URBAN DESIGN
MASTER PLANNING
ARCHITECTURE

INTERIOR DESIGN
LANDSCAPE
GRAPHIC DESIGN

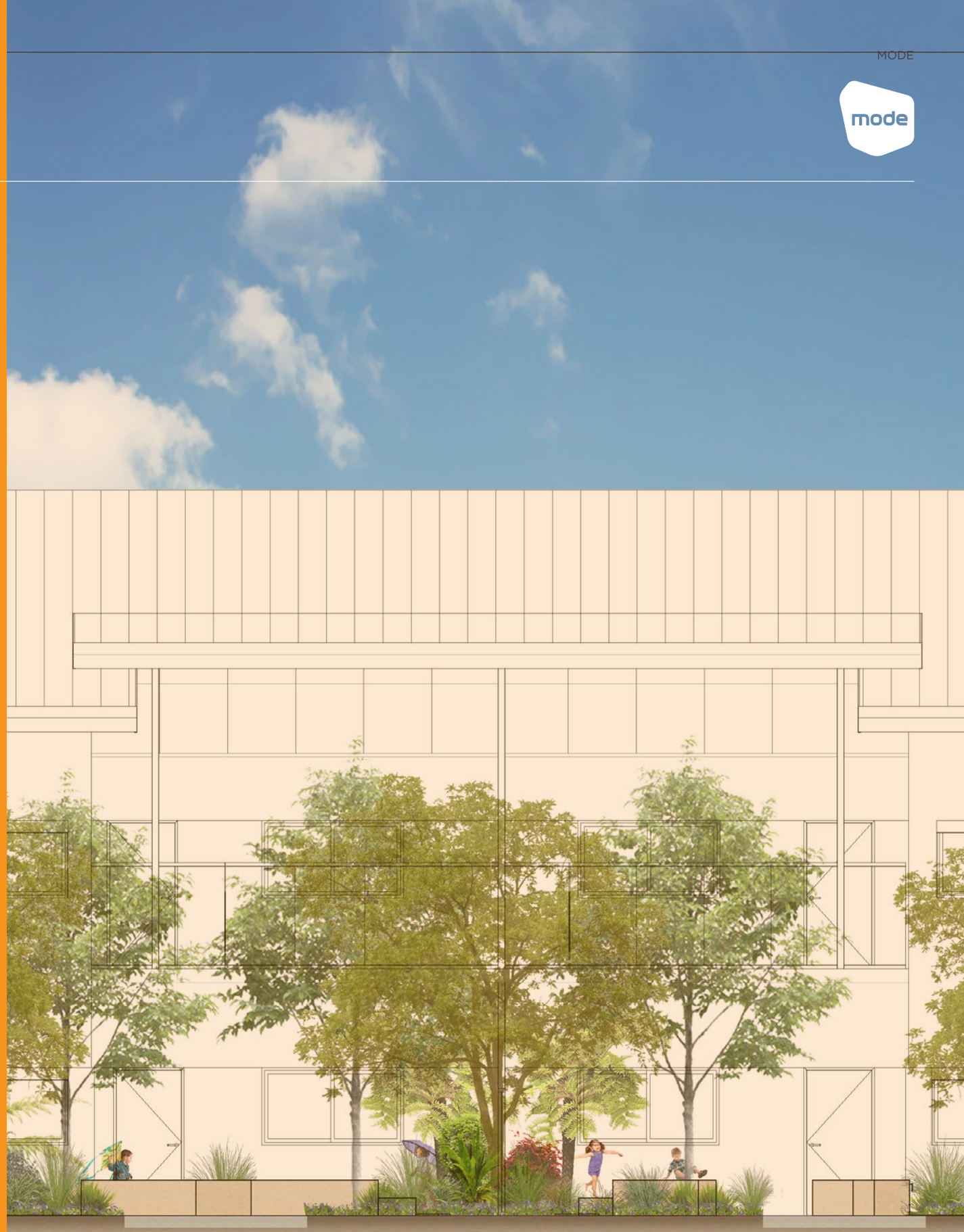
YMCA BARINGA

Preliminary Landscape Development Application

March 2026

Better environments through unique design

YMCA BARINGA



PROJECT INFORMATION

REAL PROPERTY DATA:	LOT 32 ON 8011SP298744
WARD:	SUNSHINE COAST
CLIENT:	YMCA BRISBANE

ISSUE REGISTER

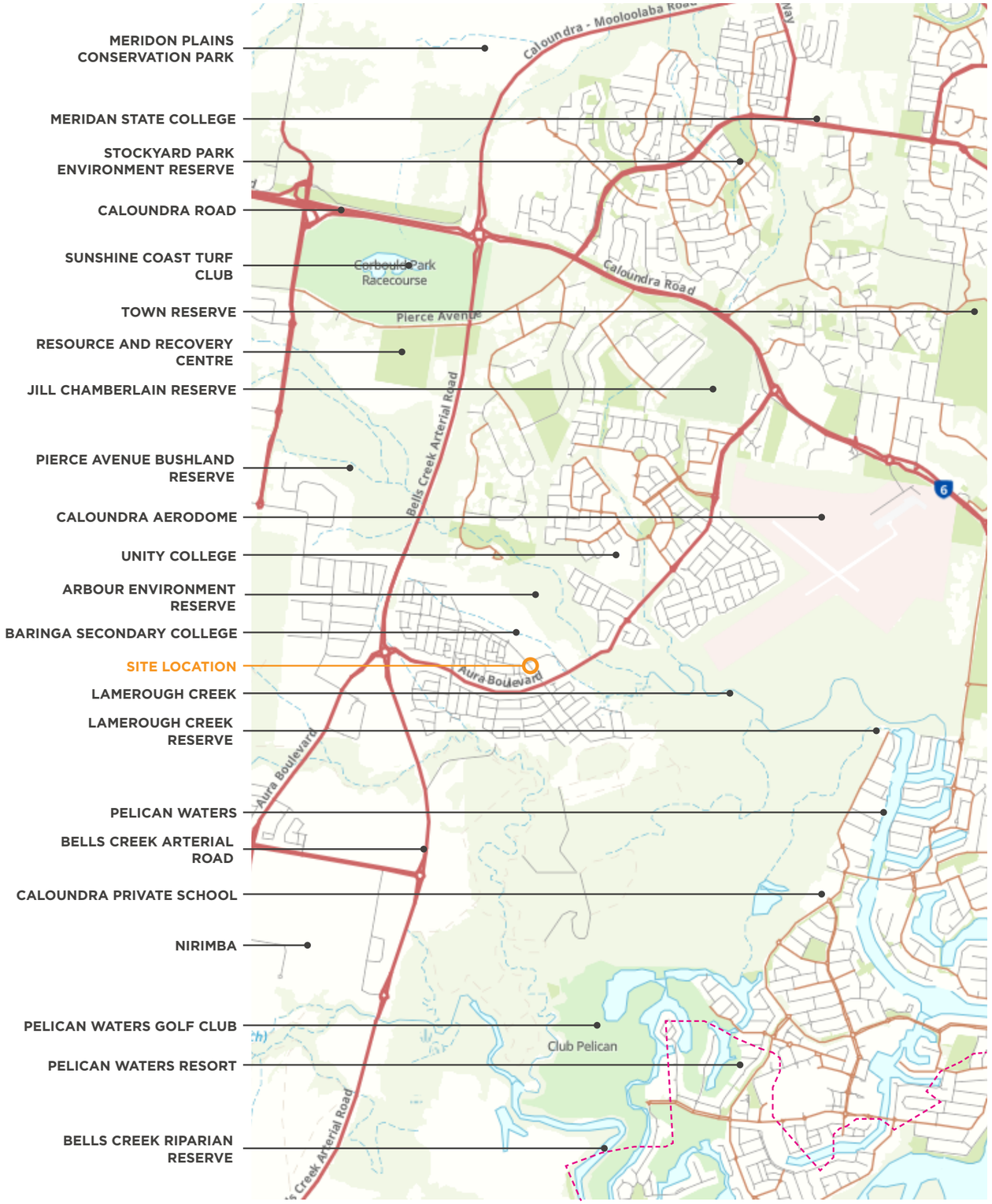
ISSUE	DESCRIPTION	AUTH	CHK	DATE
A	Preliminary DA	LM	AW	06.03.2026
B	D.A	LM	AW	27.03.2026

