



# Design Framework: A Standardised approach

A guideline for Standardised Design in NSW schools.

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[schoolinfrastructure.nsw.gov.au](https://schoolinfrastructure.nsw.gov.au)

# Purpose of this document

This document has been created to provide information on Standardised design in schools to enable delivery through Modern Methods of Construction (MMC) methodologies to Department of Education (DoE) facilities across NSW.

These guidelines are intended to be used by architects, professional consultants, manufacturing contractors and assembly contractors. The guidelines are developed through a rigorous engagement process with School Infrastructure NSW and relevant DoE stakeholders.

## Disclaimer

This framework helps design teams easily access information and share successful project methodologies to ensure compliance with the school design principles. Following this framework does not irrevocably replace any project obligations to deliver against Educational Facilities Standards and Guideline requirements. The information within this document once downloaded/printed/exported will be classed as an uncontrolled copy. Its currency must be checked by visiting the EFSG website prior to using the information for any purposes.

## Related Documents

This framework has interdependencies to the following policies, guidance materials and frameworks:

[Education Facilities Standards and Guidelines \(EFSG\):](#)

- [Standard Hub Layouts](#)
- [Schedules of Accommodation](#)
- [Design Framework: Master Planning for Schools](#)

## Superseded Documents

Documents designated 'For Information Only' (i.e. DfMA Guidelines) remain relevant although may have sections that have since been superseded by more current Guidance Documentation and the like.

[SINSW DfMA Guidelines Rev 3, 10/12/20 \(for information only\)](#)

For more information on Education Facilities Standards and Guidelines, Technical Standards and a glossary, please visit:

[education.nsw.gov.au/about-us/efsg](http://education.nsw.gov.au/about-us/efsg)

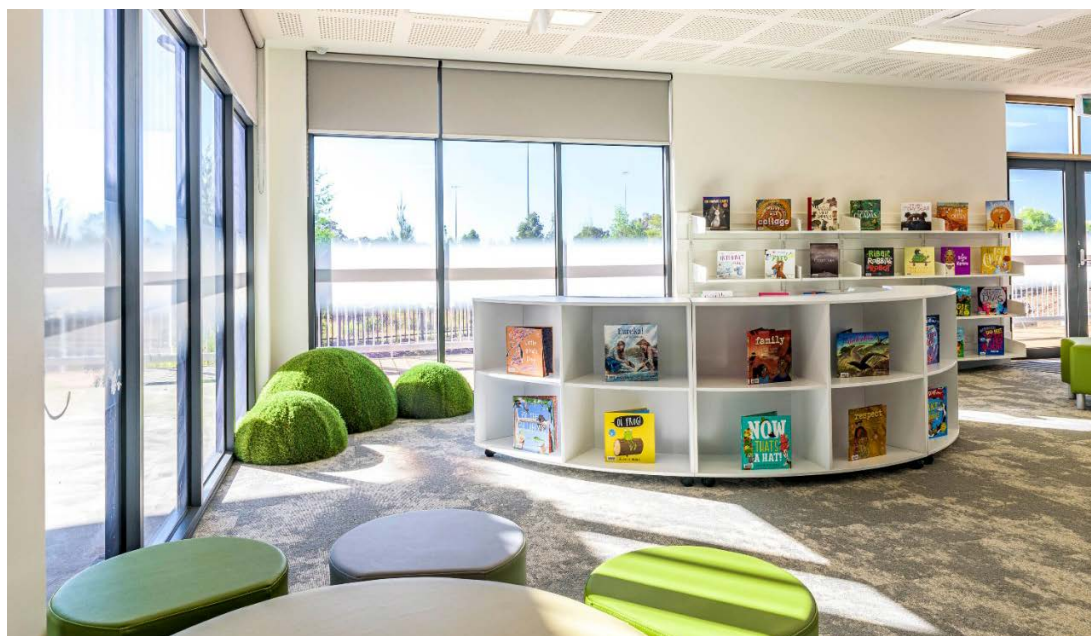


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# 1. Introduction to Standardisation

