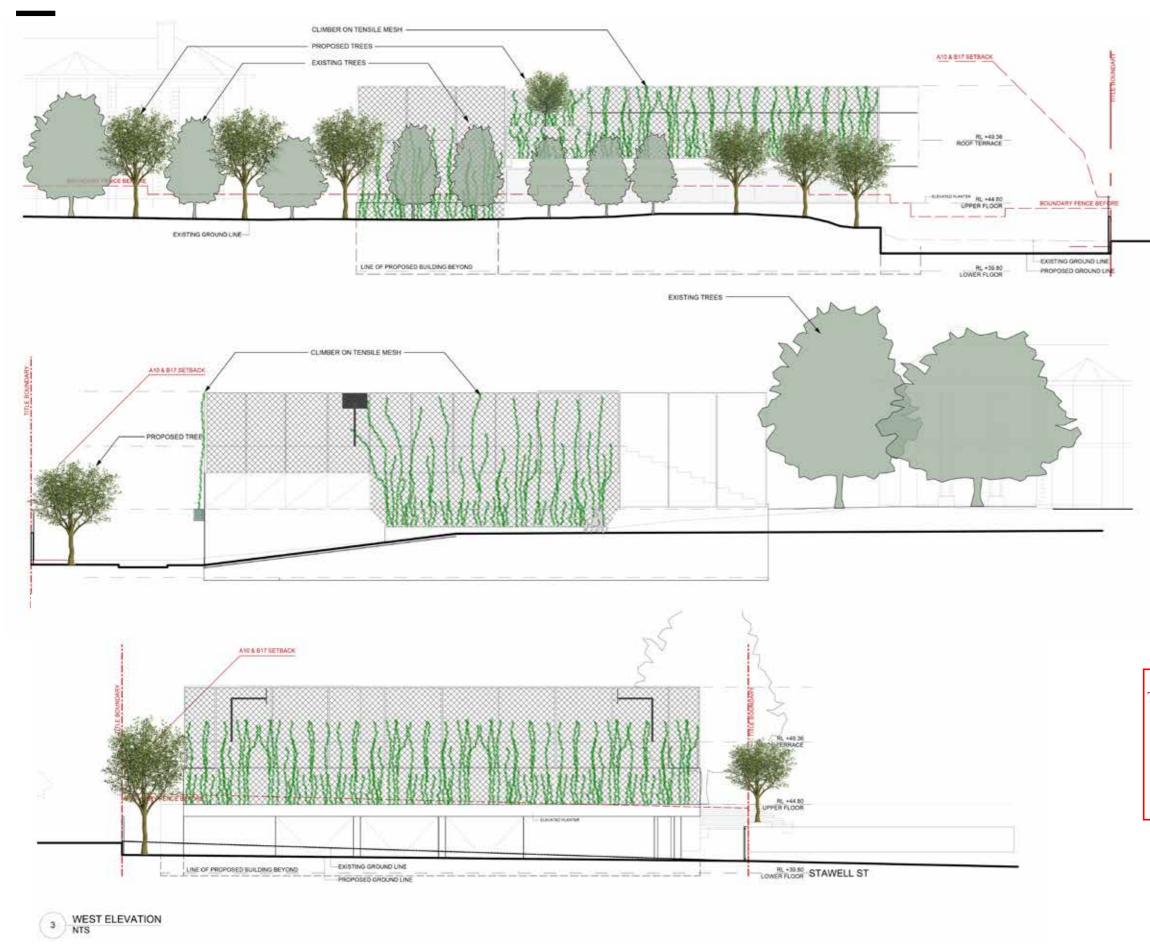




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# **1.6 Landscape Elevations**



