DEPARTMENT OF EDUCATION
learners first

Attachment 4

DEPARTMENT OF EDUCATION BUILT ENVIRONMENT GUIDE

DRAFT

Department of Education

Tasmanian Government

ACKNOWLEDGEMENTS

This Built Environment Guide has been prepared by Facility Services, Department of Education, Tasmania. Facility Services operates across the state and provides specialised services, support and advice in relation to the Built Environment of the Department of Education. Aspects of the framework and the development of content for this guide have been formed through concepts and understanding sourced from design guides from International, other State jurisdictions and current academic research. Specific acknowledgement to:

Government Architect NSW
Design Guide for Schools, 2018

NSW Government
Schedule 4 of the Education SEPP
(State Environment Planning Policy) 2017
Design Quality Principles

Catholic Education Melbourne, Catholic Education Diocese of Parramatta and the Learning Environments Applied Research Network (LEaRN)
Learning Environment Design and Use
Towards Effective Learning Environments: An Evidence-based Approach, 2018

Disclaimer
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Cover photo:
Montagu Bay Primary School
M2 Architecture
Image: Adam Gibson

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1. INTRODUCTION

Cooee Primary School
GHD Woodhead
Image: Aaron Jones Photography

1. INTRODUCTION

THE DEPARTMENT OF EDUCATION (DOE) BUILT ENVIRONMENT GUIDE WAS UPDATED IN 2020 TO REFLECT THE COMMITMENT THE TASMANIAN GOVERNMENT HAS MADE TO ENSURE OUR LEARNERS HAVE ACCESS TO HIGH QUALITY LEARNING ENVIRONMENTS.

The intent of this document is to provide practical guidance to consultants, schools and project working groups for the design, management and delivery of the diverse range of facilities and assets built and managed by the DoE. These assets are distributed around all regions of Tasmania and include schools and school farms, Child and Family Learning Centres, libraries, childcare centres, and allied office spaces. It is acknowledged that well-designed learning spaces play a critical role supporting learners, enabling their participation in, and access to, high-quality teaching and learning programs.

The core commitment of the DoE is 'Together we inspire and support all learners to succeed as connected, resilient, creative, and curious thinkers' (DoE Strategic Plan 2018-2021). Two key goals identified in the Department of Education's Strategic Plan are:

- **Access, Participation and Engagement** – Everyone is participating and engaged in learning and able to pursue life opportunities; and
- **Wellbeing** – Learners are safe, feel supported and can flourish, so they can engage in learning.

Our commitment and goals are central to the provision of spaces that engage Tasmanians in positive, productive and supported learning experiences that encourage lifelong learning.

DoE has identified seven key principles with underlying aspirational considerations to assist in the delivery of these projects. Technical requirements for each project stage are summarised in stage-based checklists. These key elements contribute to the achievement of our strategic goals.

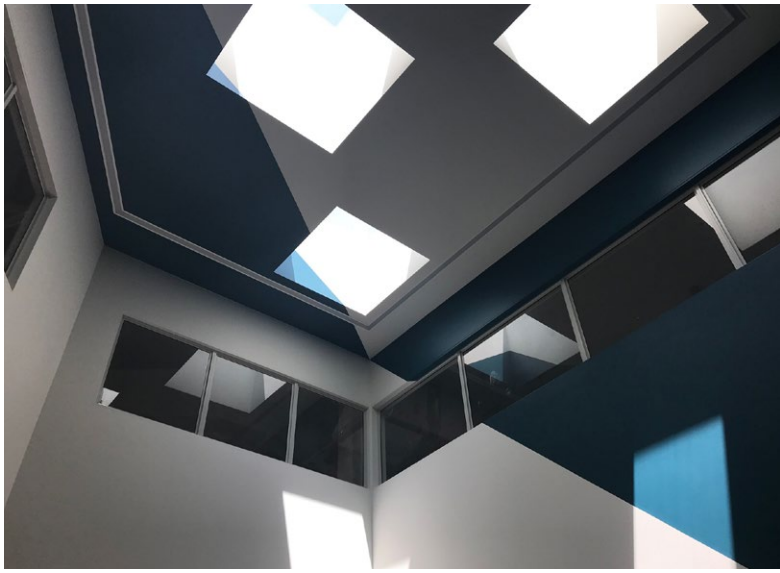
The DoE asset portfolio supports the delivery of public education in Tasmania. These assets are important to the community and perform a wide range of roles – from providing formal learning, to informal recreation and play, and community use.

Waimea Heights Primary School
M2 Architecture
Image: Matt Sansom

Guiding documents are used throughout Australia and many other countries to develop education facilities. This document supports the Department's desire to provide education-focused developments that encompass best practice thinking. Research of current academic literature, Australian and International education-focused design guidelines, and stakeholder engagement with communities across Tasmania has informed the development of this document.

This guide complements, and should be used in conjunction with, other DoE policies and relevant documents, such as the *DoE Strategic Plan 2018–2021*, the *DoE ITS Cabling Standards*, and the *Early Childhood Centre and School Age Care Facilities Code 2012*.

In using this guide, DoE will continue to work in conjunction with consultants, educators and national bodies to promote innovation, flexibility, creativity and current best-practice when designing new and refurbished spaces for Tasmanian learners. This will help ensure we deliver spaces that allow for different styles of learning, alternative teaching methodologies, support community engagement, and create a sense of pride, identity and ownership for the daily users and broader community.



Riverside High School
Artas Architects
Image: DoE

Lilydale District School Kindergarten
CMK Architects
Image: Aaron Jones

2. PURPOSE

Montrose Bay High School
HBV Architects
Image: Jonathan Wherrett

2.
PURPOSE

THE BUILT ENVIRONMENT GUIDE PROMOTES DESIGN EXCELLENCE, AND SUPPORTS THE DELIVERY OF NEW AND REFURBISHED CONTEMPORARY LEARNING ENVIRONMENTS UNDERTAKEN BY DOE.

It has been prepared to guide and advise educators, consultants, project working groups, communities and other DoE stakeholders.

The Built Environment Guide has been developed to more accurately reflect DoE's current thinking around pedagogy, encompasses the themes and elements that are common across best practice learning spaces, and captures many of the recurrent post-occupancy issues dealt with by DoE.

It is aimed at any stakeholder who participates in the project delivery cycle. The guide establishes the project stage basics for those stakeholders and consultants that are unfamiliar with DoE's development processes, procedures and expectations at the four key design and development stages until construction. These are explained further in the document.

Austins Ferry Primary School
X-Squared Architects
Photographer: Thomas Ryan

3. CORE OBJECTIVES AND RESPONSIBILITIES

Windermere Primary School
M2 Architecture
Image: Matt Samson

3.

CORE OBJECTIVES & RESPONSIBILITIES

THE GUIDE IS COMPRISED OF FOUR COMPONENTS: PRINCIPLES, CONSIDERATIONS, STAGE CHECKLISTS, AND DESIGN VERIFICATION STATEMENTS.

Seven principles are defined and are to be used as a guiding set of values. These principles offer a language to facilitate a common understanding for all involved and interested when designing DoE environments. Refer to ***Definitions*** for further clarification of terminology used.

Under the principles are a set of Considerations which provide aspirational elements to be considered by the ***Design Team*** and ***Project Working Group*** (PWG). They are an essential tool to support decision-making by the PWG and help deliver a holistic and integrated built outcome.

The Checklists are relevant to each project stage. They detail performance standards required to be considered by the Design Team at defined ***Project Stages:*** Consultation and Commissioning; Schematic Design; Design Development; and Documentation. The checklist is submitted to Capital Works Project Managers when stage deliverables have been achieved, and the project stage completed. PWGs can use the checklist to measure design outputs against Guide requirements.

To close out each stage and for Quality Assurance (QA), the Lead Consultant is required to submit a Design Verification Statement to validate the design response to the checklist and project scope. It provides the opportunity for consultants to demonstrate and justify key design considerations and responses to the Guide and the Return Brief. The Design Verification Statement is an online form and is located at the end of each project stage checklist.

Taroona High School
Tim Penny Architecture and Interiors
Image: Sebastian Escobar Hoyos

4. DESIGN GUIDE FRAMEWORK

Parklands High School
ARTAS Architects
Image: Aaron Jones

4.

DESIGN GUIDE FRAMEWORK

1.
PRINCIPLES

Seven principles are to be applied to the design and decision-making process.

Principles facilitate PWG discussion and assessment of the proposed design.

Design decisions made by the PWGs should be guided by the principles.

2.
CONSIDERATIONS

Specific principle considerations to be applied to project design, decision making and approvals stages.

Considerations will help ensure the design meets the objectives of the principles and project stage requirements

The PWG should use the Considerations to understand what to expect at each project stage and to review the Considerations against the stage design deliverables ensuring an integrated design review process.

Other stakeholders can use the considerations to understand what to expect of a well-designed DoE learning environment.

3.
CHECKLIST

The Checklists are a quality assurance tool for approval to progress the design to the next stage.

Checklist items must be considered and if not applied, justified by the Consultant.

4.
DESIGN VERIFICATION STATEMENT

The Consultant is to complete the Design Verification Statement at the end of each project stage.

This process will confirm that the principles and considerations have been applied to the design.

5. GUIDING PRINCIPLES

East Launceston Primary
School Kindergarten
ARTAS Architects,
Image: Aaron Jones

5.
GUIDING PRINCIPLES

THE GUIDING PRINCIPLES ESTABLISH THE PHILOSOPHY THAT UNDERPIN THE GUIDE AND CAPTURE THE SPIRIT IN WHICH PROJECTS WILL BE DEVELOPED. THE PRINCIPLES ARE TO BE USED BY ALL INVOLVED IN A NEW BUILDING OR REFURBISHMENT PROJECT AND ESTABLISH A COMMON DIALOGUE AND UNDERSTANDING AT THE COMMENCEMENT OF A PROJECT.

PLACE
Enhances the connections between people and places, and the integration of the learning environment into the social, natural, built, historic and local contexts.

SUSTAINABLE
Embraces environmental, social and economic design to create healthy learning, environments, and minimise the environmental impact and consumption of resources through construction, and over the life of the building.

