

Design standards — Part B

Education facilities master planning, architectural and landscape design principles

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Contents

1.0	Introduction	1
1.1	The purpose of this document	1
1.2	Alignment with the overarching principles, Education Principles and Facilities Design Principles	1
1.2.1	Overarching principles	2
1.2.2	Education Principles	2
1.2.3	Facilities Design Principles	3
1.2.4	Universal Design Principles	3
1.3	Compliance with Acts, regulations and standards	4
2.0	Urban design	5
2.1	Schools and the public environment	5
2.2	Urban design principles applied to education settings	6
2.2.1	Be climate responsive	6
2.2.2	Be inspired by local place, character, form and culture	7
2.2.3	Work with and enhance natural systems, landscape and biodiversity	7
2.2.4	Create great places to learn	8
2.2.5	Create attractive, human-scale places and well-integrated building forms that successfully blend the old with the new	8
2.2.6	Design the built environment to be accessible and usable by all users — school staff, students, and visitors to the school	9
3.0	Master planning and site planning	10
3.1	Urban context analysis	10
3.2	Cultural and heritage considerations	10
3.3	Allowing for enrolment growth and flexibility	11
3.3.1	Master planning for relocatable buildings	11
3.4	Construction planning and future development	12
3.5	Integration of Early Childhood Education and Care centres and community facilities	12
3.5.1	Community use of school facilities	12
3.6	A sense of address	13
3.7	Site circulation	13
3.8	Disaster mitigation	14
3.8.1	Bushfires	14
3.8.2	Floods and storm surges	14
3.8.2	Emergency shelters	14
3.9	Summary of key considerations for master planning	15
4.0	Architectural design	16
4.1	Impact of the quality of learning spaces on learning outcomes	16
4.2	Value for money	16
4.3	General architectural design considerations	17
4.4	Innovation	19
4.5	Building quality, materials and lifecycle	19

4.6	Design and construction to support future change	20
4.7	Ecologically sustainable design	20
4.7.1	Whole-of-life performance for the facilities	21
4.7.2	Quality of the learning environment	21
4.7.3	Enable aspects of the buildings, building design and outdoor spaces to be learning tools in themselves	22
4.7.4	Design strategies to support energy efficient building performance	22
4.8	Internal learning spaces	23
4.8.1	Spatial structure	23
4.8.2	Circulation	23
4.8.3	Connections and relationships between learning spaces	23
4.8.4	Natural light, views and artificial light	23
4.8.5	Natural ventilation	23
4.8.6	Surface, colour and texture	24
4.9	Acoustics	24
4.10	Safety and security in design	25
4.11	Storage	26
4.12	Signage and wayfinding design principles	26
5.0	Landscape design principles	27
5.1	General principles and guidelines for landscape design	27
5.2	Biodiversity	28
5.3	General design principles for external areas	29
5.3.1	External public spaces	29
5.3.2	Civic presence	29
5.3.3	Fencing	29
5.3.4	Covered ways	29
5.3.5	Bicycle parking	29
5.3.6	Sports fields and multi-purpose courts	30
5.4	Shade areas	31
6.0	Traffic and pedestrian movement	32
6.1	General circulation and spatial organisation	32
6.2	Provision for all occupants	33
6.3	Emergency exits	33
6.4	Pedestrian access and egress	33
6.4.1	Pedestrian paths	34
6.4.2	Vehicular traffic design considerations	34
6.4.3	Vehicle access roads	35
6.5	Access for emergency vehicles	35
6.6	Vehicle parking areas	36
6.6.1	Short-term public parking and student drop-off	36
6.6.2	Long-term staff, visitor and student parking	37

6.7	Bus parking	38
6.7.1	Public bus services	38
6.7.2	Private and charter bus services	38
6.7.3	Students with disabilities.....	38
6.8	Visiting van services	39
6.9	Waste storage and disposal	39

1.0 Introduction

1.1 The purpose of this document

This document is one of three documents developed by the Queensland Department of Education that set out the principles and minimum standards for the planning, design and construction of new facilities and the refurbishment or maintenance of existing facilities for Queensland state education settings.

1. *Part A: Education Facilities Design Principles and Generic Functional Brief* outlines the overarching education rationale, principles and framework for designing and developing contemporary Queensland state education settings that respond to context and place and provide access for all. It also describes the generic functional requirements for different education settings.
2. *Part B: Master Planning, Architectural and Landscape Design Principles* details the master planning, architectural and landscape design principles and includes the minimum requirements for the external learning environment and traffic management.
3. *Part C: Technical Specifications and Standards* details the minimum performance standards for the building fabric and finishes, building and site services, services and utilities, structural and civil works, acoustic performance, security, information and communications technology and ecologically sustainable design.

All references to sections and tables in the *Master Planning, Architectural and Landscape Design Principles* are references to sections and tables in this document unless expressly stated otherwise.

The department is committed annual reviews and updates of the *Education Facilities Design Principles and Generic Functional Brief*, *Master Planning, Architectural and Landscape Design Principles*, and the *Technical Specifications and Standards*. These reviews will be informed by the lessons learned and feedback provided by project consultants, department staff and schools, and other stakeholders involved in the design, construction, and occupation of new and refurbished educational facilities. Feedback should be provided through the department's Infrastructure Services Division project representative.

1.2 Alignment with the overarching principles, Education Principles and Facilities Design Principles

The *Education Facilities Design Principles and Generic Functional Brief* provides the education rationale for the design principles for Queensland state education settings and, through the overarching principles, sets out expectations for planners, architects and designers.

All principles are derived from the department's strategic plan and are set out in detail in 'Section 3.0 Education Principles' and 'Section 4.0 Design Principles' of the *Education Facilities Design Principles and Generic Functional Brief*. All master planning, architectural and landscape design must show how the designs give effect to the overarching principles, the Facilities Design Principles and Universal Design Principles. These sets of principles are reproduced here, in summary form, for convenience. For more detail, and to ensure the designs enact these principles, refer to 'Section 3.0 Education Principles' and 'Section 4.0 Design Principles' of the *Education Facilities Design Principles and Generic Functional Brief*.

1.2.1 Overarching principles

The planning, design and construction of education facilities must be developed in line with these overarching principles:

- **Responsiveness:** Embed the potential for adaptability to ensure that the design does not impose on schools but rather is responsive to them. For example, the design of the learning communities should be adaptable enough to accommodate the pedagogical approach and organisation developed by the school. Responsive design must be based on an analysis of the context, place, culture, curriculum and pedagogical approach of the school.
- **Collaboration:** Improve all outcomes (success in learning for all learners, establishing the school as central to community, planning, design, and construction etc.) through collaborative efforts of all departments, community, key stakeholders, including specialist support staff and students.
- **Informed risk-taking:** Balance opportunity and risk in the pursuit of innovation and continuous improvement.
- **Harness technology:** Leverage technology to engage modern learners, provide access for all learners and advance teaching and learning.
- **Reconfigurability:** Be future focussed and design-in the ability to accommodate changed personal needs, new learning technology, curriculum changes and changing demands for use that might occur over the long term, without major re-construction and expense.
- **Sustainability:** Ensure the long-term social, environmental and economic sustainability of the facilities.

Source: Queensland Department of Education (2020), Education Facilities Design Principles and Generic Functional Brief, 4.1

1.2.2 Education Principles

The design of contemporary learning facilities must reflect the six Education Principles derived from the Queensland Department of Education's strategic plan, vision, goals and priorities. These principles capture what is valued for:

- Learners
- Learning
- Access and inclusion
- Diversity
- Wellbeing
- Community

Source: Queensland Department of Education (2020), Education Facilities Design Principles and Generic Functional Brief, Ch 3.

Each of these Education Principles has implications for the design of facilities.

1.2.3 Facilities Design Principles

The implications of the Education Principles for facilities design are set out in the Facilities Design Principles listed below in summary form. It is imperative that the implications of each of these principles is considered in master planning, architectural design and landscape design:

- Create contemporary indoor and outdoor learning environments that facilitate a learning and learner-centred approach.
- Support collaborative learning and teaching for students and professionals.
- Design and fit out indoor and outdoor spaces that enable all users — school staff, students and visitors to the school to participate in all school experiences.
- Design and fit out indoor and outdoor facilities that reflect and celebrate the cultural make-up of the school community.
- Design facilities that are aesthetically pleasing, welcoming and support the physical, emotional and social wellbeing of the students and staff.
- Support a sense of community and belonging both within the school and the school within the wider community.

These principles are discussed in full in ‘Section 3.0 Education Principles’ in *Part A: Education Facilities Design Principles and Generic Functional Brief*. [Table 1](#) is a reproduction of these principles.

1.2.4 Universal Design Principles¹

Queensland is committed to providing all young Queenslanders with access so they can participate in education that is inclusive and free from any form of discrimination. To ensure each learner has direct, or indirect access to participate in all learning experiences, taking into account their characteristics and individual learning needs and styles, the design of Queensland State Schools will need to go beyond minimum compliance and employ the Universal Design Principles (Section 4.3) that aim to make the built environment (indoor and outdoor) usable by all users — school staff, students and visitors to the school. (Queensland Department of Education (2020), [Education Facilities Design Principles and Generic Functional Brief](#), 4.25)

Universal design recognises that there is a wide spectrum of human abilities, including physical, perceptual, social and cognitive abilities as well as there being different ages, body sizes and shapes. Design and fit out of indoor and outdoor spaces must enable all users — school staff, students and visitors to the school to participate in all school experiences.

The Universal Design Principles as they apply to Queensland state education settings are listed in summary form in [Table 1](#). Learning environments must be designed to provide good anthropometrics for all students and teachers using universal design principles as set out more detail in Section 4.3 Universal Design Principles — ‘design for all’ in *Education Facilities Design Principles and Generic Functional Brief*.

¹ Centre for Excellence in Universal Design <https://universaldesign.ie/about-universal-design/the-7-principles>

Table 1. Universal Design Principles as they apply to Queensland state education settings

Principle 1. Equitable use	The design is useful to people with diverse abilities.
Principle 2. Flexibility in use	The design accommodates a wide range of student, staff and visitor preferences and abilities.
Principle 3. Simple and intuitive	Use of the design is easy to understand, regardless of the user's experience, age, knowledge, language skills, or current concentration level.
Principle 4. Perceptible information	The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.
Principle 5. Tolerance for error	The design minimises hazards and the adverse consequences of accidental or unintended actions.
Principle 6. Low physical effort	The design can be used efficiently, comfortably and independently with a minimum of fatigue.
Principle 7. Size and space for approach and use	Appropriate sizes and spaces are provided for approach, reach, manipulation, and independent use regardless of user's body size, posture, or mobility.

