Part 2: Design Principles

Education and Care Facilities Design Standards

Public education is for every child and young person in South Australia.

Government of South Australia
Department for Education

LEARN AND THRIVE

Part 2: Design Principles

Introduction

This part outlines the department's requirements for the planning and design of education and care facilities for all new projects, major upgrades and refurbishment of existing facilities. It sets out the expectations and requirements for the delivery of education and care facilities ensuring alignment to the department's strategic asset management objectives to deliver optimal whole-of-life value (see the Asset Management Policy), and the aim of the 20 Year Infrastructure Plan to make every school and preschool great.

The 'Areas of Impact' in the department's strategy for public education (wellbeing, equity and excellence, learner agency, effective learners) shape the core design principles for education and care facilities. These principles (community and place, safe and secure, accessible and inclusive, responsive learning environments, sustainable and climate ready) guide the architectural design and master planning of facilities, ensuring the building, landscape and service requirements are met. This ultimately supports the delivery of the department's strategic educational outcomes (see figure 1).

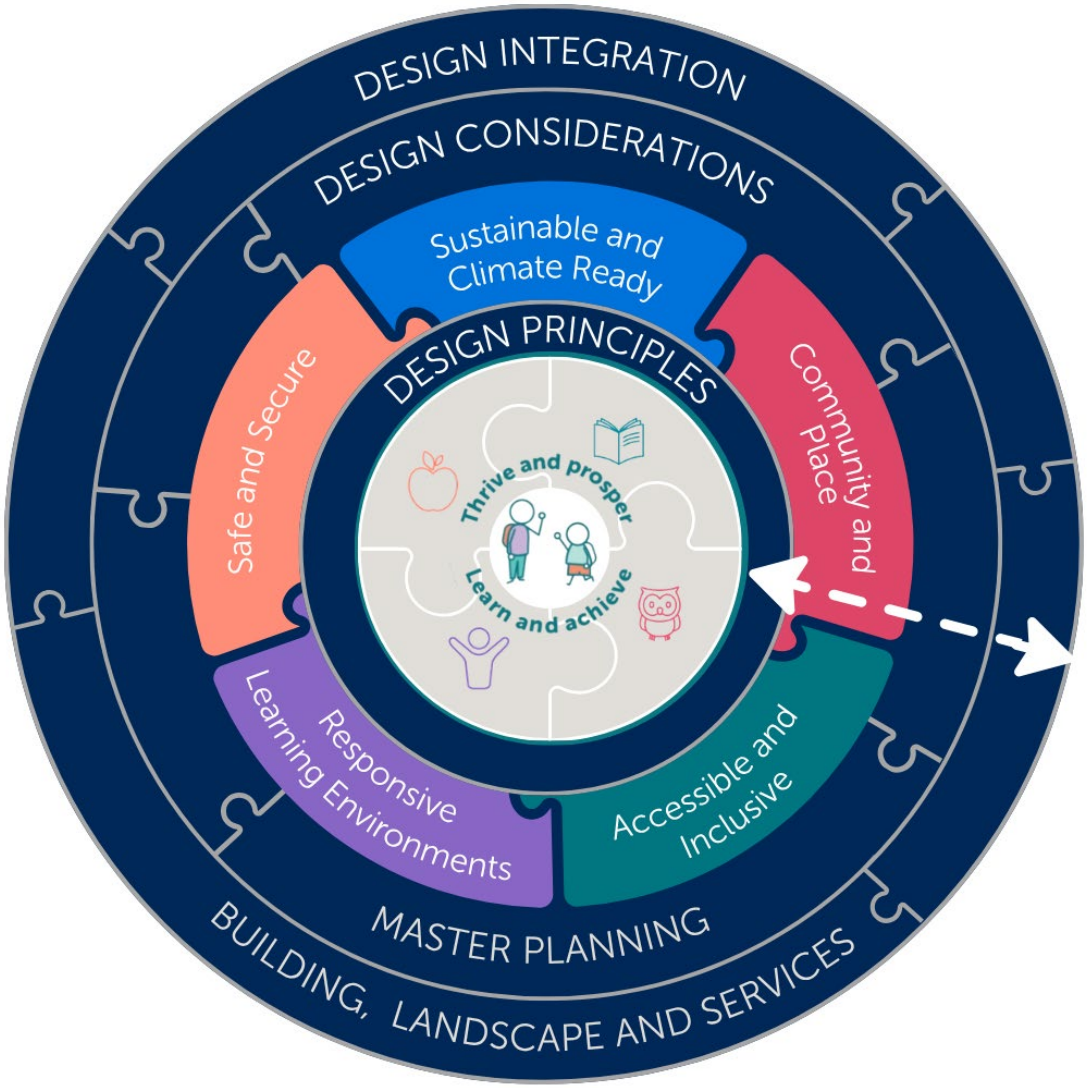

Figure 1: interdependencies between the Design Principles and Areas of Impact

Design principles

It is essential these ***5 design principles*** (figure 2) are applied to all internal and external aspects of facilities:

Figure 2: department's 5 core design principles for all education and care facilities.

World-leading design supports the diverse learning and care needs of every child and young person while providing an operationally efficient and supportive environment for staff. Thoughtful design translates the educational vision and pedagogy principles (Appendix A), framework, and specifications into built environments that maximise engagement and participation among all users. The ODASA principles of good design provide support for designing for context, inclusivity, durability, value, performance and sustainability.

Any departures require formal approval from the department as outlined in the overview and glossary.

Community and Place

Our facilities provide a positive contribution to the community as a civic heart that fosters a sense of belonging, ownership and pride, inspires learning and teaching and continues to provide broader public benefits over time.

To create inviting and welcoming facilities, that instill a sense of ownership, design solutions must:

- provide a well-positioned physical presence which considers the design and orientation of the buildings for accessibility
- ensure form, scale, mass, volume, appearance and sustainable principles work together, the scale of buildings should be appropriate to the age and size of the users
- respond to, integrate with, and enhance the positive qualities of the local context, including built form, character and materiality, landscape, cultural heritage and site history (South Australian Urban Design Charter)
- use site conditions such as topography, orientation, landscape character assessments, view corridors and climate to inform building design, including spatial organisation and the spaces created in between
- ensure the facility is complementary to its community and broadly considers demographics, future growth, history, culture and needs of its local industry and region
- integrate with adjoining community developments and facilities where possible so the potential for shared facilities may be identified and maximised (consider opportunities to stimulate the local economy and encourage investment through good, safe connectivity to local centres)
- ideally contain some 'signature' element to the entrance that reflects something unique about the facility, developed from the local community (not imposed on the site) that sends an immediate message to the community about the nature of the facility and its priorities
- inform and respond to any current or future structure planning or strategic visioning being undertaken on adjacent land by Council or other authorities through the master planning process
- prioritise intuitive, logical wayfinding for all users (including after-hours community users) across the site and between buildings through clear and legible spatial organisation and movement hierarchy with paths that give a sense of direction, and by the prominence of building entrances, unique character of particular buildings and site features
- reflect the culture, pedagogical model and vision for the facility through the experience of the built and natural environment, with elements that reflect the important cultural and educational aspirations, and foster a sense of belonging, ownership and pride in the buildings and grounds
- include flagpoles to display the Australian, Aboriginal, and Torres Strait Islander flags side by side
- make learning processes and achievements visible and accessible, integrating them within the environment to convey educational priorities and support engagement with families and community
- consider the landscape design as an integral part of the project, providing amenity and comfort, support wellbeing, contributing to the streetscape and connecting the site into its immediate context (maximise opportunities for external spaces to provide learning environments as well as opportunities for play)
- consider key walking and cycling routes to and from the facility to support local access and safe journeys with a focus on nearby public transport, public facilities, services, open space and local centres
- minimise the lineal extent of car parking that interfaces with streets and provide a landscaped buffer which maximises opportunities for tree planting where parking is required
- reduce the impact from adjacent noise sources, as well as considering the impact of noise generated by facilities on neighbouring properties
- ensure when facilities are co-located (early childhood education and care facilities and schools) their location and design creates a community precinct and encourages linkages with the school and other community facilities, and are positioned to assist seamless transitions and provide developmentally appropriate opportunities to engage with the environment.

Safe and Secure

Our facilities are designed as welcoming environments where all users can gather in safe and secure spaces. Users should feel comfortable in environments that provide clear boundaries and passive zoning, while supporting the flexibility for partnerships to occur.

To maximise the safety and security of all users of the facility, reduce the likelihood of bullying and encourage positive behaviours and relationships, design solutions must:

- ensure facilities comply with all relevant Acts, Codes and Government Legislation, and apply Safety in Design (SiD)[1] principles and guidelines, to manage risks throughout the building's lifecycle
- implement Crime Prevention Through Environmental Design to include protecting occupants from unwelcome persons during occupied hours, staff and students from violent behaviour, and property from vandalism during and outside of occupied hours, eliminating unwanted roof access with unobtrusive strategies such as:
    - natural surveillance maximising passive surveillance from the buildings, particularly to communal areas ensuring landscaping does not impede surveillance or effective supervision
    - natural access controls and territoriality to guide ideal behaviour, support safe communities and clearly defining access for after-hours use
- implement security and emergency measures to ensure occupants can respond quickly and safely when there are emergency situations including access to:
    - fencing, intruder detection, fire alarm, access control and security systems including ready access to duress buttons, fire extinguishers, alarm buttons
    - prioritising the integration of secure lines within the overall built form allowing lock downs of specific areas and providing safe places for invacuations, evacuations, and bushfire shelters
    - a centrally located Automated External Defibrillator with appropriate internal and external signage
- mitigate disasters accounting for climate change and increased risks to ensure longevity and sustainability, including:
    - locating buildings to not be affected by 1 in 100 year flood events
    - select and locate plantings to minimise bushfire risk and maintain a defensible area around buildings
- ensure privacy and security for learners and neighbours (visual and auditory) from outdoor spaces
- promote smoke free environments and displaying appropriate signage
- position facilities for community use on or near the site perimeter with clear definition of boundaries, obvious entrances and effective signage, with the ability to zone facilities for third party access
- provide compliant illumination of spaces to be used at night, including paths from buildings to car parks
- ensure clear separation of pedestrian and bicycle pathways from vehicle roadways, connected to local pedestrian and bicycle pathways to encourage safe active modes of transport
- promote good sight line in all indoor and outdoor areas by careful placement of doors and windows (with glare control) for effective supervision of entrances/spaces used by external providers and visitors
- promote learner safety and uphold their dignity through designs that facilitate effective supervision (at all times) and minimise risks associated with isolation, obstructed visibility and unsafe interactions
- eliminate long straight corridors, dead-end passageways, isolated stairwells and secluded external locations to avoid places where bullying or undesirable activity can occur, ensuring the provision of staff spaces that are secure and confidential with safe egress from any potential entrapment spaces
- locate gathering and social spaces in areas that enable passive supervision
- ensure spaces, connections and elements support cultural and emotional safety and wellbeing.

[1] SiD is the terminology used to describe a designer's responsibility under the WHS legislation to achieve a safe design

Accessible and Inclusive

Our facilities are designed ensuring they are accessible, optimising the learning and participation of all (regardless of physical, perceptual, social or cognitive abilities, cultural or family backgrounds, or identities). They create a sense of belonging among community, removing barriers and providing cultural safety.

The design and construction of new facilities and the redevelopment of existing facilities must ensure:

- compliance with disability building standards and the departments children and students with disability policy (including the aim to meet AS 1428.2 requirements)
- the building and outdoor areas are welcoming, family friendly and culturally appropriate to encourage community use of facilities for a variety of purposes and programs
- the community (parents, learners and educators) see themselves genuinely represented and celebrated throughout the facility in environments that are inclusive of all gender, ability, culture and family diversity – including the naming conventions of spaces that reflect learner voice and agency
- both internal and external spaces follow principles of Universal Design, or participation for all, which recognises there is a wide spectrum of human abilities including physical, perceptual, social and cognitive, they must:
    - facilitate safe and secure access that is equally available to all users, including:
        - culturally safe and secure environments
        - access for all through the principal street entrance with consideration to car parking placement and covered walkways
        - door thresholds, including those to outdoor learning areas, must permit wheelchair access and circulation (exemptions include cleaner's rooms, storage rooms and plant rooms)
        - community access to shared facilities
        - access to health and wellbeing supports and services including amenities
        - designs that minimise hazards and adverse consequences of accidental or intended actions.
    - incorporate elements that accommodate a range of individual preferences and abilities, including:
        - various spaces for learner regulation that allow engagement in ways that meet their sensory, social and cognitive needs, accommodating a tiered escalation approach to learner regulation
        - signage and spaces that support LGBTIQ+, gender, Aboriginal peoples, Cultural and Linguistically Diverse (CALD) such as all-gendered amenities, multi-faith practices, community engagement
        - provision of hearing augmentation systems that provide equitable access to services, best practice listening conditions and help to protect educator voices
        - display technology that ensures information (detailed text, graphics, video) is visually accessible to all
        - spaces that are intuitive and easily understandable regardless of user's experience, knowledge, language skills and cognitive capacity
        - necessary information about the use of space is communicated effectively regardless of ambient conditions and user's sensory abilities
        - spaces that can be used efficiently, comfortably, with minimum physical fatigue, and can be easily modified, rearranged and repurposed to support diverse learner needs
        - appropriate size and space is provided for approach, reach, manipulation and use regardless of user's body size, posture or mobility
        - access to controls, switches, handles and operable parts of building elements, fixtures, furniture and fittings.