CONTENTS

LOCATION PLAN

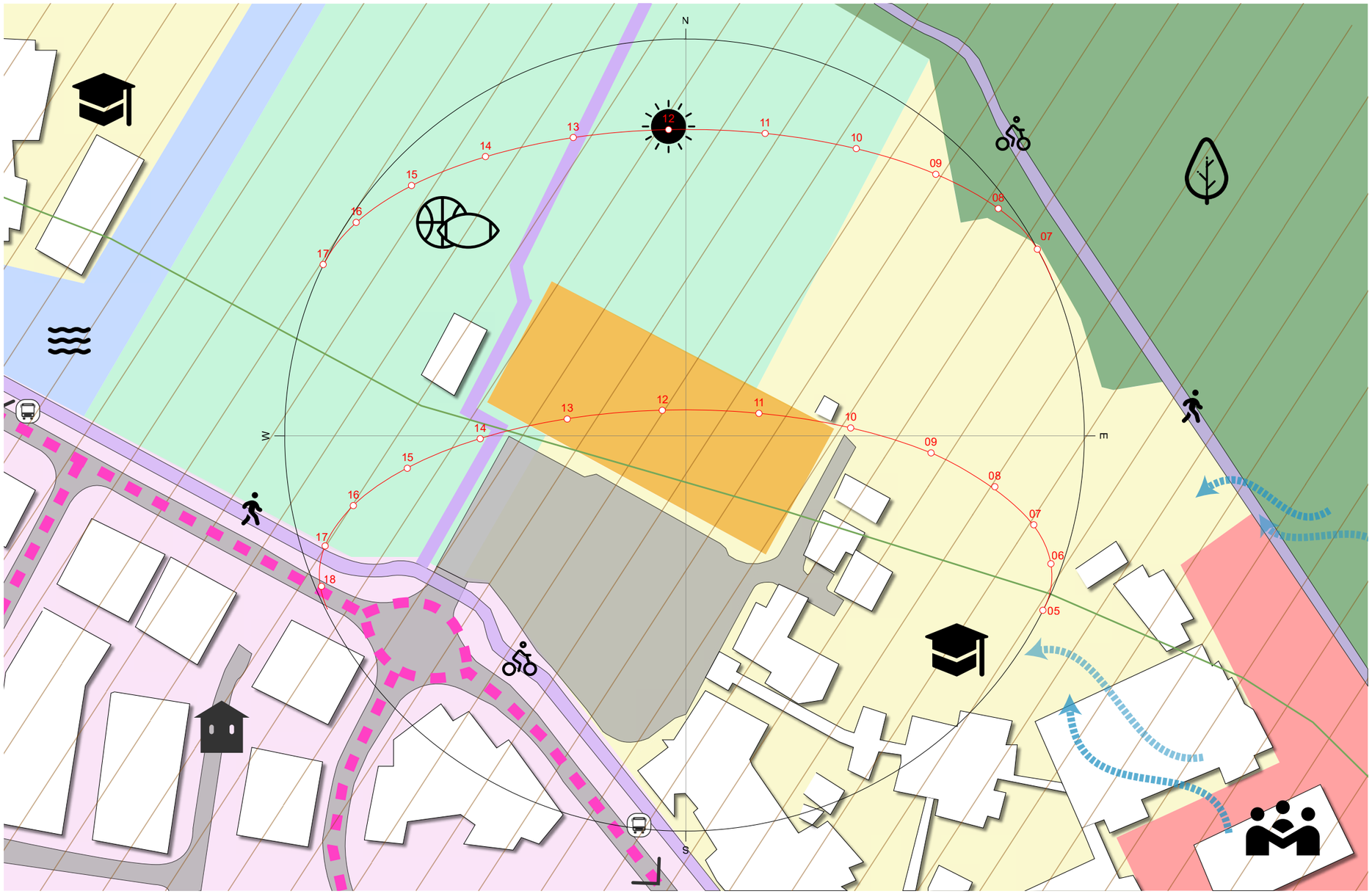
The project is located in Baringa, an inland/coastal suburb west of Caloundra. The sites location sits on Baringa Drive between a primary, and a secondary school. Only a 2-minute drive to a main transport corridor, providing easy access and greater connectivity to the Sunshine Coast.

Land immediately surrounding the development comprises of community, residential and ecological tenure, providing complimentary context for the proposed space. This development provides key community service opportunities for both the local and broader communities.



SITE ANALYSIS

The landscape response will look to harness the benefits this site presents, looking to create shade through trees in strategic locations in the warmer months, while limiting the trees to allow solar access in the cooler winter months. The solar paths for the varying seasons helps inform tree planting. These current views include to the Arbour Environment Reserve and Lamerough Creek Corridor. The site's proximity to both pedestrian and vehicle corridors demonstrates the sites accessibility and permeability. Arrangement of elements within the space allow to capture prevailing winds, funneling them through the site to provide cooling during summer, while strategically located elements obstruct winter winds.