1.3 Compliance with Acts, regulations and standards

The design of school buildings and facilities and all works in Queensland schools must comply with all relevant Acts, regulations and standards, and the National Construction Code.

Where a standard is referenced in this document designs are required to comply with the referenced standard and all other associated and related standards.

Standards will only include a reference to the number, with reference to a specific version being excluded. Designs must comply with the most current version in use at the time that detailed planning commences.

Should a referenced standard become redundant designs must comply with any replacement standard/s.

Where, *Education Facilities Design Principles and Generic Functional Brief, Master Planning, Architectural and Landscape Design Principles* or *Technical Specifications and Standards* specify a requirement or performance standard which exceeds those specified in any relevant Act, regulation, standards or the National Construction Code the designs must comply with the higher requirement or performance standard.

2.0 Urban design

As part of the Queensland Government's commitment to achieving better urban design outcomes across Queensland, principles were developed to guide design, development and improve the quality of urban outcomes. These principles are published in QDesign, *Principles for good urban design in Queensland, December 2018*².

This section details the urban design requirements for schools. It integrates the overarching principles and the Education Facilities Design Principles with the Queensland Government urban design principles. Good urban design can give effect to three of the Education Facilities Design Principles.

- Support a sense of community and belonging both within the school and the school within the wider community.
- Design facilities that are aesthetically pleasing, welcoming and support the physical, emotional and social wellbeing of the students and staff.
- Design and fit out indoor and outdoor facilities that reflect and celebrate the cultural make up of the school community.

2.1 Schools and the public environment

Schools provide a community focus and contribute to the urban structure, legibility and coherence of a place. Good urban design integrates schools with surrounding communities through careful consideration of.

- site planning
- building form and scale
- the location of access routes and surrounding infrastructure
- by considering the co-location of related uses and activities
- by exploring opportunities for shared or joint use of facilities.

Schools, at their best, function as the centre of the community and offer the opportunity to share facilities. Many schools and communities work together to share library facilities, sporting facilities, meeting spaces, performance spaces, holiday programs, co-location with early childhood and care centres and before and after-school programs on school grounds.

Close links between a school and its community can enhance public safety, health and economic wellbeing and encourage sociability in culturally diverse and disadvantaged areas. A strong relationship between a community and a school will result in the community advocating for the needs of the school and the students, supporting fund-raising activities, volunteering for school related activities and providing passive security.

Good urban design is not just about space planning. It is also about context over time. Consideration must be given to the:

- past — origins and early development
- present — current condition
- future — informed, evidence-based speculation on future development and the place of a dynamically evolving school in it.

2 https://www.hpw.qld.gov.au/data/assets/pdf_file/0022/4837/qdesignmanual.pdf

2.2 Urban design principles applied to education settings

Queensland is a region of diverse scale and character. Covering an area of 1,722 000 km², its urban landscapes are a rich mix of thriving cities, bustling regional and coastal towns, and remote communities settled across a natural landscape of bushland, beaches, ranges, rivers, rainforest and lakes. As part of the Queensland Government's commitment to achieving better urban design outcomes across Queensland, principles were developed to guide design, development and improve the quality of urban outcomes. These principles are published in QDesign, *Principles for good urban design in Queensland, December 2018*³.

The QDesign *Principles for good urban design in Queensland, December 2018* have been integrated with the overarching principles and the *Education Facilities Design Principles* to guide master planning, architectural design and landscape design of education facilities specifically.

Responsiveness

- be climate responsive
- be inspired by local place, character, form, and culture
- work with and enhance natural systems, landscape character and biodiversity
- create attractive, human-scale places and deliver a well-integrated facility that successfully blends the old and the new.

2.2.1 Be climate responsive

Climate responsive design is essential in managing the environmental impacts of urban areas and establishing the resilient communities of the future:

This means:

- buildings and spaces should be designed to work with and respond to the local climate to create places that are resource efficient and deliver climate resilient, comfortable and cost-effective living.

Strategies

- Take advantage of the local climate and adopt passive design strategies to significantly reduce or eliminate the need for mechanical and electrical systems, using natural elements such as sunlight and breezes to heat, cool and light buildings.
- Maximise natural light. Apply design strategies to maximise natural light in habitable spaces, reducing reliance on artificial lighting, improving amenity for occupants and reducing energy demand.
- Reduce the extremes of temperature. Use building layout design and architectural features, such as hoods, louvres, screens, awnings, and hard and soft landscape elements to reduce the extremes of temperature and urban heat island effect in buildings, streets and spaces.
- Use movable elements — maximise comfort opportunities. Use movable elements such as adjustable openings and sliding screens, allowing occupants to manually control the temperature, shading and comfort of their environment.

3 https://www.hpw.qld.gov.au/data/assets/pdf_file/0022/4837/qdesignmanual.pdf

2.2.2 Be inspired by local place, character, form and culture

Memorable places, places with their own identity, reflect the distinctive qualities of their physical setting, heritage and community values. This means:

- buildings and spaces should be designed to reflect the distinctive qualities of a place by identifying landscape, heritage and cultural assets worthy of protection, and working with these to enhance natural systems, landscape character and biodiversity.

Strategies

- Engage with the school community to determine cultural needs and the specific needs of different groups (e.g., different socioeconomic, disability specific).
- Create contributory community value by understanding the characteristics, traditions and values of the local community, and explore opportunities to work with these, and extend benefits beyond the development site boundary and back into the community.
- Map the valued assets (landscape, heritage and culture) and work with these features to create places with a strong relationship to their context.
- Work with the natural topography of the area to minimise requirements for cut and fill and create development that contributes positively to the environmental and visual experience of a place.
- Interpret locally distinct building traditions. Work with and interpret locally distinct building traditions, materials and craftsmanship to create development that draws on local practices and physical qualities.

2.2.3 Work with and enhance natural systems, landscape and biodiversity

The health of our urban environments and our personal health are interlinked. Well planned and maintained green spaces and waterways have been shown to improve community health and wellbeing, and significantly improve the liveability of places. Their inclusion supports biodiversity, delivers opportunities for sustainable water management, contributes to better air quality, mitigates noise, moderates temperature, provides enhanced recreational opportunities and comfort through shade. This means:

- buildings and spaces enable the protection and enhancement of established ecologies and hydrological systems, delivering a connected network of 'working' landscapes that support the physical, emotional and social wellbeing of the students and staff and provide a landscape for learning.

Strategies

- Work with established ecological and hydrological systems to improve urban biodiversity and create a 'working landscape' of connected green corridors and waterways.
- Apply best practice Water Sensitive Urban Design (WSUD) in the design of buildings, and spaces, working with established topography to sustainably manage surface water run-off at the source and deliver improved biodiversity and landscape amenity.
- Conserve and protect healthy trees, plants of scale and significant species as valuable community assets.
- Ensure there is adequate space for vegetation. Provide areas of deep soil for planting within the site and along the site boundary to ensure there is adequate space for vegetation (trees and shrubs) to grow and thrive into maturity.

Diversity, wellbeing, access and inclusion

- create great places to learn
- create attractive human-scale places and deliver building forms that successfully blend the old with the new
- design the built environment to be usable by all users – school staff, students, and visitors to the school.

2.2.4 Create great places to learn

Successful education facilities are great places to learn. The whole site is to be considered as a 'landscape for learning' which will support a rich mix of learning needs and offer variety and choice. This means:

- buildings and spaces are inclusive and support the needs of a diverse community — the learning needs of students and the professional needs of staff.

Strategies

- Ensure complementary and contrasting land uses are well located and that education, residential, and commercial densities are appropriate and make mixed use viable.
- Easily accessible. Provide a safe environment that promotes walking and/or bike riding to school and active mobility for all.
- Create 'life on the street'. Use the ground floor of the education facility buildings to clearly address the adjacent street or space, delivering a sense of safety, community ownership and activation.
- Prioritise the needs of young people who use the education facilities.
- Crime Prevention Through Environmental Design (CPTED). Ensure places benefit from the application of 'Crime Prevention Through Environmental Design' principles to lessen or prevent crime and increase the sense of safety of an area.

2.2.5 Create attractive, human-scale places and well-integrated building forms that successfully blend the old with the new

This means:

- buildings and spaces that feel comfortable for the age and stage of the young people who will inhabit them while integrating with the surrounding built environment.

Strategies

- Respond to human scale. Create buildings, streets and spaces that respond to human scale, establishing a walkable urban structure and opportunities for a fine-grain urban form.
- Vary development density. Use diverse building heights and typologies, to avoid the creation of featureless and monotonous scale places.
- Work well with their neighbours. New buildings should work well with their neighbours and respect their local context. This does not mean new development must mimic its neighbour but does require new development to be considered in the way it acknowledges and responds to its neighbour. This approach provides opportunities to use material choice and building massing to ensure developments of different scales are well integrated.

- Create buildings that contribute to the quality and character of the street. Building forms and massing should be used to define streets. Their scale should be used to establish a clear street structure and hierarchy. Windows, terraces, balconies and principal entrances should be designed to contribute to the character and activation of the street, supporting local business and residential activity and positively contributing to a safe and vibrant street life.
- Prioritise occupant amenity. Consider building performance and prioritise occupant amenity through the articulation of building massing, height and forms.

2.2.6 Design the built environment to be accessible and usable by all users — school staff, students, and visitors to the school

This means:

- buildings and spaces that are accessible for all users without segregation or separation.

Strategies

- Create places that respond to the diverse needs of the users of the facility, prioritise the needs of children and people with a range of different disabilities.
- Engage with professional support staff to ensure designs provide direct, or indirect access, for participation by different students with a range of different abilities.
- Ensure that access and egress to the site, buildings, spaces and amenities are 'all access' and do not segregate or stigmatise individuals or groups.

Reconfigurability

- embed opportunities for adaptation and change
- design buildings and spaces to have inbuilt flexibility and be readily changed to accommodate new uses and users in the long term.