ACCESSIBLE
Able to be used, entered, reached and attained by the individual learner, and the wider community, safely and with dignity.

SAFE & SECURE
Provides an approachable and accessible environment, balanced with effective and considered security and safety.

AESTHETICS
Creates a welcoming, engaging, inviting and attractive learning environment.

AMENITY
Provides a comfortable, convenient and agreeable environment that supports and enables learning.

ADAPTIVE AND FLEXIBLE
Spaces that cater for a range of users, learning styles and group sizes. Provides flexibility for multiple uses and changes of use over time.

New Town Primary School
Bence Mulcahy Architecture
Image: Adam Gibson

6. CONSIDERATIONS

Montagu Bay Primary School
M2 Architecture
Image: Adam Gibson

6.

CONSIDERATIONS

THE CONSIDERATIONS PROVIDE ASPIRATIONAL GUIDANCE ON HOW THE PRINCIPLES CAN BE MET. DESIGN TEAMS, PROJECT WORKING GROUPS AND BROADER COMMUNITIES CAN USE THE CONSIDERATIONS TO INTERROGATE A LEARNING ENVIRONMENT DESIGN.

Hobart College theatre
Cumulus Studio
Image: Adam Gibson

PLACE

- Embed the design appropriately in its surroundings by responding to and enhancing its physical context, the natural environment, scenic values and local landscape setting.
- Design buildings that contribute to the community by respecting and responding to local character, streetscape quality, scale, form and existing buildings, architectural language of the area, local tradition, heritage, local materials and construction techniques.
- Create a sense of belonging and ownership for users, consider a signature element, recognising for example school & community histories, diversity, traditions and culture.
- Engage with the natural and constructed landscape through views, including views between interior and exterior spaces.
- Contribute to a 'sense of place' that effectively indicates to users the function of each building.
- Plan and develop sites in a manner that minimises undue disturbance of the existing site, landscaping is to be integrated and enhance the associated environmental value of the site.
- Location, orientation and spaces between buildings should be informed by topography, sun, views, prevailing winds, weather & microclimate use of existing and future buildings and outdoor spaces and contributes positively to identity.
- Optimises community connections.
- Create dynamic social and physical environment that is welcoming and accessible and has a positive effect on all users including students, teachers and the wider community.

SUSTAINABLE

- Design that considers innovation and promotes sustainability in the built environment. Demonstrate environmentally sustainable design (ESD) principles delivering high environmental performance, return on investment, is adaptable and resilient and allows for future flexibility and modification.
- Optimise site potential, minimise non-renewable energy consumption, use environmentally preferable products, protect and conserve water, enhance indoor environmental quality and optimise operational and maintenance practices throughout the design. Avoid using natural gas, LPG or products containing HFC refrigerants.
- Consider highly visible sustainable concepts involving students, staff and the community that can be used as a teaching tool to inspire and educate during construction and over the life of the building.
- Integrate highly visible user-friendly monitoring systems with real time data available for all building users to assess energy use, production and export and water and waste production. A system that captures and stores data to build a library of building system functionality and allows for future modelling.
- Low-maintenance building forms and construction techniques. Design to minimise the use of material resources and avoid pollutants, choose materials from sustainable sources, recycled content, recyclable, non-toxic and non-petroleum based, are robust and durable and aesthetically pleasing. Consider embodied energy and emissions.
- Building systems, finishes, furnishings and equipment that consider life cycle values including recurrent and replacement costs. A whole-of lifecycle approach when designing services, construction methods and selecting materials and considering cost over time.
- Maximise opportunities for safe walking, cycling and public transport access, provision of showers, change rooms, secure bag lockers and bicycle storage and a community re-charge unit/s for electric car/bikes.
- Sustainability audit undertaken early in the design and post build to calculate carbon footprint and ensure the build minimises harm and enhances the quality of the local environment. Including management of waste streams during demolition and construction to reduce waste to landfill.
- Consider a sustainability consultant as part of the design team on major projects.

ACCESSIBLE

- Delivers an equitable and inclusive learning and working environment by responding to diverse and unique needs of users and ensuring that all users can participate in all activities in an inclusive manner.
- Consider equitable access for all users
- The design is engaging, welcoming, appropriate for users and enables everyone to participate equally, confidently and independently in everyday activities across the whole site.
- When developing the design, engage with users including students, teachers and the community to understand their unique needs and views.
- Encourage opportunities for community access, engagement, participation and use of facilities after hours.
- Teacher support spaces are centrally located and easily accessible with appropriate storage for learning and teaching resources at the point of use.
- Provide intuitive site and building layout with effective wayfinding, clearly defined signage and considered transition from public to private space for both vehicle and pedestrians.

SAFE & SECURE

- Design to enable the everyday users and the wider community to gather in an environment where they feel safe and secure.
- Passive surveillance and design for crime prevention principles embedded through a whole of site strategy with consideration to after-hours use. For example, good sightlines, active frontages, security and access lighting.
- Spaces designed to be age and size appropriate.
- Circulation spaces that avoid bottlenecks and overcrowding during peak student movement.
- Toilet location, number, proximity and design allows for safe use by different age groups, abilities, and genders including non-gender specific options.
- Unobstructed sightlines through the internal and external learning environments with visual and physical links, allowing observation and movement between indoor and outdoor settings. Well-lit and minimise blind spots and hidden spaces that are difficult to monitor.
- Balance between optimised security and safety with a welcoming and accessible environment.
- Site and building layout with differentiation of buildings and spaces that provide natural surveillance and legibility of wayfinding. Visible and accessible exits and entries with direct links to pathways.
- Public and private zones that are clearly defined and controlled.

AESTHETICS

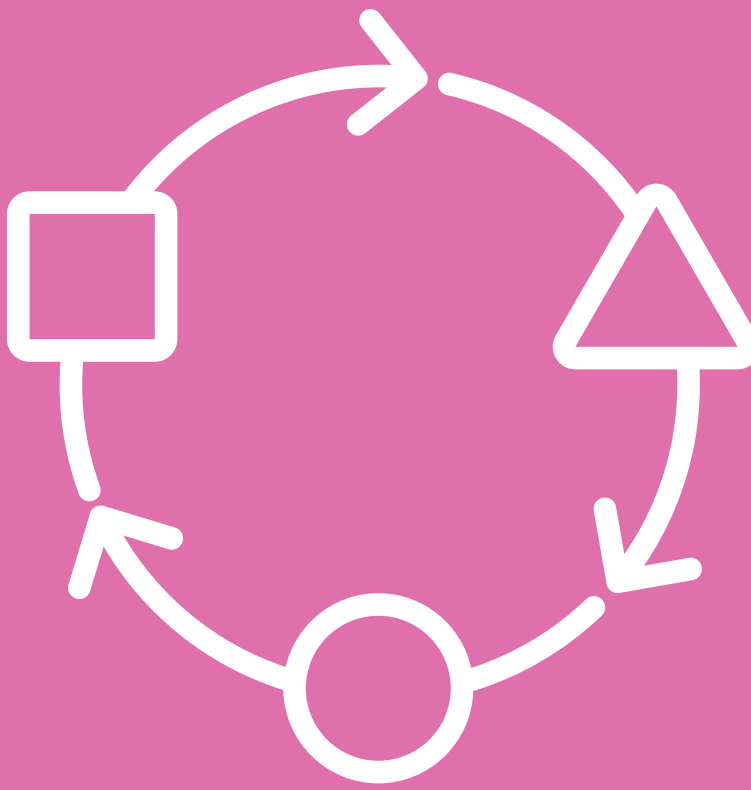
- Built form is well proportioned and of appropriate scale, with balanced composition of elements including use of colour, texture and materials, creating a welcoming, nurturing, safe and stimulating environment that suit their intended use and users.
- Encourages imagination and inspires students, teachers and the broader community.
- Provides appropriate internal and external scale of learning environments with use of form, materials, texture and colour.
- Achieves a style that responds to positive elements for the site and surrounding area and is tailored to each facility.
- Aims to have a positive impact on the quality and character of the local area, is enjoyed by users and promotes pride among students, staff and the community.
- Takes advantage of the site and allows for natural light, sun, views to the outside and access the natural environment.
- Explores user views when creating spaces. Where do they want to be and will be inspired to create and to learn?
- Design that considers the diverse range of user's responses e.g., bright and stimulating or calm and relaxing as appropriate, demonstrating the ways in which the spatial aesthetic impacts on the occupants and users.

AMENITY

- Acoustic performance to suit the intended use that considers distraction, intelligibility of speech, hearing, noise levels and allows adjoining spaces to be effectively used when connected (opened) and when separated (closed).
- Provide thermal comfort for teaching and learning considering building thermal quality, natural ventilation, air quality and flow.
- The light quality provides a comfortable setting for teaching and learning minimising reflection and glare and is zoned to enable modification of natural and artificial light to suit different settings and activities.
- Learning environments have access to natural light, sun and visual outlook, with protection from sun and rain and excessive solar gain, reflection and glare.
- Provides learning environments that are well-proportioned, adequate, age appropriate with efficient circulation that enable easy movement within the spaces and support the desired learning activities.
- Provide adequate size of learning environment that aligns with the desired pedagogies and learning activities.
- Uncluttered environments with adequate provision of storage for student belongings, teacher and shared resources and display for 2 and 3-dimensional artwork.
- Location of digital and display technologies affords access for various learning settings.
- Furniture is to scale, purposeful and appropriate for the learning settings and types of activities to be undertaken.
- Easily maintained and cleaned.

ADAPTIVE & FLEXIBLE

- Ensure maximum flexibility and ease of adaptation, maximises multiple uses and ability to respond to changing needs over time.
- Demonstrates opportunities for buildings and outdoor spaces to be learning tools in themselves.
- Responds to a masterplan that includes the testing of options for future potential growth. Provides flexible spaces for growth and contraction, future adaptation to accommodate new teaching and learning approaches and integration of new technologies.
- Indoor and outdoor environments that feature a variety of learning and social settings to accommodate diverse activities and allow opportunities for instruction, interaction, activities and reflective retreat and provides the option for students to move between settings when required.
- Enables tasks to be undertaken in a variety of settings beyond the main learning area with good visual connection.
- Easily reconfigurable furniture allows new layouts in support of different sized settings and provides cues about how the learning setting could be used.
- Durable, resilient and adaptable structure and services enabling evolution over time to meet future requirements.
- Building systems that facilitate future refurbishment or remodelling as needs change.