Refer also to DIT Guidenote G119 Disability Access Checklist for general government building requirements.

Responsive Learning Environments

Our facilities recognise both indoor and outdoor environment as integral to supporting our learners to thrive. Innovative spaces prioritise wellbeing and learner agency, creating physical environments that empower and enable effective learning and instill a sense of belonging.

A diversity of learning settings support the development of critical thinking and problem solving, analytic capabilities, curiosity and imagination and include:

- age-appropriate spaces, ranging from spaces that support high levels of nurturing at young ages to spaces that allow increased independence and self-directed learning
- specialist disciplinary and interdisciplinary areas to investigate and deeply engage with specific curriculum areas
- practical hands-on areas for learners to experiment, use new technologies, test ideas, make and create innovative solutions to real and complex problems
- personalised, individual or small group areas for inquiry-based learning, critical and creative thinking, supporting self-regulation and reflection
- settings, including communal areas, that offer diversity and choice and including spaces for collaboration and interaction and to serve as a stimulus for conversations on common interests
- spaces for learner regulation that allow engagement in ways that meet their sensory, social and cognitive needs
- user comfort conditions that are conducive to inclusive learning including layouts, material selections, colours and finishes (biophilic elements), indoor air quality, daylight provision, thermal control and acoustic properties
- access to a natural environment providing a variety of play, rest and recreational experiences.

Education and care facilities need the capacity to adapt to new learning and teaching approaches over their design including:

Flexible and agile - the ability to manipulate spaces quickly and easily to suit different group sizes and learner needs, activities, communication tools and presentation modes including the use of flexible wall systems, the creation of zones within a larger space, 3D use of space using vertical wall surfaces, writable wall surfaces, moveable joinery, wireless technology, AV systems, surface treatments and loose furniture.

Adaptable - the ability to change the nature of spaces over a longer period of time (including years and decades) as the process of teaching and learning evolves, and the needs or numbers of the community or demographics changes. Buildings and landscapes constructed now will still be in use in the future and need to be easily, economically and sustainably adapted to cater for inevitable changes over their expected life.

Connected - both physically and visually to each other in ways that encourage engagement of learners with their tasks, including visual transparency, and the ability to move readily to spaces as required in a way that causes minimum disruption to others. Outdoor learning environments are equally as important as indoor learning environments, and must provide seamless learning spaces that operate as an extension of the internal space.

Interactions – aspects of the physical environment can positively or negatively influence learning outcomes and require the careful consideration of colours, textures and surfaces, acoustics, lighting and ventilation, and practical demonstrations of environmental best practice design.

Technology – seamless and accessible integration allowing its use wherever learning occurs in both indoor and outdoor environments, with the ability for it to be changed many times over the life of the buildings.

Fixtures, Furniture and Equipment - meet the comfort requirements of a range of educators, learners, ages and needs and robust to withstand deliberate and accidental damage as well as normal wear and tear.

Sustainable and Climate Ready

Our facilities embed sustainable practices across planning, design, construction and operation, using resources efficiently and supporting circular economies. Climate ready design promotes equity, enhances user wellbeing, and facilitates strong connections between built and natural environments.

The design and construction of facilities must achieve outcomes that support South Australia's Net Zero Strategy, and departmental sustainability and climate ready policies to:

Enable learners to thrive through designs that embrace sustainability as tools for education:

- supporting the Australian Curriculum cross-curriculum priorities
  - demonstrating human connections to nature including natural cycles of sun, wind, rain and seasons
  - identifying open spaces that support exploration, biodiversity, earth education in outdoor learning
- maximising opportunities for connections to nature through physical connection with outdoors, external outlook and use of natural materials, textures and colours (biophilic elements).

Act on climate change reducing emissions through incorporating:

- passive design principles including considerations of building shape, orientation, natural daylight and ventilation, insulation and thermal mass
- support the urban greening strategy - leading by example - to provide cooler, greener and healthier developments through water sensitive urban design (WSUD) and biodiversity sensitive urban design (BSUD)
- design of equipment and services to minimise energy and water consumption over the facilities lifecycle
- re-use and recycling of materials, and use of low carbon materials in the construction and operation of the facilities
- appropriate technologies to generate electricity, heat water, harvest (including permeable surfaces), store and re-use water and manage the lighting, mechanical and electrical systems.

Foster resilient communities managing climate risk through buildings that incorporate best practice:

- adaptable design that considers future potential expansion or contraction by:
  - designing an external built form that can be easily modified
  - incorporating structural systems that enable cost effective internal refurbishments
  - future-proofing and allowing for technological advances
- opportunities to use building materials that can be disassembled for re-use, in conjunction with considerations for the addition and removal of accommodation over time.

Amplify our impacts modelling best practice design:

- materials and finishes are selected for their environmental qualities minimising exposure of building occupants to air contamination
- systems and operational methodology for buildings and external spaces
- including effective examples of 'green' and 'blue' design to provide a resource for various age levels
- whole of life building performance - targeted initiatives that demonstrate equivalent or improved sustainability through industry recognised tools and standards or as prescribed by the NCC.

Embed sustainable practices with durable design elements:

- materials and finishes that will weather well in exposed conditions, endure the rigors of school environments and be easily maintained and cleaned
- prioritise materials with good whole of lifecycle costs that are fit-for-purpose.

Master Planning

Master planning should create a clear hierarchy for the buildings and spaces between them, and the ability to capture opportunities beyond the site boundary (such as linkages, heritage, landscape), ensuring strategic direction allows for change, future expansion and potential staging of the works.

The areas of a site that are to be master planned include:

- permanent buildings
- possible additional accommodation to meet peak demand or expansion (permanent or modular)
- external functional areas
- landscaping (active and passive)
- circulation and parking (covered and uncovered), sheds, bike/scooter storage
- amenities
- services – water, power, waste services

The following Guidenotes must be referred to:

- G37 – Site Contamination
- G96 – EPA Environmental Information
- G100 – Selection of Site Contamination Consultant
- G101 – Using a Site Contamination Auditor
- G103 – Development Proposals for Heritage Assets
- G125 – Principles of Safe Design

For sites located in Port Pirie the additional guidance provided in the Addendum: Guiding requirements for effective ongoing Lead exposure management must be followed.

Future expansions

The site planning and building design of each project should consider provisions for future expansion to provide accommodation for additional enrolments/programs (including learning communities, gymnasium, specialist learning spaces) and support spaces (including on-site car parking, administration, learning resource centre, wellbeing) in accordance with departmental policy. These considerations must inform:

- location of the buildings and outdoor spaces on the site
- relationship between functional zones and circulation through facilities
- design of outdoor spaces and spaces between new and existing buildings
- pathways of underground services (water, sewer, stormwater, power, ICT)
- possible future site access points.

Future expansion must not detract from the design and functionality of the facility or the external urban interface and appearance.

Designs must incorporate master planning for up to 30% growth in enrolments (pending land availability) with consideration to include services that cannot be easily augmented into the initial build.

For established sites, consideration should be given to any recent architectural planning that may have been undertaken, this may include a Learning Environment Opportunity Study (LEOS).

Site analysis

All projects which involve the construction of new facilities or redevelopments must undertake a site analysis to determine the feasibility of the project and identify any major cost considerations including:

- preservation of Aboriginal heritage and native title, European heritage sites of local and state heritage significance, and heritage building - all planning, consultation, design and works must comply with the Aboriginal Heritage Act 1998, Heritage Places Act 1993 and The Burra Charter
- disability access considering universal design and the learning and participation needs of all
- infrastructure services – water supply (including close proximity to recycled water schemes for irrigation purposes), power supply, sewerage, telecommunications (mobile phone/cellular towers must not be installed on education and care sites), stormwater, security and stormwater treatment
- environmental elements
    - bushfire protection areas and relevant building requirements
    - current climate conditions and adaptation to climate change
    - native flora and fauna including significant and regulated trees
    - existing Conservation Management Plans
    - short-term and long-term impacts on air quality
    - water sensitive urban design (WSUD) and biodiversity sensitive urban design (BSUD)
    - watercourses within or adjacent the project area
    - 100 year flood levels, minimum building floor levels and flood abatement measures
    - soil
        - type and the presence of rock, deep uncontrolled fill or other problematic conditions in the soil which may affect building footings and structure
        - contamination which may require management, containment and clean-up as per the *Environment Protection Act 1993*
        - Phytophthora – a plant damaging pathogen impacting a wide range of plants, including native flora - Proteaceae (Proteas) and Xanthorrhoea sp. (grass trees)
        - acid sulphate soils
        - site assessment for contamination including a site history analysis and testing where earthworks volume >100t and/or site history assessment identifies a contamination risk
- noise and vibration impacts to any historical structures, existing buildings, neighbouring properties and any nearby operations that would be adversely affected by noise and vibration
- decommissioning and removal of existing underground oil storage tanks
- site hazardous materials register
- site access restrictions and impact to traffic management both currently and with expansions.

Cultural and heritage considerations

Planning and design must preserve South Australia's cultural heritage for the benefit of the community and future generations:

- preserve unique and significant natural and cultural features
- respect the significance of a place through consideration of its siting, bulk, form, scale, character, colour, texture and material

Advice from a suitably qualified heritage advisor may be required where a heritage place is affected by works. Advice and registers are available through the Department for Environment and Water, Heritage SA, and relevant local councils on matters relating to conservation approach and development approvals. Refer DIT Guidenote G103 – Development Proposals for Heritage Assets. The following must be checked to

confirm if any of the existing facilities are heritage listed:

- Register of Aboriginal Sites and Objects
- Australian Heritage Places Inventory
- SA Heritage Register
- Local Heritage Register

The Aboriginal Voice framework embeds guidance from Aboriginal staff at all stages of development and design aligning with the department's Aboriginal Education Strategy and Reconciliation Action Plan.

Partnering with the local Aboriginal Cultural Authority and community will ensure knowledge, language and perspectives are embedded into the design of education and care facilities providing opportunities to:

- explore and develop an awareness of kinship networks and acknowledge connections to Country (refer to the AIATSIS Map of Indigenous Australia)
- strengthen identity by recognising and sharing Aboriginal histories, cultures, and languages through opportunities to introduce cultural or creative elements to tell individual stories of place and respond to local conditions
- promote belonging, wellbeing and reconciliation by:
    - supporting the development of collaborative arrangements with health and community engagement programs
    - fostering positive learning environments that support the 8 Ways of Aboriginal learning
    - establishing partnerships with Aboriginal families and community to develop an understanding of child development and learning.

A design narrative should explore (figure 3):

Figure 3: Aboriginal design narrative for education and care facilities.

More information on community engagement co-design with Aboriginal and Torres Strait Islander peoples is available on the Department of the Premier and Cabinet website.

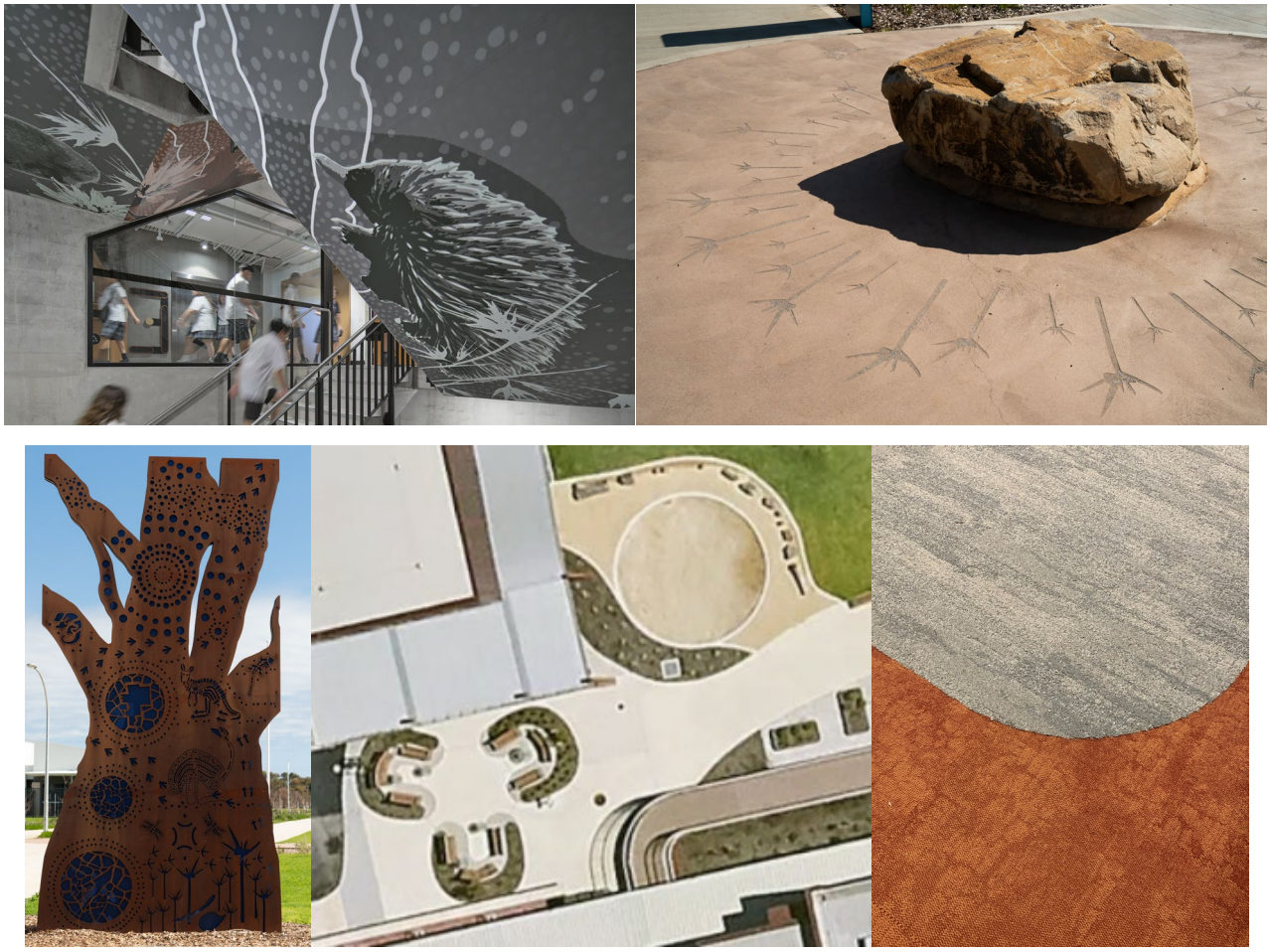

Figure 4: Examples of design narratives used within stairwells, landscape elements and flooring colours.