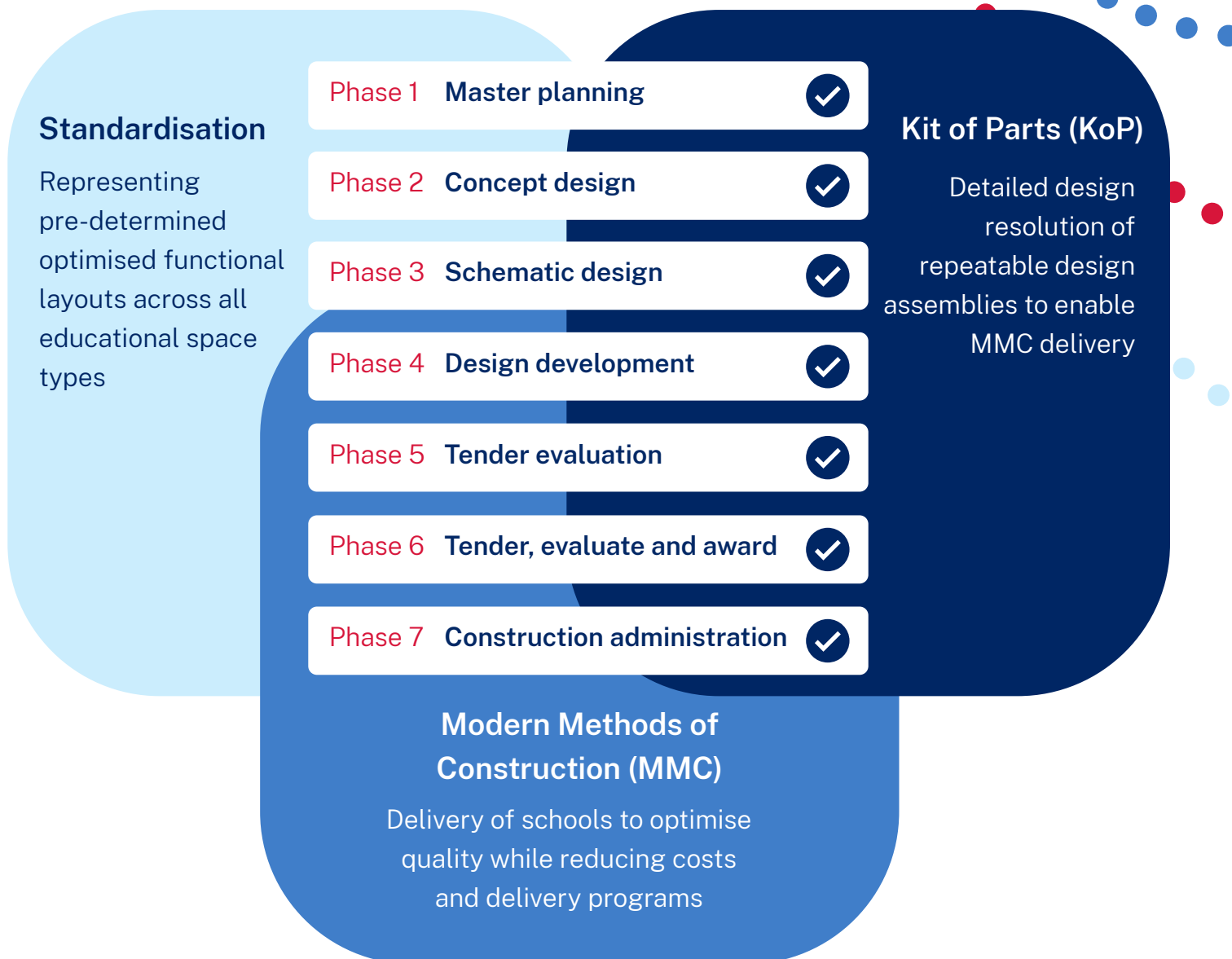
The NSW government's commitment to providing a school place for every child has resulted in significant investment in school infrastructure through expansion, upgrade, and new school projects. To address the challenges of the new educational environment and aging school assets, Standardisation has been developed. In this context, School Infrastructure NSW (SINSW) has an unprecedented opportunity to support principles of pedagogy, sustainability, and construction technology.

To meet this challenge, SINSW has developed the Modern Methods of Construction (MMC) Program to deliver school infrastructure projects using off-site manufacturing methods. The aim of the program is to develop more capacity for construction, while also supporting the establishment of a sustainable

market within NSW. MMC combines the benefits of volumetric modular construction (speed, quality, and safety) with 'Kit of Parts' design and Standardisation. This approach uses a range of standardised floorplans that are selected in accordance with site conditions, education rationale, and school size (stream).