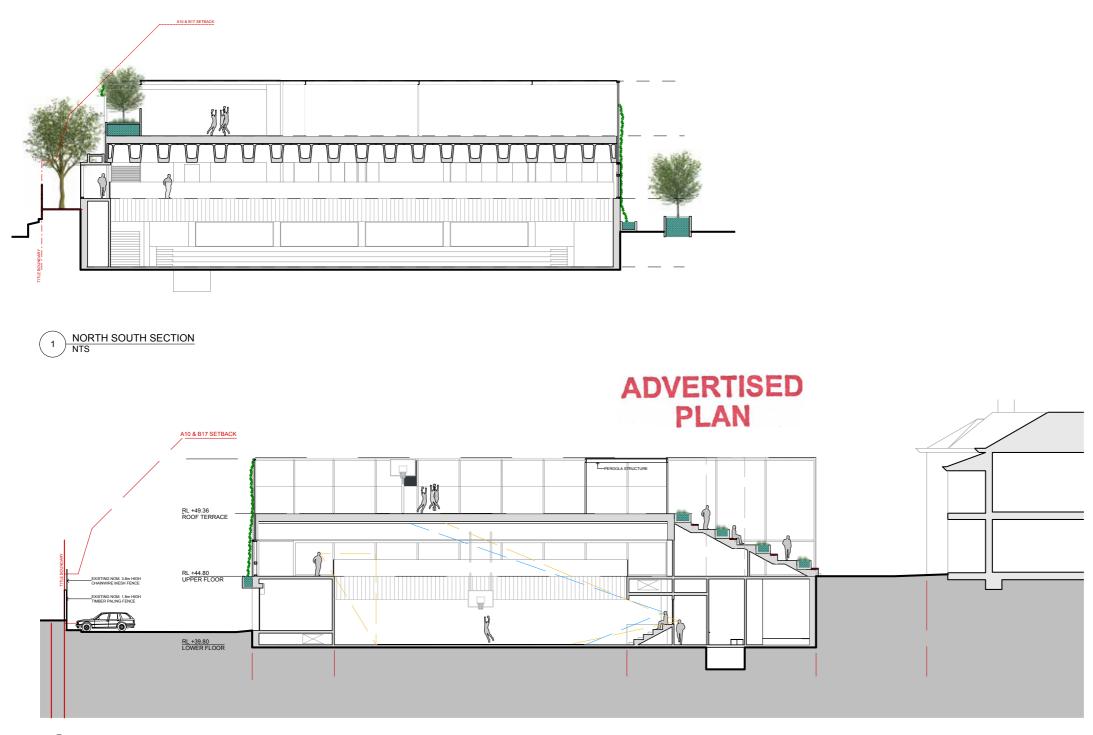


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# **1.7 Landscape Sections**



2 EAST WEST SECTION NTS

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## **1.8 Landscape Maintenance During Construction**

#### STANDARDS OF MAINTENANCE

- · Maintain whole of landscape works from the date of practical completion of "Landscape Works"
- · All work is to be performed in accordance with all applicable laws, ordinances and regulations required by authorities having jurisdiction over such work and are to provide for all inspections and permits required by Federal, State and Local Governments and Authorities in procuring and transporting materials.
- · Unless otherwise specified, current relevant Australian Standards are to be observed
- · Ensure site is maintained in a safe, and as far as practicable, clean and tidy condition
- · Airborne dust is to be kept to a minimum.
- · Ensure that no spillages or discharges of oil, fuel or other pollutants occur during servicing, refuelling or works operations.
- · Driving of vehicles within council parks and reserves is to be minimised.
- · Parking and driving of vehicles within TPZ is prohibited.
- · Unless absolutely necessary to carry out works, the driving of plant and equipment in the following areas is to be avoided:
- irrigated areas
- landscaped areas
- tree root zones
- Council infrastructure areas.
- · Access to open space areas for specific works is to be coordinated with the Superintendent.

#### **RECTIFICATION OF DAMAGE**

- · Contractor is to rectify, at their own expense, any damage to landscaped areas, including compaction and wheel ruts
- shrubs, plants and trees
- footpaths
- medians
- kerb and channel
- any other council or public property caused by maintenance operations or the movement of vehicles or plant.
- · Uphold a no net loss of vegetation philosophy, and all plants that are damaged beyond rectification (as assessed by Project Arborist) are to be replaced at a minimum ratio of 1:1.
- · If a tree is is removed in error or damaged beyond the point of rectification, a 'no net canopy loss offset' replacement is required. This offset considers the area of the tree canopy and number of new trees to achieve the same area of canopy within a given timeframe.