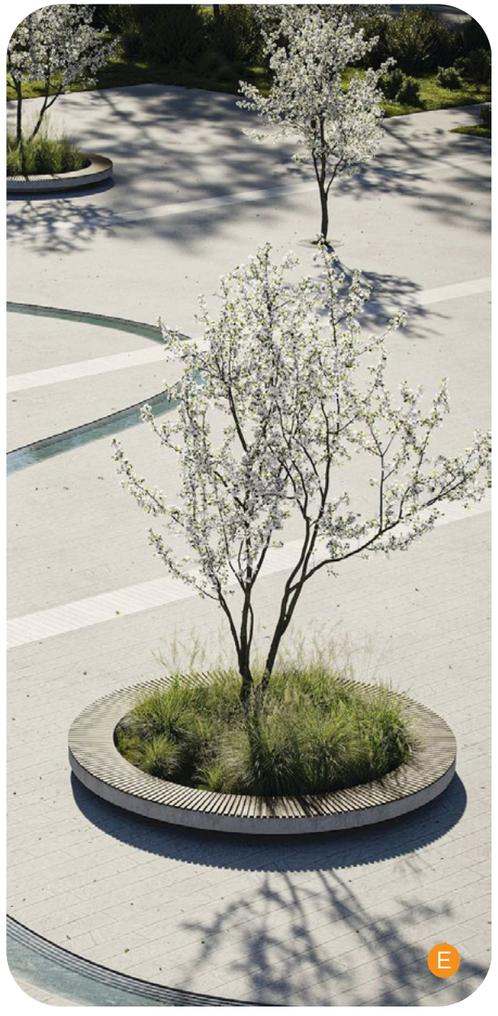
- Residential Area
- Bus Stop
- School/Education
- Community Area
- Recreational Sport
- Nature Reserve
- Drainage Channel
- Wind Direction
- MSES (Regulated Vegetation - Intersection a watercourse)
- Acid Sulphate Soils: Land above 5m AHD and below 20m AHD
- Shared Pathway
- Vehicular Access/Movement
- Site Location

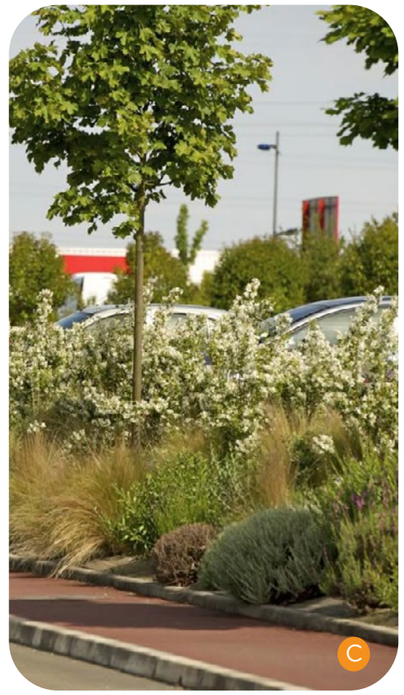
Sun Path

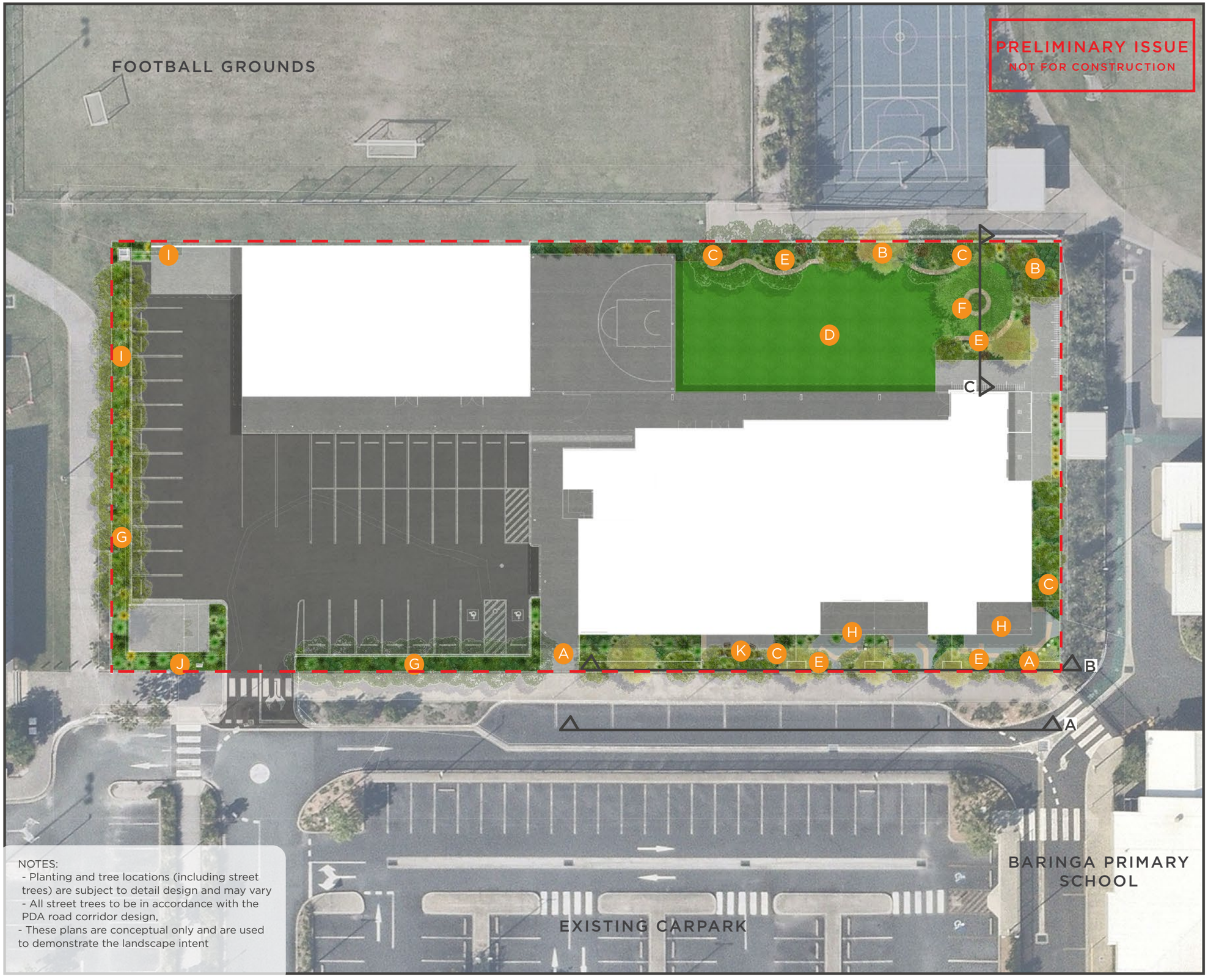
CHARACTER IMAGERY

The landscape proposal adopts an endemic, multifaceted planting approach that integrates ecological function with high-quality amenity outcomes. The design considers multiple aspects of planting to provide visual interest, passive surveillance in accordance with CPTED principles, site embellishment, and practical long-term management outcomes. The planting strategy aims to enhance habitat value within the site and contribute positively to the broader ecological network of the surrounding area, while maintaining the relaxed and subtropical landscape character of the Sunshine Coast. Sensitive landscape treatments support the protection of nearby wetlands and ecological corridors through considered stormwater management and planting selection. A diverse palette of species with varied texture, height, and seasonal colour will create layered landscape experiences, delivering a strong visual statement from both exterior and interior spaces. Feature planting elements are strategically incorporated to establish a distinctive identity while complementing the form and function of the proposed built environment.