The most resilient places are those that can be repurposed and reoccupied, they are places that are capable of adapting easily to changing social, economic and environmental influences. This means:

- buildings and spaces need to be future focused, designed with an ability to be changed or repurposed without major re-construction and expense.

Strategies

- Locally sourced. Provide facilities to enable the education community to be more resilient and self-sufficient embedding opportunities for a community garden and water and energy to be locally sourced.
- Create flexible buildings, streets and spaces that are capable of adapting to new uses and user needs over time.
- Resource efficient, durable and low maintenance. Design places to be resource efficient, durable and low maintenance to reduce energy demand and therefore costs in construction and maintenance in the long term.

3.0 Master planning and site planning

3.1 Urban context analysis

A necessary precursor to a strongly grounded urban design proposition, within which to situate a school master plan, is a rigorous, in-depth analysis of the site and its embedding urban fabric. The master plan for a site must be based on an understanding of the nature of a place. It must be underpinned by a comprehensive analysis of the natural, cultural and built context and the associated opportunities and constraints of the site.

The urban design analysis must take into account:

- key elements of the existing and future proposed context and the nature of the surroundings beyond the site
- existing and future connections between the site and surroundings and the patterns of movement of the users (e.g., pedestrians, cyclists, people with a range of disabilities and vehicles)
- cultural links to the site (e.g., Aboriginal and Torres Strait Islander people; early settlers; migrant communities)
- the existing patterns of built form on the site and around it, including heritage elements existing flora and fauna on and adjoining the site, and characteristics that make it a unique place
- the site topography, historical land use (considering ground condition and contamination risks), hard and soft landscape and ecology).

3.2 Cultural and heritage considerations

The design and development of new and design and re-development of existing Queensland state education settings must preserve Queensland's cultural heritage for the benefit of the community and future generations. All planning, consultation, design and works must comply with the:

- *Aboriginal Cultural Heritage Act 2003*
- *Queensland Heritage Act 1992*
- *Torres Strait Islander Cultural Heritage Act 2003*.

The principles and procedures of the Burra Charter⁴ must be observed.

Planning and design must preserve all unique and significant natural and cultural features, with works limited to that necessary to care for the place and to make it useable, but otherwise change as little as possible so that its cultural significance is retained.

New work should respect the significance of a place through consideration of its siting, bulk, form, scale, character, colour, texture and material. Imitation should generally be avoided.

Where a Conservation Management Plan (CMP) exists, planning and design must comply with the CMP.

Where planning and design is required to meet departmental goals and is contrary to the CMP, public consultation must be undertaken, and the CMP updated accordingly.

Where planning and design requires a CMP and one does not exist, a CMP must be developed and approved prior to planning and design being undertaken.

4 <https://australia.icomos.org/wp-content/uploads/The-Burra-Charter-2013-Adopted-31.10.2013.pdf>

Consideration must be given to existing school buildings which often have heritage and cultural value without being formally recognised by the Queensland heritage register or local heritage registers. Existing buildings must be treated as if they are of significant heritage and cultural value regardless of formal status, and any modifications must be able to withstand scrutiny for the sequence of investigations, decisions and actions taken.

3.3 Allowing for enrolment growth and flexibility

The department uses relocatable buildings as an adjunct to permanent facilities, so that schools can accommodate fluctuations in student enrolments and peak enrolments that may be significantly more than a school's long-term enrolment.

Master plans must consider planning for peak enrolments and must propose practical strategies for the positioning of relocatable buildings, for alignment with the local educational context, landscape elements (hard and soft), service connections, and for integration with community use facilities.

3.3.1 Master planning for relocatable buildings

Master planning must allow planned space for the future installation of relocatable buildings in a manner which does not detract from the design and functionality of the overall site and ensures integration with the permanent facilities.

The overarching principles, the Education Facilities Design Principles and the Universal Design Principles apply equally to relocatable buildings and their layout as they do to the design and layout of permanent buildings.

Relocatable buildings will typically be brought to site progressively to provide accommodation as a school's enrolment exceeds the capacity of permanent buildings. Relocatable buildings may be on a school site for potentially extended periods of time and deserve the same status as permanent learning and teaching areas. They should read as an integrated part of the school, connected to the open space and circulation networks. Landscape should be used to integrate relocatable buildings and give status to 'temporary' parts of the school.

As part of the inclusion of relocatable buildings into the master plan, design consideration must be given to the:

- Constraints and opportunities presented by the site, the proposed placement of permanent buildings, pathways, play areas, civil works, underground services, etc., and the constraints presented by existing and proposed contours and site topography. The height above ground level at entry points to relocatable buildings should be minimised to minimise the extent of stairs and ramps.
- How the relocatable buildings can be clustered and distributed to enable similar learning environments to those provided in permanent learning and teaching areas.
- Placement of relocatable buildings to avoid negative visual and aesthetic impact on the street and public realm. Relocatable buildings should not be located immediately adjacent to the main frontage or near the main entry to the site.
- Access and logistic space for the planned safe delivery, placement and subsequent removal of those buildings. Sufficient space must be allowed for the size of transport vehicles and lifting equipment used for this purpose and provide unobstructed routes of delivery access across the site, noting that transport vehicles cannot travel over soft ground or deep swales or beneath tree canopies, or negotiate ground with excessive slope and camber. A minimum 6 m wide clear access route must be

provided. Access routes must avoid the need for transport vehicles to traverse hard-courts or require the removal of site infrastructure such as covered walkways and playgrounds.

- Positioning relocatable buildings to integrate with the site contours, site services, permanent buildings and structures, overflow carparks, play areas, pathways, outdoor learning areas, parent drop off areas, shared facilities, emergency services and utilities including water, power and communication technology.

The master plan must demonstrate that the relocatable buildings can be simply and safely moved onto and off the site with minimum disruption to school activities and external environments.

3.4 Construction planning and future development

Master plans must provide for the opportunity to deliver future school or community infrastructure. These considerations must inform the design of outdoor spaces between buildings and the linkages and opportunities beyond the current facilities.

For existing Queensland state education settings, master plans must demonstrate how facilities can continue to operate without undue disruptions to learning environments.

3.5 Integration of Early Childhood Education and Care centres and community facilities

Master planning must identify nearby Early Childhood Education and Care centres (existing or planned) and community sporting or recreational facilities (existing or planned) and demonstrate ways that the master plan is integrated with and engages with those other facilities and their community of users. The shared use of car parks should also be considered.

3.5.1 Community use of school facilities

Opportunities to design facilities with reference to the broader community context and to foster joint use arrangements, sharing and community access for use outside school hours should be explored. Parents and other community members should feel that they are welcomed and valued at the school and that the school has a role as a community resource.

The design of facilities must support opportunities for use outside school hours by small and large groups of users drawn from the school and the wider community. Spaces and functions suited to community use must be designed to be available for parents and the community to gather and meet, learn, be active and be involved. These spaces may include sports facilities, performance and presentation spaces, the library/learning resource centre, spaces to accommodate out of school hours care programs, community gardens (where provided) and spaces suited for small and medium sized community meetings and social activities.

The design must show that these spaces (and the necessary amenities and services) can be zoned and isolated for contained use out of hours. Provision must be made to secure the limits of suitable community access areas, so that unauthorised persons are prevented from accessing the remaining areas of the school. When a limited area is secured for community use, it must deliver all user requirements including zoned and sub-metered building services, zoned isolation of security services, emergency egress and access to amenities.

Consideration must be given to direct external access to community use zones, the approach path and safe departure route for users who may be moving across the school grounds at night or at weekends, and the proximity to car parking.

3.6 A sense of address

Schools should invite and welcome the local community through the design and orientation of buildings and through the creation of a well-positioned and obvious point of entry and address. Where community facilities such as early childhood services and open space are located adjacent to the school master planning should, where possible, have reference to the location and design of these facilities so as to create a community precinct that encourages links and interaction between schools and community facilities, maximises ease of use for parents and other community members, and zones the school into public access and secure school zones.

3.7 Site circulation

Master planning, particularly the location of entry points and car parks, should:

- ensure that access and egress to the site, buildings, spaces and amenities are 'all access' and do not segregate, stigmatise or disadvantage individuals or groups
- have reference to the surrounding footpaths, pedestrian crossings, bicycle paths, disability parking, bus bays, street network and traffic management infrastructure.

Where pedestrian and bicycle paths abut or run close to a site, safe and easy access to the site from these paths must be provided. It is critical that access for students arriving by non-motorised forms of transport is encouraged and carefully considered as part of the master planning process.

Each site must be provided with a continuous accessible path of travel linking all habitable buildings with site access, bicycle and car parking, and bus stops.

A continuous accessible path of travel must be provided for stretcher access to all first aid and sick rooms from the kerb of the nearest emergency vehicle parking bay and must comply with the relevant Australian Standards. These paths of travel must consider the widths of doors, circulation spaces, and the slope and cross falls of access pathways.

The traffic flow design must ensure safe vehicular, bicycle and pedestrian access, egress and movement within the school site and ensure minimal disruption to surrounding traffic movement. The orientation of the school and its entry points should have reference to surrounding drop-off and pick-up areas to maximise accessibility and encourage safe movement of parents, students and other users of the school.

The master plan must consider and resolve the space provided for the arrival, departure, parking, loading and unloading of buses. Associated with this function, the master plan must make provision for the safe and convenient circulation of students arriving or departing by bus, including provision of paved sheltered waiting areas (with seating) on the school site and proximate to the bus parking areas.

3.8 Disaster mitigation

Master plans must be developed to mitigate the impact of:

- natural disasters including bushfires, cyclones and storms, earthquakes, floods and storm surges, and landslides
- man-made disasters including chemical and hazardous material spills.

3.8.1 Bushfires

To mitigate the impact of bushfires:

- a Bushfire Attack Level (BAL) assessment of the site must be undertaken using the method described in AS 3959 Construction of buildings in bushfire-prone areas
- buildings should be in areas of the site with the lowest BAL rating.

3.8.2 Floods and storm surges

To mitigate the impact of floods and storm surges:

- buildings should be in areas of the site not affected by inundation or overland flows
- building platform levels must be above the 1 in 100 Average Recurrence Interval (ARI) inundation level
- building floor levels must be 500 mm above the Q100 level or the relevant authority's minimum floor height requirements, whichever is the greater
- overland stormwater flow paths must be designed to ensure that water does not enter buildings during a 1 in 50 ARI rain event
- pedestrian and vehicle access must be designed to allow suitable access and egress and the use of buildings following a significant rain event.