Community use

Facilities intended for broader community use—such as gymnasiums, libraries, community and cultural spaces, wellbeing spaces, meeting rooms, sports fields and hardcourts—should be located nearer the site perimeter to facilitate safe, easy after-hours entry.

Thoughtful wayfinding, safe access routes, and secure yet accessible layouts are essential to instill confidence in all users including community groups, sporting clubs, and training providers.

Transparent, visible, and accessible design supports these two-way relationships and makes the facility a focus for collaboration and community pride.

Sustainable facilities

Durable, safe and fit-for-purpose

There must be an emphasis on quality, robustness and sustainability through building detailing, material selection and installation that are:

- designed to achieve appropriate levels of service, buildability, and durability – they need to be fit-for-purpose[2]
- selected on a whole-of-life basis and aimed at low on-going maintenance and cleaning cost
- in accordance with all relevant building codes and standards

[2] Means a facility can enable the education and care functions in a quality, safe, efficient and effective manner, and does not impair their use as education and care facilities.

- free from premature failure, cracking, decay, rust, fractures, splits, holes, delaminating, spalling, mould growth and hazardous materials
- designed to minimise the potential for nesting or roosting of birds, animals, insects and other pests
- where exposure to sunlight and UV rays presents a risk of degradation, there must be protection in the form of shelters, canopies, covers, or conduits as appropriate
- uniform and consistent in their respective colours and textures
- able to operate freely and smoothly with continued and anticipated use for which it is intended
- free of trip hazards, climbing opportunities and any other hazards such as sharp edges, corners or protrusions on surfaces, joinery, fixtures and fittings
- designed to consider the make and model of any existing fixtures and fittings to minimise maintenance costs and the duplication of parts and servicing contracts
- selected to consider availability and timely replacement in the event of failure and/or end of life.

Design and selection of materials, fixtures and building detailing must also consider the needs of children and students to ensure:

- no finger, head or limb entrapment hazards in material and fixture detailing
- no hazards at eye and head height
- any risk of falls is mitigated through appropriate handrails, guardrails, barriers and impact absorbing materials
- ease of use of fixtures and fittings
- mounting heights are appropriate for access or to prevent access when required
- secure locks, latches and catches are mounted or concealed to prevent reach and operation of children in early childhood education and care
- building services plant and equipment are located external in areas inaccessible to children and young people or, where permitted in these standards, within secure, non-climbable and lockable enclosures.

Climate responsive and passive design

Facility design must support resilience to a changing climate, mitigating catastrophic weather-related risks, and address day-to-day challenges of rising temperatures and urban heat effects which can increase the risk of heat-related illness in vulnerable populations, increase wear on built assets, stress vegetation and biodiversity, and drive increased electricity consumption.

Buildings should be designed according to the climate zone where it will be located (refer to the NCC Climate Map for more information) prioritising:

- natural elements – light, views and ventilation to give a sense of connection between internal and external spaces and support indoor air quality and circulation
- site configuration to support pedestrian movement and encourages healthy habits, active travel, incidental activity, and opportunities to experience natural elements of the site
    - a minimum 50% of the total project site area for new schools must comprise of landscaping elements, including vegetation, hard-scaping elements shaded by overhanging vegetation, water bodies and/or water courses
- covered areas for weather protection from sun, rain and wind
- building orientation, layout and materials integrate passive design features that will support user comfort and efficient operation including:
    - aligning buildings with their longer axis set out in an east/west direction, maximising north facing facades and minimising east and west facing facades to take advantage of thermal

gains during winter, minimise thermal gains during summer and reduce the reliance on artificial lighting
    - minimising areas of east and west facing glass and providing external shading to exclude direct sun light from spaces during warmer months and glare at all times
    - maximising thermal insulation to improve internal comfort conditions and help to manage temperature fluctuations
    - maximising natural air flow from predominant wind direction and reducing reliance on mechanical systems through building orientation, window and door openings.

Use guidance from key strategies and resources to support the creation of cooler, greener, wilder, climate-resilient sites:

- Urban Greening Strategy for Metropolitan Adelaide (released March 2025, Priority 2: Government leading by example)
- Water sensitive urban design – Creating more liveable and water sensitive cities in South Australia
- Biodiversity sensitive urban design – Blueprint for a nature-positive Adelaide
- Creating Greener Places for Healthy and Sustainable Communities – Ideas for quality green public space in South Australia

Low emissions and efficient operations

Low emissions building design includes:

- considering all-electric buildings to utilise South Australia's low emissions electricity supply and support the Government's sustainable buildings requirements
- optimising the building envelope performance for energy efficiency and heat reduction strategies:
    - ensure airtightness and use high R-value insulation in roofs and walls
    - eliminate thermal bridges - use external sun-shading and double-glazed windows
    - use light-coloured roofs and cladding to reduce heat transfer and cooling needs
    - increase shade with vegetation and minimise impermeable surfaces around the building
- efficient plant and equipment:
    - integrate high-efficiency mechanical and electrical systems with passive design to optimise performance and reduce operating costs
    - select and program equipment and fittings for maximum energy efficiency based on site use
    - install building management systems with automated demand management and energy use displays for monitoring and education
- integration of renewable energy systems (solar PV and batteries):
    - design roof orientation and pitch for optimal solar PV installation and allow space protected from weather for future battery systems
    - size solar PV to reduce peak electricity demand by 30% (minimum 20%) compared to a reference building
    - where solar PV can generate ≥50% of annual consumption, consider adding battery storage to reduce grid export and further lower peak demand
- include adaptive water use:
    - plan landscapes to enhance facilities, reduce heat island effects and support optimal building performance by incorporating permeable surfaces, high density plantings and water sensitive urban design (WSUD)
    - use alternative water supplies for irrigation to support vegetation management, reduce urban heat effects, and reduce drinking water use (with ability to use mains water as backup when required)

    - install infrastructure to harvest rainwater for irrigation including turf and non-edible gardens
    - connect to recycled water schemes where available for irrigation (refer to the department's recycled water connections procedure)
    - incorporate permeable surfaces to allow natural infiltration of water into the soil and reduce radiant heat from paved surfaces.
- manage embodied carbon[3]:
    - consider a retrofit of existing buildings where viable, instead of demolition and replacement
    - prioritise low-carbon and post-consumer materials in construction and fit-out
    - conduct lifecycle assessments of key materials (such as concrete, steel, cladding, linings, flooring and joinery products, structural timber) to identify low carbon material options
    - minimise landfill waste from construction and demolition
    - use recyclable materials where possible.

Circular economy and waste management

- providing waste management infrastructure to support multi-stream waste separation and department waste management contract requirements
- designing waste service provision areas for easy staff and cleaner access
- prioritising construction and fit-out materials with South Australian content
- ensuring materials removed from the site are sorted and directed to appropriate waste streams.

Disaster resilience in facilities

Facility designs must support resilience to a climate that is changing to ensure the health and wellbeing of all learners, staff, families and communities. The department's emergency management policy provides details of the requirements in relation to disaster resilience in assets and facilities and outlines the requirements for new and existing builds in designated bushfire prone areas.

Bushfire

To mitigate the risk of bushfires, all new buildings, structures and refurbishment projects commissioned, funded or approved by the department must comply with:

- relevant sections of the NCC
- current Australian Standards
    - AS 3959 – Construction of buildings in bushfire-prone areas
- Ministerial Building Standards

Construction (new buildings and structures) in designated bushfire prone areas must comply with the provisions of AS 3959, in respect of the bushfire attack level (BAL) attributed to the site, or to a minimum standard of BAL 12.5 (whichever is the higher).

Bushfire prone areas are identified in the bushfire hazard overlays to the Planning and Design Code. Education and care facilities located in Hazard (bushfire – outback), Hazards (bushfire – regional) and Hazards (bushfire – urban interface) areas must also be protected from bushfire (including ember attack).

- The department assigns bushfire risk categories to sites (R1: extreme/high, R2: high, R3: medium/low, NR: negligible) based on their Bushfire Attack Level (BAL) which determine the required bushfire mitigation and asset protection measures

[3] Embodied carbon is the greenhouse gas emissions released during the lifecycle of materials, including extraction, manufacturing, transport, construction, and disposal.

- sites in designated bushfire prone areas with BAL 19 or higher must have a designated bushfire shelter
    - a designated bushfire shelter may be located at that site or any other suitable off-site location
        - where the designated bushfire shelter is a building or part of a building, it must be constructed or adapted to meet the provisions of AS 3959-2009 for the applicable BAL
        - an off-site bushfire shelter must not be situated more than 800 metres from the site or service.
- A designated bushfire shelter is not required for sites and services with a BAL of 12.5 or lower.
- landscaping design and vegetation selection must reduce potential fire danger risks by:
    - ensuring spacing prevents a continuous canopy line or flammable undergrowth to buildings
    - considering mature tree canopy size to eliminate overhanging buildings
    - using deciduous trees near buildings that do not drop litter during summer
    - avoiding conifers, rough barked Eucalyptus, or species that shed bark which may create fire hazards.

Further information on bushfire mitigation and asset protection measures can be discussed with the Security and Emergency Management team.

Earthquakes

To mitigate the risk of earthquakes, all new buildings, structures and refurbishment projects commissioned, funded or approved by the department must comply with:

- relevant sections of the NCC
- current Australian Standards
    - AS/NZS 1170.0 and AS 1170.4 Structural Design Actions
- Ministerial Building Standards 'Upgrading Health and Safety of Existing Buildings'
- Department for Infrastructure and Transport (DIT) Guidenotes, Standard Drawings and Policy
    - Seismic Restraint of Engineering Services (G172)
    - Examples of Seismic Bracing for Services (DG51)
    - Examples of Seismic Bracing for Services (DG52)
    - Seismic Bracing for Suspended Ceiling (DG53)
    - Ceiling Equipment Typical Mounting Examples (DG57)
    - Strengthening Existing Buildings For Earthquakes (PO45).

Seismic assessment and, if necessary, earthquake mitigation works are required to be included in any significant alteration proposed to an existing government building/asset. Additional support and information can be provided by DIT Manager Professional and Advisory Services.

Emergency situations

In emergency situations site circulation must plan for the safe and efficient evacuation of occupants from all buildings, via circulation paths, to a dedicated emergency assembly point. Disability access must be considered in determining all emergency evacuation planning. If stairs are provided, to optimise the efficient use of floor area, they should have a dual function supporting day-to-day circulation as well as emergency circulation and egress.

All emergency exits must be compliant with AS 2293.1 and NCC E4D8. Emergency exit signage must comply with the requirements for fire safety certification.

All sites and services must display evacuation diagrams in locations that are easily visible by all users of the

facility. The site's emergency management team is responsible for developing evacuation procedures, and ensuring evacuation diagrams are correctly placed in visible, high-traffic areas. They must be updated every 5 years or at any other time changes are made to building layout, evacuation routes or emergency assembly points.