KEY	DESCRIPTION
A	Concrete form benches encroached into garden beds, invites users to submerse themselves into the landscape, creating spaces intended for social interactions, while waiting or relaxing.
B	A larger, open, turfed outdoor recreational area; with enough space for larger groups of student to play games and interact with each other while allowing for surveillance via teachers.
C	Garden beds surrounding carparks are layered with tall canopy trees and medium-low height planting. Enforcing a physical barrier between external spaces while maintaining sight lines for CPTED.
D	A selection of native plants mix with the built forms, softening the edges/walls that are erected throughout the site.
E	A featured seating area underneath a tree, inviting users within the landscape to interact with the space and surrounds.
F	The use of permeable garden beds and endemic/appropriate planting acts as natural drainage against runoff from carparks and other hard surfaces.
G	Using endemic species surrounding the Lamerough Ck corridor. Enhancing local bushland character of the space, increasing flora and fauna habitat in the area.







LANDSCAPE CONCEPT PLAN

LEVEL	SITE PLAN
SCALE	1:200

0 2.5 5 10m

NORTH

KEY	DESCRIPTION
A	Featured endemic landscaping and larger trees create a sense of arrival and soften built form, enhancing the overall street appeal. Providing a strong landscape buffer for the development.
B	Deep planting in unobstructed natural ground. No obstruction to canopy growth while creating dense natural buffers.
C	Larger planting areas to consist of a 3 tier planting approach including a variety of endemic ground covers, shrubs and feature trees. These areas will provide an embellishment that compliments both the buildings built form and local character.
D	Turfed outdoor area to be utilised for playspace and potential outdoor classrooms.
E	Formed concrete seating and areas of rest/waiting; in shaded areas - outdoors.
F	Large canopy feature tree provides shaded outdoor seating and respite area for students.
G	Carpark specific planting, enforced to act as an informal barrier/fence without the need for harsh infrastructure, softening the overall visual appeal of the carpark and create shade around the space.
H	Landscape to outdoor learning areas softens spatial transitions while creating immersive outdoor learning spaces.
I	Plant selection and garden beds to be actively treated for stormwater runoff. Limiting hardstand run-off into waterways nearby.
J	Low level planting and non-invasive roots planted around services boxes, softening visual aspects of services
K	Landscaping to provide respite and amenity to teachers break out area.

LANDSCAPE CONCEPT PLAN

LEVEL	OUTDOOR LEARNING
SCALE	1:50

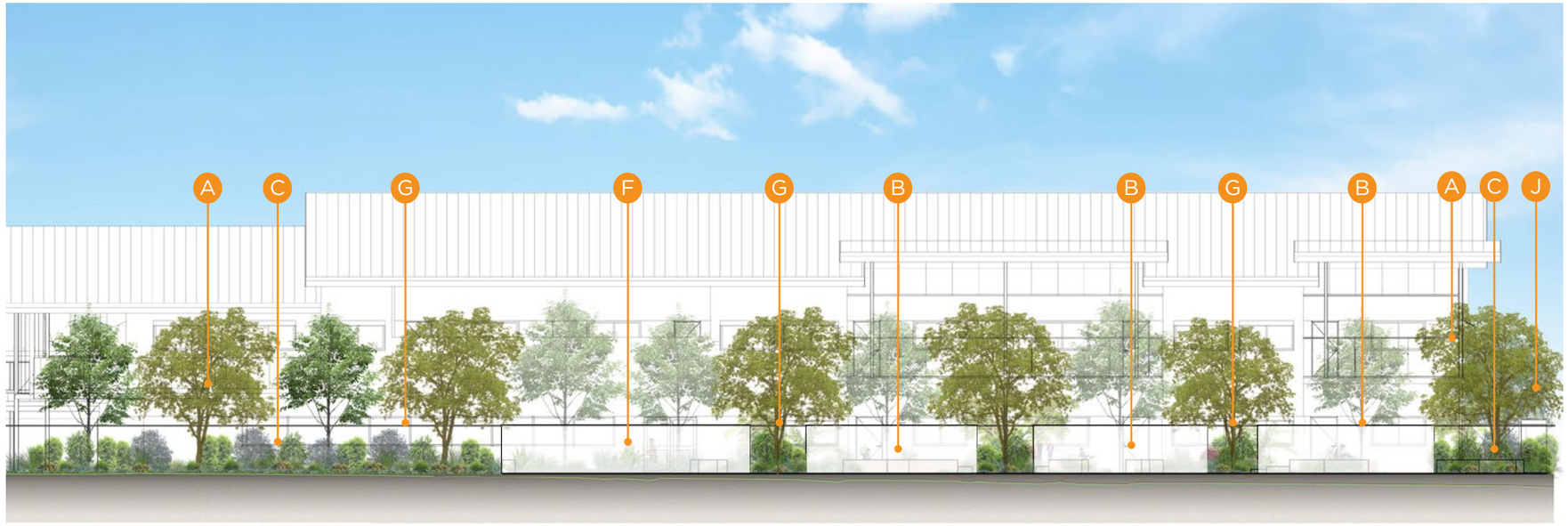
0 2.5 5m

NORTH

KEY	DESCRIPTION
A	Featured endemic landscaping and larger trees create a sense of arrival and soften built form, enhancing the overall street appeal. Providing a strong landscape buffer for the development.
B	Open outdoor learning area providing a soft, stimulating and immersive landscape experience.
C	Larger planting areas to consist of a 3 tier planting approach including a variety of endemic ground covers, shrubs and feature trees. These areas will provide an embellishment that compliments both the buildings built form and local character.
D	Stone steppers in garden beds offer dynamic movement through the space, while creating an immersive space.
E	Formed concrete seating and areas of rest/waiting; in shaded areas - outdoors.
F	Large tree with seating below providing shaded outdoor spaces for students.
G	Landscaping to provide respite and amenity to teachers break out area.
H	Lower leveled formed concrete plinths, help to transition levels while acting as movement and access opportunities.
I	Compacted gravel ground reinforces the soft qualities of the space, minimsing reflection and heat into the space.