7. PROJECT STAGES

Parklands High School
ARTAS Architects
Image: Aaron Jones

7.

PROJECT STAGES

EVERY NEW OR BUILDING REFURBISHMENT PROJECT FOLLOWS CERTAIN STEPS TO ENSURE A SUCCESSFUL OUTCOME. THE PROJECT STAGE DIAGRAM BELOW OUTLINES THE TYPICAL STAGES OF A DOE BUILDING PROJECT.

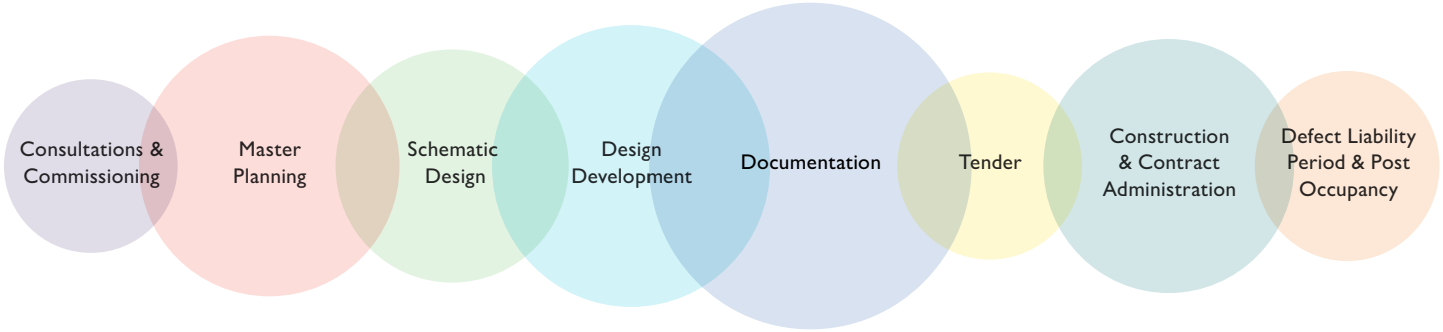
The Built Environment Guide Checklist is to be used by the Project Working Group, and the Lead Consultant, as a guide throughout the defined stages. The checklist and verification statement are completed by the Lead Consultant and submitted to the Capital Works Project Manager at the end of each stage.

Projects vary in size, budget, delivery times and number of stakeholders, the Capital Works Project Manager may amend the checklist submission requirement accordingly.

Tasmanian eSchool
Robert Carroll & Associates Architects
Image: MSP Photography

PROJECT STAGES

Community Engagement Round 1	ASSC (Asset Strategy Steering Committee) Approval, DoE executive endorsement of costed Master Plan	Community Engagement Round 2	Planning Approval	PSPCW (Parliamentary Standing Committee Public Works) Approval >$8mil, 80% Document Review	Building & Plumbing Approval	Occupancy Permit & Final Certificate	Post Occupancy Reviews



Project Working Group (PWG) Esablished Undertake site & Infrastructure assesment Determine *Project Objectives* Develop *Return Brief*	*Site Masterplan* Establishes a framework for site & key area for future development *Project Masterplan* Incorporate the project into the Site Masterplan Cost of Works Estimate	Design solutions to meet the approved *Return Brief* Preparation for Planning Application Regular PWG meetings Cost of Works Estimate	Develop Schematic Design with integration of building services and structural systems Cost of Works Estimate Regular PWG meetings	Documentation completed for Tender & Construction Obtain statutory approvals including Building & Plumbing Approvals Pre-tender Cost of Works Estimate	Government Contractor procurement & tender evaluation process Contractor appointed Regular PWG meetings	Supervision of Construction Manage variations. Regular PWG meetings.	Obtain statutory approvals Obtain feedback on buildings performance in use Determine if *Project Objectives* met Consider how and if processes worked Capture lessons learnt

8. CHECKLIST

Snug Primary School
Preston Lane Architects
Image: DoE

8. CHECKLIST

PROJECT WORKING GROUPS AND DESIGN TEAMS USE THE CHECKLIST DURING EACH PROJECT STAGE TO GUIDE THE DESIGN PROCESS AND ENSURE THAT THE DESIGN PROPOSAL MEETS THE REQUIREMENTS OF DOE.

The Lead Consultant is responsible for completing the checklist, providing verification statements and submitting the checklist to the Capital Works Project Manager at the end of the defined project stage.

All design, materials, standard of work, testing and commissioning **must** comply with the latest edition of the National Construction Code and relevant Australian Standards and legislation. All work is to be undertaken in accordance with relevant building and safety regulations, codes and standards. This Guide is intended to be used in conjunction with the National Construction Code.

The Sustainability Learning Centre
Morrison & Breytenbach Architects
Image: Ray Joyce

STAGE A

COMMISSIONING + CONSULTATION

PREFACE

- [ ] Establish Project Working Group (PWG), (eg Principal, School Assoc, Learning Services, School Business Manager).
- [ ] Connect with Operations, ITS, Security & Emergency Management, Asset Planning, gather site information such as existing floor plans and existing IT infrastructure plans.
- [ ] Communications strategy agreed by all parties.
- [ ] Return Consultant Project Brief Approved.

1. PLACE

- [ ] Establish key place making priorities with PWG and include in return brief.
- [ ] Undertake a desk top assessment of geotechnical domains that may influence building location or form such as landslip zones or floodplain.
- [ ] Establish what significant existing features are worth retaining; make reasonable effort to retain existing trees and landscape, with reference to the local planning scheme.
- [ ] Consider patterns of use (time, duration and level of use), activity types, daily and seasonal movements of the sun, safety, structures, windloads, access and maintenance.

2. SUSTAINABLE

- [ ] Determine if school has a sustainability program. Can the project help & enhance the current program, or can a program be instigated;
- [ ] Ensure the effects of climate change are considered in the design for the future. The occurrence of high wind, heavy rain and extremes in temperature ranges in Tasmania has increased over recent years impacting upon roof, site catchment and dispersal systems designed for previous baseline climate profiles. Water conservation will become a priority requiring consideration of increased on-site storage capacity, particularly in areas with low annual precipitation;
- [ ] Undertake land surveys to determine slopes and above-ground site features.
- [ ] Undertake underground asset survey to determine the location of civil, hydraulic, security, fibre, electrical and irrigation assets.
- [ ] Desktop investigations of watercourses, areas subject to inundation and overland flow paths, and water table and levels and other sensitive wet areas.
- [ ] Source past construction records of the site from DoE Asset team, local authorities and school;
- [ ] Assess the feasibility of a building refurbishment solution before deciding on new construction, check condition of existing infrastructure such as roofing and gutters;
- [ ] Preserve or enhance the ecological value of the site. Retention, supplication or reinforcement of existing land values, landscaping and drainage pathway.
- [ ] Consider the location of future bio swales to filter site stormwater runoff. Simple grassed swales in lieu of hard formed drains can improve site absorption and reduce loads to mains infrastructure;
- [ ] Establish key sustainability challenges with PWG and include in return brief.

3. ACCESSIBLE

- [ ] If an access consultant is required on steep or challenging sites, have them undertake a preliminary assessment of the conditions.
- [ ] If a traffic consultant is required, have them undertake a preliminary assessment of the conditions.
- [ ] Establish key access challenges with PWG and include in return brief.

4. SAFE AND SECURE

In addition to the above:

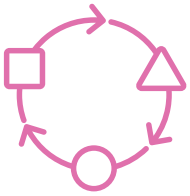
- [ ] Ensure all members of the consultant team (and sub consultants) have current Working With Vulnerable People (WWVP) cards or site agreed management strategy is in place;
- [ ] Consider that buildings constructed before 1990 may contain asbestos.
- [ ] Review the Asbestos Register. Note that "likely to or may contain asbestos' means no verification sampling has been done and the materials should be treated as suspect. Asbestos registers generally don't include concealed asbestos which can be found for example: behind original pinboards in older buildings, in mechanical duct baffles and under linoleum tiles which may be carpeted over. Ensure budget allowances for testing and potential removal are made at sketch stage;
- [ ] Review site emergency plans: emergency evacuation, bushfire response and lockdown plans if applicable.

5. AESTHETICS

- [ ] Review local planning scheme to check to overlays such as Scenic Protection and Heritage.

6. AMENITY

- [ ] Investigate capacity of existing electrical, hydraulic and mechanical systems to accommodate the project requirements plus 20% redundancy for future growth.
- [ ] Undertake underground asset survey.
- [ ] Site electrical capacity has been checked at point of supply, main switch and sub boards as needed. Refer also Site Master Planning section.
- [ ] Assess outdoor play ground to ensure sufficient area for predicted student population, future growth opportunities, age appropriateness and alignment with the educational brief.



7. FLEXIBLE AND ADAPTABLE

- [ ] Undertake a full site assessment and respond within the return brief findings on the following at a minimum: in-ground conditions, contamination, flora and fauna, flooding, drainage and erosion, and noise and traffic generation.
- [ ] Review any existing site masterplans within the project context.

STAGE B
SCHEMATIC DESIGN

PREFACE

- [ ] The architect establishes the size, location, and relationships between all the spaces and will develop the shape and size of the building/s with some basic design. A general plan and basic exterior design is developed. How the building will look and operate is somewhat resolved. The Schematic phase of the project is where general design is being undertaken, but not getting into final detail.
- [ ] Updated response to the brief, design quality principles and design themes of the Master Plan. The stage during which the schematic design is amended and clarified as required and finalised to produce the final design. This includes schedules of finishes and materials, integration of building services with architectural and structural systems, verification of cost estimate, verification of project program. Expectation - ready for DA lodgement

Updated Strategies for:

- [ ] natural daylighting including a daylighting analysis: a graphical representation of lux level predictions that cover schooling hours on both sunny and overcast days at the summer and winter solstices
- [ ] heating and natural ventilation
- [ ] acoustics
- [ ] quality learning and teaching areas
- [ ] sustainability
- [ ] landscape design
- [ ] Schedule of accommodation areas based on SPG entitlement (net and gross).