3.8.2 Emergency shelters

Subject to the department's prior written approval, a special purpose facility such as a cyclone shelter or bushfire safe haven may be provided.

Where an emergency shelter has been approved:

- The building floor level must be above the 1 in 200 ARI inundation level
- At least one road access must remain passable for emergency evacuation during a 1 in 200 ARI rain event.

3.9 Summary of key considerations for master planning

A master plan provides the spatial framework for an educational environment fully aligned with a school's vision for learning and opportunities and constraints arising from its site. It helps coordinate diverse considerations into a strategic long-term plan for facilities.

Master planning and site planning must:

- Consider the school's place within the immediate neighbourhood and wider community.
- Consider patterns of pedestrian and vehicular movement to and through the school. Consider how the public, parents and pupils access the school.
- Maximise potential linkages with nearby community facilities and consider potential partnership opportunities.
- Exploit the full extent of land. Every part of the site should be highly considered and integrated with a view to maximise the use of the total site as a landscape for learning. The development of isolated and unusable parts of the site should be avoided.
- Develop a clear hierarchy of open space and a 'heart' for the school. Outdoor areas must contain areas that vary in scale from larger gathering and active play spaces, to medium play spaces to smaller, intimate areas of refuge and a flow between indoor and outdoor space where appropriate.
- Make best use of the natural assets of the site. Consider how existing ecosystems, topography, vistas and habitats can inform the design response and how these can also become part of the learning experience.
- Develop a clear address and main point of entry. A school entry should be conspicuous and announce itself to the neighbourhood. It is the interface between the school and students, parents and the community. The school's address must be more than just a drop-off point.
- Encourage active transport through the design. The site must integrate with the area's broader cycling and walking path networks.
- Consider after hours use and community access to buildings and sports facilities and grounds. Consideration should be given to how these facilities be expressed in the built form and the co-location of facilities potentially being used after hours.
- Consider the impact of after hours use on site security.
- Incorporate gathering spaces for parents and carers at pick-up times to foster the development of the school community and connectedness.
- Minimise potential congestion created by school pick-up/drop-off by car or by bus. Position parent car pick-up/drop-off safely, separate from the main pedestrian entry and consider how it can be managed through design.
- Allow for the future delivery and locations for relocatable buildings for the school's projected long term and peak student enrolments.

4.0 Architectural design

4.1 Impact of the quality of learning spaces on learning outcomes

Good design plays an essential role in enabling high-quality education environments that support the learning needs and wellbeing of every student and the professional and wellbeing needs of staff.

The department is committed to developing and delivering high quality, innovative, efficient and value-for-money, contemporary education infrastructure assets. High quality design has an important part to play in achieving this objective. High quality design is functional and durable, but it is also comfortable, stimulating, uplifting and inspiring.

There is strong evidence that the quality of learning spaces and school buildings can have a profoundly positive impact on traditional learning outcomes⁵.

*Naturalness: light, temperature and air quality — accounting for half the learning impact
Individualisation: ownership and flexibility — accounting for about a quarter
Stimulation (appropriate level of): complexity and colour — again about a quarter.
(Barrett, 2015, p.3)*

4.2 Value for money

Design must take into consideration the whole of life costs of the assets, whilst paying attention to the individuality and specific qualities of the site and surrounding community.

A well-designed school must create value for money building and external environments that give effect to:

- the overarching principles
- the Education Facilities Design Principles
- Universal Design Principles
- the functional requirements for each type of education facility
- the key considerations for master planning.

In doing so, the design of education facilities will:

- reflect the department's vision for learning and its strategic priorities
- present as community facilities in form and character
- be fit for purpose
- enable access for all
- be safe and secure.

⁵ Barrett, P et al (2015) Clever Classrooms: Summary Report of the Holistic Evidence and Design (HEAD) Project, University of Salford, Manchester. https://d7d3e509-a9ca-48ba-90a9-4167b5689991.filesusr.com/ugd/902e4a_6aa724a74ba04b46b716e528b92ad7fc.pdf

A school is an important public building for the local community but should avoid presenting as institutional in form or character. Schools must be designed to have status in the neighbourhood and set the urban structure and identity of a place. Good design should signal the school's civic qualities and value within the community. A school's status as a place of learning and education should be prioritised rather than diminished. The architecture must define a strong presence while at the same time project a sense of invitation, safety and welcome.

Consideration must be given to:

- using regular building shapes and simple roof forms
- matching the volume of internal spaces with the scales of users and the purpose of the facility
- grouping buildings to minimise circulation requirements and planning to ensure that circulation spaces within buildings is efficient
- grouping buildings and areas within buildings requiring specialised mechanical, hydraulic, electrical and ICT services
- designing sub-structures to suit site contours and geo-technical conditions and balancing the efficiencies of cut and fill and retaining walls with above-ground lightweight sub-structures.

4.3 General architectural design considerations

Specific architectural requirements to address the Education Facilities Design Principles are provided in for each of the functional zones and learning spaces in the *Education Facilities Design Principles and Generic Functional Brief*. As well as addressing the essential functional requirements and design principles, the design of a school must give attention to the detail and the context of the site. The design of buildings must:

- Include building forms and structures that are consolidated rather than fragmented – to provide improved user interaction and flexibility as well as more efficient architectural and engineering design outcomes. Multiple separate building forms and structures connected by extensive external walkways are not preferred.
- Provide spaces that are well-proportioned, and efficient in circulation. Circulation that is efficient has a clear hierarchy and can, where appropriate, be programmable to also accommodate other uses such as display, breakout areas or lockers.
- Ensure the layout enhances the operational efficiency of the school activities and the orientation of each school building must take full advantage of the opportunities offered by the site. The architectural design must consider how this can be best achieved using massing, form, materials and architectural expression.
- Engage with the natural and constructed landscape through views between interior and exterior spaces.
- Optimise the integration of Ecologically Sustainable Design (ESD) principles.

The general architectural design considerations summarised in [Table 2](#) must be applied.

Table 2. General architectural design considerations

Site plan	Make the best use of the site's natural and physical features, views, orientation, edges, existing flora and fauna, pedestrian and vehicle access.
Master plan	Create a clear hierarchy for the buildings and spaces between, street presentation, lines of sight for staff supervision of students during breaks, capturing opportunities beyond the site boundary and planning for good integration of mobile and relocatable buildings, anticipating change in the development of the site, and making provision for the staging of works.
Functionality	Demonstrate an understanding of the functional requirements and functional relationships described in the <i>Education Facilities Design Principles and Generic Functional Brief</i> and resolving those requirements and relationships (diagrammatically in abstract) as the basis for the further development of planning for buildings and the site.
Buildings	Ensure form, scale, mass, volume, appearance and sustainable design principles work together. The scale of buildings should consider the age and size of students
Identity and context	Design facilities and the landscape of which students, educators, parents and community can be proud, and which also enhances neighbourhood amenity and urban structure.
Universal design	Designing an inclusive built environment through universal design principles (design for all) to enable users of all abilities — school staff, students and visitors to the school to participate and fully engage in all school experiences and activities.
Quality of the physical learning environment	The facilities must deliver and sustain physical environments and user comfort conditions that are conducive to learning, including the layout of spaces, materials selections, indoor air quality, daylight provision and control, thermal comfort, and acoustic engineering amongst others.
Inspiring spaces	Beyond function, architecture should excite and educate the imagination and create spaces that are engaging, diverse and inclusive, culturally rich and poetic, enjoyable and a great place to be.
Landscape and external environments	Making all external spaces assets for formal and informal learning, enhance social interaction and play, good supervision of students by a minimum number of teachers, diverse in use and function, age-appropriate, and utilising sustainable principles to support flora and fauna, biodiversity and improve water quality. Trees (existing and new) are to be used to support each building's passive heating and cooling system as well as for sun protection for students when outdoors.
Supporting community use	Facilities that support and encourage community use through the identification of spaces suited to community and out-of-hours use, zoning of community use spaces in the design (including zoned and sub-metered engineering services, security controls and access to amenities), ease of direct safe access (out of school hours), provision of storage, etc.
Interiors	Creating excellent spaces for learning and teaching and using interior design to create a positive environment for students of all learning needs. The design is to demonstrate a co-ordinated selection of colours, finishes and materials. Joinery, fixtures and fittings must be flexible, adaptable and provide equitable access for students of all abilities. The design of interiors must ensure that students with disabilities can fully engage in learning alongside their similar-aged peers.
Feeling safe	Creating a secure and welcoming place.
Long life, loose fit, low energy	Designing for whole-of-life, creating facilities that can adapt and evolve in the future, which integrate community use and are adaptable in structure and plan.
Ecological sustainability	Designing for environmental, social and economic sustainability, efficient lifecycle, reduced maintenance cost and reduced resource usage, and support of recycling.
Successful whole	Facilities that integrate buildings, landscape, infrastructure, sustainability and the site; cohesive in architectural form and expression and considers all interstitial spaces.

4.4 Innovation

A key overarching principle arising from the department's strategic priorities that governs the approach to the design process is informed risk taking.

Informed risk-taking

- balance opportunity and risk in the pursuit of innovation and continuous improvement

This means:

- planners, architects, designers and construction companies must, while weighing up risks and potential budgetary constraints, look for opportunities to improve the ability of school facilities to give full effect to the education and design principles.

In addition to meeting the functional requirements of contemporary learning environments as set out in the *Education Facilities Design Principles and Generic Functional Brief*, the design of schools requires an ability for learning and teaching spaces to adapt to educational and technological change.

Harness technology

- leverage technology to engage modern learners, provide access for all learners and advance teaching and learning

This means:

- educators, planners, architects, designers and construction companies must be abreast of all available technology which can facilitate engagement of modern learners, remove barriers to access for all learners and advance teaching and learning. There is an onus on educators to inform planners of emerging new technologies on the market and to test these developments.

For example, digital technology provides multiple options and opportunities for schools locally, nationally and globally. The inevitable evolution of digital technologies will require future-proofed spaces and reconfigurability in design.