LANDSCAPE CONCEPT SECTIONS

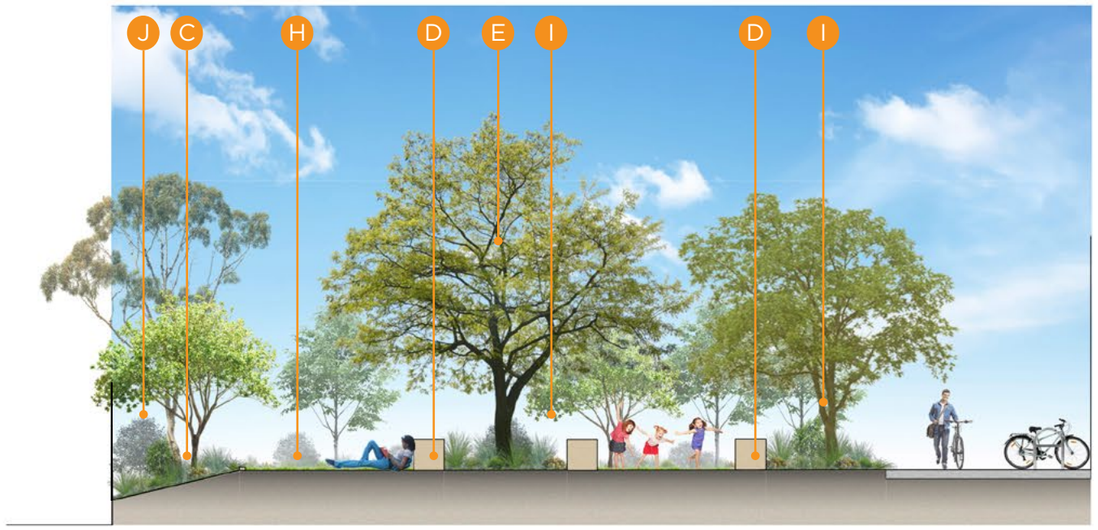
KEY	DESCRIPTION
A	Featured endemic landscaping and larger trees create a sense of arrival and soften built form, enhancing the overall street appeal. Providing a strong landscape buffer for the development.
B	Open outdoor learning area providing a soft, stimulating and immersive landscape experience.
C	Larger planting areas to consist of a 3 tier planting approach including a variety of endemic ground covers, shrubs and feature trees. These areas will provide an embellishment that compliments both the buildings built form and local character.
D	Formed concrete seating and areas of rest/waiting; in shaded areas - outdoors.
E	Large canopy feature tree provides shaded outdoor seating and respite area for students.
F	Landscaping to provide respite and amenity to teachers break out area.
G	A change in depth via fencing creates pockets for landscaping opportunities. Improving street appeal and softening fence infrastructure.
H	Turfed outdoor area to be utilised for playspace and potential outdoor classrooms.
I	Medium to low level planting using endemic and native species allow for sight lines between spaces to monitor students and adhere to CPTED.
J	Exterior landscape buffer around site softens building infrastructure and creates visual barriers to pedestrians outside the site.



SECTION A

SCALE 1:100

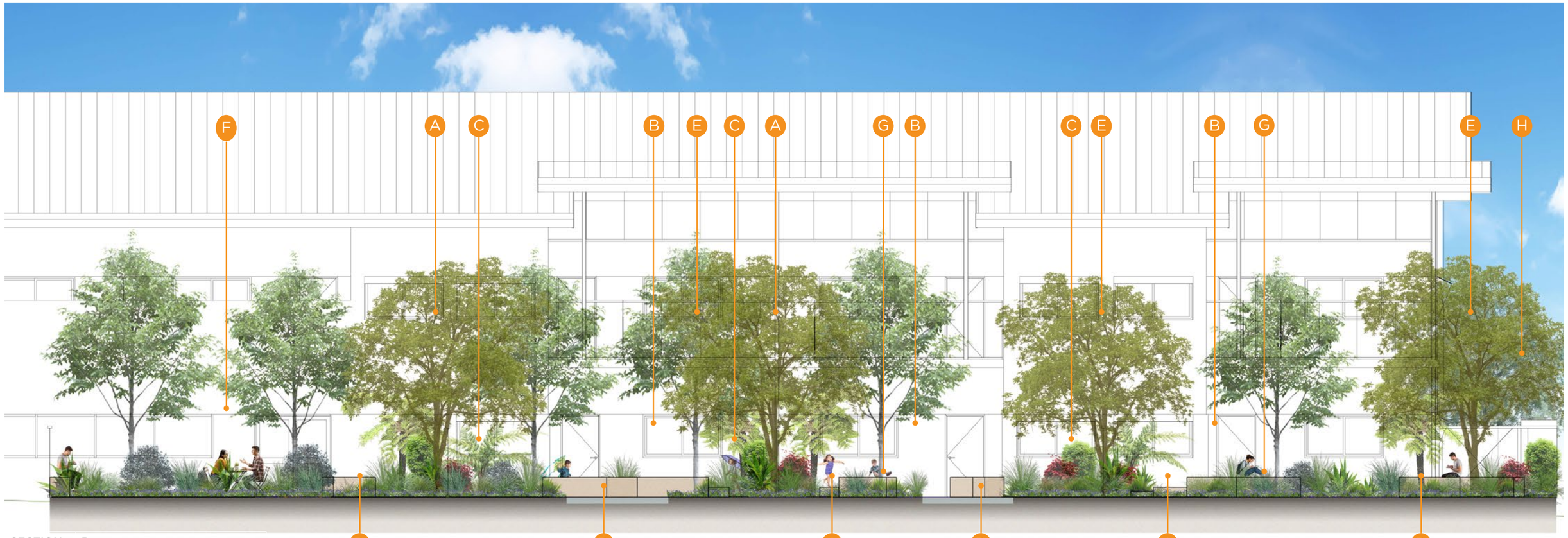
0 2.5 5 10m



SECTION C

SCALE 1:50

0 2.5 5m



SECTION	B
SCALE	1:50

KEY	DESCRIPTION
A	Featured endemic landscaping and larger trees create a sense of arrival and soften built form, enhancing the overall street appeal. Providing a strong landscape buffer for the development.
B	Open outdoor learning area providing a soft, stimulating and immersive landscape experience.

KEY	DESCRIPTION
C	Larger planting areas to consist of a 3 tier planting approach including a variety of endemic ground covers, shrubs and feature trees. These areas will provide an embellishment that compliments both the buildings built form and local character.
D	Formed concrete seating and areas of rest/waiting; in shaded areas - outdoors.

KEY	DESCRIPTION
E	Large tree with seating below providing shaded outdoor spaces for students.
F	Landscaping to provide respite and amenity to teachers break out area.

KEY	DESCRIPTION
G	Medium to low level planting using endemic and native species allow for sight lines between spaces to monitor students and adhere to CPTED.
H	Exterior landscape buffer around site softens building infrastructure and creates visual barriers to pedestrians outside the site.