Preliminary design detail for other disciplines:

- [ ] traffic management
- [ ] geotechnical
- [ ] structure
- [ ] civil
- [ ] services (mechanical, electrical, hydraulic, ICT, fire, security and comms)

1. PLACE

- [ ] Develop a sketch plan that addresses the site analysis undertaken in the earlier phases.
- [ ] Address Art Site Scheme in early planning noting functionality, safety and durability. If incorporated into the build process, allow sufficient lead time in the selection process to meet the build program.
- [ ] Consider existing site conditions such as soil, rock, vegetation, flood levels, and contours when determining the location of buildings to maximise the use of existing vegetation.
- [ ] Assess links and interactions between community facilities and open spaces adjacent to school sites, to support the cultural, economic and environmental wellbeing of communities.
- [ ] Consider the impact of after-hours use on the surrounding community.
- [ ] Consideration to be given to the provision of a community or vegetable garden, preferably north facing.
- [ ] Landscapes spaces within school environments should offer a variety of shade and shelter types; natural and built with a variety of views considered within the setting. Natural shade is preferred;
- [ ] Soft landscaping requires careful consideration of design, species habit, water load, vandalism and longevity. The school shall be consulted from the outset as they ultimately "inherit" the design. Consider instant lawn or artificial turf in small areas that are difficult to develop and maintain or are high use;
- [ ] Consider early involvement of the landscape architect or 'place maker' specialist.
- [ ] Where possible, enable views of nature and maximise existing landscape features;
- [ ] Shading diagrams of the massing model are recommended, aim to maximise natural light infiltration.
- [ ] Adequate formal and informal seating should be provided to encourage and facilitate social interaction outdoors. Seating configurations must take into account prospect/ vista and shade, the ages of users, and their benefit in terms of social development and interaction.
- [ ] Maximise access to external views. A visual and physical connection to the natural environment can improve student engagement.

2. SUSTAINABLE

- [ ] In sensitive or high risk areas, undertake borehole and geotechnical investigations to determine, as best as possible, subsurface conditions.
- [ ] Locate, orientate and design buildings to optimise environmental advantages to reduce heat gains and losses. Integrate passive design principles, optimise thermal performance and acoustic comfort;
- [ ] Maximise exposure to natural light with minimal reliance on artificial lighting with balanced glare control to sensitive areas.
- [ ] Maximise opportunity for solar power generation arrays. Discuss with site regarding current solar installation operation and maintenance arrangements;
- [ ] Water Sensitive Urban Design (WSUD) where possible to capture, reuse and conserve stormwater onsite e.g. stormwater swales and retention basins. Higher intensity rain patterns can overload landscaping and disposal systems so the site needs to maintain an appropriate level of absorbency via soft landscaping, hard surface catchment, water capture and harvest. Native planting can assist by reducing the irrigation requirement.
- [ ] Assess the feasibility of a building refurbishment solution before deciding on new construction;
- [ ] Enhance the value of a structure by maximising its reuse, adaptability or alternative component use potential.
- [ ] Promote initiatives to reduce impacts on ecological systems and biodiversity.
- [ ] Develop buildings on parts of land not suitable for other purposes. Appropriate site planning and building design can maximise use of existing contours and limit site disturbance and provide maximum area of flat land for activities.
- [ ] Preserve or enhance the ecological value of the site. Retention, supplication or reinforcement of existing land values, landscaping and drainage pathway.
- [ ] Consider the location of future bio swales to filter site stormwater runoff. Simple grassed swales in lieu of hard formed drains can improve site absorption and reduce loads to mains infrastructure.
- [ ] Ensure that the building design characteristics provide maximum passive heating and cooling solutions. It is no longer sustainable to provide an indoor comfort solution in isolation to a performance analysis of the building envelope. Consultant to provide a detailed specification of the building envelope predicted comfort performance.
- [ ] Ensure sustainability and energy efficiency is a fundamental consideration when selecting heating and cooling strategies. School sites may already have strategies in place around long term monetary savings and environmental considerations.

3. ACCESSIBLE

- [ ] Address key access challenges identified in the return brief at a schematic level.
- [ ] Design with safe, equitable and dignified access for all students, staff and the broader community, and must comply with all applicable accessibility and amenity requirements stipulated in the NCC;
- [ ] Access and entry must be prominent and easy to find, and clearly visible from the road. The entry should face away from the prevailing weather;
- [ ] Aim for separation of people and vehicles on site;
- [ ] Assess proposed vehicle movement around the site: buses, parent drop off, staff parking, trucks for waste collection etc;
- [ ] Consider how maintenance staff will access areas, particularly proposed mechanical and hydraulic plant areas; and, internal courtyards for lawn mowing, drain clearing etc;
- [ ] Consider hierarchy of spaces and how staff/students/community will access the site before/during/after school hours;
- [ ] Bicycle shelters can be provided to encourage students and staff to cycle to schools. Provide showers, change rooms and secure and visible cycle storage.

- [ ] Vehicles excluded from pedestrian and student areas. Car parking, bus standing, drop off zones require careful consideration to minimise active supervision and safe access for staff, students and visitors as well as waste collection trucks, deliveries etc;
- [ ] Allow for a flexible learning space to be centrally located within a school campus. This space will be school needs driven and is likely to include: access shower/toilet, a small class space with inclusive breakout areas, breakfast/lunch clubs, office type spaces (dependent on the school's needs) and storage.
- [ ] Ensure DoE standard access toilet (with changing facilities) is centrally located where required.

4. SAFE AND SECURE

In addition to the above:

- [ ] Support safe walking and cycling to and from school by connecting to local foot and bike paths and providing bike parking and shower facilities.
- [ ] Review NSW Inclusive Play Guideline when planning external spaces.
- [ ] Consider building configuration and site planning to avoid the creation of un-supervisable gathering points and thoroughfares.
- [ ] Consider protection and security options for infrastructure inlet and access points, for example locations of key internet, power and water infrastructure.
- [ ] Support passive surveillance, including through the location of toilets and areas intended for outside of school hours use.
- [ ] Staff safety has been considered in 'front of house' functions. Visitors to only access reception area. Need a balance of safety and welcoming ambience.
- [ ] Ascertain school requirement for TVs and web-based CCTV. It can be advantageous for visitors to be aware that security cameras are in operation in public areas. Web-based CCTV is to be included in all new developments and refurbishments and form part of the built solution. Cameras are not to be funded from Furniture and Equipment budgets;
- [ ] Design to minimise unwanted roof access.
- [ ] Determine existing capacity for IT system to cope with extended web-based CCTV. Information Technology Services to provide advice on existing infrastructure;
- [ ] Investigate capacity of existing systems to accommodate the project requirements for Fire, Security and Comms. Discuss future upgrades with site representative to potentially rationalise or extend existing system;
- [ ] Ensure proposed security, fire & safety systems (including communications – alarms and voice systems) are compatible with existing systems;
- [ ] Ensure any asbestos containing material is identified within the project area and removal is included within the project budget. In any area being redeveloped the complete removal of the material irrespective of condition in encouraged.

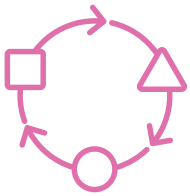
5. AESTHETICS

- [ ] Assess opportunity to enhance the public facing areas with landscaping and integrate landscaping and building design;
- [ ] Balance internal spatial requirements with external mass and scale that responds to the surrounding environment;
- [ ] Consider landscape and playground arrangement and links across the site.

6. AMENITY

- [ ] New developments should be integrated into, and maximise the use of the natural environment for learning and play.
- [ ] Facilitate opportunities for buildings and outdoor spaces to be learning tools in themselves.

- [ ] Provide a diversity of indoor and outdoor spaces for both informal and formal use.
- [ ] Ensure access to sunlight, daylight, natural ventilation and visual outlook wherever possible. The building design characteristics should provide maximum passive heating and cooling solutions to provide for optimum occupant comfort.
- [ ] Multi-level school buildings need to minimise the negative impacts of overshadowing and wind on surrounding buildings, open space and school grounds.
- [ ] From the outset, floor planning must consider acoustic performance and whether the spaces are fit-for-purpose. Locate buildings away from noise sources such as roads to ensure acceptable acoustic levels in teaching and learning spaces.
- [ ] Spaces must be designed to avoid noise transmission between rooms and between rooms and open areas. Where teaching and learning spaces must be located alongside noise sources, arrange built form to ensure dual aspect that allows for natural ventilation away from the noise source.
- [ ] Guide areas for GLAs: 90sqm for upper primary (to include wet area and breakout such as staff study or break out room. Confirm requirements with school), and 80sqm for secondary. Refer to the early years kinder brief for early years requirements.
- [ ] Basic areas for Music, Drama and Art etc nominally 80sqm + storage.
- [ ] 1No. 8sqm DoE Access WC is required per site as a minimum. This allows room for a change bed.
- [ ] Areas for Science, Cooking and MDT are to be determined in conjunction with the school.
- [ ] Ensure Capital Works Project Manager, ITS and school representative have been consulted about ICT cabling standards, NBN, microwave, satellite links, VOIP suitability, switches and wireless access points infrastructure agreed to be provided in the contract documented.
- [ ] Ensure space within IT cabinets for a system expansion to ITS Manager approval;
- [ ] Refer to DoE's Communications Cabling Installation Standards;
- [ ] School made aware that active network equipment (media converters, fly leads, switches, wireless access points, etc.) and patching are the responsibility of the school's ' Furniture and Equipment' budget;
- [ ] Ensure wi-fi technology is available in all areas;
- [ ] Where necessary, provide an appropriate and dedicated workspace for the school's IT support person in accordance with workplace standards. (Can be in same room as rack and servers, or adjacent room.) The Hub room can become congested with control gear that limits work space;
- [ ] Balance high daylight transmission and unwanted reflectivity glare. The increasing use of screen based learning challenges the base need for natural light and solar gain.
- [ ] Consider external sun shading on north facing windows to minimise internal treatments.
- [ ] Use robust materials that will tolerate harsh treatment up to min 900AFL. Use of low maintenance and non-galvanised walls. Avoid Colorbond sheet at impact height.
- [ ] Use of fibre cement cladding systems to Capital Works Project Manager approval. Longevity and appearance of fixings, serviceability of expressed joint materials and painting regimes can create future maintenance issues.
- [ ] Ceilings generally 2.7m in height or more. May include a range in heights to define spaces balanced against large volumes that area a challenge to heat and cool.
- [ ] Minimum clear door opening shall be 900 for hinged doors, 1000 for sliding doors;
- [ ] A waste storage area on the site should be provided and sized to accommodate waste and recyclables materials, to be collected and stored before collection. This area should be screened, contained and located as close as possible to the street boundary of a site, and be visually discreet. Areas for composting of onsite vegetative waste should also be allowed for;
- [ ] Within buildings, integrate waste storage areas that can accommodate standard sized bins;
- [ ] Use of hydronic heating systems is permitted as an efficient and low maintenance heating solution. Specification requires specific approval from the Capital Works Project Manager.