Floods and storm surges

An assessment of the project flood risk must consider factors such as sea level rises where this may impact on the design life of the project. After considering these factors, the designer will need to:

- mitigate the impact of floods and storm surges locating buildings outside inundation or overland flow zones
- raise building platforms to account for a 1% Annual Exceedance Probability (AEP) event
- design overland stormwater flow paths to prevent water entry into buildings and incorporate WSUD
- ensure pedestrian and vehicle access and egress remains useable after a 5% AEP event
- use permeable surfaces, vegetation and WSUD to improve the soil water infiltration and retention
- protect building foundations with impermeable walkways by directing water to adjacent permeable, vegetated or WSUD areas
- undertaken specialist hydraulic and flood modelling where the site is within an identified floodplain.

Inclusive participation

By embedding Universal Design principles and practical measures, education and care facilities will foster an environment where everyone can participate meaningfully in work, learning and social activities, supporting a culture of inclusion, collaborative learning, and belonging.

Key principles include:

- Equitable use: ensure privacy, security, access, and safety are provided equally for all users, without segregation or stigmatisation.
- Flexibility in use: design spaces and elements to accommodate a wide range of preferences and abilities, supporting diverse ways of learning and engaging.
- Simple and intuitive use: create spaces and navigation that are easily understood, regardless of experience, cognitive ability, language, or skill level.
- Perceptible information: communicate about the use of space effectively, catering for diverse sensory abilities and various environmental conditions.
- Tolerance for error: minimise hazards and the risk of accidental or intended misuse through thoughtful planning and design.
- Low physical effort: ensure spaces can be used efficiently and with minimal fatigue by all, including users with limited mobility.
- Size and space for approach and use: provide adequate approach, reach, and manoeuvring space for all users, regardless of posture, mobility aid, or age.

Inclusive design

Considerations for accessibility and participation include:

- Acoustics: carefully control noise levels to reduce echo, sound transfer and sudden sounds, ensure good auditory conditions for learning.
- Access and joinery: ensure ramps, entries, pathways, doors, lifts, work benches, and furniture allow barrier-free movement. Provide turning circles for wheelchairs (diameter: 1500mm for children, 2200mm for adults) in all relevant areas, including outdoor play and learning spaces.

- Amenities: ensure all toilets, change facilities, parents' rooms, drinking fountains are accessible, safe, and inclusive for people of all ages, genders, abilities, and cultural backgrounds, ensuring dignified, equitable participation and privacy for all users.
- ICT and AV solutions: include hearing augmentation and accessible communication technologies, considering appropriate sizes for the intended activities and spaces.
- Wayfinding and signage: use clear, intuitive signage and visual cues to support users to navigate with confidence and reduced anxiety.
- Sensory and tactile learning: ensure all learners can easily access and interact with tactile elements like water courses, garden beds, sensory gardens, and edible gardens. Minimise adverse sensory input avoiding highly patterned or glossy flooring.
- See also Responsive Learning Environments.

Designs must meet all current requirements described in the Disability Discrimination Act 1992, Disability (Access to Premises – Buildings) Standards 2010, Disability Standards for Education 2005, and relevant Australian Standards and sections of the National Construction Code (NCC). Early engagement with a qualified disability access consultant is essential. Refer also to the DIT Guidenote G119 Disability Access Checklist.

Some existing facilities may not be fully compliant with current standards, any new project or alteration is required to address current and future child and student needs. Accessibility solutions must be reviewed as needs change, ensuring education and care environments remain inclusive and adaptive over time.

For existing sites, minimum facility upgrades for equitable access include:

- pedestrian access: ensure facility access from primary student entrances alongside their peers (this may differ from the main entrance).
- accessible parking: provide designated disability access parking, as outlined in relevant standards.
- accessible education and care services: learning and care programs must be available in physically accessible spaces.
- accessible outdoor learning environments: outdoor spaces should incorporate accessibility features so all children and students can engage with outdoor education and play. Not every area must be fully accessible, but there must be reasonable opportunities for inclusive participation.
- student movement and consultation: changes to fencing or movement that affect access must be discussed with affected students and caregivers, ensuring that the site remains both safe and equitable.

Inclusive outdoor learning and play

The design of outdoor learning and play spaces must ensure accessibility, along with optimising the learning opportunities and participation for all, including those with disability.

Inclusive Play Guidelines have been developed by the Department for Human Services. These guidelines are a tool for facilities, design professionals and others to assist in planning and developing play spaces that are inclusive of all (see Figure 5).

Figure 5: Design guidelines for creating Inclusive Play spaces.

When selecting items of play equipment, or play structures comprising multiple components, consider how play components can be incorporated to provide opportunities for all. When selecting single purpose play equipment items, unable to be modified for universal access, ensure there are opportunities throughout the play space for all abilities to play together.

Ensure outdoor spaces provide adequate space for manoeuvring wheelchairs, including space for educators. The turning circle diameter range is 1500mm for children and 2200mm for adults.

Designs must consider access to tactile elements of the learning area. All learners should be able to easily reach tactile learning areas such as water courses, garden beds, sensory gardens, horticultural areas and edible gardens.

Signage, wayfinding, circulation and parking

Consultation with the relevant authority (local/state) must be undertaken during master planning and detailed design to ensure the proposed designs are endorsed by the relevant authority and address:

- avoiding congestion at entrance and access points
- vehicle speed inside the facility
- external traffic volume passing the facility at any time
- the requirement of traffic lights and other monitoring systems
- visibility and site conditions
- median strips
- pick up/set down and parking bays
- special surface treatments
- street signs
- fences and landscape design.

Signage and wayfinding

Associated with the design of internal and external environments a complete signage plan must be developed that:

- provides clear directions, instructions or advice for all users helping them to engage with unfamiliar environments
- clearly identifies destinations, functions and key spaces (including amenities) with appropriate naming conventions
- reflects the cultural heritage of the site (including acknowledgement of country)
- is fully integrated into the design of the buildings and external environments
- is consistent, accurate, intact, legible of reasonable appearance and illuminated where appropriate
- uses iconography (universal symbols and core vocabulary from Augmentative and Alternative Communication systems) to maximise accessibility, inclusivity and assist pre-literate learners (including in amenities, see figure 6 below for examples).

Figure 6: examples of inclusive abilities and genders amenities signage.

The design of the built and natural environments should support the signage through pedestrian layout, use of colour, and material referencing. Key issues to be considered include:

- clearly defining points of entry into the building and circulation through the building
- defining functions (learning and play areas, sleep, toilets) using materials selections, colour coding, graphics
- using sight lines to show destinations
- using signs (text, graphics, colour coding) at decision points.

Circulation

Pedestrian routes on education and care sites must take priority over vehicular ones. There must be clear separation between vehicular traffic and pedestrian movement, and where routes intersect the priority for pedestrians must be emphasised. Footpaths must be designed with safe and direct access in mind.

The location and design of building and car park entry and exit points should consider:

- existing and future connections between the site and surroundings and patterns of movement of pedestrians, cyclists, people with a range of abilities and vehicles
- limiting congestion
- off-street access for vehicles for safe drop off and pick up of children at ECEC facilities
- safe and accessible drop off and pick up for students and families
- direct access to carparking for ECEC families, and for the safety of staff who work after hours
- avoiding conflict between pedestrian, cycle and vehicle paths
- safe drop off and pick up to disability access spaces and access taxis
- undercover access to building entrances from accessible parking spaces and the ability for any future covered drop-off area(s) for approved department programs
- safety and duty of care requirements for children, young people, parents and community members
- vehicular access to outdoor spaces (including fenced play spaces) for emergency vehicles, deliveries and maintenance
- safe after-hours access by approved community and third-party providers (OSHC, sporting clubs etc).

Other important issues that must be addressed in the planning of a site include:

- minimising pedestrian travel distances
- weather protection to pedestrian paths, at entrances and where possible between buildings
- functional and safe access for pedestrian and vehicular traffic
- provision of on-site parking for staff, visitors and short-term parking for drop off/pick-up in accordance with the department's current policy
- access for delivery, waste removal and service vehicles
- emergency access.

The neighbourhood context must be thoroughly considered, with the locations of circulation routes in the public realm clearly informing the placement of access points into education and care facilities. Active transport facilities such as pedestrian links, bicycle paths and pathways/links to public transport must be considered and integrated into the urban design and site master plan.

- For ECEC facilities the main pedestrian access must be prominent and easy to find, with the building located near to it and clearly visible from the road and easily accessible from the car-parking area. Planning and design of the building and main entry interface must ensure that children and parents do not have direct access from the building into the carpark and vehicular movement areas to

ensure child safety and supervision when entering and exiting the facility. Safe and easy access for prams and other mobility devices from street frontage and carpark areas must be incorporated.

- For school sites access points must be planned to consider building entrances, street design, the physical and emotional needs of children and young people with disability and their carer, the requirements of pedestrian and cyclists, proximity to pick-up and set-down zones (including bus zones), council planning requirements, community use of facilities and the movement of vehicles on the site.

Pedestrian access and egress

Pedestrian movement must be well planned, safe and legible in both internal and external areas.

Both buildings and hard and soft landscapes must be designed to enhance and integrate with the external pedestrian experience, as well as enhance and focus the views for internal pedestrians. The efficient and safe movement of people from the car park and boundary entrances to the building is essential in delivering a user-friendly, accessible and inclusive facility.

The design of pedestrian access and egress must:

- clearly define convenient points of access and egress and allow pedestrians to move from site entrances to buildings, and from places such as parking areas, using where possible footpaths that avoid crossing vehicle circulation routes
- ensure all paths around the building receive spill lighting from external security lighting, and access paths that will be used before sunrise and after sunset (including paths connecting car park areas and points of pedestrian access to doors used out of hours, including OSHC) are provided with safe levels of illumination along the length of the path
- ensure paths are free of obstructions such as plant, equipment, furniture, fittings, projecting window sashes and shading devices, or projections from external walls (the number of supporting columns to shelter structures over paths must be minimised)
- consider the careful management of changes in level, DDA compliant ramps and walkways are preferred to stairs (if stairs are provided, there must be an equitable ramp provided close to the stairs that leads to the same destination)
- if paths are diverted from the most obvious and practicable routes, fencing may be used to direct pedestrians and discourage alternative routes
- bicycle access points and paths must be kept separate from vehicle traffic, paths are to be easily accessible in highly visible, well-lit locations with good passive supervision, and must have logical access to bike parking/storage.

Vehicular access and parking

To ensure the safety of children and young people the separation of pedestrian and cyclist traffic from vehicular traffic is paramount. The design of vehicle access and parking must:

- ensure that children and parents do not have direct access from the building into the carpark
- provide adequate and compliant lighting, located to mitigate unnecessary light spill
- facilitate access for emergency vehicles (such as ambulances and fire trucks) to the front entry of the building and via vehicular access gates to outdoor learning and play areas and outdoor recreation area (ensure landscaping, including trees, do not obstruct these access points)
- consider the location of waste and recycling bins to facilitate safe access for collection vehicles that does not impact on general vehicle or pedestrian movement
- ensure that where on-site parking is provided, where possible all vehicles enter and exit the parking area in a one-way forward direction and not included dead-end aisles requiring vehicles to turn around

- consider the integration of electric vehicle charging points/infrastructure to assist in the transition to low carbon forms of transport
- include designated and signposted accessible parking spaces in accordance with AS/NZS 2890 Parking facilities – Off Street car parking
- provide parking spaces with dimensions in accordance with AS/NZS 2890 Parking facilities
- consider separation of parking from other on-site parking areas for co-located ECEC facilities, to mitigate traffic congestion at peak times and ensure parking close to the ECEC facility is prioritised for these families
- ensure access by taxis, buses and access cabs is available to appropriate parts of the site that minimises travel distances to buildings and exposure to the elements
- if required provide delivery drop off points for goods to be taken by hand truck to points of requirement
- ensure landscaping provides natural shade covering, that will not obstruct driver vision, to at least 40% of parking spaces to reduce heat island effects.

The location of the following facilities needs careful consideration to avoid vehicle/pedestrian conflict and keep internal roadways to a minimum:

- canteen
- learning resource centre/library
- design and food technology workshops
- administration/foyer (student wellbeing and general store)
- gymnasium
- grounds maintenance
- engineering plant and services (air conditioners, transformers)
- waste disposal area.

On-site parking

The following on-site parking spaces apply to new sites and may not apply to existing sites or redevelopments if site area restrictions exist. The department does not acquire additional land for carparking purposes, or provide or fund student parking, even in instances where the local council prohibits parking in the surrounding streets.

Provide on-site carparking accommodating:

- ECEC facilities
    - 1 parking space for each FTE (full time equivalent) staff member
    - 0.25 spaces per child (drop off / pick up bays)
    - minimum of 1 accessible parking space(s) with consideration of undercover access to the building entrance in line with AS 2890.6
- School facilities
    - 1 parking space for each FTE (full time equivalent) staff member
    - an additional 10% of the total for visitor parking (or 5 spaces, whichever is greater)
    - accessible parking space(s) with consideration of undercover access to the building entrance in line with AS 2890.6
        - primary schools - a minimum of 1 space (with preference for 2 spaces with common loading space between)
        - high schools a minimum of 2 spaces.

Consider options for shared parking with other providers and negotiating street parking arrangements with the relevant government authority.