KEY	DESCRIPTION
I	Lower levelled formed concrete plinths, help to transition levels while acting as movement and access opporunities.

PLANTING PALLETTE

Trees

Barkyla *syringifolia*
Crown of Gold

Buckinghamia celsissima
Ivory Curl Tree

Elaeocarpus reticulatus
Blueberry Ash

Glochidion *fernandi*
Cheese Tree

Lophestemon *confertus*
Queensland Brush-Box

Tristaniopsis l*aurina*
'Luscious'
Swamp Mahogany

Shrubs

Allamanda *cathartica*
Yellow Allamanda

Brachysome *multifida*
Native Daisy

Casuarina *glauca*
'Cousin It'
Cousin It

Carex *appressa*
Tall Sedge

Callistemon citrinus
'White Anzac'
Callistemon White Anzac

Gardeina *augusta*
'Radicans'
Rock Gardenia

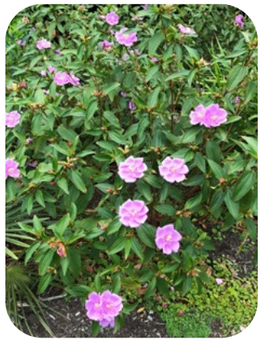
Liriope *muscari*
'Evergreen giant'
Lilyturf

Hardenbergia *violacea*
Native Sarsparilla

Lepstopermum
polygalifoilum
Yellow Tea Tree

Lomandra confertifolia

Lomandra *longifolia*
Lomandra



Hibbertia *scandens*
Guinea Flower

Westringia *fruticosa*
Coastal Rosemary

Pennisetum *alopecuroides*
'Nafray'
Foxtail Grass

PLANTING PALLETTE

Shrubs + Groundcovers

Austromyrtus dulcis
Midyim Berry

Baeckea *virgata 'dwarf'*
Miniature baeckea

Banksia *spinulosa 'BC'*
Banksia Birthday Candles

Scaevola *aemula*
Fairy-fan Flower

Dianella caerulea
Blue Flax Lily

Myoporum *parvifolium 'Fine Leaf'*
Creeping Boobialla

Poa *labillardieri*
Tussock Grass

Viola *banskii*
Native Violet

LANDSCAPE SPECIFICATION NOTES

SETOUT
It is the contractor's responsibility to adequately setout the landscape works as documented. Use figured dimensions where documented. Do not scale off drawings.

SERVICES
Service locations shown on the drawings are indicative only. The contractor shall accurately determine the location and level of all services within the site.

STANDARDS
All work methods, site works, materials and workmanship shall be in accordance with the relevant government policies, guidelines and legislation and the standards of the Standards Association of Australia.

EXCAVATION
Excavate over the site to give accurate levels and profiles as the basis for construction and surface treatments. The contractor shall accurately determine the location and level of all services within the site prior to excavation.

CULTIVATION
Following excavation and prior to placing topsoil cultivate all areas to receive planting, turfing or grassing to the following depths:
- Garden areas – 150mm
- Tree pits and trenches - 300mm
- Turf and grassed areas - 150mm.

Do not disturb services. Cultivate by hand within the drip line of trees to be retained and within 300mm of paths or structures. Incorporate gypsum into cultivation at the rate of 0.25kg/m3 and other additives if required.

SUBSURFACE DRAINAGE
Install subsurface drains as shown on the drawings or as detailed. Connect all subsurface drains to stormwater to engineer's details.

TOPSOIL
Topsoil means soil which contains organic matter, supports plant life, is free form unwanted matter such as stones over 25mm in diameter, clay lumps, weeds, weed propagules, tree roots, sticks, rubbish, material toxic to plant growth, pests, disease and the like.
Standards: All topsoil shall comply with the requirements of AS 4419 'Soils for landscaping and garden use'. Topsoil may be:
- Site topsoil that complies with AS 4419; or
- A blend of site topsoil and imported topsoil that complies with AS 4419; or
- Imported topsoil that complies with AS 4419.

Topsoil to planters shall be an approved lightweight podium mix.

The Contractor shall supply certification of compliance from a NATA accredited testing laboratory to the Superintendent prior to the delivery of topsoil to the site. Prepare garden beds by removing all debris, stones and building materials arising from the works. Contaminated soils as a result of spillages of oil, fuel, cement or the like shall be excavated and removed from the site.

Required topsoil types:
- 'A' horizon topsoil - To top 300mm of all garden beds and tree pits. Landscape soil (on grade), Medium organic soil blend with 6.0-14.9% screened composted organic matter. Hydraulic conductivity 15-30cm/h. pH 5.5 - 6.5.
- 'B' horizon topsoil - Below 300mm depth. Landscape soil (on grade), Low organic soil blend with 3.0-5.9% composed organic matter. Hydraulic conductivity 30-80cm/h. pH 5.5 - 6.5.

To all turfed / grassed areas – Soils for turf and lawn. Friable sandy loam textured material. Min. 2% organic matter. pH 5.5-6.5. OR site topsoil, ameliorated, tested and certified as complying with the requirements of AS 4419.

Required topsoil depths:
- To planting areas - 300mm unless detailed otherwise
- To tree pits and trenches - 1000mm unless detailed otherwise.
- Turfed areas - 100mm unless detailed otherwise

Do not place topsoil under trees to be retained unless directed otherwise. Lightly consolidate topsoil in max. 150mm deep layers and grade evenly so that the finished surface is smooth, free from lumps of soil and roots at the required levels ready for planting. Provide minimum 1:50 falls for drainage to all turfed areas. Gradients in garden beds shall not exceed 1:3 without erosion control measures. In garden beds set topsoil levels 100mm below adjacent edges and surfaces to allow for full mulch depth.

FERTILISER AND WATER CRYSTALS
Planting areas: Place slow release pill type fertilizer such as 'Agriform' planting tablets (20:4.3:4.1) or equal approved and water crystals such as 'Earthcare Water Crystals' or equal approved around the root ball of all plants at the time of planting to manufacturer's recommendations.

PLANT MATERIAL
All plants shall be vigorous, well established, hardened off, of good form consistent with species or variety, not soft or forced, free from disease and insect pests, with large healthy root systems and no evidence of having been restricted or damaged. No substitution of species shall be made without the prior approval of the Superintendent. All trees supplied are to be certified to comply with AS2303 'Tree stock for landscape use'.

PLANTING
Do not vary plant locations from those shown on the drawings unless otherwise directed by the Superintendent. If it appears necessary to vary the locations or spacings of plants to avoid service lines, apply for directions from the Superintendent on completion of set out and prior to planting. Do not plant in extreme weather conditions of extreme heat, wind, cold or rain.