7. FLEXIBLE AND ADAPTABLE

- [ ] Ensure the site and project masterplans include the testing of options for future potential growth;
- [ ] Expectation is that builds will meet DoE needs for 50 years;
- [ ] Understand the potential impacts of future local projected growth on the site/project.
- [ ] Provide spaces that cater for multiple uses and are constructed in such a way that they can be easily modified in the future to suit a change in use over time.
- [ ] Design learning spaces that cater for a range of learning styles and group sizes.
- [ ] Take a whole of lifecycle approach when assessing project costs, consider the greater public benefits over time.

STAGE C
DESIGN DEVELOPMENT

PREFACE

- [ ] In Design Development materials including interior finishes and products such as windows. doors, fixtures, equipment, etc…will be selected. Drawings will be revised with more specificity and detail. Engineering will commence on the structure, plumbing, electrical, heating/ventilation systems, energy analysis and any other project specific systems. At the end of design development, most of product selection and systems design should be progressing. This phase concludes when the interior and exterior design of the building is approved by the PWG .
- [ ] The stage during which the schematic design is amended and clarified as required and finalised to produce the final design. This includes schedules of finishes and materials, integration of building services with architectural and structural systems, verification of cost estimate, verification of time program.
- [ ] Finalised response to brief, development principles and design themes.
- [ ] Finalised Strategies for:
    - [ ] natural daylighting including a daylighting analysis: a graphical representation of lux level predictions that cover schooling hours on both sunny and overcast days at the summer and winter solstices
    - [ ] heating and natural ventilation
    - [ ] acoustics
    - [ ] quality learning and teaching areas
    - [ ] sustainability
    - [ ] landscape design, including integrated perimeter fencing options
    - [ ] weather tightness compliance
    - [ ] avoiding aggravated thermal bridging.
    - [ ] Schedule of accommodation areas based on SPG entitlement (net and gross).
    - [ ] Developed design detail for other disciplines
    - [ ] Developed security management, including: alarm zoning, audible and inadible comms systems and locking strategies.

1. PLACE

- [ ] Buildings should project a sense of welcome, safety and accessibility for all users.
- [ ] Consider an external material palette within the site's broader context.
- [ ] Incorporate inherent wayfinding solutions into the design to direct staff, students, visitors and guests.
- [ ] A variety of materials, textures and colours appropriate to the site/context are included internally and externally, including in paved and landscaped areas. Where possible, materials should be in their base state to minimise the future maintenance burden.
- [ ] Pavement and hard landscaping needs to be balanced with sustainability requirements. It is expected that hard landscaping is fit for purpose, durable and easy to repair using basic trade methods where possible.
- [ ] Integrate irrigation into playing fields and landscaped areas, with the controls in a sensible spot, preferably the groundskeeper's compound. Ensure irrigation systems are designed with the necessary expertise, however consider if necessary in the context of water conservation.
- [ ] Avoid plants that produce unhealthy air-borne spores.
- [ ] Consider how deck and ramp areas can also incorporate in-built furniture and other opportunities for play.
- [ ] Define/imply outdoor gathering areas.
- [ ] Integrate interpretive and educational opportunities within the landscape to facilitate active and passive outdoor learning.
- [ ] Do not impede the vision of supervisors. Consult to ensure an acceptable the level of visibility by duty staff. Maintain an awareness of passive surveillance requirements.
- [ ] Consider setbacks from the edge of buildings, fences, drip-lines of large trees, adjoining residential property boundaries, open playing fields and sports courts street frontages, onsite roads and paths of vehicular movement (unless there is a dividing fence).
- [ ] Soft landscaping used to improve overall functionality and aesthetic.
- [ ] Ensure playgrounds are well positioned and design matched to user age groups and the educational brief.
- [ ] Provide a mixture of hard and soft play surfaces. Consider spectator areas for students.
- [ ] Provide for challenging activities and nature based play.

2. SUSTAINABLE

- [ ] Discuss with the PWG to establish if the project will enhance or be the catalyst for a sustainability program;
- [ ] Consideration should be given to 'visible sustainability' to inspire and educate. Suggestions for visible sustainability include, but are not limited to:
  - [ ] Solar powered public lighting or clocks
  - [ ] Native planting to attract native birds
  - [ ] nterpretation displays to describe the sustainability initiatives built-in to the project
  - [ ] Recycling bins in public spaces
  - [ ] Vegetable gardens
  - [ ] Onsite composting of garden waste
- [ ] Consider computer modelling of the predicted energy performance of a proposed design. Useful on major projects to support assessment of alternative designs and can be used as a teaching tool.
- [ ] Provide accessible and easy to use energy & water consumption metering as a management and learning tool.
- [ ] Consider building systems that communicate building performance and facilitate effective monitoring and compliance with sustainability strategies for the site. For example: Display of realtime data on a tv screen in the foyer or other agreed location.
- [ ] Integrate sustainable initiatives and where possible, make them visible eg solar tanks.
- [ ] Minimise areas of cut and fill.

- [ ] Ensure orientation optimises natural ventilation and daylighting while minimising glare and draughts. Zone lighting to enable natural and artificial lighting to be modified to suit different activity settings.
- [ ] Ensure the number of different materials on site is minimised for construction and operation;
- [ ] Where possible/feasible, reuse demolished elements on site "closing the loop" as much as possible.
- [ ] Integrate water reuse systems for irrigation, toilet flushing etc.
- [ ] Provide enough storage areas for a variety of bins to promote a "rubbish free" environment that enables maximum reuse and recycling of consumables.
- [ ] Use hot water from solar or reverse cycle heat pump sources in preference to direct electric sources where climate appropriate and unshaded. Where co-generation is possible, waste heat can be considered for water heating.
- [ ] Consider installation of water tanks where possible and practicable;
- [ ] Hard landscaping directs stormwater run-off without compromising access functionality;
- [ ] Carefully consider roof catchment area discharge and capacity of tanks to receive flows. If the catchment area is large, the tanks can be overcome by heavy flows and if full, can overflow onto surrounding areas causing damage. Ensure high overflow can be managed into landscaping or drains. Ensure tanks are non-scalable and their aesthetics are considered within their context.

3. ACCESSIBLE

- [ ] Entrances to be at grade or provide threshold ramps. Level entry is the preferred option, but carefully consider weathering on unprotected external door sills.
- [ ] Pedestrian paths and networks must follow the intuitive and logical way through the site, enabling students, staff and others to travel efficiently.
- [ ] Security against unauthorised access can be achieved through environmental design: for example, landscaping features such as planter boxes, and changes in levels to control vehicle and people flow.
- [ ] Consider all areas of the development (except steep terrain) as being accessible;
- [ ] Focus on encouraging access to the site by nonmotorized forms of transport, including: use of footpaths and bicycle paths, bicycle parking, and links to public transport.
- [ ] Consider clarity and legibility of access to parking and reception areas.
- [ ] Locate accessible parking bays closest to main building entrance with appropriate line marking and signage. Include consideration for accessible employee and student parking.
- [ ] Consider accessibility of sand pit enclosures. Sandpits flush with the ground facilitate "rolling in" access, raised sand beds provide wheelchair access and raised sections around part of the perimeter provide seating.

4. SAFE AND SECURE

- [ ] Provide covered areas for protection from the sun and rain;
- [ ] Security against unauthorised access can be achieved through environmental design: for example, landscaping features such as planter boxes, and changes in levels to control vehicle and people flow;
- [ ] ensure supports/columns/posts that are clearly visible, with rounded edges and/or padding and placed to minimise risk of collision in open areas (especially in areas where vehicles circulate eg bus bas and main gates), include vertical supports that are not scalable by students, and avoid any feature that might make fences scalable.
- [ ] Do not impede the vision of supervisors. Consult to ensure an acceptable the level of visibility by duty staff.
- [ ] Clearly define access arrangements for after school hours, and integrate security systems and zoning to support it.
- [ ] Consider location and number of toilets to allow safe use by different ages groups including unisex options. Eg small children may be afraid to use self-contained toilet cubicles with big doors.

- [ ] Ensure capacity in all components of security or web-based CCTV system for expansion.
- [ ] Ensure prior to final design, Tasmanian Fire Service is consulted regarding whole of site fire strategy, appliance approach points and standing areas and hydrant and hose reel locations. Consultant shall provide all communications to the Capital Works Project Manager.
- [ ] Pre plan for appropriate number of fire extinguishers and adequate coverage – ensure positioning appropriate to space use – ie not too low for tampering, and where possible integrated into hallways so they don't present a hazard. Note: hose reels not required in Tasmanian schools but may be required in GP Halls accessible by the public, integrate FHR cabinets where appropriate;
- [ ] AC units are to be mounted on ground unless there are mitigating circumstances, they are to be enclosed in cages that are either under 1m high or over 1200h and clad in non-climbable material to prevent damage and vandalism. Appropriate drainage for overflows must also be provided;
- [ ] All new buildings are to have the capacity to be locked down in the event of an emergency (external/perimeter zones and critical internal zones), provide electronic access control of external doors to enable this.
- [ ] Incorporate communications systems: alarms, well voice systems (both audible and non-audible), consider secondary/alternate control points.
- [ ] Modifications to existing buildings must also consider lock-down procedures through selection of appropriate door construction and hardware eg electronic keys, doors that can be locked quickly and easily from the inside; and glass/window surfaces/treatments such as the use of frosting to reduce visibility in specific circumstances.