4.5 Building quality, materials and lifecycle

The architectural design must take account of the performance characteristics and durability of all the materials and components used in each building structure to ensure that the design life of the structure is achieved and that maintenance requirements are minimised. Materials should be considered which contribute to the diversity in experience of the users with due regard to scale, colour and texture.

Materials and finishes must be robust, durable, readily available and easily maintained.

4.6 Design and construction to support future change

Reconfigurability

- be future focused and designed with an ability to accommodate changed personal needs, new learning technology, curriculum changes and changing demands for use that might occur over the long term, without major re-construction and expense.

The use, size or requirement of some functional areas may be subject to change over the life of a school. The design, construction system and the layout of fixed services must support opportunities for future change and re-configuration of general educational and administrative spaces.

Designs must be capable of being used for different organisational, operational and learning models without requiring significant modification or reconfiguration.

Where possible, the school should be designed as serviced core spaces and more adaptable surrounding spaces. The building structure must provide large clear span zones, with functional spaces in those zones defined using partition walls that can be removed and reconfigured at a later date. Fixed joinery and hydraulic services should be kept away from walls that divide similar adaptable spaces, and away from external walls in those instances where this is the direction of any proposed future expansion.

4.7 Ecologically sustainable design

Ecologically sustainable design (ESD) principles must be incorporated into the design, construction and operation of the facilities.

Sustainability

- deliver facilities that remain environmentally and ecologically sustainable
- relevant to school operations and patterns of use
- provide learning opportunities related to the environment and sustainable futures
- enhance the quality of the internal amenity

This means:

- ensure the long-term social, environmental and economic sustainability of the facilities.

ESD elements must be integrated into design solutions, providing multiple benefits and working in harmony with the overall design.

Three primary benefits must be realised from investment in ESD strategies in design and building performance:

- whole of life performance for the facilities
- quality of the learning environment
- enable aspects of the buildings, building design and outdoor spaces to be learning tools in themselves.

4.7.1 Whole-of-life performance for the facilities

The whole of life performance of the facilities must be considered in terms of economic, social and environmental impacts and opportunities.

Life cycle costing is to be used to guide design and procurement decisions to optimise the balance between capital and operating costs to ensure whole of life best value for money outcomes.

The environmental impact of the design, and up-stream and down-stream impacts of material selections, energy consumption etc. must be considered. ESD is to be integrated within a school as a whole, including planning and spatial organisation, materials selection, building services, landscape systems and planning, pedestrian and bicycle-friendly links to the surrounding streets.

Buildings and urban open spaces must be designed in such a way that a minimum of energy is needed to light and service them in terms of hot water, heating, cooling and ventilation.

The use of passive energy measures to achieve a comfortable internal environment must be employed where possible. The form of each building must be developed to take account of the need to minimise energy consumption with particular emphasis on maximising the use of insulating materials, natural ventilation and daylight, and passive solar design to maintain comfort conditions.

The sanitary fittings installed, and the landscape designed must minimise the water needed for human use and irrigation. Rainwater runoff from roofs is to be captured in tanks for use in toilets and irrigation.

The facilities must be designed with the future in mind, and risk-based approach to foreseeable risks such as climate change must be implemented.

4.7.2 Quality of the learning environment

The quality of the learning environment needs to cater for the needs of occupants in terms of their health, comfort, and productivity. ESD initiatives should be implemented which contribute to the quality of the indoor environment by:

- Improving thermal comfort by maintaining temperature levels, relative humidity and air velocity at appropriate levels
- minimising the entry of outdoor pollutants
- providing sufficient outside air to ensure levels of indoor pollutants and CO₂ concentrations are maintained at suitable levels
- exhausting indoor pollutants directly to the outside of buildings while limiting their entry into other areas
- using materials, finishes and adhesives with low concentrations of volatile organic compounds and formaldehyde.

Further details on specific ESD performance standards and requirements are provided in the *Technical Specifications and Standards*.

4.7.3 Enable aspects of the buildings, building design and outdoor spaces to be learning tools in themselves

Because of their presence in all communities, schools have the potential to be flagships for change in sustainable sensitivities and to act as demonstrators of practical sustainable approaches and technologies.

The operation and monitoring of ESD systems can form part of the learning process, by giving students opportunities for personal responsibility in the management of ESD active systems, and by providing them with the data on seasonal energy and resource consumption that can inform an understanding of the sustainability footprint of their school, their community and their family. In this way, the adults of tomorrow can grow up with an understanding and appreciation of the sustainable living patterns that the world needs, and with an understanding that individuals need to take personal responsibility for creating a sustainable future.

Many ESD initiatives could have features added (education enablers), which are not required to deliver the ESD outcomes, but that enable the initiative to support curriculum requirements and desired learning outcomes.

For example, a photo voltaic system could deliver the ESD outcome of reducing consumption of fossil fuel sourced power. Putting the system in a visible location so students can see it and providing a display that shows how much electricity has been generated, would be education enablers. Identifying and implementing education enablers is the required approach.

ESD features must be incorporated in a manner that encourages practical student interaction and reinforces student's understanding and appreciation of environmental issues.

4.7.4 Design strategies to support energy efficient building performance

The following strategies to reduce electrical power consumption for heating and cooling must be implemented:

- Align buildings with their longer axis set out in an east/west direction, maximising the north-facing facade and minimising east and west-facing facades.
- Minimise areas of east-facing and west-facing glass.
- Provide external fixed and operable shading of east, west and north-facing windows.
- Use airlocks to external doors.
- Zone areas so that the heated/cooled areas are grouped and isolated from non-conditioned areas by means of doors. If possible, conditioned areas must be separated from the outside by airlocks.
- Main entries to buildings are located to avoid prevailing winds.

4.8 Internal learning spaces

4.8.1 Spatial structure

The interior must ensure the overall circulation strategy is clear, simple, safe and legible. It must provide shared circulation spaces, which encourage interaction and use visual transparency to enhance vertical and horizontal connectivity. It must offer the range and relationship of learning spaces, settings and functional elements specified in the *Education Facilities Design Principles and Generic Functional Brief*.

4.8.2 Circulation

Schools, educational settings and classrooms must be designed to enable students of all backgrounds, identities and abilities to access and fully participate in learning.

Circulation and travel spaces must provide users with access to functional spaces, which can be considered as destinations or terminal spaces. However, circulation spaces should also be considered as part of the learning environment and be designed to support learning and contain functions and activities such as breakout areas for collaborative learning or lockers and wet areas. They can also extend a formal learning space and be integral to connecting several learning spaces into a larger one. A clear hierarchy between circulation and terminal spaces is important for effective place making. Designs must provide clear unimpeded access in circulation spaces.

4.8.3 Connections and relationships between learning spaces

The connections between learning spaces must be supported by the framing of external views, visual axes through the buildings and the use of natural light. The interior design must support the overarching circulation principles with the co-location of similar functions in the same or adjacent zones to capture efficiencies in services.

4.8.4 Natural light, views and artificial light

Internal environments must be designed to maximise daylight and views, with the appropriate levels of sun and glare control. Daylight must be able to be modified to suit different modes of use. Natural light and access to views that connect the interiors to the surrounding context must be exploited in the design of internal spaces. Natural light must support the internal amenity, including the main entry areas and links, and must be used as a medium for cognitive way finding.

Artificial lighting must enhance the overall ambience, avoid an institutional feel and provide a secure environment. An appropriate balance of direct and indirect lighting should be used to minimise glare and allow for the prominent display of artwork on walls.

4.8.5 Natural ventilation

The ventilation design must consider seasonal variations in climate conditions, orientation of the buildings, and wind direction to maximise natural air flow whilst limiting the entry of dust, pollen and other allergens.

4.8.6 Surface, colour and texture

The considered use of surface, colour and texture enhances and defines the spatial structure and support the function of spaces.

A change in texture and surface can help define interior spaces and assist in wayfinding. This approach should be achieved using natural materials. The use of materials that promotes wellbeing and assists in the management of student behaviour should be considered. The materials palette must be developed as part of the integrated architectural and interior design concept and resolution.

The appropriate choice of colour in learning areas must help students and teachers to stay focused, and extend students' attention spans, reduce eyestrain and foster work productivity and accuracy.

The design of colour schemes must:

- support the function of the building and the tasks that are carried out in it
- be restrained
- incorporate natural materials
- complement the display of student work
- create positive emotional and physiological effects
- create legibility and differentiate space.

The use of complex colour schemes and the use of contrasting colours of the same value (e.g., red/green) that could create a difficulty for a person with a visual impairment must be avoided. The design must consider the widely held view that muted colours and colours of particular hues can have a calming effect on students with autism.

4.9 Acoustics

Good acoustic design is essential and must be considered during the development of master plans and detailed designs.

Consideration must be given to:

- external noise sources including roads, industry, railways, aircraft flight paths, etc. and their impact on activities within the site
- the impact of school activities, plant and equipment on adjacent properties and residents
- relationships between noise producing buildings within the site (e.g., gymnasiums, performing arts, technology workshops, etc.) and their impact on adjacent buildings and activities
- relationships between noise producing activities and spaces within individual buildings
- noise from mechanical ventilation and air-conditioning fans and compressors.

Master planning and detailed designs should seek to reduce noise impact by separating noise sources from the areas affected by noise by distance in preference to a reliance on the use of acoustic barriers and materials.

4.10 Safety and security in design

Schools are exposed to real world risks and challenges and will hold valuable assets and may stand empty for extended periods. When schools are in use students and adults will be accessing and using the facilities through the day, evenings and weekends. Designs must demonstrate that crime risks and user safety have been considered and addressed.

Crime Prevention Through Environmental Design (CPTED) principles must inform the design.

Facilities must provide safe and secure environments. To achieve this the design of schools must:

- Provide clear and logical street access to administration facilities that permits the supervision of all entries.
- Discourage wilful damage.
- Avoid placing external doors in locations that are difficult to monitor.
- Where possible, compartmentalise facilities to support a range of out of hours uses.
- Limit opportunities for unauthorised roof access. Designs must avoid external structures and works of less than 1800 mm height (such as fences, balustrades, equipment cages, screen walls, shade structures, retaining walls, covered walkways and the like) that present climbing opportunities and access to roof areas.
- Consider on-site traffic management and separation of vehicular and pedestrian traffic.
- Include well placed external public address speakers.
- Provide easy and open access to first aid locations.
- Utilise durable and strong fencing systems that present a substantial barrier to unauthorised entry onto school grounds.
- Utilise security systems, lighting and construction to deter unauthorised access to car parking areas and buildings.
- Promote good supervision of all internal and external areas by minimum numbers of staff (long lines of sight).
- Promote neighbourhood passive surveillance out of hours across the site; provide clear and logical external signposting.
- Ensure safe and easy access to and from car parking areas at all hours.
- Ensure that the carpark area and footpaths used after hours are free from hiding spots (shrubs, substations, etc.).
- Provide safe access to toilets at all times.
- Provide security lighting to building perimeters, car park and external paths of access.