Bus parking

Where practicable, a public/chartered bus zone is to be provided at a convenient location on a street abutting the school. Where a bus zone cannot be provided external to the school site, a bus access road with a loading point may be provided in consultation with the department.

A bus zone is required for area, rural and special schools, where buses are used daily.

Where briefed, an undercover drop-off and pick-up area is required for buses and taxis. A secure compound for bus parking and storage may also be required. Each situation must be studied and provisions made as a result of the sites requirements. It is important that access roads and bicycle and pedestrian paths do not conflict with the bus zone. Suitable access roads must be provided and buses are not permitted to reverse on school grounds.

Bike Storage

Parking facilities for bicycles and scooters must be provided to promote and encourage the use of active transport by children, staff and visitors.

Bike parking facilities must be paved in an area where some level of passive surveillance is available and as close as practicable to the adjacent bike routes and road frontage to allow direct access for users and avoid the need for shared pathways within the site.

Refer to 'Bicycle/scooter parking' within the Generic Functional Briefs (Part 3a ECECs and Part 3b Schools) and Part 4: Technical Specifications for information on bicycle parking design and requirements.

Responsive learning environments

The design of learning environments, through the physical spaces, building layouts, and indoor and outdoor settings, generates a sense of journey for educators, children, young people, and visitors. As they move through these settings of various scale and purpose, shaped by an overriding intention to build community, they are encouraged to connect with others, engage actively, and develop curiosity about the activities happening around them. These learning environments can be modified to form and shape the learning, research, projects and experiences of children, young people and adults.

Regulation 115 recognises that the physical design of education and care service premises (ECECs and OSHC) plays a critical role in protecting children's safety, wellbeing and rights. Unimpeded supervision[4] is essential, as obscured areas[5] and opportunities for isolated interaction[6] – caused by poor visibility and obstructed sightlines can increase the risk of harm by limiting an educator's ability to supervise and respond promptly when needed.

Flexible and agile

- spaces should be designed with a variety of furniture options that encourage learner choice and support diverse teaching and learning modes, enhancing flexibility without the need to move heavy items
- resource storage should be thoughtfully located, accessibility and shared across different spaces to maximise usability without compromising the area's flexibility

[4] Unimpeded supervision - supervision that is not hindered by the design or layout of the premises. Unimpeded supervision is achieved where physical design supports clear sightlines, educator mobility, and continuous supervision across indoor and outdoor areas without reliance on fixed positions or supporting measures.
[5] Obscured area - any area where an educator does not have a clear, direct line of sight to children because of the physical design, layout or configuration of the premises.
[6] Isolated interaction - an interaction between an adult and a child that occurs out of sight or hearing of other adults, including in areas that are low-traffic, enclosed or not readily observable, and which may increase child safety risk.

- spaces intended for reconfiguration must allow users to make adjustments quickly and easily, empowering educators and learners to adapt the environment as needed
- where appropriate, adjoining spaces should feature agile, fully or partially openable connections, or alternatives such as windows for visual connectivity, to support collaboration and flexible use
- circulation flow should facilitate quick and seamless movement between areas to support various activities, recognising that agility is not only about physical reconfiguration but also about ease of navigation
- physical spaces should be flexible enough to accommodate a wide range of behaviours, learning preferences, and varying needs to support every learner's ability to thrive
- seamless movement between indoor and outdoor environments should be enabled, with thoughtful design at the interface of buildings and landscape to expand learning opportunities and respond to learner needs.

Adaptable

- structural design, built form, detailing and material selection, and service locations should enable sustainable, future modifications to learning environments including:
    - minimising internal load bearing internal walls to support flexible reconfiguration of spaces as needs evolve
    - minimising the location of services within internal walls to facilitate modifications and ease of access
    - ensuring technology infrastructure can be easily updated or expanded as new developments arise, with particular attention to easy and safe access to ceiling mounted services
    - incorporating design features that allow demountability, deconstruction and reconstruction supporting ongoing adaptation and renewal
    - allowing for the addition or removal of accommodation areas and building elements, enabling the environment to grow and change over time
    - considering not only the built form but also the adaptability of outdoor learning environments and their physical features.
- the design should empower educators, children and young people to adapt and personalise their spaces, encouraging agency, ownership, and a strong sense of belonging.

Connections

- contemporary learning environments should feature a variety of flexible spaces, that are both physically and visually connected, actively encouraging engagement and collaboration among learners
- visual transparency is essential:
    - windows and internal glazing between spaces fosters a sense of openness and connectedness, making learning visible and celebrated. This should be balanced with the need for usable wall space for display, writeable surfaces and accessible low-level storage
    - the placement of internal windows should enhance supervision, support duty of care, and allow natural daylight to penetrate deep into buildings, improving wellbeing and visibility
- the functional relationship between spaces must support seamless movement, enabling learners and educators to transition easily for diverse activities and with minimal disruption to others
- well-connected spaces enable a 'just in time' approach, empowering children and students - particularly in early years - to access resources and environments immediately as learning needs arise
- the relationship between external and internal environments should be carefully designed to broaden teaching and learning opportunities. Outdoor spaces may include courtyards used as outdoor classrooms, tiered amphitheatres, landscaped areas, sculpture courts, nature trails and

physical activity facilities. The building form and detailing should create gentle transitions and blur boundaries between indoors and outdoors through features such as verandas, overhangs, opening doors (folding, sliding), and level flooring.

There must be a strong cohesion between indoor and outdoor spaces to support:

- effective delivery of contemporary pedagogy and cross-curriculum priorities
- ease of movement for learners (consider door type and positioning for direct access)
- visual connection for supervision and duty of care (window positions maximise views and line of sight supervision)
- self and co-regulation of learners
- ease of access to toilets.

Interactions

- careful selection of colours to acknowledge their psychological influences on learners of different ages, using colour to support engagement, focus, regulation, and wellbeing
- provide variations in lighting levels and opportunities for user control to accommodate diverse activities and preferences, enabling both high-focus and relaxed settings, while preventing glare and facilitating comfort
- exposing elements of the building's structural features and services can provide real-life learning opportunities, sparking curiosity and engagement
- selecting materials and finishes that assist in making learners feel comfortable and safe, while ensuring durability, ease of cleaning and ongoing practicality
- creating opportunities for personalisation of individual and group workspaces, fostering ownership, self-expression, and pride in their environment
- designing spaces that actively support the development of positive, collaborative relationships between learners, and between learners and educators, including both formal and informal interaction spaces
- provide opportunities for learners to self-regulate by incorporating retreat spaces into walls or joinery, enabling students to step back, reflect, or take sensory breaks as needed
- designing staff work areas that promote collaborative practice, supporting professional interactions, teamwork, and shared planning
- incorporating systems for displaying learner's work – such as pinning, hanging and specialised lighting – throughout all areas to celebrate achievement, encourage feedback, and add vibrancy, with the flexibility to regularly change displays
- using the buildings and grounds as real-world demonstrations of environmental best practice, providing ongoing curriculum linked learning opportunities in sustainability and stewardship
- ensuring the design cultivates a sense of ownership for leaners, educators and the broader community, encouraging active participation in the operation and continual improvement of the facilities.

Technology

- is an integral part of daily life and should be seamlessly integrate into learning environments, with the infrastructure and design allowing for ongoing change and upgrades throughout the life of the building
- the selection and deployment of technology must be guided by the desired learning outcomes, ensuring pedagogy drives technological choices – rather than technology dictating learning opportunities

- should be accessible wherever and whenever learning occurs, supporting a model where ICT is dispersed and readily available, rather than confined to specialist spaces
    - for visual and collaborative learners, the design of spaces and equipment must facilitate social learning, requiring careful thought around the selection, placement, and usability of ICT, as well as room layouts and furniture
    - consideration must be given to the power requirements, cable management, appropriate lighting, glare mitigation, dust control, temperature control, and both the storage and security of hardware and software, ensuring safe and practical use for all learners and educators.

Acoustics

Good acoustic design is essential for the engagement, health and wellbeing of staff, children and young people. Spaces should provide an appropriate level of acoustic comfort relative to their function and use.

Contemporary pedagogy is supported by flexible learning environments that use operable systems such as moveable walls and sliding doors to create different arrangements and connections between spaces. These open plan spaces require a high level of acoustic absorption to remain functional for multiple users, enhance speech intelligibility and support effective learning.

The following acoustic priorities are to be addressed in the design:

- manage acoustic separation to ensure sound transfer between spaces is appropriate for the intended use
- control room reverberation[7] to assist with speech intelligibility and minimise the build-up of noise or echo – especially important in education and care settings, where a short reverberation time is required
    - Reverberation time depends on surface finishes and room size. Smaller spaces with noise-absorbing materials (such as acoustic ceilings and carpet) have shorter reverberation times, while larger spaces with noise-reflective surfaces (such as plasterboard, vinyl and glass) have longer reverberation times.
    - Coordination between the acoustic engineer and architect is essential to deliver the right level of noise absorption, often requiring dedicated treatment of both ceilings and sections of wall surfaces.
- control ambient noise levels generated by mechanical equipment, external sources such as transportation, adjacent properties, rain, outdoor learning areas, and noise from air conditioning systems.

Refer to Part 4: Technical Specifications for additional information.

Lighting and ventilation

Access to natural views, lighting and ventilation can improve the quality of experiences and support wellbeing for learning.

Internal environments must be designed to maximise natural daylight and views, while ensuring effective sun and glare control. Window and glazing placement should balance the benefits of full-height glazing with the need for wall space for storage, displays and communication resources, and also to support privacy and safety during invacuations.

Daylight should be adjustable to suit different uses, and every room occupied during the day must have access to natural light. Views to the outside should be thoughtfully managed to reduce potential distractions, particularly for some children and young people. All learning, wellbeing, sensory, self-regulation

[7] Reverberation time is a measurable quantity and represents the time taken for sound to decay within a space. The longer the reverberation time, the greater the "build up" of sound will be within the space.

and therapy spaces must receive natural daylight, with the ability to control and darken spaces as required.

For ECEC facilities this includes compliance with National Regulations for lighting and natural ventilation.

Designs should take advantage of natural ventilation and promote visual connection to outdoor spaces, ensuring these elements support cognitive wayfinding, main entry areas, and internal gathering zones. Providing access to outdoor air and views has demonstrated benefits for alertness, engagement, and the health and wellbeing of staff, children and young people.

Artificial lighting should enhance the overall ambience, avoid an institutional feel, and provide security. A balance of direct and indirect lighting will minimise glare, highlight key functions, and allow for prominent display of learner work. Skylights or solar tubes can supplement natural daylight where window access is limited to reduce the need for artificial lighting.

Pathways, steps, ramps and car parks must be well-lit for safe movement, with security lighting focused on building perimeters and all courtyards and discreet areas adequately illuminated. Lighting should be designed to minimise disturbance to neighbours and the night sky, in line with AS 4282 - 'Control of the Obtrusive Effects of Outdoor Lighting'.

Fixtures, Fittings and Equipment

Must consider the following to best support all users and learning experiences:

- ensure comfort and ergonomic design, with appropriate support and suitability for a diversity of ages and tasks
- provides a variety of formal and informal seating options, suited to different settings and purposes
- include varied designs and colours to support visual interest and reflect the unique character of each learning space
- offer multiple heights and 'access for all' to ensure inclusivity, particularly for those using wheelchairs or with other mobility needs
- enable flexibility of use, with modular or movable items that can be reorganised, stacked or adjusted for different arrangements and activities
- support the definition of space and function, helping to create distinct areas for different learning modes or groupings
- ensure the operational and static noise and movement of equipment and appliances are sympathetic to those with sensory processing disorders
- be robust and durable, capable of withstanding deliberate use, accidental damage, and everyday wear and tear, ensuring longevity and safety.

Colours, textures and surfaces

Colours and textures used throughout indoor and outdoor learning and care environments should support children and young people to feel safe, relaxed and calm – creating supportive settings for wellbeing and learning.

Thoughtful selection of surface treatments, colours and textures enhances and defines spaces, supports their intended function, and assists with wayfinding by providing visual clues about how spaces are to be used. Design should incorporate contemporary colour and sensory theory, with the following considerations:

- use a predominantly neutral and natural palette. Add small accents of colour through items such as upholstery and loose furniture, and avoid cold whites and strong primary colours, especially yellow
- incorporate natural materials and hues inspired by nature such as pale blue, sage green, salmon, sand and timber finishes, to create calming environments, supporting wellbeing through connectivity to nature and biophilic design
- select material palettes that support the display of children's and young people's work

- choose colours that create positive emotional and physiological connections
- use materials and colour changes to aid wayfinding and differentiate spaces and functions. Ensure clear distinction between floor and walls to assist those with depth perception issues, and avoid extending the same colour or material from floor to wall. Be aware that contrasts (such as between vinyl and carpet) might be seen as changes in floor level.
- vary ceiling heights to give visual clues for different zones with lower ceilings for quiet spaces and high ceilings for active learning spaces
- choose durable and appropriate flooring, favouring medium strength colours with patterns (fleck or graphic) to conceal dirt and wear. Avoid highly patterned, high contrast, plain light or dark flooring, and glossy surfaces, as these can be visually distracting and show marks more easily.