5. AESTHETICS

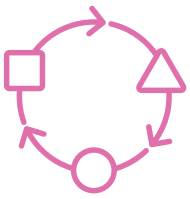
- [ ] Develop a purposeful material palette and balanced massing of built elements;
- [ ] Aesthetic theme should reflect a commitment to, and investment in, rigorous design that is engaging and purposeful;
- [ ] Provide an engaging environment for pedestrians visually and materially along public frontages;
- [ ] Avoid long stretches of fencing. Perimeter fencing can be achieved through of the use of building edges, and be integrated into landscaping.
- [ ] Ensure services are integrated into the building design;
- [ ] Engage with the public arts program to determine opportunities for inclusion;
- [ ] In consultation with the PWG, discuss finishes and furniture that are complementary to one another and balance aesthetics with durability.
- [ ] Material selections are to carefully consider the ongoing maintenance burden. Durability and maintenance is to be balanced against aesthetics.

6. AMENITY

- [ ] Ensure wireless technology is available in all areas. Prior to final design, refer all projects to ITS for approval.
- [ ] Timber framing is preferred. Refer also the Tasmanian Wood Encouragement Policy.
- [ ] Ensure display areas such as pinboards are maximised. These can extend to skirting level provided the backing is robust.
- [ ] Acceptable acoustic levels are imperative for teaching and learning areas. Balance between robust surfaces and good acoustic outcomes must be achieved. The acoustic

design of rooms must aim to eliminate acoustic defects such as flutter echoes and focussing and addressing the following issues: control of sound disturbance and transfer between spaces, control of room reverberation (echoing) within spaces, control of ambient noise levels arising from mechanical plant, equipment or external noise (such as transportation), and meet recommended maximum sound levels according to room type and function.

- [ ] Assess the acoustic performance of doors in large openings: The use of large doorways or operable walls creates challenges in acoustic separation especially where teaching walls back onto each other. Balance flexibility with appropriate acoustic separation.
- [ ] Carefully consider heat pumps in general learning areas and areas with external doors as the main access. Heat loss via constant door openings is a challenge. Heat pumps are an ongoing cost for the site, so their operational costs and functionality must be well understood.
- [ ] External locations of AC compressor units to be preferably ground mounted and secured in clad compounds or cages that prevent climbing or vandalism, but also allow for airflow to manufacturer's recommendations.
- [ ] Ensure heating is provided in baby change rooms and access bathrooms.
- [ ] Consider gravity pipe gradients, low flush toilet cisterns and the potential for blockage due to introduced material or accumulation and hardening of toilet paper.
- [ ] Confirm with PWG the requirement for hot water in student toilets.
- [ ] Confirm with PWG the requirement for hot water to cleaners sink, canteen and catering areas, water boiling units in staff lounges and senior student areas.
- [ ] Locate hot water storage units as close as possible to areas of highest use to avoid wastage of pipe, insulate all components. Alternative - reticulated system with a booster.
- [ ] Confirm with PWG location, number and signage of drinking water stations both internal and external.
- [ ] Prevent windows opening into travel ways unless windows clear at adult head heights (approx. 2.1m). Awning and casement windows dangerous at low level even if provided with restricted openers.
- [ ] Internal down pipes are not to be included in new works.
- [ ] Avoid box gutters wherever possible. Where used they must be oversized and constructed of fully welded stainless steel and incorporate hail guards and approval is required by the Capital Works Project Manager.
- [ ] Ensure that new covered ways, awnings and bus shelters do not promote ease of access to roof areas;
- [ ] Canopies/verandahs are to give adequate protection from sun/rain. Designing covered ways to prevent ease of access can compromise protection unless the roofs have wide overhangs – carefully consider rain patterns to ensure maximum protection of designated travel ways.
- [ ] Ensure the prevailing weather patterns are well understood: Include wind breaks to outdoor learning areas verandas and bus shelters. Landscaping can be also used to good effect but takes time to establish.
- [ ] Ensure additions to buildings do not cover up or impede sub floor ventilation.



7. FLEXIBLE AND ADAPTABLE

- [ ] Develop the concepts from Schematic Design further, and:
- [ ] Evaluate how the design allows for future adaptation to suit: new teaching and learning approaches; new technologies; demographic changes; and, community uses.
- [ ] Allow for 30 bag boxes per GLA in Kinder and Primary settings, unless otherwise agreed with the Capital Works Project Manager.
- [ ] Evaluate all switchboards, data racks and inground infrastructure to determine capacity for future expansion. If budget/scope allows, ensure minimum 25% spare capacity in MSBs and that they are appropriately located to suit future development.
- [ ] Discuss with DoE ITS the requirement for new data racks etc to assist with future capacity planning and budgeting.
- [ ] Evaluate, where relevant, whether spaces have been incorporated within the teaching and learning areas that provide for: student/student, teacher/teacher and teacher/student collaboration; group learning; presentations; specialised focus labs; project space and wet areas; display areas; student breakout; teacher meetings; and, reflective/quiet spaces.

STAGE D
DOCUMENTATION

PREFACE

- [ ] The Construction Documentation Phase is the largest of all the phases. In the construction documentation phase the architect and engineers finalise all the technical design and engineering including structural engineering and detailing, heating air conditioning and ventilation systems, plumbing, electrical lighting, energy calculations, and all products and materials are selected and scheduled.
- [ ] Multiple drawing sets are produced including approval documentation for Permit Authorities as well as a separate set of Construction Drawings. Separate drawings are produced for each discipline and include specific design details. For example: structural drawings with foundations and concrete work details.
- [ ] PWC to undertake full review of documentation of the final design, including preparation of specification and tender drawings, final integration with structural and building services, statutory approvals as appropriate. 80% review & Pretender review.
- [ ] Minimum deliverable documents:
  - [ ] Pretender Estimate
  - [ ] Architectural
  - [ ] Landscape
  - [ ] Mechanical
  - [ ] Civil
  - [ ] Electrical
  - [ ] Communications
  - [ ] Hydraulic
  - [ ] Fire

1. PLACE

- [ ] Final development of concepts initiated in previous stages.
- [ ] Ensure any items flagged in the planning permit are integrated.
- [ ] Include in building contract a requirement for planting to be maintained for a realistically achievable period to ensure establishment, particularly for instant turf. Discuss available resourcing with site.
- [ ] Indigenous/native plantings and low maintenance species where possible and specified in landscaping sub-contract. Balance against landscaping that engages the senses and attracts birds and butterflies.
- [ ] Ensure that the main structure planting is introduced as early as possible to provide identity, enclosure and shade to outdoor spaces.
- [ ] Consider the requirement for ongoing maintenance of outdoor areas, and minimise seasonal impacts.
- [ ] Ensure external lighting is integrated, functional and supports positive, site specific place making.
- [ ] Provide high-quality furniture configurations of durable, fit-for-purpose materials, that support outdoor teaching and offer an integrated solution.
- [ ] All playground equipment must comply with and be installed in accordance with the relevant Australian Standards. It must promote accessibility and inclusivity by providing multiple play options for all students, regardless of their individual circumstances.
- [ ] If it is specified, ensure that any rubberised softfall is included in the contract, and that its specification complies with the Australian Standards.
- [ ] Ensure that any timber used is non-toxic.

2. SUSTAINABLE

- [ ] In addition to the further development/resolution of the above:
- [ ] Maximise the opportunity to recycle demolition materials and minimise construction waste going to landfill. Disposal of recyclables is often a challenge but offsets exist for recyclers to take material for future use. A Contractor Waste Management Plan with witness points is desired and should be approved prior to construction commencement and included in the specification. Ensure an induction for all site labour will develop a mindset of waste minimisation. A pre-planned separation system maintains on-site motivation to recycle.
- [ ] Timber used in the building and construction works is either:
  - [ ] certified by a forest certification scheme or
  - [ ] from a reused source
- [ ] Minimise material emissions from "cradle to grave". Some low VOC emitting materials and finishes systems may not suit the challenging physical DoE environment, ensure balance between sustainable intent and long term durability.
- [ ] Install high quality water efficient fixtures and fittings.
- [ ] Ensure appropriate signage is allowed for on all greywater fittings and fixtures.
- [ ] Provide appropriate drainage design to avoid potential blockages and odours resulting from low flow fixtures. Mechanically pumped systems are to be approved by the Capital Works Project Manager.

3. ACCESSIBLE

- [ ] Consider engaging an independent occupational therapist or access consultant to provide professional advice, to ensure ease of access is maximised for all users.
- [ ] Check accessible clearance requirements inclusive of joinery and furniture placement. Loose furniture layout can impact accessibility and/or door swing clearances. PWG to coordinate selection of suitable furniture. Seek professional advice as required.
- [ ] Ensure exposed grates and access covers are not in paths of travel unless completely flush with the adjoining surface after it has consolidated.
- [ ] Counter heights are to be appropriate to young students and wheelchair users eg dual height counter in separate sections noting that this also applies for sinks in kindergarten rooms where both adults and children will be washing hands, paint brushes etc.
- [ ] Consider mirror placement at sinks in early childhood environments at a low level;
- [ ] Ensure structural design has the capacity to be easily reinforced, enabling structure to be installed for future ceiling mounted hoists in accessible bathrooms.
- [ ] Ensure bollards are installed at an adequate height and preferably not bolted to the surface;
- [ ] Allow for removable bollards in areas of infrequent vehicle use;
- [ ] Incorporate wheelchair height stations in specialist learning areas such as: kitchens, art rooms, materials, design and technology workshops.