Further guidance on security in design requirements is provided in the Security Design Requirements, Department of Education and Training, School Security Program, Version 12 Dated: 15 March 2011⁶.

6 <https://qed.qld.gov.au/our-publications/standards/Documents/design/security-design-requirements.pdf>

4.11 Storage

Schools make frequent use of teaching aids and resources, creative media, creative play materials, games, special furniture and equipment, etc. to support teaching and learning activities. Resources will be in various forms and quantities — some suited to storage on adjustable shelving, and some requiring floor space.

Designs must consider the distribution of accessible, well designed and efficient storage through all learning and teaching areas. Resources must be available where needed, when needed and can be securely stored away when not in use.

Storage solutions may include dedicated storerooms, fixed joinery and mobile joinery that may be used to define learning spaces.

Storage must be provided both within and near to external learning environments, to facilitate the transfer of learning resources, and to provide space for the storage of loose furniture, fittings and equipment that will be used to activate outdoor areas.

Storage must be provided for use by community groups and associated with community use spaces, including out of school hours care, sports groups, etc.

4.12 Signage and wayfinding design principles

Schools have an annual intake of new students who engage with complex and unfamiliar environments. The transition can be made easier by having the design of buildings and external environments support clear and easy wayfinding. Key issues to be considered and demonstrated in the design of buildings and external environments include:

- clearly defining points of entry into buildings and circulation paths through buildings
- defining different buildings using materials selections, colour coding, graphics, etc.
- defining functions and destinations (canteen, toilets, general office, etc.) using materials selections, colour coding, graphics, etc.
- creating clear and direct pathways that are informed by human factors analysis
- using sight lines to show destinations
- using signs (text/ graphics/ colour coding) at decision points.

Associated with the design of internal and external environments a complete signage design must be developed that provides clear directions, instructions or advice for all users, that clearly identifies destinations, functions and key spaces, and that is fully integrated into the design of the buildings and external environments. The design of the built and natural environments should support the signage through pedestrian layout, use of colour and material referencing.

The colour coding of buildings, spaces and facilities for wayfinding purposes must not discriminate or identify buildings, spaces or facilities on the basis of a user's abilities.

5.0 Landscape design principles

Design of the internal and external environments must be developed simultaneously. Landscape is not an add on — it is an integral aspect of the learning environment. The whole site has potential as a landscape for learning.

From the outset, integrate the expertise of:

- an education designer and planner in the master planning process to ensure that outdoor spaces are activated and designed to enable learning as described in the functional requirements within the *Education Facilities Design Principles and Generic Functional Brief*
- a landscape architect in the master planning process so the key opportunities and assets of the site are captured
- regional support staff with specialist knowledge of the requirements of people with disability.

The landscape design principles set out in this document need to be read in conjunction with the education rationale and detailed functional requirements for the outdoor spaces for each education setting as provided in the companion document *Education Facilities Design Principles and Generic Functional Brief*. Technical requirements for landscaped elements are set out in *Technical Specifications and Standards*.

5.1 General principles and guidelines for landscape design

Well-designed external environments can improve the functionality, durability and flexibility of open spaces, the thermal performance of buildings, and offer shade and shelter in playgrounds.

The design of external environments must:

- Ensure that outdoor spaces are activated and designed to enable learning as described in the *Education Facilities Design Principles and Generic Functional Brief*.
- Deliver spatial experiences within the external environments. The *Education Facilities Design Principles and Generic Functional Brief* requires internal and external learning environments to support multiple teaching and learning modes. Similar thinking as is applied to the design of internal spaces and settings should be brought to the design and activation of external environments.
- Consider the visual outlook from internal learning environments. Where possible enable visual access to nature and exploit existing features such as mature trees.
- Ensure spaces are all access and address the needs of students of all abilities.
- Consider how spaces are used and appropriated by different age groups and what elements are required to activate these spaces.
- Respond to the key opportunities and make best use of the existing assets of the site.
- Establish a hierarchy of open space to provide functional, adaptable, expandable and durable landscapes.
- Conserve and respect the natural vegetation, topography, ecology and heritage of the site.
- Support and express different cultural perspectives in the external environments.
- Consider the main entry points, nodes, linkages and gateways for students and the local community.
- Develop the spaces between buildings to foster various modes of recreation, gathering and socializing.
- Integrate seating areas and nooks within the building perimeter to form outdoor gathering areas.

- Consider how deck and ramp areas can also incorporate built-in furniture and other opportunities for play.
- Consider the interface between built form and landscape and how the building form can help to define outdoor gathering areas.
- Have a consistent design intent between the architecture and the landscape.
- Demonstrate sustainable land management practices and landscape design that reflects the indigenous history of an area.
- Provide robust, durable, high-quality external furniture in configurations that can support outdoor learning, student socialising and offer an integrated design solution.
- Integrate interpretive and educational opportunities within the landscape to facilitate active and passive outdoor learning.
- Consider the requirement for ongoing maintenance of outdoor areas and minimise seasonal impacts.
- Prevent soil erosion.
- Respond to the primary and secondary functional roles of each outdoor space described in the *Education Facilities Design Principles and Generic Functional Brief*. The prescribed functionalities will influence the size, level of enclosure and relationship of outdoor spaces with internal spaces.
- Establish a clear planting structure. Ensure that the main structure planting is introduced as early as possible to provide identity, enclosure and shade to outdoor spaces.
- Consider the specific needs of the different school types and student cohorts.
- 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.

5.2 Biodiversity

The design of external environments must maintain biodiversity and improve the natural environment. Native and endemic plant species must be used where possible to support biodiversity and local fauna. The master plan and the landscape design must incorporate biodiversity considerations:

- Retain existing native and endemic tree and understorey plant species (where possible).
- Ensure new plantings are predominantly endemic and native. The plant palette is to be based on the nearest natural bushland areas to provide connectivity and increase the likelihood of migration of flora and fauna.
- Select new plantings to contain a variety of species and avoid monocultures.
- Where feasible source new trees and plant specimens from areas within the same climatic zone.
- Include native and exotic food production gardens.
- Utilise composting of green waste and worm farming.
- Where appropriate use drought tolerant planting species suited to the local climate to reduce irrigation requirements.
- Where feasible use biodegradable mulches to improve micro bacterial activity and reduce irrigation requirements.
- Introduce plantings and landscape features, such as retarding basins, detention in dry basins, swales and bioswales, to slow surface water movement and increase stormwater infiltration, filter pollutants and provide habitat.
- Plant deciduous and evergreen trees to provide shade to building walls and external areas appropriate to the seasons and climate changes.

5.3 General design principles for external areas

5.3.1 External public spaces

For all external public spaces, consideration must be given to temperature control through wind protection, cross-ventilation, the capture of sunlight during cooler months, shading during warmer months and the use of thermal mass in ground and wall surfaces.

5.3.2 Civic presence

The landscape design should complement the master plan to enhance the civic presence of the school whilst maintaining the characteristic of the surrounding areas. Structure planting should provide character and presence to the school both around the perimeter, within the major external spaces and along circulation routes.

5.3.3 Fencing

The design and detailing of fencing must be considered as an important part of the overall presentation of the school. Fencing forms part of the street image of the school, and quality, colour and construction must be coordinated with adjacent buildings. Fencing will define contained school property and will identify the boundary that outsiders are not permitted to cross. Schools contain outdoor play facilities that attract out-of-hours use. Fencing must secure the school site and outdoor spaces from unauthorised access.

5.3.4 Covered ways

Where facilities comprise two or more buildings, and where the facilities include the provision of relocatable buildings as part of the initial development, covered ways must be constructed to provide at least one sheltered pathway linking the main (administration) building with the outlier buildings and permitting travel between all outlier buildings under a continuous sheltered pathway.

5.3.5 Bicycle parking

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

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

The numbers of parking spaces must be calculated based on the long-term enrolment and staff numbers as advised by the department and the ratios nominated in [Table 3](#).

Consultation with the school must also be undertaken to confirm school requirements. Where a discrepancy exists between the numbers of parking spaces proposed and the numbers determined in accordance with [Table 3](#), departmental approval must be obtained.

Paths must be provided connecting the bicycle parking to cycle paths and roadways at the perimeter of the site. These access entries and paths must be separate from those used for vehicular access and designed to avoid conflict between bicycles and vehicles.

Paths must also be provided connecting the bicycle parking to the closest building or covered walkway.

Table 3. Bicycle parking

User	Number of parking spaces	AS2890.3 Security Class
Students	1 per 3 students from Year 4–12	Class 2
Staff	1 per 10 staff	Class 2
Visitors	Year P–6 1 per 25% of student parking Year P–12 and Year 7–12 1 per 10% of student parking	Class 3

Class 2

Secure, roofed storage enclosures, protected from the weather, containing bicycle parking devices that allow users to lock the bicycle frame and both wheels to the parking device using their own lock must be provided.

Class 3

Bicycle loops, rails or similar must be provided which allow a user to secure their bicycle frame and both wheels to the bicycle parking device using their own lock.

5.3.6 Sports fields and multi-purpose courts**Sports fields**

Sports fields must be located:

- With a direction of play orientation within $\pm 10^\circ$ of north/south.
- Allowing a minimum grade of 1:120 and a maximum grade of 1:80.
- With due consideration to passive supervision of the sports fields from school buildings. Where possible and practicable, sports fields should be located at a lower level than school buildings.
- With suitable access to facilities used to store sports equipment and toilets and amenities.
- To facilitate use by community groups outside of school hours.

For P–6 schools, the sports fields must be configured to accommodate:

- One cricket oval with a boundary 110 m long and 92 m wide and additional run-off areas of 3 m.
- One rectangular sports field 82 m long and 55 m wide placed within the boundary of the cricket oval.