#### GENERAL MAINTENANCE

Throughout the planting establishment period, the Contractor is to carry out all maintenance work including

- watering
- weeding
- · rubbish removal
- fertilising
- · pest and disease control
- reseeding
- staking and tying replanting
- cultivating
- pruning
- · hedge clipping
- aerating
- mulch reinstatement
- renovation
- Trellis maintenance
- · Provide the Superintendent with a report (at monthly intervals) of activities completed

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#### WEED CONTROL

- · Inspect garden beds and mass planting areas for weeds and rectify as required to prevent seeding, germination and competition.
- · Weeds within tree basins are to be removed by hand.
- · Retaining mulch levels within tree basins assists in keeping weed growth to a minimum
- · Stream banks, damp exposed areas and other weed prone areas are to have appropriate weed control measures enforced.
- · Hand weeding should be part of an integrated approach to weed control, particularly if there is a possible risk to waterways or damaging desirable plant species.
- · Avoid herbicide residue leaching into nearby waterways.
- · Eradicate weeds using an approved herbicide.
- · Adhere strictly to manufacturers application instruction, rates and safety procedures
- · Herbicides are to be applied outside normal operating areas, but not during extreme temperature or high wind periods.
- · Watering is to be delayed for the recommended period after application.

#### PEST AND DISEASE CONTROL

- · Immediate notice is to be given to Superintendent when evidence of significant insect attack or disease amongst plant material is found.
- · If pests and diseases are identified, affected portions are to be removed from the plant and disposed of off site.
- · Chemical methods are to be secondary control measures where pruning is not successful. Where required, spray with non-toxic organic pesticide, fungicide, or both, at the discretion of the Superintendent / Arborist.
- · Approval is to be obtained from Superintendent 5 days prior to the use of pest and disease control chemicals.
- · Adhere strictly to manufacturers application instructions, rates and safety procedures.
- · Pesticides are to be applied outside normal operating hours.
- · Pesticides are not to be applied during extreme temperature, high wind or rain periods
- Irrigation is to be delayed for the recommended period after application.

#### LITTER COLLECTION AND REMOVAL

- · Waste from contractors activities is to be removed from site.
- · In hardstand areas, vegetative matter is to be removed from around trees and shrubs
- · Mulch spilt from garden areas is to be reinstated
- · Collection of all hard waste and litter from within the subject site
- · Sweep/vacuum leaf litter

#### WATERING

- · Mass planted areas, trees and palms are to be sufficiently watered to maintain adequate soil moisture during the specified maintenance period. This should be achieved using low pressure with adequate volume.
- · Generally every two to three days in summer.
- · Generally every three to four days in winter.
- Allow soil surface to partially dry out between watering.
- · Watering shall be increased during periods of wind, drought and/or where soils have low moisture retaining characteristics.
- · Rates may be decreased during periods of high rainfall
- · Ensure moisture is maintained in planting media in sufficient quantities to promote plant growth and minimise stress after installation.
- · Watering is to be prioritised for early morning or night application to lessen evaporation
- · Water used for plant establishment and maintenance is to have:
- a pH of between 5.5 7.5
- total soluble salts less than 1000mg/L
- no phytotoxic substances.

### PLANT MAINTENANCE

#### GENERAL PRUNING

- and relationship to total landscape

- encourage natural growth habit.
- current standards for road and footpath clearances.
- canopies

## SPECIFIC PRUNING TECHNIQUES

Shrubs

Vines

- · Prune in a manner that encourages natural form.
- · Allow skirt to grow down to ground level.
- · Do not prune off bottom growth.
- Groundcovers

FERTILISING

· Soils are to be moist

fertiliser application.

of replacement plants.

REPLACEMENT

· Prior to pruning activities, plants are to be evaluated for natural growth habit

· Shrubs and groundcovers are to be pruned to encourage natural plant form. · Smooth, clean cuts are to be used to encourage fast healing.

· Equipment is to be sharp and sized appropriately for pruning requirements. · Generally, plants are to be pruned after flowering.

· The combined techniques of thinning out and dead heading are to be used to

· Remove dead organic matter and diseased plant material.

· Remove branches and foliage overhanging pavements and paths, in line with

· All vines and creepers are to be pruned to keep clear of all tree trunks and

· Prune to encourage dense coverage

· Encourage horizontal spread by removing vertical growth.

· Allow spreading to form a dense mat.

• Trim groundcovers in planter boxes to formalise cascading beyond the planter. · Prune to keep the height and spread in scale with surrounding planter boxes and remove runners that have a tangled appearance

 Ageneral purpose fertiliser is to be applied as per the manufacturers application instructions, rates and safety procedures.

· Irrigation systems or hand held hoses are to be used to wash excess fertiliser from plants to prevent burning.

· Landscaped areas are to have repeat irrigation the morning following the

· Where plants fail or die during the 'on maintenance' period, it is the contractors responsibility to replace those plants, as soon as practicable. · Approval is required by the Superintendent prior to purchasing and planting

· Replacement plants are to be the same size as described in the contract, plant schedule and/or landscape drawings.