4. SAFE AND SECURE

- [ ] For all new buildings ensure electronic access to all buildings, controlled centrally as agreed with the PWG. Consider upgrading existing building where budget allows.
- [ ] Agree functional zoning strategy with the school and communicate to Capital Works Project Manager for DoE system update with the security provider.
- [ ] Ensure keying of doors to existing school system is included in the construction contract, establish number of new keys required (minimise numbers of new mechanical keys where possible).
- [ ] Electronic access control is the preferred primary form of access external control. Establish number of access cards required, timing of automatic locking and lock/unlock procedures outside of standard hours.
- [ ] Communication systems with audible and non-audible capabilities must provide coverage for the entire site. They are integrated where possible with: electronic access and lighting control; allow for pre-recorded and ad-hoc announcements; have at leass one alternate control location at the site; and have independent power supply or another solution that delivers redundancy during power outages
- [ ] Avoid installing fire detection mimic panels or new systems parallel to existing systems. Where a panel is undersize for proposed demand, that panel shall be replaced, and specification approved by Capital Works Project Manager prior to tender.
- [ ] Coordinate communications fire and security alarm signalling equipment with Capital Project Manager. Ensure lead time to arrange for mobile phone and account to be established;
- [ ] Coordinate elevator/lift emergency class system with DoE Operations. Ensure lead time to arrange for mobile phone and account to be established.
- [ ] Fencing is be non-scalable, locks are to be located on the inner/school side of gates to allow for lockdown in the event of an incident. Tamper proof cover plates to gate locks are to be considered;
- [ ] Dual height handrails to be installed as standard in primary schools.
- [ ] Ensure gas bottle storage locations comply with the current Workplace Standard for hazardous materials
- [ ] Use low volatile organic compounds (VOC, materials, paints and sealants).
- [ ] Ensure PA system function and location is agreed upon with the school and the main unit is appropriately located
- [ ] External web-based CCTV to be installed on all new builds;
- [ ] Internal CCTV requirements to be discussed and agreed upon by the PWG, and be consistent with the DoE Guidelines (CCTV arrangements). Suggested areas include: main acess and egress points to the site, stairwells (as needed), main thoroughfares through the site, areas with access restrictions for security reason eg where chemicals, cash, records, where IT servers are held/located; and any area that is particularly isolated e.g after-hours self-contained WCs.
- [ ] Any inspection opening for asset maintenance should be discreet and integrated into the surrounding structure/ landscaping without compromising accessibility or creating a hazard;
- [ ] Where required, fencing can be used to define school sites, to deter and delay outsiders, and indicate where outsiders are not permitted. Any fencing and associated gates used at schools must be strong, durable, and fit-for-purpose. Fences should discourage climbing, but also be able to withstand it. Ideally use one fence type across the campus.

5. AESTHETICS

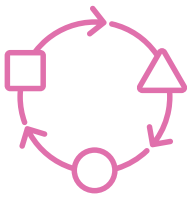
- [ ] Provide schedules for: Furniture, include visual representations in the schedule (if requested by the Capital Works Project Manager), Landscaping schedule showing all plants and maintenance requirements for the groundstaff; Finishes schedule (internal and external) which shows the colours and names of all specified products.

6. AMENITY

- [ ] Provide buffer planting in setbacks where appropriate to minimise the impact of new development and/or to soften new fencing.
- [ ] Ensure allowance is made within the documentation for acoustic assessment and possible adjustment post occupancy.
- [ ] Ensure that all mechanical heating, cooling and ventilation solutions are identified, considered and documented. Consultant to provide recommendations, fit-for-purpose data, capital and running costs, life cycle value and environmental impact.
- [ ] Ensure that mechanical systems are multi zone to space orientation and use. Provides flexibility, equipment failure isolation and facilitates out-of-hours use.
- [ ] Lighting control via zone switching within the zone of the lighting - i.e. perimeter wall switches for perimeter wall lighting. All lights within a room are often switched on if the switching is grouped at the entry even though some parts of the room receive adequate natural light.
- [ ] External lighting design should cater for dark sky requirements ie colour temp (2700K +/-) and control of light spill.
- [ ] Location of sensor lights to be discussed with PWG and avoid possibility of wildlife triggering lighting.
- [ ] Ensure exhaust systems are multi-speed, compatible with the acoustics of teaching practice and does not compromise space heating for occupants.
- [ ] Hardwire appliances such as boiling water units, hand dryers etc. Hardwiring limits annual testing and tagging costs.
- [ ] Lighting control that is integrated with security and comms systems is optimal.
- [ ] Consider utilising a commissioning agent for complex or high-stakes operations.
- [ ] Lighting systems and non-essential electrical circuits are to de-energise with activation of the security system.
- [ ] Ensure appropriate coverage of emergency lighting especially in toilets and internal rooms used by children. Sudden loss of light can be distressing to children and person not familiar with the building layout.
- [ ] Check electrical requirement for powered change tables in access toilets.
- [ ] Ensure that additions or modifications to PA systems remain compatible with existing systems. Note – it is a legal requirement in schools to provide verbal communications to all areas including external in case of emergency. New hardware can sometimes compromise the efficiency of a system.
- [ ] Ensure roof design facilitates safe access within industry standard codes of practice.
- [ ] For complex sites, ensure an access consultant has been involved in key decisions.
- [ ] Ensure handrail extensions on stairways and ramps extend 300mm beyond the transition point to be compliant but do not create an obstruction into travel areas. Handrail protrusions past the ramp or stair can be a safety hazard to small children if located in a travel path.
- [ ] Stair nosings and tactile surface indicators to have sufficient luminance contrast from the surrounding colours. Avoid rubber sheet type installations.
- [ ] Suspended ceiling radiant heating panels may be used in areas with high or raked ceilings where other systems are not practicable. Ensure install height is within recommended manufacturer's tolerances. Control by time and individual room push button refresh with total isolation of circuits upon security system activation.
- [ ] Ensure sufficient consideration has been given to both heating and cooling methods for internal areas.
- [ ] Avoid recessed radiant heaters that now require a clear air gap around and above. The new designs can create paths for heat loss and draft and air movement noise if ceiling voids are significant.
- [ ] Heating and cooling controls should be agreed upon with the PWG. Eg. simple localised controls or basic BMS able to be programmable by any licensed electrical contractor or centrally controlled.
- [ ] For science block upgrades: all gas turrets are to be the DoE standard model and be approved by the Capital Project Manager. This will ensure consistency across the DoE's assets.
- [ ] Ensure power shutdown override switches at all entry doors in workshops and science labs – key to re-energise.

- [ ] Ensure that any system mechanical system is designed, installed and commissioned as a recognised brand system not created from a variety of hybrid model types or components. The design of one-off system comprising components from variety of manufacturing sources can create challenges when a critical purpose designed part cannot be replaced or substituted. Ensure larger centralised systems include provision for redundancy. Total failure of a central system impacts the whole building.
- [ ] Ensure any system controls are of a simple generic design able to be accessed and maintained by any licensed electrical or mechanical contractor and site representative. High end BMS controls that restrict access to only the original system provider or specifically skilled contractor can create repair and maintenance issues especially in regional areas. All control systems to be approved by Capital Works Project Manager.
- [ ] Provide drip trays with drains under outdoor heat pump units located in service areas or travel ways. Condensate discharge during defrost can accumulate on paths etc. and freeze in cold weather exacerbated by colder air flows from the unit creating a dangerous slip hazard.
- [ ] In all areas supplied with flammable gas, mechanical ventilation must be provided and automatically activated when any gas outlet is activated. The distribution system to include a gas pressure proving system and room gas control stations with interlocks to the mechanical vent system – i.e. ventilation automatically on when gas flow is activated.
- [ ] Ensure eyewashes and like equipment do not damage finishes when turned on through use, testing or vandalism. Ensure adequate floor drainage. Eyewashes can damage finishes if not enclosed with splashbacks and or screens.
- [ ] Ensure rural water supplies have UV sterilising system for drinking water. Outlets in Staff Room and other points to be agreed upon by the PWG. Ensure appropriate signage is installed.
- [ ] Ensure collected rainwater is not used as drinking water unless approved by Capital Works Project Manager. Appropriate signage on all discharge points.
- [ ] Any piping or tapware that is considered potable and accessible for students to fill cups or water bottles is to be lead free, and lead-containing brass fittings are not to come into contact with drinking water sources. This does not apply to external vandal-proof taps.
- [ ] Any new hydraulic fixtures and fittings must be certified under the Watermark Scheme.
- [ ] Drinking fountains and refill stations are to be accessible for all students, including wheelchair users, and are height appropriate for the age of students. Externally these should be in areas of high activity such as playgrounds and sports areas and internally allow for one drinking tap for every 30 students (this could be a tap or bottle filling station).
- [ ] Taps in WCs and small handwash basins are to have a maximum flow rate of 3L/minute. A higher flow rate is permitted in laboratory and kitchen sinks.
- [ ] Dado lining to above furniture height on all walls, proposed material to Capital Works Project Manager's approval. Ensure there are skirtings to all walls without dados.
- [ ] Underlay to learning areas where students or teachers spend time on floor. Commercial quality direct stick underlay systems can provide a degree of comfort whilst maintaining resistance to undue wear from furniture movement A full underlay system, combined with a generous pile carpet or cushion-backed tiles are recommended for early Childhood areas.
- [ ] Floor mats at external entries and foyer areas at least 3 metres in width.
- [ ] Consider vinyl that is easy to clean without the need for polishing. Avoid light colours in areas with red clay soil, and preferably use vinyl that is compatible with the existing cleaning regime.
- [ ] Provide well positioned and robustly designed ceiling access in solid ceilings. Ensure safe access. Access panels close to walls are preferred for ladder support. Select panel materials to minimise handprints.
- [ ] Doors in mid to high traffic volume areas to have vision panels if not a glazed door. Consider student and wheelchair line of sight.
- [ ] In student use areas: maximum sliding door height 2400, maximum hinged door height 2100. Above height doors to Capital Works Project Manager's approval.
- [ ] External doors in high-use common areas should be of heavy-duty construction, be in pressed metal frames, and have bollard-type door stops with bumpers at midrail height to prevent damage. Aluminium door frames in these areas are prone to fatigue and damage.
- [ ] Metal door stops must be provided to prevent doors or door furniture striking adjacent walls, fixtures or other surfaces.
- [ ] Doors in aluminium frames to have backing plates, aluminium extrusions and three wrap around hinges to each door leaf for standard size doors. Constant usage of heavy use of glass external doors weakens hinges and affects frames causing doors to deflect unless adequately supports.
- [ ] All doors including toilet cubicle doors, to which EC children have daily access shall be fitted with anti finger jamb seals both sides to prevent accidents.