Storage

Accessible, well designed and efficient storage must be provided throughout all internal and external spaces. Resources should be readily available when needed and securely stored away when not in use. Storage areas accessible to children and students should promote independence, allowing for self-selection and easy access to toys, learning materials, activities and personal belongings.

Outdoor learning environments require storage both within and nearby, supporting the movement of resources and providing secure space for moveable equipment, such as sheds or external cupboards built into the facility. Storage solutions may include dedicated storerooms, as well as fixed or mobile joinery that can help define learning and play areas.

A variety of storage options must also be available to support children and young people with additional needs. Some may require access to their belongings, while others may be comfortable with open storage or require extra security for their possessions. Items such as nappies or continence supplies, medications, food, car seats, or mobility aids should be stored in appropriate, separate locations close to where they are used.

Storage must be provided for spaces detailed in the Generic Functional Briefs (Part 3a ECECs and Part 3b Schools).

Outdoor learning environments

"Outdoor learning environments need to be where inspiration and creativity can take root, where curiosity and spontaneity can be realised, and where risk and failures can be experienced."[8]

Outdoor Learning Environments (OLEs) include but are not limited to nature play spaces, outdoor classrooms and fixed play equipment areas intended for use by children, young people and the community.

A natural environment that provides challenge and exploration contributes to overall physical health, as well as emotional and cultural wellbeing.

Learning and wellbeing outcomes

OLEs should be designed to promote:

- connection and respect for the environment, fostering environmental stewardship and inspiring learners to respect nature
- holistic development, supporting physical health, emotional and cultural wellbeing, and overall learner agency
- risk-taking and confidence, providing opportunities to develop risk-taking skills, improve confidence, and promote safe, independent exploration
- curricular extension, allowing for continuation and extension of curriculum learning, including Aboriginal ways of learning and sustainability practices

[8] Nature Play SA https://natureplaysa.org.au/wp-content/uploads/2025/01/Why-Sheet-Why-Nature-Play-.pdf

- skill refinement, facilitating the development of:
    - motor skills: walking, running, jumping, climbing, hopping, skipping, sliding and tri-cycling
    - manipulative skills: throwing, catching, kicking, striking and bouncing
    - stability skills: bending, stretching, swinging, twisting and balancing
    - language skills: role play, active listening, negotiation, conflict resolution, respect.
- opportunities to:
    - develop skills in negotiating the environment (including taking acceptable risks)
    - learn how to use equipment safely and for its designed purpose
    - develop co-ordination and orientation skills
    - learn the consequences (positive and negative) of risk taking
    - move their bodies and stimulate the vestibular system for self-regulation (swing, spin, rock)
    - exert energy and 'blow off steam'
    - rest and recover in quiet spaces in nature
    - discover through exploration of spaces.

The design of outdoor learning environments must ensure:

- user and supervision considerations:
    - have a clear brief on what the purpose of the learning area or play space, the likely ages and abilities of users, the level of supervision required and potential number of users at any given time
    - ensure children and young people can always be supervised, both actively and passively, and removing access to areas behind structures such as storage sheds, cubby houses and water tanks or areas of known risk such as carparks, waterways or main roads
- balance of risk and safety:
    - provide balanced environments which optimise learning and risk-taking skills and gross motor skills that are reasonable, appropriately identified, controlled or managed including spinning, twisting, bouncing and rolling
    - select surface, equipment and material colours to avoid heat retention and injury to the user in line with ISO Standard 13732-1:2006 Ergonomics of the thermal environment
    - provide adequate built and natural shade to suit the types of activities or play
    - eliminate environmental hazards such as sharp edges, poisonous plants or plants with spikes/thorns/sharp blades, pooling of water through well designed drainage
    - design for hazard prevention; consider trip hazards, fire risk, health hazards, falling limbs and provide adequately sized impact absorbing areas for gross motor activities, and for play equipment and nature play climbing features (including trees) in accordance with Australian Standards
    - appropriate heights of outdoor elements to maximise their usefulness without restricting flexibility or creating hazardous or security risks
- inclusive and flexible environments:
    - ensure where play equipment is provided there is access for more than one user to participate at any one time such as swings
    - provide opportunities for learner agency through:
        - ambiguity of spaces that don't have a clear 'way' to interact with
        - furniture that can be adapted, moved, changed, or that moves, pivots, swivels
        - items that have multiple functions, for example they could be a step, lounge, or seat
        - discovery by offering exploration spaces (screening or vegetation creating spaces of smaller scale, or spaces that are semi-hidden)

        - maker spaces that can extend the curriculum or provide opportunities for informal learning
    - consider the flow of play and avoid conflicts between active areas involving movement and moving equipment and areas for quieter activities
    - include a variety of texture, materials, spatial characteristics and surfaces, slope and gradient to provide opportunities for physical movement and challenge, creative and sensory expression, cognitive and imaginative play and social interaction.

Play opportunities

The design must include opportunities to develop the whole learner:

- physical – supporting movement and building coordination
- emotional – supporting imaginative play, creativity, regulation
- sensory – stimulating touch, sight, sound, movement
- cognitive – offering challenges to think and problem solve
- social – creating spaces for expression, communication, friendships.

It should cater for both structured and unstructured play:

- Structured - generally adult led providing direction, and a specific task to learn a new skill. Learners are introduced to new ideas and opportunities, enhancing their development and abilities to focus, pay attention, take turns and follow instructions
- Unstructured – open ended, creative and generally child led and directed, and doesn't require an outcome or product. It provides experiences in creativity, imagination, decision-making and the development of overall emotional and social skills.

Play benefits all learners and those who don't feel confident to engage in structured play (sport) particularly benefit from unstructured play including neurodiverse students[9]. In secondary environments, playful spaces can be incorporated by subtly adding play throughout the landscape rather than having a designated play space, for example:

- encouraging engagement or testing - a ledge that is also a seat that is also a sculpture

[9] The Schoolyard Greenrpint (Emerging Findings pg.7) https://www.canberra.edu.au/content/dam/uc/documents/research/hri/schoolyard-greenprint-summary-of-emerging-findings-web-042925.pdf

- interactive elements - seats that pivot or mobile furniture
- new ways to perform old functions - a rope to go up a slope or a slide to go downstairs.

Nature play

Nature play enhances learner wellbeing and agency, supporting holistic development through:

- fostering greater self-confidence while enhancing social, emotional and physical development
- greater cognitive engagement and reductions in physical dysregulation
- greater engagement with and development of a stronger sense of autonomy in learning
- developing an appreciation of the natural world, fostering creativity, problem-solving skills, and active participation in making positive environmental changes in their world
- cultivating hope[10].

Nature play, aligned to curricula, should provide opportunities to:

- develop specific skills and knowledge to be confident and capable operators in the outdoors
- explore human-nature relationships and steps to engage with nature and culture in a positive and meaningful way
- take action to live a more sustainable life and share messages of hope for the conservation of local flora and fauna
- identify ways they can influence their own health and wellbeing through nature connection and being active in the outdoors[11].

Nature play design:

- should optimise the use of the existing natural environment and consider designing in natural elements such as wet/dry creek beds, plantings to create semi hidden spaces with a variety of textures, scents, colours that match the soil and climate and are robust, and trees to climb or swing from
- should consider site specific environmental factors such as local habitat, drainage, weather conditions, bushfire zones and site access (emergency vehicle access) to ensure the area can be effectively managed and maintained
- must consider falls from heights, impact absorption and surfacing, fall protection, entrapment hazards, protrusions, damage, maintenance and contamination. Where the contents of AS 4685 do not apply directly to natural elements (such as barriers or handrails on natural logs or boulders), the play and development benefits of the design features must be reviewed with the facility to determine suitability (see Figure 8 and 9).

[10] Nature Play SA - Wandana Thriving Learners Story https://natureplaysa.org.au/wp-content/uploads/2025/02/Wandana-Thriving-Learners-Story.pdf

[11] Nature Play SA - https://natureplaysa.org.au/educators/incursions-and-excursions/

Figure 8: Ingle Farm Children's Centre nature play space.

Figure 9: Aldinga Payinthi College nature play space.

The Nature Play SA website includes a range of resources and design principles which should be referred to including the Thriving Learners initiative aiming to strength the department's Areas of Impact.

Risks and benefits

Outdoor learning environments present an opportunity for children to develop risk taking skills that contribute to their physical learning and wellbeing. Learners naturally seek risky play, they experience excitement and fear during risky play, and healthy risk taking has been acknowledged as an important part of play and life skill development including:

- confidence
- taking responsibility for self and others
- handling challenges and failure
- resilience[12].

Risk taking is an essential feature with play provision aiming to offer the chance to encounter acceptable

[12] Nature Play SA (Learning Outdoors Benefits and Risk) - https://natureplaysa.org.au/wp-content/uploads/2023/11/NPSA-Learning-Outdoors-Benefits-Risks-opt.pdf

risks as part of a stimulating, challenging and well-managed learning environment. Elements of risk involved in some nature play activities include:

- playing at speed or at height (injury from jumping at heights, falling when running fast)
- playing near dangerous elements (fire, water)
- using potentially dangerous tools (hammers).

Opportunities need to be provided to:

- develop skills in negotiating the environment (including risks)
- learn how to use equipment safely and for its designed purpose
- develop co-ordination and orientation skills
- take acceptable risk
- learn about the consequences (positive and negative) of risk taking.

Provisions should aim at managing the balance between the need to offer risk and the need to keep learners safe from serious harm. Consider if signage is required to describe safe use of equipment items. The use of pictograms is preferable so the message is understandable to all users.

Information that relates to the installation, inspection, maintenance and disposal of playground equipment and nature play elements is available on the creating a safe outdoor learning environment webpage.

Secure outdoor learning and play areas

Inclusive Preschool Programs (IPP) and inclusive school programs (Special Classes and Disability Units) must have access to outdoor spaces that can be physically separated to support the needs of the learners using these spaces. They must be visually screened from property boundaries, perimeter gates and local roads to provide users with a sense of privacy and security. It is preferred that the secure boundary to these outdoor areas is formed by the building, outdoor structures or dense planting rather than fencing.

Secure outdoor learning and play areas should:

- include a combination of soft and hard surfaces
- create opportunities for structured and unstructured play
- thoughtfully consider the use of rocks, boulders, and fixed balancing or stepping logs appropriate to learners' abilities
- prioritise the inclusion of accessible play elements
- include suspension points under verandahs to allow the use of a range of swinging apparatus in all-weather situations.

Sports fields and hard courts

To ensure education and care facilities continue to play an active part in the community, outdoor recreations areas must be designed to be easily accessible by the community.

School sporting facilities (ovals/courts) are to be maintained to a quality that allows the safe and effective delivery of curriculum and school-based competition.

Quality of facilities may be enhanced to support district, state or national competition or community use, however only with third party financial input (such as local government, sporting organisations).

In such cases sporting facilities must meet the standards and requirements as specified by the relevant regulatory body:

- **Football:** South Australian National Football League (SANFL)
- **Soccer:** Federation of International Football Association

- **Cricket:** South Australian Cricket Association
- **Hockey:** International Hockey Federation.
- **Tennis:** International Tennis Federation – Rules of Tennis
- **Netball:** International Federation of Netball Associations
- **Basketball:** International Basketball Federation (FIBA)

The design must consider:

- the participation needs of current and possible future children and young people with disability
- investigating the shared use of any suitable community facilities to reduce duplication of existing infrastructure and services
- location of recreation facilities for access by the community after school hours including proximate carparking must be considered in master planning.

Sports fields - the preference is to provide flexible grassed areas that enable a range of formal playing fields to be marked out as specified in the Area Schedule, while also allowing for informal play areas.

Hard courts - area is to be provided as per the Area Schedule for minor games, physical education lessons and play activities within the school. Where more than one is briefed it is desirable to locate them in an area where adjacent courts can be established.

Therapy and sensory equipment

Sensory swings and therapy equipment that are suspended from ceilings and outdoor learning area structures must be appropriately located to ensure they do not cause hazards to users or others nearby:

- suspension points are to be positioned in an area that is not a thoroughfare and an impact absorbing surface (such as certified rubber impact absorbent material or certified impact absorbing mats) must be provided under and around suspension points
- impact attenuation must comply with free height of fall and fall zones for swings in accordance with AS 4685 (Parts 1 and 2) and AS 4422(Int).

The impact area around the swings must be free from obstacles, walls and windows and swings zones must not conflict with circulation pathways.

Impact absorbing material

Natural loose fill is the preferred impact absorbing material to be used in education and care facilities.

Children under three should not have access to small objects of a size that presents a choking hazard including bark chip softfall.

For new projects, major upgrades and extensive redevelopment of existing outdoor play areas, consider the type of loose fill to be provided in outdoor play areas that can be accessed by children under three years of age. Bark chip soft fall in these areas is not recommended.

The use of rubber or synthetic impact absorbing material is only recommended in high use areas where it is likely that loose fill will be regularly displaced (such as under swings and at the end of slides).

Consider whether the reflective and heat retention qualities of the surface material are suitable for the application. Rubber and synthetic impact absorbing materials absorb heat and on hot days can cause burns to children.