For 7–12 schools, the sports fields must be configured to accommodate:

- Two rectangular sports fields each with a boundary 115 m long and 68.5 m and additional run-off areas of 5 m. The two fields shall be placed side-by-side spaced 14 m apart (boundary line to boundary line).
- A 400 m eight-lane oval running track 165 m long by 110 m wide overlaying the two rectangular sports fields. The running track shall be 8.5 m wide and have an internal radius of 46.5 m in the bends. A zone of 2 m outside the perimeter of the running track must be provided level with the surface of the running track and free of undulations and obstacles. The running track must be located so that the sports field goal posts (including goal post sleeves) do not encroach on the running track.

For P–12 schools, master plans must include separate P–6 and 7–12 sports fields configured to accommodate the abovementioned facilities.

Where joint use of sports fields with local government, local sporting groups or other agencies is being considered and their needs cannot be accommodated within the areas nominated in [Section 5.3.6 Sports fields and multi-purpose courts](#), the department's approval must be obtained prior to master planning the site to accommodate these needs.

Accessible paths 1200 mm wide and with a maximum slope of 1:20 must be provided between the sports fields and the school building zone.

Landscaping around the sports fields should provide turfed areas of battered banks, mounds or terraces for spectators.

Multi-purpose courts

Multi-purpose courts must be located:

- with a direction of play orientation within $\pm 10^\circ$ of north/south
- arranged side-by-side, rather than end-to-end
- with suitable access to facilities used to store sports equipment and toilets and amenities
- to facilitate use by community groups outside of school hours.

For P–6 schools, one double-court platform or equivalent area to accommodate two basketball or netball courts must be provided.

For 7–12 and P–12 schools, two double-court platforms or equivalent area each accommodating two basketball or netball courts must be provided.

For 7–12 and P–12 schools, two double-court platforms or equivalent area each accommodating two basketball or netball courts must be provided.

The platform dimensions must be based on the court dimensions including run-off areas specified by the relevant sport's governing body.

Master planning should consider distributing the court areas to address the needs of different student cohorts and age groups.

Where joint use of multi-purpose courts with local government, local sporting groups or other agencies is being considered and their needs cannot be accommodated within the areas nominated in [Section 5.3.6 Sports field and multi-purpose courts](#), the department's approval must be obtained prior to master planning the site to accommodate these needs.

Accessible paths 1200 mm wide and with a maximum slope of 1:20 must be provided between the multi-courts and the school building zone.

5.4 Shade areas

Sun shading in the form of permanent roof structures, lightweight structures and shade trees must be provided.

The master plan and landscape designs must incorporate shading of:

- lunch areas and general seating areas between 10:00 am and 2:00 pm
- permanent playground structures including climbing frames and sandpits between 9:00 am and 3:00 pm.

The placement and extent of sun shading must:

- consider the sun angles at different times of the day throughout the school year
- reduce indirect UV radiation by managing reflected sun light
- not impact natural light levels, or block breezes to windows, in occupied spaces in adjacent buildings.

6.0 Traffic and pedestrian movement

6.1 General circulation and spatial organisation

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 the school site.

Active transport facilities such as pedestrian links, bicycle paths into a site, bicycle parking/storage, and pathways/links to public transport must be given a higher priority over other modes of transport and integrated into the school design as a whole.

The main pedestrian access to a school must be prominent and easy to find, with buildings located near to it and be clearly visible from the road. Additional points of pedestrian access must be provided around a site, aligned with external infrastructure such as pedestrian crossings, public pathways, bicycle tracks, bus stops, street parking, street networks and local facilities such as shopping centres, neighbourhood parks, etc.

The main pedestrian entrance is the point of access for all visitors. It should be prominent, clearly visible, well orientated, well sized, and easy to find by the pedestrians entering the site, and it should be easily accessible from the car-parking area. The entrance should also provide a safe and secure environment for students.

Once in the school grounds users must be able to find the administration reception area without difficulty and without requiring or obtaining access to the rest of the site or other buildings.

Protection from wind and inclement weather prior to entering the main door must be provided.

Depending on the size of the site, access to adjacent roads and the layout of the school separate entrances for staff may be considered.

The majority of students will not normally use the main entrance to a school. They will often enter an open campus at defined points of entry around the perimeter of the site and make their way around the grounds to play areas and to entrances to their respective learning areas.

Depending on proposed community use of a school, entry to community-shared facilities may be shared with the main entry or form a clearly defined separate entry.

Provision must be made within sites for vehicle access to permit parents to short-stay park and drop-off or pick-up students. Particular provision must be made for parking for children attending Early Childhood Education and Care (a parent or carer must accompany children to and from these facilities) and for children with special needs. Vehicles must be able to enter and exit a site in a forward direction without the need to undertake 3-point turns or reversing manoeuvres (excluding access to parking bays).

Internal circulation roads and vehicular access must be kept to a minimum while ensuring ease of parking and access to the main entrance. The location of vehicular access points and internal circulation must give consideration to the operation of the roads surrounding and connecting to the site.

Pedestrian routes on the school site must take priority over vehicular ones. Where routes intersect the priority for pedestrians must be emphasised. Footpaths must be designed with safe and direct access in mind. Where possible there must be clear separation between vehicular traffic and pedestrian movement. Where there is a conflict between pedestrians and vehicular movement, appropriate treatments must be provided to ensure the safety of pedestrians.

6.2 Provision for all occupants

All occupied areas of the school and external civil works must be designed to provide safe, dignified and equitable access for all users including people with disabilities whether students, staff, parents or other visitors.

The design of schools must comply with the requirements set out in AS1428; the *Disability Discrimination Act* (DDA); Disability (Access to Premises — Building) Standards 2010; and Human Rights and Equal Opportunities Commission (HREOC) — Access to Buildings and Services: Guidelines and Information.

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

- minimising pedestrian travel distances
- weather protection to pedestrian paths and at entrances
- functional and safe access around the site for pedestrian and vehicular traffic (this must include traffic planning in relation to drop-off and pick-up zones for students by cars and, where relevant, buses, with separation of pedestrian and vehicle traffic)
- provision of parking for teachers, parents and visitors
- access for delivery, waste removal and service vehicles
- emergency access.

6.3 Emergency exits

All emergency exits must be BCA compliant, clearly signposted and easily found. Emergency exit signage must comply with the requirements for fire safety certification.

If stairs are provided and in order to optimise the efficient use of floor area, stairs should have a dual function supporting day-to-day circulation as well as emergency circulation and egress.

6.4 Pedestrian access and egress

Pedestrian movement through the site must be well planned, safe and legible in both internal and external areas. The efficient movement of people from car parks and boundary entrances to buildings is essential in delivering a user-friendly school. Points of access and egress must be clearly defined and easily located.

A path network is required to provide all users with a safe, functional and direct means of access from boundary entrances to and around buildings on the site and to external learning and play areas. While all paths around buildings must receive spill lighting from external security lighting, 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) must be provided with safe levels of illumination along the length of the paths.

Pedestrian access must engage with adjacent streets and local and neighbourhood pedestrian and bicycle paths to facilitate and encourage pedestrian access to the site. Pathways to engage with public transport stops must be provided where applicable. The design for a site must consider the best locations for flagged school crossings over adjacent streets and provide safe pathways to these locations.

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 layout of pedestrian access networks across a site must consider the planned placement of relocatable buildings to meet long-term and peak enrolment needs.

Pedestrians must be able to move from site entrances to buildings and from places such as parking areas using footpaths that avoid crossing vehicle circulation routes where possible. Pedestrian crossings must be provided where footpaths cross paths of vehicle movement. Pedestrian visibility must be a priority at these locations.

6.4.1 Pedestrian paths

Path widths must suit their anticipated usage, comply with the relevant DDA access requirements and, in general, be a minimum of 1800 mm wide. Where paths will be shared by pedestrians and cyclists these must be a minimum of 1800 mm wide. External paths widths must be consistent with the requirements of the relevant road authority.

Paths must free of obstructions such as plant, equipment, furniture, fittings, projecting window sashes, or projections from external walls. The number of supporting columns to shelter structures over paths must be minimised.

Where changes of level must be managed, DDA compliant ramps 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.

Where external access is provided to learning environments footpaths must be wide enough at building entrances to provide sufficient paved area for the students waiting to enter.

Pedestrian paths must follow the key pedestrian desire lines through the site enabling students and other users to efficiently travel between buildings. Paths should be designed using Human Factors Analysis to reduce the cutting of corners over gardens and landscaped areas.

6.4.2 Vehicular traffic design considerations

There is significant vehicle traffic associated with the operation of a school. The needs of various user groups must be considered:

- short stay for drop off or collection of students
- student arrivals and departures by bus
- visitors arriving for interviews or meetings
- goods deliveries.

Some staff vehicles will stay for a full day. Visitors out of normal school hours may stay for several hours to watch or participate in a performance, function, or sports event. Schools may have a bus that is parked permanently at the site. Emergency vehicles may rarely attend site but have high priority for direct unimpeded access to specific locations.

Commercial vehicle movements will include known and scheduled events (e.g., a waste truck arrives regularly, at a scheduled time, and follows a short, defined, and known path of travel) and frequent but irregular arrivals of large and small delivery vehicles. Site planning requires a considered response, wayfinding strategy and space provision for service vehicle parking.

Administration buildings are not intended to operate as a delivery bay and few deliveries will be suited to direct receipt at the general office. Deliveries to canteens and specialist learning areas (Science, Technology, Arts, etc.) have a specific end destination and will involve the transport of goods (sometimes large and heavy) across a school campus. The optimum solution that reduces manual handling may require vehicle access close to the end destinations, but this has consequences in terms of space devoted to vehicle access and risk in terms of the interface between vehicles and pedestrians.

In developing the master plan and in designing the site response to car parking provision and vehicle movements, the design must:

- consider the multiple vehicle movements that will occur at a school across a week
- consider the purposes, destinations and vehicle types that will be involved
- consider and resolve the safety risks associated with the interface between vehicle movements and pedestrians
- demonstrate how the design responds to and supports these many competing demands for vehicle access to and circulation around the site.

6.4.3 Vehicle access roads

Vehicle access roads must provide functional and safe access into a site. For safety reasons, they must be separate from pedestrian and cyclist access paths. On-site parking must be designed with minimal site intrusion and the extent of access roads must be minimised.