# **1.9 Landscape Maintenance Establishment Period**

'ON' MAINTENANCE ACTIVITY SCHEDULE (ESTABLISHMENT & DEFECTS LIABILITY PERIOD)

ACTIVITY	OTHER	WEEKLY		MONTHLY	3 MONTHS	6 MONTHS	ACTION
GENERAL							
Logbook		Summer	Winter				Complete a logbook entry of maintenance work every day at site and at least every two weeks. All actions listed below require a logbook entry. Include details of any chemicals used. Make the log book available for inspection on request. Submit copies of new entries in the logbook to the Contract Administrator on a monthly basis.
PLANTS	-			-	1		
Plants		Summer, Winter during weeks 1-12 from Practical Completion	Winter after 12 weeks from Practical Completion				Inspect all garden beds and planter boxes and attend to all softworks maintenance requirements as required. Inspect and remove spent flowers and dead stalks as they become apparent.
Hand Watering	Every day irrigation does not run during weeks 1-12 after Practical Completion. Afterwards as required.						Supplement irrigation with handwatering during the establishment period. Watering will be dependant on plant requirements, seasonal changes and prolonged periods of dry and windy weather. Adjust as required for optimal plant growth. Do not allow soil and plants to dehydrate. Water in the early morning or late afternoon to avoid excessive evaporation during the heat of the day. Comply with authority regulations for water use where applicable.
Stakes and Ties		Summer	Winter				Inspect and adjust and/ or replace as necessary but remove as plants mature and are able to support themselves.
Trailing Plants		Summer	Winter				Inspect groundcovers are trailing and train or prune as required
Overgrown vegetation		Summer	Winter				Inspect and remove overgrown vegetation including that growing on paths and hardscapes
Pruning		Summer	Winter				Inspect and prune as necessary to remove dead wood, improve plant shape and promote healthy vigorous new growth.
Leaf Litter		Summer	Winter				Remove leaf litter as necessary
Pest and Disease Control		Summer	Winter				Inspect and action as necessary. Use pesticides only if non- chemical methods will not be effective. Spray for disease control only when absolutely necessary.
Plant Replacement		Summer	Winter				Inspect and replace failed, damaged or stolen plants within 2 weeks of observation. Match species, original size and location of new with old.
Fertilising							Fertilise gardens every 3 months or other frequency in accordance with fertiliser manufacturer's directions.

GARDEN BEDS AND	PLANTER BOXE	S			
Weeding		Summer	Winter		Remove all weeds and dispose off site legally
Erosion Control		Summer	Winter		Inspect and repair ground, soil and mulch immediately. Maintain erosion control device as necessary.
Remulching		Summer	Winter	Торир	Inspect and replace mulch deficiencies within 2 weeks of observation. Prior to placing new mulch aerate the soil by fork turning to a depth of at least 100mm, roughly level the soil and then place mulch. Do not disturb major plant roots while aerating soil. Top up mulch every 3 months.
Soilworks					Check soil depths for slumping and top up to design levels using original specified soils
IRRIGATION AND DF	RAINAGE				
Inspect irrigation system		Summer	Winter		Inspect and adjust the irrigation system to suit plant requirements, seasonal changes and prolonged periods of dry and windy weather.
Inspect and clear drains					Inspect clear drains immediately. Additional inspections are required after heavy rainfall.
HARDWORKS					
Inspect all fixtures and fittings					Inspect and adjust all fixtures and fittings to original specification. Replace as necessary
Oil timber					Oil timber every 6 months or to manufacturer's recommendations
MISCELLANEOUS W	ORKS				
Litter					Remove all litter, rubbish and debris and the like offsite. Dispose of legally. Do not place in public or other residents bins.
Clean Site					Remove all grass clippings, weeds, dead plant material and the like offsite. Dispose of legally. Do not place in public or other residents bins.
Urgent Works					As required. Complete immediately and within 24hrs of notification

'ON' MAINTENANCE IRRIGATION SYSTEM MINIMUM REQUIREMENTS

IRRIGATION	SUMMER	WINTER	ACTIO
WEEKS 1-12 AFTER PC			
Plants	4x per week	3x per week	Inspector to suit
	20mins each run at 5am	20mins each run at 5am	and pro
AFTER 12 WEEKS FROM PO			
Plants	3x per week	3x per week	Inspec to suit
	20mins each run at 5am	20mins each run at 5am	and pr