- [ ] Kick plates to be provided to all timber doors; either vinyl or stainless steel.
- [ ] External roller door shall be heavy duty to mitigate vandalism or wind damage and be masterkeyed.
- [ ] Ensure all lockable windows master keyed – all window locks to be keyed alike on their own system – not practicable to master key.
- [ ] Without limitation, hardware is to include hinges, pivots, locks, latches, padlocks to gates and enclosures, master-key systems (noting that electronic key systems are preferred), door furniture, door closers, door stops, window latches and locks, weather seals, acoustic seals, fire and smoke seals, and other hardware necessary to the required functionality and security.
- [ ] Ensure minimum of double glazing to external walls in aluminium frames preferably with a thermal break.
- [ ] Ensure heavy duty safety mesh provided under all polycarbonate roofing or any roof lights irrespective of product specification compliance with AS code. In clear roof areas, alternate solid and clear sheets avoids unsightly dirt accumulating in hard to clean sheet lap joints.
- [ ] Provide protection to lower part of downpipes.
- [ ] Ensure Quality Assurance procedures for slab curing and testing are documented. Slump test records are to be retained by contractor and provided to Capital Works Project Manager upon request.
- [ ] Ensure adequate timeframes for slab curing are allowed for to prevent issues with floorcoverings being installed on green slabs.
- [ ] Ensure the following minimum QMS procedures are documented and allowed for pre-handover: water quality testing procedures; camera of all drainage lines; and pressure testing of all lines/services. The testing results are to form part of the handover documentation.



7. FLEXIBLE AND ADAPTABLE

- [ ] Ensure that the requirements captured in stages A-C are reflected in the final documentation and aligns with the principles and project objectives.

8. DEFINITIONS

Bayview Secondary College
Tim Penny Architects
Photographer: Tim Penny Architects

8. DEFINITIONS

Lenah Valley Primary School
Architects: Designhaus

Asset Strategy Steering Committee (ASSC)

A committee of senior Department of Education representatives appointed to provide strategic oversight and direction to the Secretary and Executive on activities related to the Department's asset portfolio.

Commissioning Brief

A document providing details to prospective consultancies for the purposes of procuring consultancy services. The Commissioning Brief provides essential background information, and outlines services and deliverables to be provided by the Lead Consultant.

Concept Design

A range of design concepts explored to define the solution to meet the Return Brief and includes for example schematic floor plans, site plans and building elevations and computer renderings expressing spatial relationships, scale, form and material use. Statutory requirements are investigated, consideration of the integration of building services and structural systems and initial cost estimates are further considered based design options and anticipated complexity.

Contract Administration

The task or function of ensuring that a construction contract is executed in accordance with the terms of the contract.

Consultation & Commissioning (Project Stage)

First project stage after Lead Consultant commissioned. During this stage the Project Working Group (PWG) is formed, all site information established, sub-consultants commissioned, DoE Design Guide, Project and Education Briefs considered, and a Return Brief delivered by the Consultant to the PWG for approval.

Defects Liability Period

Is the period of time following the completion of construction or practical completion during which a building contractor remains responsible under the building contract for attending to and rectifying any defects which become apparent in the completed works.

Project Brief

The consolidation of preliminary briefing and scoping information developed by the DoE. It outlines the aspirations for the project and links the desired vision for learning, design solutions and the facility.

Design Development

The stage during which the schematic design is refined to produce the final design. This includes the integration of building services with architectural and structural systems, verification of cost estimate, verification of time program. Finishes, fixtures and materials are specified. Fully dimensioned site plan, floor plan, elevations and sections.

Built Environment Guide Checklist

A quality assurance tool and checklist of requirements to be verified at defined staged approval submissions to the Project Working Group and the Design Review Committee. It contains key considerations forming a set of basic criteria for a design to meet minimum compliance standards.

Documentation

Documentation of the final design, including preparation of specification and tender drawings, final integration with structural and building services, statutory approvals as appropriate. Architectural documents are combined with structural, mechanical, hydraulic and electrical drawings and have all details required for pricing and construction.

Education Brief

Sets outs the methods and practice of teaching and learning, and aspirations for the project's learning spaces. The educational vision of the school is key to developing the Educational Brief. Other DoE documents, for example: School Improvement Plans, Pedagogy Frameworks, School Vision Statements and the Early Years Learning Environment Design Brief can provide additional information about teaching and learning practices and spatial aspirations. Key elements are integrated into the project brief.

Environmentally Sustainable Design (ESD)

The intention is to eliminate negative environmental impacts completely through skillful, sensitive design. Principles include, low impact material use, energy efficiency, durability, reuse & recycle, renewable resources and design impact.

Parliamentary Standing Committee on Public Works

A Committee comprising members of the State Parliament responsible for scrutinising major Government public works projects, and specifically the necessity or advisability of carrying out the project and the present and prospective public value of the work. Applicable for projects over $8,000,000.00.

Pedagogy

The method and practice of teaching. The function or work of teaching: the art or science of teaching, education instructional methods. (Department of Education, Employment and Workplace Relations (DEEWR), 2009a, p.42)

Post Occupancy Review

A review undertaken after a building is occupied to obtain feedback on a building's performance in use. It checks whether the design process worked, establishes lessons learned, occupant feedback, and closes the loop on the objectives of the Built Environment Guide.

Bridgewater LINC and Child and Family Centre,
Liminal Studio
Image: Jonathan Wherrett

Chigwell Child & Family Centre
Morrison & Breytenbach Architects
Image: Ray Joyce

Practical Completion

The point where all building work is complete or almost complete, in accordance with the contract, and the building is fit for occupation.

Project Description

Formal project description from State Government Budget Papers or the DoE that defines a high-level scope and budget.

Project Masterplan

The Project Masterplan illustrates the proposed project works and how it fits in the context and considers the strategic future development of the site.

Project Objectives

Key project outcome requirements that are established and approved in the Project Plan.

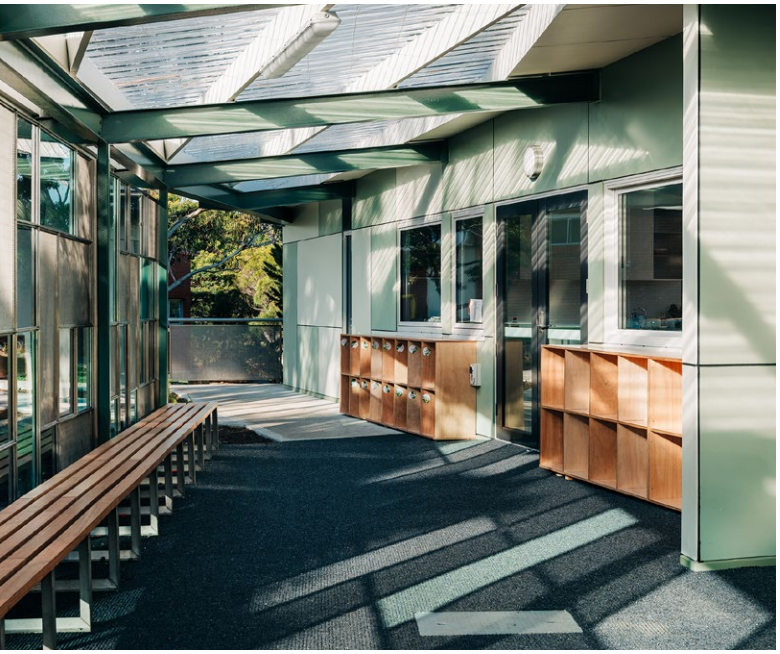
Project Plan

A document prepared by the Capital Works Project Manager in consultation with key site stakeholders, establishing specific requirements for the project and includes: site information, budget, scope, timeframes, opportunities, identified issues, stakeholder engagement strategies, project methodology, governance requirements, and, risk mitigation strategies.

Project Working Group (PWG)

A group of representatives of interested parties and stakeholders responsible for key project decision making relating to the appointment of the Lead Consultant, design outcomes and scope priorities.

Montagu Bay Primary
M2 Architecture
Image: Adam Gibson



Project Stages

Typical stages that most building projects whether simple or complex go through to ensure successful project outcomes: Consultation and Commissioning; Master planning; Schematic Design; Design Development; Documentation and Tender; Construction and Contract Administration; and, Post-Occupancy and Defects Liability Period.

Return Brief

A statement from the Lead Consultant back to the Project Working Group, prepared in response to the commissioning brief. It outlines the design ambitions without prescribing a solution. The Return Brief confirms project requirements and responds to the Design Guide, and outlines key functions, considerations and learnings identified from collaboration and investigation during the Consultation & Commissioning stage.

Schematic Design

Also known as Concept Design and is the range of design concepts explored to define the solution to meet the Return Brief and includes for example schematic floor plans, site plans and building elevations and computer renderings expressing spatial relationships, scale, form and material use. Statutory requirements are investigated, integration of building services and structural systems and initial cost estimates are further considered based design options and anticipated complexity.

Site Masterplan

A high-level plan showing the intended site and/or building layout over the longer term (i.e. beyond the scale of a single project). Establishes the spatial framework and aligns the school's vision for the site and key areas for future development. The site masterplan is a stand-alone deliverable and considers the whole site and provides options including infrastructure requirements that will ensure future utilisation or otherwise of the existing structures and/or areas will not be compromised.

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Hellyer College
Michael Wilkinson Architect
Image: Grant Wells

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Lilydale District School Kindergarten
CMK Architects
Image: Aaron Jones

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Hobart College Theatre
Cumulus Studio
Image: Adam Gibson

East Launceston Primary Kindergarten
ARTAS Architects
Image: Aaron Jones

Department of Education

Tasmanian Government