Water plants and planting holes thoroughly before planting begins. Remove plants from containers carefully to ensure minimum soil loss and root disturbance. Top prune trees only as directed. Position plants in the center of holes and set at such a level that after trimming and settlement, a normal and natural relationship of the plant with the ground surface will be established. Incorporate fertiliser and water crystals as specified. Backfill with topsoil as specified and firm to avoid air pockets. Water plants immediately after planting and thereafter as required to maintain growth rates free of stress.

TREES
Trees to be planted in landscape areas at least 1m width to ensure enough space for landscape to grow and plants to be of any value
One shade tree with a clean trunk to 2m with non-invasive roots is required for every 8 car bays as a minimum.

STAKING AND TYING
Stake and tie all trees that have a calliper less than 50mm. Use straight hardwood stakes pointed at one end. Ties shall be hessian webbing placed two-thirds of the plant height above the ground.
- Trees > 2.5m high: Three 50 x 50 x 2400mm stakes per plant
- Trees 1.0 to 2.5m high: Two 40 x 40 x 1800mm stakes per plant
- Trees or shrubs < 1.0m high requiring support: One 38 x 38 x 1200mm stake per plant. Remove stakes and ties at the end of the Establishment Period.

MULCH
Standards: To AS4454 'Composts, soil conditioners and mulches'.
Mulch shall be well composted, free of deleterious matter, including weeds, soil, rocks and the like. Obtain mulch from approved suppliers. Do not place mulch in contact with plant stems, spread evenly to the depth specified.

PRACTICAL COMPLETION
Carry out any other work as specified or necessary for the satisfactory completion of the work and leave the job in a clean and tidy condition.

DEFECTS LIABILITY
A defects liability period of 12 months shall apply to all landscape hardworks including irrigation, garden edges, pavements and the like.

ESTABLISHMENT PERIOD
An Establishment Period of 12 weeks from the date of Practical Completion shall apply to all landscape areas including turf, trees and planting areas. Make sure the general appearance and presentation of the landscape and the quality of plant material at date of practical completion is maintained for the planting establishment period.

Should the Contractor fail to carry out the Establishment Work as specified, the Superintendent may arrange for others to carry out the work and deduct the cost for such work form monies due to the Contractor under the Contract.

Inspection: Seven (7) days prior to the end of the Establishment period the Contractor and Superintendent shall carry out a joint inspection of the plant material to determine what work needs to be undertaken before the end of the period.

FINAL COMPLETION
Following the satisfactory rectification of all defects and completion of all works associated with Establishment and Maintenance a Certificate of Final Completion shall be issued to the Contractor.

MAINTENANCE PERIOD (Streetscape Works only)
A maintenance period of 12 months shall apply to all landscape works. The 18-month maintenance period commences from the date the works are accepted 'on maintenance' by the Superintendent.

IRRIGATION
The project will design and construct an automatically controlled irrigation system to all planting areas, installing the system in a competent, professional manner in accordance with standard industry practice. The irrigation system shall be designed by an IAL Certified Irrigation Designer. The system shall be designed considering different landscape zones with differing water requirements. The system shall provide an even application of water over each irrigated landscape zone.

The Contractor shall prepare shop drawings of the irrigation system design showing all components including pipe alignments and sprinkler locations grouped in their appropriate stations and submit to the Client. Written approval or sign-off by the Client is required before ordering or commencing with construction.

Standards:
- Degrees of protection to conform to AS 60529
- Water connections to conform to AS/NZS 3500:2003 Plumbing and Drainage Code
- Power connections and conduits: To AS/NZS 3000:2007 Electrical installations

• Pipe work
  - ASA185 Solvent welding cement for use with rigid uPVC pipe and fittings.
  - AS1159 Polyethelene Pipes for Pressure applications.
  - AS1167 Welding & Brazing filler materials.
  - AS1345 Identification of the contents of piping, conduits and ducts.
  - AS1432 Copper tubes for water, gas & sanitation.
  - AS1477 Unplasticised PVC (uPVC) pipes and fittings for pressure application (metric)
  - AS1628 Copper alloy gate valves and non-return valves for use in water supply and hot water services.
  - AS2032 Code of practice for installation of uPVC pipe systems
  - AS2053 Non-metallic conduits and fittings
  - AS2129 Flanges for pipe, valves and fittings
  - AS2845 Water supply mechanical back flow prevention devices.
  - AS4130 PE Pipes, pressure applications.
• Backflow prevention and water efficiency: To PCA (2022)

Water Requirements:
• The irrigation system shall be capable of delivering 25 litres of water / m2 / week to the irrigated landscape.
• Water storage tanks shall be capable of storing minimum 2 weeks of irrigation supply.

Water Supply:
• The Contractor shall confirm the source/size and location of all connection points to be used to supply water for irrigation and perform a flow rate versus pressure test to confirm the flow rate available to the irrigation system.
• The irrigation system and componentry shall be designed to suit the irrigation water supply and be operated efficiently at recommended and suitable operating pressure.
• If the flow/pressure is insufficient the Contractor shall advise the Client immediately for direction on options open to them.

Hydraulics: The Contractor shall accomplish the hydraulic design of the irrigation system to conform to the following:
• Maintain water velocities in all mainline pipe work to below 1.5 metres per second.
• Maintain water velocities in all lateral pipe work to below 2 metres per second.
• Maintain pressure losses in laterals within valve sections to less than 10% between best and worst case sprinklers and of the nominal sprinkler operating pressure of that valve section.