It should be noted that grass is not an appropriate impact absorbing material under play equipment or nature play structures that have a free height of fall height of 600mm or more above ground level or equipment causing a forced movement on the body of the user.

Mounds

Mounds can be great play features that promote activities like tumbling, rolling, hiding, lying on and climbing, and can have a wide variety of play items added to or through them, this can include slides (resulting in reduced fall heights and costs of impact absorbing materials).

The location of mounds and surface treatments need to be considered carefully. Positioning within flat grassed areas can limit the flexible use of space for large group gatherings, games and activities.

Natural turf may be difficult to maintain due to overuse. The addition of a synthetic product at the top and bottom of a slide (such as wet pour rubber) is recommended to eliminate erosion. Timber decks may be used at the top of the slide for this purpose and a steadying post (with optional handle grips) is also recommended at the slide entrance to assist children upon entering (see Figure 10).

Mounds can be landscaped with plants suitable to the area including small trees for shade, shrubs and native grasses.

Other items for mounds include tunnels, timber stages, shopfronts, pergolas, telephones, dry creek beds, boulders, rock climbing activities and fragrant gardens using aromatic plants. Where there is a change in surface height between the mound and adjacent ground surfaces (such as above tunnels, around slides) a barrier to prevent falls or impact absorbing materials may be required.

Bridges can be installed between a series of mounds (impact absorbing surfacing will not be required if kept below 600mm above ground level).

Amphitheatres are perfect for mounds using sleepers set into the mound (approximate step height 375mm high and landing width 600mm deep) to allow for seating.

Figure 10: Mound incorporating slide and tunnel Moorak Children's Centre play space.

Rocks and boulders

Creative placement of rocks and boulders around a play space can provide children and adults with easy to challenging 'routes', testing balancing skills along boulder borders or using stepping stones. In addition to defining areas (sand areas or dry creek beds), rocks and boulders provide children of all ages with opportunities for exploration, challenging and interactive play, and add to the natural materials used in play spaces (see Figure 11). They also make good places to sit and rest, talk or watch. Children have a healthy respect for the solidity and hardness of rocks and boulders and develop their own sense of care, concern, and safety when they climb on them. Boulder sizes should vary with the age of the children using them.

Figure 11: Rocks and boulders Aldinga Payinthi College.

Sand environments

It is recommended that a sand area is provided with a fixed shade structure that is designed to shade the majority of the area during peak summer UV hours, and is designed in such a way that the area creates a non-regular interesting shape to facilitate nooks and crannies that provide potential quiet areas and larger spaces for group interactions with varying levels including an area for disability access. The design should:

- consider a lockable storage facility (less than 600mm in height and incorporating design to avoid finger crush points during lid operation) for equipment and loose parts as part of the design
- incorporate a raised border with boulders, logs, plantings with ground level disability access to contain the sand without the level of the sand creating a trip hazard
- incorporate an interactive water feature that directs water into a section of the sand play area
- provide adequate drainage to reduce flooding and water pooling risks
- not be located near building entrances, any cemented or paved areas, or any rubber or synthetic impact absorbing material to limit dissipating sand coming indoors and the creation of slip hazards.

Refer to the Kidsafe SA information sheet – Sand pits and Figure 12.

Figure 12: Wandana Child Parent Centre – sand environment.

Sensory garden, kitchen gardens and vegetable patches

Sensory gardens, kitchen gardens and vegetable patches must provide access for all to be engaged in experiences that stimulate the senses. Gardens must incorporate planting, shade, seating, circulation routes and design elements that give learners the opportunity to interact and engage with the planting and setting.

The spaces, planting and designed elements should engage all senses including sight, hearing, touch, taste and smell. This can be achieved through planting types and arrangements, materiality and the use of landscape elements specifically designed to use all the senses and include:

- an area large enough for small groups to work together
- raised plots and planter boxes to allow equitable access and participation
- winding paths, designed to provide opportunities to interact with the planting and design elements as you move through the space
- appropriate planting, excluding any poisonous, irritating or otherwise problematic planting
- shaded seating areas
- a defined and safe space, free of extraneous noise and distractions (such as a courtyard).

The inclusion of Aboriginal design elements and bush foods can introduce local relationships with the land and help to embed cultural aspects into the space.

Landscaping

Children today experience more limited physical freedom and autonomy compared to previous generations. Our facilities play a vital role in reconnecting them with nature by offering opportunities for healthy risk taking, sensory play, and unstructured free-play.[13]

Interaction with natural environments supports physical health, cognitive functioning, attention restoration, resilience, agency, social functioning, environmental awareness and overall wellbeing[14].

Education and care facilities are a great place to showcase the benefits of nature and provide learners and educators with opportunities to connect with nature in cooler, greener learning environments that provide a direct experience of what a healthy urban environment can be for the whole community[15].

Outdoor landscapes are integral parts of the learning environment and must be developed simultaneously to the indoor environments to promote a strong interconnection of these spaces to support multiple learning and teaching modes. They are important spaces that 'offer a vast array of physical activity and learning experiences not available indoors - inviting open-ended interactions, physically active play and games, spontaneity, risk-taking, exploration, discovery, and connection with nature'[16].

They also provide a culturally safe and responsive learning environment for Aboriginal people, promoting a culturally welcoming space for the Aboriginal community, and supporting cultural understanding for non-Aboriginal learners and families actively recognising Aboriginal culture, identity and heritage - all strongly tied to the land - through sharing of histories, stories, languages, and local knowledge of Caring for Country.

A landscape architect must be commissioned to design the landscaping in conjunction with the building architect.

The design must:

- ensure sites are landscaped for amenity, shade, and environmental benefits, prioritising BSUD and WSUD to reduce heat island effects, support biodiversity and plan for adaptive water use

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[13] Adapted from Nature Play SA https://natureplaysa.org.au/wp-content/uploads/2025/01/Why-Sheet-Why-Nature-Play-.pdf

[14] Nature Play SA Thriving Learners (pg1)

[15] Greening Australia (Why plant in schools)

[16] Early Years Learning Framework – Belonging, Being & Becoming (EYLF 2022 V2.0 pg 23)

- create rich, inclusive environments prioritising agency, connection to place, and deep engagement with nature for all users
- seamlessly connect indoor and outdoor environments through features such as verandahs, overhangs, opening doors (folding, sliding), matched floor and paving levels - maximising both visual and physical access to nature
- consider building placement to minimise issues of overshadowing, including to key external spaces, and provide shelter from the prevailing winds and weather during the different seasons to extend the range of days during which the external spaces are comfortable
    - entrances must have protection from wind and inclement weather with appropriate treatments to ensure the safety of pedestrians
- integrate interpretive and educational opportunities within the landscape to facilitate active and passive outdoor learning including nature education and exploration through provision of habitat for wildlife (such as insect hotels, bird nesting boxes and migratory flight paths, kitchen gardens or vegetable patches) with consideration to the placement of paving, seating, trees and other plants, water, walls and fences to provide useful teaching, learning and socialising opportunities
- ensure spaces are accessible and address the needs of all ages and abilities including adequate provision of shade and shelter, places for rest and hydration, pathways, equipment and experiences
- consider the connectivity of spaces being important to maximise activities, building construction and security matters (wall and door systems allow a variety of options to be used, maintaining weather resistance when closed) using paving, landscaping, gardens and physical structures to effectively link the buildings and not be seen merely as spaces in between them, and the use of landscaping elements to direct or restrict pedestrian traffic
- consider how the boundaries of outdoor spaces are defined through a range of built and natural elements to achieve boundaries, including environmental boundaries, that allow independent and safe movement across the site for all
- use existing assets of the site including topography, natural vegetation (where appropriate), ecology, incorporating rain gardens and other WSUD elements (relevant information is available in the Water Sensitive SA Guidelines) to increase stormwater quality and convey overland flows away from usable spaces
- incorporating elements reflecting the cultural and heritage history of the area, and the provisions of flagpoles for the Australian national flag, Aboriginal flag and Torres Strait Islander flag
- use a mixture of evergreen and deciduous native species to create a vibrant, ecological diverse landscape that changes with the seasons and considers the use of plantings to direct or restrict pedestrian traffic and define zones between active and passive outdoor activities
- consider the inclusion of rainwater tanks for landscape irrigation and sub surface irrigation to small lawned areas and garden beds via a drip irrigation system with a moisture sensor override
- preserve access corridors for emergency service vehicles and utilities services to ensure emergencies, maintenance, upgrade, or future implementation of new services can be undertaken with minimal disturbance to built environments and consider the requirement for ongoing maintenance of outdoor areas and minimise seasonal impacts (hazard prevention – trip hazards, fire risk, health hazards and falling limbs)
- consider the proximity to power lines and subsequent maintenance requirements, refer to the guidelines set out in the Electricity (Principles of Vegetation Clearance) Regulations 2021, underground services and potential root system growth, neighbouring properties (site works) and soil moisture changes resulting from vegetation creating damage to buildings
- provide effective environmental modelling to the wider community.

Biodiversity

The landscaping design must maintain, and if degraded improve, the natural environment with native and

endemic plant species used where possible to support biodiversity and local fauna, and should:

- where possible, retain existing native and endemic tree and understorey plant species
- ensure new plantings are predominantly endemic and native (the plant palette is to be based on the species lists available from relevant Landscape Boards) and from areas within the same climatic zone that are drought tolerant to reduce irrigation requirements
- select new plantings to contain a variety of species and avoid monocultures
- enhance existing site biodiversity and replace any lost biodiversity caused by site construction work
- comply with any existing Conservation Management Plan
    - where planning and design is required to meet departmental goals and is contrary to the Conservation Management Plan, public consultation must be undertaken, and the plan updated accordingly
    - where planning and design requires a Conservation Management Plan and one does not exist, a plan must be developed and approved prior to planning and design being undertaken
- include native and exotic food production gardens in line with Kid Safe SA guidance
- consider incorporating composting of green waste and worm farming
- include gardens that promote Aboriginal culture and knowledge in caring for country
- use resilient materials including blue and green infrastructure
- connect with surrounding greenspaces and link to habitat corridors
- plan to use biodegradable mulches to improve micro bacterial activity and reduce irrigation requirements (external areas should not have bare soil)
- plant trees to provide shade to building walls and external areas appropriate to the climate and seasonal changes.

Refer to additional information in the Water Sensitive Urban Design policy, Biodiversity Sensitive Urban Design policy. Resources on planting, wildlife, coastal and native design are available from Green Adelaide.

Plants, Trees and Grass

Establish a clear planting structure ensuring the main structure planting is introduced as early as possible to provide identity, enclosure and shade to outdoor spaces:

- avoid plants:
    - with excessive water demands
    - that shed limbs in drought conditions
    - have invasive root systems or that are short lived
    - have known toxicities/harm and where possible those that provide a measure of allergen
    - that requiring ongoing pruning maintenance
- ensure the intended use, site and climatic conditions are considered when selecting plant and grass/turf species
- ensure trees are protected in high use areas with a tree protection cage until established
- support the creation of microclimates using a 1:3:6 upper/mid/lower storey planting ratio. To promote ecological function and visual interest.

Vegetation and garden beds must be a minimum of 1m away from buildings to avoid moisture damage to building infrastructure.

The aesthetic value of outdoor learning environments can be enhanced by the provision of grass or turf. When a facility is located in an environment where traditional grass cannot be sustained then an alternative

surface, in keeping with the local environment, is to be considered.

The installation of synthetic grass should only be considered where no suitable natural alternatives are available, with its use kept to a minimum. Where the use of synthetic grass is the only solution, adequate shade and appropriate measures to address heat retention and facilitate effective cleaning must be provided.

Shade

Built and natural shade areas are to be designed and installed to suit the types of activities, play and learning experiences that are briefed to receive shade cover.

Shade must be provided around high use/static spaces and must consider the direction of the sun and the time of day it will be used. Trees selected for natural shade must establish quickly and be protected during their first years of growth.

To meet Regulation 114 adequate shade must be provided in ECEC Facilities over play areas where children will spend extended/focused time (such as sandpits (see Figure 13), fixed play structures, yarning circle, cubbies/play platforms) through the use of shade structures and plantings, such as trees and large shrubs. If there are no mature plantings, built shade may need to be provided while landscaping and plantings establish. Refer to the Kidsafe information sheet – shade in outdoor learning environments, for further guidance.

Design and placement should consider:

- the range of required uses from general shade provisions to covering playgrounds, sand pits, hard play areas and outdoor learning environments
- the sun angles at different times of the day throughout the year and reduce indirect UV radiation by managing reflected sun light - additional UV tools are available in the Cancer Council resource
- proximity to buildings and shading of windows, not impact natural light levels, or block breezes to windows,' in occupied spaces in adjacent buildings
- locations of existing modular buildings that may require future removal or relocation
- appropriateness of existing ground surfaces and disposal of stormwater from the new roof
- access around the site for emergency vehicles
- the location of existing services such as drainage, power, data, gas, sewer and water for post placement.

Figure 13: Built shade over sandpit at Moorak Children's Centre.