A single point of vehicle entry to car parking areas should be provided to minimise the number of locations where pedestrians, cyclists and vehicles will interact. Multiple access and egress points may be provided where long and short-term car parks are separated within the site. Appropriate sightlines and intersection operations must be provided for any vehicle access points. Points of access and egress must be kept clear of external intersections, pedestrian crossings, curves, and other locations where turning traffic impacts on safe and efficient traffic movement.

Provision must be made for access and short-term parking for delivery vehicles. Where possible, delivery parking should be proximate to the delivery location, but delivery vehicle access must not take precedence over the safety and amenity of users. Delivery vehicles must enter and exit the site in a forward direction. Safe space for vehicle reversing movements must be provided where required. Car park layouts must keep pedestrians separated from those areas where vehicles may be reversing.

To maximise safety for students the internal design should create a slow speed environment for vehicular traffic and maximise pedestrian visibility, which may require the use of:

- speed humps
- signage
- bollards.

6.5 Access for emergency vehicles

Master plans and civil works must facilitate access for emergency vehicles (such as ambulances and fire trucks) while minimising the length of on-site trafficable pavements. Provision must be made for an ambulance to park close to the first aid/sick bay and to sports fields where these are provided.

The provision of access for emergency vehicles must be considered carefully in the context of site topography, on-site parking, student hard play areas and zones where relocatable buildings will be placed.

For ambulance access, all weather vehicle access must be provided from a surrounding street to sports fields by the shortest possible route.

Access for fire-fighting purposes must comply with the recommendations provided in the Queensland Fire and Emergency Services' *Fire Hydrant and Vehicle Access Guidelines for Residential, Commercial and Industrial Lots*⁷.

6.6 Vehicle parking areas

Separate off-street parking areas must be provided for:

- short-term public parking and student drop-off and pick-up
- long-term staff, visitor and student parking.

The location of car parks should:

- avoid car park access and exit roads crossing major pedestrian and cycle access points and pathways
- mitigate the impact of vehicle queuing on pedestrians, cyclists, buses and nearby roads and intersections
- consider access to school facilities that may be used by the community outside of school hours.

The number of parking spaces provided must be calculated in accordance with [Section 6.6.1 Short-term public parking and student drop-off](#) and [Section 6.6.2 Long-term staff, visitor and student parking](#). Consultation with the relevant local authority must then be undertaken to confirm that the proposed number of spaces comply with local planning requirements. Where a discrepancy exists between the number of parking spaces proposed in Section 6.6.1 and Section 6.6.2 or local planning requirements, departmental approval must be obtained.

In addition to the guidance provided in [Section 6.6 Vehicle parking areas](#), the design of parking areas must comply with the requirements of the Department of Transport and Main Roads' *Planning for Safe Transport Infrastructure at Schools*⁸ and the relevant local authority.

6.6.1 Short-term public parking and student drop-off

Public parking and student drop-off zones must be located adjacent to the property boundaries to allow the excise of these areas in the favour of the relevant local authority as a public road.

The design of public parking and student drop-off zones must:

- Allow all vehicles to enter and exit the parking area in a one-way forward direction. These car parks must not include dead-end aisles requiring vehicles to turn around.
- Include parallel parking for student drop-off and pick-up with the kerb and pedestrian footpaths being on the left of the parking bays.
- Include short-term parking based on a 60° nose-in arrangement.
- Include parking spaces with dimensions consistent with the classification nominated in [Table 4](#) and as outlined in *AS/NZS 2890 Parking facilities*.
- Include designated and signposted accessible car parking spaces.
- Incorporate entrance and exit queue storage lengths consistent with Department of Transport and Main Roads and local authority requirements and operational assessments and queuing theory calculations based on car park capacity, expected service rates and arrival flows.

7 <https://www.qfes.qld.gov.au/buildingsafety/referral-agency-advice/documents/BFS-FireHydrant.pdf>

8 <https://www.tmr.qld.gov.au/-/media/Safety/Schoolroadsafety/PlanningforsafetransportinfrastructureatschoolsTechnicalGuidev51.pdf>

The numbers of parking spaces must be calculated based on the long-term enrolment as advised by the department and the ratios nominated in [Table 4](#).

Table 4. Short-term public parking and student drop-off

User category	Number of parking spaces	AS2890.3 Security Class
Short-term: Prep students and students with disabilities	1 per 8 students	Class 2
Short-term: All other students	1 per 15 students	Class 3/3A
Student drop-off	20% of short-term	Class 3/3A
Early Childhood Education and Care		Class 2

Consideration should be given to creating separate public car parks and locating these proximate to the various zones within a site (e.g., Early Childhood Education and Care, Prep–2, 3–6, 7–9, 10–12) to mitigate traffic congestion at peak times by not concentrating all parking in the one location.

1% of all car parking spaces must be designed and designated as spaces for vehicle occupants with disabilities, with a minimum of one space being provided in each car park.

As these car parks will be excised to the relevant local authority and become part of the road reserve, master planning and design must not place or allow any infrastructure, internal site services, buildings or structures to encroach on the area to be excised.

Consultation with the relevant local authority must be undertaken during master planning and detailed design to ensure that the proposed designs are endorsed by the local authority.

6.6.2 Long-term staff, visitor and student parking

The location of staff, visitor and student parking must include and allow for:

- convenient access for staff from the car park to buildings
- convenient access for visitors to the administration area and reception
- designated and signposted accessible car parking bays.

Delivery vehicle access may be incorporated into these car parks to provide close access to areas such as administration, canteen, science and technology.

The design of parking for staff, students and visitors must:

- Incorporate two-way access aisles with a single access/exit point. These car parks should not include dead-end aisles. Where dead-end aisles are unavoidable, adequate turning provision must be provided.
- Include parking based on a 90° arrangement with dimensions consistent with Class 1/1A as outlined in *AS2890.1 Parking facilities Part 1: Off-street car parking*.
- Incorporate entrance and exit queue storage lengths consistent with Department of Transport and Main Roads and local authority requirements and operational assessments and queuing theory calculations based on car park capacity, expected service rates and arrival flows.

The numbers of parking spaces must be calculated based on the long-term enrolment and staff numbers as advised by the department and the ratios nominated in [Table 5](#).

Table 5. Long-term staff, visitor and student parking

User category	Number of parking spaces	AS2890.3 Security Class
Long-term: Staff	0.7 per staff member	Class 1
Long-term: Student	1 per 10 Year 12 students	Class 1/1A
Visitor only		Class 2

1% of all car parking spaces must be designed and designated as spaces for vehicle occupants with disabilities, with a minimum of one space being provided in each car park.

6.7 Bus parking

6.7.1 Public bus services

Master planning of sites must consider the location and extent of public bus service set-down areas and bus movements.

Consultation must be undertaken with the relevant local authority, bus service providers and the regional Department of Transport school transportation officer to determine service requirements.

Where current set-down areas do not exist or are considered inadequate an assessment of the area required must be made using the recommendations provided in the Department of Transport and Main Roads' *Planning for Safe Transport Infrastructure at Schools*⁹. Where set-down areas cannot be accommodated within the existing road reserve, an area at the site boundary shall be identified for possible excise to the relevant local authority.

A covered passenger waiting area must be provided with the site boundaries close to the public bus service set-down area and provide shade between 2:00 pm and 4:00 pm (and account for seasonal shade angles). The covered waiting area must not impede the safety and visibility of the set-down area.

The waiting area and any associated structures and infrastructure must not be in or encroach upon any area of the site to be excised.

6.7.2 Private and charter bus services

Where schools operate private bus services or will be chartering buses for school excursions, consultation must be undertaken with the relevant local authority and bus service providers to determine whether public bus service set-down areas may be used for this purpose.

Where agreement on the use of public bus service set-down areas cannot be reached, separate set-down areas for these buses must be provided.

6.7.3 Students with disabilities

Where dedicated bus services are provided for students with disabilities, a separate, secure and appropriately sized bus set-down area must be provided within the site boundaries.

Consideration must be given to the needs of these students with the set-down area being located near to the building/s used as a reception or waiting area for these students. A continuous covered walkway and awning must be provided which connects the bus set-down area to the reception/waiting area.

9 <https://www.tmr.qld.gov.au/-/media/Safety/Schoolroadsafety/PlanningforsafetransportinfrastructureatschoolsTechnicalGuidev51.pdf>

6.8 Visiting van services

The master plan and site planning must include suitable trafficable all-weather site access, turning and parking for a double unit (two chair surgery) dental caravan clinic towed by a truck, trade training truck, mobile library or similar visiting services.

Parking for visiting services must not be located within either the short or long-term car parks provided for the public, staff, visitors or students.

Parking for visiting vans must be located:

- Where practicable, near a covered shade area to cater for students waiting and in reasonable proximity to administration or other buildings to provide passive supervision. The preference is to locate the parking area away from the main site frontage.
- Away from windows where the noise from van air conditioners may impact occupants of nearby buildings.
- Close to site services infrastructure including electricity, potable water, sewer and telecommunications to mitigate the need extend services for the sole purpose of servicing visiting vans.
- As part of a widened section of an internal paved access road with a minimum parking area of 10 m long by 4 m wide.
- Allowing for the construction of a concrete slab parking area which is level across its width and with a maximum gradient of 1:33 along its length.
- Allowing for the extension of any awnings, steps or other van fitments without these fouling on adjacent buildings, structures or landscaping.

Vehicular access from the site boundary to the visiting van parking area must be via continuous paved access roads. Access via sports fields, similar grassed areas, light-duty pavements, hard-courts or pavements with surface treatments susceptible to damage is not acceptable.

A pedestrian path must be provided linking the visiting van parking area to the site's internal path network. The pedestrian path must coordinate with the location of van entry doors and be of sufficient width to accommodate van steps extending approximately 800 mm and awnings of 1500 mm.

6.9 Waste storage and disposal

A lockable, roofed and screened waste disposal enclosure must be provided for the storage of waste hoppers or bins and for the collection of school waste.

The waste disposal enclosure must be located away from buildings and neighbouring properties to mitigate the nuisance associated with odours and the noise associated with refuse collection.

Refuse collection vehicle access to the waste disposal area must consider other vehicular and pedestrian movements in the vicinity and must limit safety risks. The waste disposal facility must keep pedestrians separated from refuse collection vehicle movements.