Components:
• Pump: Pump selection shall be:
  - of capacity to supply amount of water needed to achieve consistent minimum and maximum flow rates
  - compatible to the design pressure for the system pipes and fittings
  - compatible to the watering frequency
  - compatible for the system control or operation
  - compatible to available power source
  - resistant to available water quality
  - selected with regards to Capital vs. operational and maintenance cost
• Pump Housing: The pump housing selection shall:
  - Be weather resistant if required for pump protection
  - Be Lockable
  - Have suitable acoustic insulation qualities for each situation.
• Pipework:
  - All pipe work, cabling and fittings (with exception of drip lines) are to be placed in trenches and valve boxes to provide minimum soil cover of a minimum of 200mm to finished soil level. Trenching shall be in continuous straight lines and uniform grades, with trench bottom level and free of rubbish and sharp projections. All pipe work to run under traffic lines and pavement areas shall be sleeved in heavy duty uPVC conduit. Trenches to be backfilled with clean fill, compacted to local soil density and free of any projections.
  - Pipe work is to be installed strictly to relevant Manufacturers instructions. Threaded Fittings are to be taped unless otherwise recommended.
  - All mainline pipe work is to be either uPVC, Rubber Ring Joint, Class 12 to AS 1477
  - All Lateral pipe work will be Medium Density PE (MDPE) - PE 80, to AS / NZS. 4131
  - Fittings shall be minimum Class 12, Poly, compression and screwed joints.
  - Tapping saddle nuts, bolts and washers shall be Stainless Steel.
• Automated Controller: Controller shall be readily programmable and shall have the following capabilities:
  - Manual cycle and individual control valve operation
  - Retain various programs during manual shut down or power loss activities
  - 24 hour battery program back up
  - Minimum of 4 on/off cycles per each 24 hour period
  - Day omit function (eg. Day skip - Second or third day operation)
  - 240v input and 24v output able to operate 2 control valves simultaneously
  - Power surge protection
  - Housing or cabinet with a minimum of IP 65 resistance to AS 60529
  - Controller shall be securely fixed at a height no less than 1200mm and no greater than 1800mm above adjacent finished ground level. Controller is to be located with a clear standing zone and access to the front of the panel and have suitable clearance to allow free operation of the access door.
• Reduced Pressure Zone Devices (RPZ): The RPZ shall be a proprietary or purpose-built valve capable of the prevention of an unintentional flow of any water from the irrigation system back into the potable water (mains) supply. Design and installation shall conform to all local authority standards and guidelines.
• In-line mesh screen filters: Provide and install in-line a minimum of one (1) filter between the RPZ valve and the first solenoid controller. Final number of and requirement of filters is to be nominated by the irrigation designer. Filters shall have screen size suitable for catching larger particles that may hinder the efficiency of the irrigation system. Filter body is to include integral flush valves or plugs so that debris from the filter can generally be removed without dismantling the filter body.
• Automatic Control Valves:
  - Type: 24 V solenoid actuated hydraulic valves with flow control and a maximum operating pressure rating of at least 1 MPa and able to be serviced without removal from the line.
  - ≤ DN 50: Dezincification resistant copper alloy body and bonnet, screwed ends. Stainless steel bonnet holding down bolts and internal metal parts.
  - ≥ DN 65: Cast iron body and bonnet, flanged ends. Stainless steel bonnet holding down bolts and internal metal parts.
• Isolating valve: Provide a ball or gate valve of the same size immediately upstream of each automatic control valve.
• Check valves: If a rotating head is more than 300mm below the highest head on the same automatic control valve, an internal anti-drain valves is to be installed to prevent drainage of system through lower spay head.
• Pressure Reduction valves: At a minimum pressure reduction valves are to be provided between mainline take off points and control valves. Mount valve in readily accessible position within valve box. Pressure reduction valves are to be capable of and include:
  - Being adjusted between 100 and 600kPa
  - 800um filter size
  - Backflow prevention
• Control Wiring and Connectors: The control wiring shall be sized to ensure a maximum voltage drop between the Irrigation Controller and the solenoid valve of less than 10% of coil operating voltage. Control wiring runs shall be limited to a maximum of 400m.

Drip Irrigation Systems:
• Discrete drip emitter systems
  - Tubing: Polyethylene micro-irrigation pipe.
  - Drippers: Turbulent flow types, easily dismantled for cleaning.
• Emitters
  - Type: If the difference in elevation between the control box and all emitters is:
    < 1500 mm: Pressure compensated, or non-pressure compensated type.
    ≥ 1500 mm: Pressure compensated type only.
• Fittings
  - Barbed fittings rated for the pressure class of the pipe, fastened with ratchet type clamps.
• Valve boxes
  - UV-resistant high impact plastic with a stainless-steel security lock down bolt (plated) within lid, sized for clear access to components inside the box.
  - Install with top of box flush with the surface.
  - Boxes are to be located a minimum of 600mm within garden beds, unless otherwise approved.
  - Provide the following in each valve box:
    Automatic control valve.
    Isolating valve.
    Filter: 100 m.
    Pressure-reduction valve with 170 kPa outlet pressure.
  - Allow 100 mm minimum clearance from filters and 50 mm min clearance from valves.
  - Base: Concrete plinth or crushed rock.
• Piping
  - Materials: To AS/NZS 3500.1 (2021) clauses 2.4 and 2.5 and as documented.

Installation:
• Backflow prevention: To PCA (2022) and Network Utility Operator requirements.
• Control Wiring and Connectors: Control wiring is to be installed underground alongside pipework in mainline trench where possible. A minimum of 200mm loop in cable shall be provided at each connection and/or change of direction to take out expansion or movement allowances. Connections and joints are to occur only at solenoid valves, sensors and controllers. All joints and connections shall be fully soldered. All bare portions of cable and connections are to be suitably waterproofed. All joints shall be contained with ‘heat shrink’ wrap once soldered.
• Drip Irrigation:
  - Lay polyethylene micro-irrigation pipe on finished ground surface under planting bed mulch and anchor at 1500 mm maximum intervals with min. 300mm long, U-shaped stakes.
  - Lines are to be installed parallel to contours/perpendicular to grades. Drip line gauge and spacing is to be determined with reference to soil hydraulic conductivity in order to deliver nominal irrigation application rates. Typical spacing of 450mm is to be applied in most instances.
  - Driperline discharge rate, dripper spacing and dripperline separation when installed shall provide for a minimum application rate of 15mm/hr with a minimum application uniformity of 95% while not exceeding the manufacturer’s maximum recommended run length and not exceeding a frictional pressure loss sufficient to cause operation below the manufacturer’s minimum recommended emitter operating pressure.
• Discrete drippers: Connect directly into piping or provide appropriately sized micro-tubes.
• Air release valves: Provide at the highest point in each section to drain the system when flow stops.

Completion: On completion of the irrigation system, carry out the following:
• Flush system thoroughly. Check heads, sprays and drippers and clean if blocked.
• Clean strainers.
• Testing, commissioning and maintenance. Adjust for even distribution with no dry areas.
• Supply three (3) copies of as-installed drawings at Practical Completion. The Contractor shall provide operation instructions which include a watering program for each station.

Plant Establishment and Maintenance Period: During the Plant Establishment and Maintenance periods:
• Make as many inspections as necessary to establish the correct watering pattern for the system to ensure optimum soil moisture conditions. This will involve the selection of the appropriate days for the operation of the system, the number of start times each day and the duration of each watering cycle. Additional flushing of the system and cleaning of the filter screens may be required and checks made to ensure all pipe work remains buried and free from leaks.
• Inspect all dripper sections during watering to clear any blockages.

Defects Liability Period:
• The Defects Liability Period is twelve (12) months from the date of Practical Completion.
• The Contractor shall attend site to satisfactorily rectify any reported problem with any aspect of the contracted works, which is attributable to the failure of any item or equipment to perform in accordance with their design and/or installation, as per the conditions of the Guarantees and Warranties.

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MASTER PLANNING
ARCHITECTURE

INTERIOR DESIGN
LANDSCAPE
GRAPHIC DESIGN

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