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## 1.10 Landscape Maintenance Operational Phase

#### TREE MAINTENANCE

GENERAL PRUNING

- All tree pruning, maintenance, pest and disease control, etc. is to be undertaken under the guidance and supervision of a council approved Arborist.
- · Prior to commencing any pruning operation, evaluate trees for their natural growth habit and relationship to the total landscape.
- · Pruned trees are to be left in an aesthetically pleasing condition.
- · Trees are to maintain a shape and character appropriate for the species and the environment.
- · Tree pruning may be required to:
- enhance tree health and structure
- reduce failure risk
- meet specified clearance requirements
- meet traffic visibility requirements
- improve form
- encourage growth direction in young trees.
- Pruning is to be undertaken by a qualified Arborist, experienced in the formative pruning of young trees and in a manner that minimises damage to trees, in accordance with AS 4373:2007 - Pruning of Amenity Trees.
- · Key elements of this include:
- no lopping or topping of trees
- no flush cuts
- no greater than 25% of tree crown removed.
- · generally to be pruned to maintain clearances and access beneath the canopy · remove lower branches where required, to provide clearance over footpaths and roads to improve visibility and maintain CPTED guidelines
- remove dead, diseased or damaged limbs
- remove suckers from the base of tree
- · improve the structure of tree, e.g. pruning to define a leader in a codominant tree
- · formative pruning works are to focus on defining a leading stem or to improve the overall branching framework or structure of a tree.

#### DAMAGE

· Where damage occurs to trees as a result of the actions of the contractor, the contractor will be held responsible for the repair or replacement of tree or palm stock.

#### DISPOSAL OF PLANT MATERIAL

- · Dead timber, dead trees and large diameter trunks are to be removed from site by the contractor and delivered to green waste dumps
- · Contaminated or infected materials must be taken directly to a tipping site

#### SOIL AERATION

- Deep aeration of the soil should be conducted to decompact tree root zones, where required.
- · Equipment that uses compressed air to fracture the soil is to be utilised for decompaction work e.g. Air spade or equivalent.

#### FERTILISING

Large trees:

- · Core 50mm holes around the drip line perimeter 500mm apart and 500mm deep
- Backfill holes with a mixture of 50% soil and 50% Dynamic Lifter (or equivalent) granular form
- · Use a liquid soil injection system at the same spacing around the dripline, as described above

Smaller, young trees:

· Surface fertiliser with Dynamic Lifter (or equivalent) and cultivate lightly into the ground surface

#### **RE-MULCHING**

- Replenish mulched areas to maintain a consistent depth of 75mm-100mm.
- · Mulch used is to match originally specified material.
- · Mulch is to be raked to an even surface to the level of the surrounding finish.
- · Spread mulch so that after settling it is smooth and evenly graded toward the base of plant stems, forming a shallow dish drain with the aim of preserving soil moisture, providing essential soil nutrients and suppressing weed growth.
- · Mulch is not to be closer than 100mm from the plant stem / trunk

#### REPLACEMENT

· Replacement trees or palms are to be the same size and type as described in the contract

#### FACADE PLANTING MAINTENANCE

Routine maintenance of the vertical mesh trellis systems are to be undertaken only by the manufacturer/provider or their nominated personnel. Following completion of the 'on' maintenance period, the contractor is to provide a detailed maintenance manual for the system. During the maintenance period, site visits are to be undertaken on a weekly basis for the initial period of 8 weeks post practical completion, then reducing to bi-monthly visits. Below is a summary of the observations and actions that are to be carried out during each visit.

#### Observations

- · Comment on plant performance, make note of each species in reference to their appearance since last visit.
- · Look for damage resulting from pests or disease on each species
- · Check growth rate and performance
- · Soil moisture level

#### Actions

- · Check and adjust as appropriate pH or nutrient levels of the soil
- · Treat for pests and disease as necessary
- · Remove irrigation filter and clean (monthly)
- · Adjust irrigation rates according to season and external factors
- · check for dead or unhealthy foliage and remove using appropriate methods to avoid risk of infection to plants
- · prune any plants that are growing too far from intended cable system
- · Trim plants as necessary to encourage lateral or branching growth to avoid woody understory
- Remove weeds

#### Recording

- · Observations of plant performance
- · Current irrigation schedule and adjustments
- · Document pictures
- Additions of nutrients etc.
- · Pest or disease presence and treatment



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