Figure 14: Built shade over nature play equipment at Aldinga Payinthi College.

Seating

Seating is to be incorporated in the design of outdoor learning and recreational areas to cater for one third of the estimated total enrolment. Consideration should be given to:

- incorporating seating into retaining walls, terraces, mounds, fixed to building walls, as tree surrounds or under shade structures
- incorporating seating nooks, benches, and furniture to create zones for retreat, outdoor study, informal classroom settings, and social gatherings
- offering a range of smaller spaces, so that different cohorts can each gather
- providing seating in circular arrangements that fosters conversation
- families and community and where they may gather at the beginning and end of the day.

Preferred seating materials are those that do not require painting, sealing or maintenance and can withstand the weather and heavy use. Natural elements such as rocks and logs can also be used as seating increasing connections with nature. Select materials suitable for their intended location, use and sun exposure (such as metals and skin contact). Recycled plastic and composite timber products can become too hot for use as seating if not adequately protected by shade.

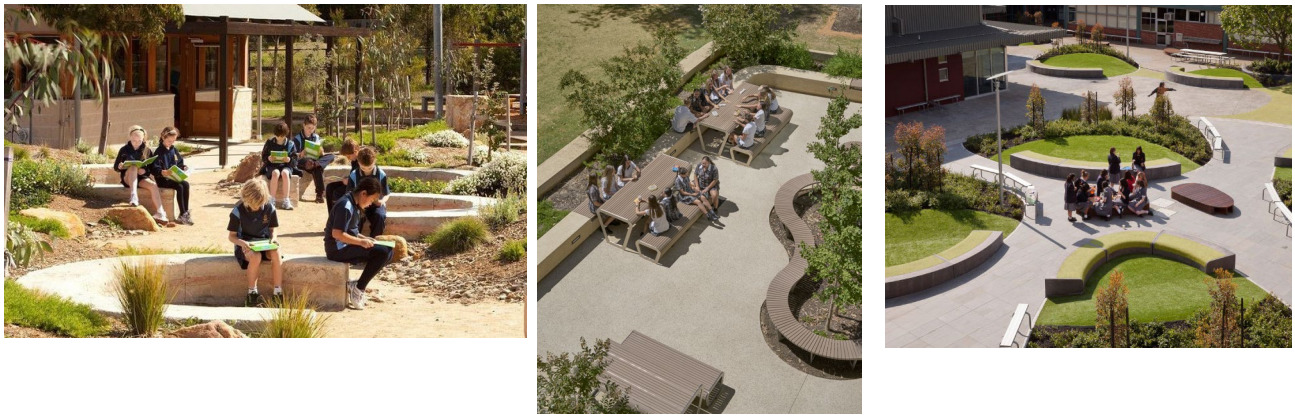

Figure 15: examples or various seating configurations and types integrated within the landscape

Irrigation

Provide irrigation to grassed areas and landscaped zones including kitchen gardens and vegetable patches to ensure soft landscape can be maintained to a safe, quality standard.

Water consumption for irrigation is likely to comprise the majority of water usage at education and care facilities for ovals or other sizeable, irrigated spaces. Whether using mains water or a non-drinking water supply improving irrigation efficiency reduces water consumption and costs. SA Water's Irrigated Public Open Space Code of Practice and Irrigated Public Open Space Operational Guide (together, IPOS) provide a guide to improving irrigation management.

Opportunities to improve irrigation efficiency include:

- applying IPOS to the irrigation system
- installing sub-meters to monitoring irrigation systems and help identify leaks (changes in water consumption without changes to irrigation scheduling could indicate a leak)
- installing isolation valves to separate the irrigation system from the supply line (independent isolation valves should be installed for shutdown in case of leaks and pipe breakages)
- regularly inspect irrigation systems for leaks and damaged, blocked and tilted sprinkler heads (unusually green or brown turf areas or damp spots on the ground may indicate inefficient operation)
- using qualified irrigation design consultants and soil and turf management specialists when planning alterations to an existing system or designing a new irrigation system
- installing automatic irrigation controls with variable functions for each station (upgrading to a smart controller and adding moisture and weather sensors could further improve efficiency).

Drainage

Individual site-specific stormwater designs must be undertaken for each site and needs to consider factors such as location, impervious area, gradient across the site and downstream infrastructure.

Landscape designs must ensure adequate drainage of water to avoid pooling, they must not be sloped in the direction of buildings (where unavoidable adequate controls must be implemented to ensure water does not compromise building infrastructure) with slopes and gradients designed to control the flow and drainage of water. Taps, water courses and sandpits must considered in these drainage designs.

All drains must be adequately covered and secured to prevent access, fall or trips. Grated drains must not be located within impact absorbing areas or under play equipment, or permit finger entrapment.

Services

ICT - Internet service provider

The connectivity solution used by the department is internally branded as Schools With Internet Fibre Technology (SWiFT). Connection to the education core and internet uses software-defined Wide Area Network (SD-WAN) via a combination of transmission service types such as optical fibre cable and LTE 4GX.

A standard high-speed internet service will be provisioned to cater for connectivity required at each site by the department's ICT Services division, which includes a service portal to view internet usage, connection status and manage learner and staff access to online content.

ICT - Local network

Sites are designed to use a STAR network topology - also known as a 'hub' and 'spoke' network design. This approach allows for flexibility and reliability by minimising the impact of points of failure in the network. Sites will use this two-level approach comprising, at minimum, a Core Node (the central location or 'hub' for local network services, core network switches, servers, data storage and other appliances) and, depending on the size and layout of the site, one or more Edge Node/s (the peripheral locations or 'spokes' of the local

area network contain the ancillary ICT equipment for outlying areas or buildings and is connected to the Core Node using high bandwidth fibre optic backbone sub-system cabling).

The local network consists of the following components:

- Structured Cabling
- Wired Network
- Wireless Network.

Energy and water meters

Meters should be installed in locations that are free from obstructions and provide safe, convenient access for meter readings at all times. Where ECEC facilities are co-located on school sites, they must have a sub-meter to facilitate the monitoring of energy and water use.

Smart meters and data loggers should be considered for their ability to track real time energy or water usage. They allow for consumption records to be downloaded and analysed using software, can be programmed to generate alarms under certain conditions such as high consumption rates, and the data can be used to support better consumption and demand management, as well as incorporate consumption tracking data into learning activities that will build awareness of efficiency and sustainability.

Water – drinking and non-drinking

All education and care facilities require access to a safe, secure and compliant water supply for both drinking[17] and non-drinking[18] purposes. This can be achieved by selecting appropriate water supplies that are installed and maintained in compliance with regulatory requirements (*Safe Drinking Water Act 2011*, *Safe Drinking Water Regulations 2012*, operational best practice as outlined in the Australian Drinking Water Guidelines (ADWG), Australian Guidelines for Water Recycling (AGWR), SA Health guidance on recycled water, the *Work Health and Safety Act 2012*, *and the Work Health and Safety Regulations 2012*) and include:

- public mains water[19] – can be used for drinking and non-drinking purposes.
- harvested rainwater[20] and bore water[21] – can be used for non-drinking purposes and can be considered for drinking purposes with the appropriate treatment.
- recycled water[22] – can only be used for non-drinking purposes.

Drinking water

Public mains water (mains water) is the preferred drinking water supply for department education and care facilities.

Non-drinking water

Use of alternative water supplies including recycled water, harvested rainwater, and bore water for non-drinking purposes (such as irrigation) reduces demand on drinking water supplies, supports water security within the state, and supports the Urban Greening Strategy for Metropolitan Adelaide, in turn improving

[17] Drinking water (potable water) is water that is intended for human consumption or for purposes connected with human consumption (such as the washing, preparation or cooking of food or the making of ice intended for human consumption, or for the preservation of unpackaged food), whether or not the water is used for other purposes, but does not include water that has been packaged in a bottle, cask or other container.
[18] Non-drinking water (non-potable water) is water from any source that is not suitable for human consumption or for purposes connected with human consumption.
[19] Mains water is treated, potable water delivered to homes and businesses through a network of underground pipes, known as a reticulated system
[20] Harvested rainwater is precipitation collected from roofs and associated guttering and downpipes.
[21] Bore water is water that has been accessed by drilling a bore into underground aquifers (water storages) and pumping groundwater to the surface.
[22] Recycled water is treated wastewater or harvested stormwater that has been treated to an appropriate level for the permitted use as outlined in the Australian Guidelines for Water Recycling (AGWR)

health and wellbeing in our communities.

For irrigating ovals and turf, recycled water (provided by a licenced operator[23]) is preferred where a suitable supply is available or can be negotiated with the nearest supplier, connection is feasible, and there is no existing alternative water supply for irrigation (such as bore water or harvested rainwater).

Rainwater tanks for capture and re-use of harvested rainwater are to be included in the design of new buildings and major refurbishments where water re-use is feasible to achieve increased water efficiency, and should be installed where roof catchments are in close proximity to landscaped areas supporting WSUD by contributing to rainfall runoff controls and harvesting for later use.

The installation of permanent grey water or harvested stormwater collection and reuse schemes are not supported at education and care facilities due to the increased site level risk management (treatment and testing) associated with these sources.

Plumbing controls for water supplies

Plumbing design must keep drinking and non-drinking water supplies separate. If there is a mains water supply, plumbing should be set up so that it can be used as a backup if the non-drinking water supply is unavailable. See further information within Part 4: Technical Specifications.

Energy performance

All education and care facilities require the supply of power for lighting, heating, cooling, and other services to enable the provision of safe and comfortable learning and care environments. Building energy use is the main driver of electricity and natural gas consumption and associated greenhouse gas emissions in department education and care facilities.

Transitioning to electricity as a power source (electrification) creates opportunities for the department to reduce emissions from building energy use and to support South Australia's net zero greenhouse gas emissions ambitions, as outlined in the Climate Change and Greenhouse Emissions Reduction Act 2007 and the Climate Ready Government Premier and Cabinet Circular PC007.

Options to reduce emissions from building energy consumption includes:

- planning for new buildings to be all-electric, new connections to natural gas are not supported
- planning for existing buildings to transition to an electric solution when gas powered equipment is impacted by a works project, fails or is scheduled for replacement
- energy efficient design concepts, materials selection, and construction methods to optimise thermal performance and natural lighting as part of the building's design and envelope
- prioritising selection of energy efficient plant and equipment
- integrating building management systems or other smart control technologies to enable electricity demand response – HVAC, lighting and ICT represent the largest electricity consumption and demand generated and facilities must be designed to reduce peak electricity demand
- inclusion of renewable energy generation and storage systems to increase on-site use of renewable electricity.

The preferred strategy is to use building design, energy efficiency, demand management, and renewable energy technologies to minimise peak electrical load requirements resulting from new builds or refurbishments.

The department seeks to achieve the following:

- a minimum 5 star Green Star Buildings certification for new buildings
- improvement against site and portfolio NABERS for Government Schools benchmark energy ratings.

[23] Licenced operator is a council or independent organisation that has a licence from a regulatory body to operate a recycled water scheme.

Solar photovoltaic (PV) systems

On-site renewable electricity generation and storage will further reduce grid energy requirements and achieve credits toward Green Star ratings. Solar PV included in new builds and major refurbishments must demonstrate a reduced peak grid energy consumption by a minimum of 10% against a reference project through a combination of active generation and storage (solar PV, batteries), demand response, and/or passive design solutions.

Solar PV installations must include provision of permanent safe roof access to enable ongoing maintenance of the solar PV system.

Solar PV installations are to:

- target roof areas with:
    - predominantly north-facing aspects
    - minimal shading from adjacent trees and buildings or rooftop plant
    - suitable structural capacity and expected longevity as assessed by an engineer.
- be oriented to:
    - generate optimum electricity during the facilitiy's core operating hours
    - increase generation when air-conditioning peaks during summer.

Waste storage and disposal

The design of education and care facilities will provide opportunities to maximise recycling and composting to reduce waste. A lockable screened and contained waste disposal area must be provided for storage and collection of multi-stream waste materials ensuring adequate space to support the department's waste contract requirements.

Truck access to the waste disposal area must consider other vehicular and pedestrian movements in the vicinity and limit safety risks. The waste disposal area location is to avoid any overhead cables and overhanging trees. Adequate circulation space (excluding the designated waste storage area) must be provided to allow large waste disposal trucks to enter, manoeuvre and leave the site travelling in a forward direction within a designated area that is separated from pedestrians.

Pavement and road surfacing to the area used by waste disposal trucks must be suitable for the applied loads (such as heavy vehicles).

Further information on waste contract requirements is available from the Waste Management Team at education.wastemanagement@sa.gov.au.

Appendix B: ECEC Design Checklist

Detailed information and the Design Checklist is available here.

Related documents

Creating a safe outdoor learning environment

Revision record

Version: v2.0 (DE20/05086)
Edits: Update to incorporate information from the retired Education Facilities Design Standards and Early Childhood Education and Care Facilities Design Standards documents.
Approved by: Director, Capital Programs and Technical Services
Published: June 2026

Version: v1.1 (DE20/05086)
Edits: Minor update to introduction
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