While the use of standardised floorplans ensures consistency and efficiency in construction, the ability to customise building form, site planning, façade design, and material selection ensures that each project is unique and appropriate to its locality and needs. This approach also supports principles of sustainability by reducing waste, energy use, and carbon emissions associated with traditional construction methods.





## 2. Standardised Design: The Vision

Standardised Design is a comprehensive and forward-thinking concept aimed at revolutionizing the construction and operation of schools. It has been devised in response to the pressing need to build schools quickly and efficiently, in response to the rapidly growing population of New South Wales, as well as to support the evolving trend towards co-teaching and flexible learning spaces.

By adopting an integrated and equitable approach, Standardised Design ensures a consistent quality of learning environments and operational control. This is achieved by using pre-planned and pre-tested product line systems that can evolve with the needs of the users. In this way, schools can be built efficiently, with the design quality and functional planning that guarantees compatibility and interoperability of componentry from modern construction methodologies.

### Background

School Infrastructure NSW (SINSW) was established in 2017 to address the challenges posed by growing enrolments and ensure that every school-aged child has access to high-quality education facilities at their local school. In recognition of the need for inclusivity and co-creation, SINSW implemented the following key strategies:

- Deliver the very best school infrastructure to meet the needs of a growing population, and support modern, flexible teaching and learning.
- Take care of school assets by making them safe, and maintaining and improving their sustainability credentials in a way that is efficient, reliable and long term.
- Make schools the centre of local communities through initiatives designed to bring people together and create opportunities for learning, work and play.
- Invite partners from various industries to work with us to continue to improve construction through Standardisation and Modern Methods of Construction (MMC).

The Standardised approach has been developed by experts from education through to delivery, embedding their learnings into school design development from inception through to completion. Their ongoing practice continues to reinform design requirements into the future.



### Policies

In August 2020, the SINSW Chief Executive mandated application of a standardised education planning grid for all new projects. This enables MMC delivery of schools and supports implementation of the following:

#### [NSW Government Action Plan, June 2018](#)

A ten-point commitment to the construction sector.

#### [Section 27A of the Human Rights Act 2004](#)

Right to Education, Australian Human Rights Commission.

**i** If you require assistance with converting existing designs at alternate phases to enable this approach, the Design and Infrastructure Standards (DaIS) and Modern Method of Construction (MMC) team can assist incumbent design teams on how to deliver standardised solutions.

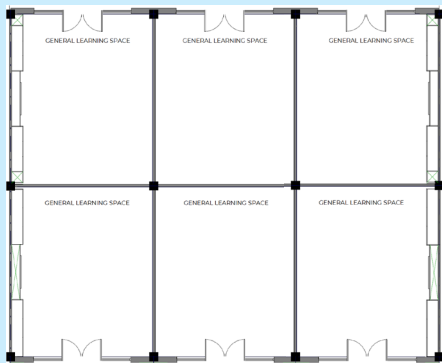
### Pedagogy

Key changes in school pedagogy mean a shift toward a more widely educated student that can harness skills in critical thinking, problem solving, and collaboration, along with the more traditional skills of numeracy and literacy.

With the adoption of co-teaching and open learning, it is predicted that the curriculum will

shift towards a more cross-disciplinary mode of education.

Standardisation gives learning spaces the flexibility to enable this cross-disciplinary learning. Meanwhile, traditional modes of learning gain the flexibility to change in the future.



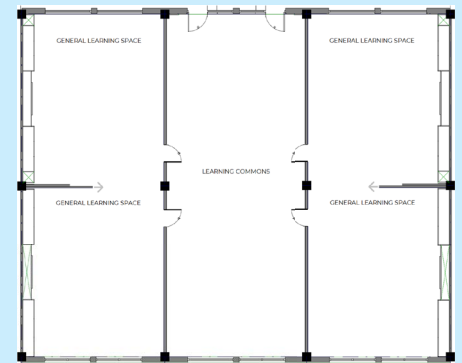
**Type A**

Traditional closed General Learning Spaces (GLS)



**Type B**

Traditional closed General Learning Spaces with access to a common learning space



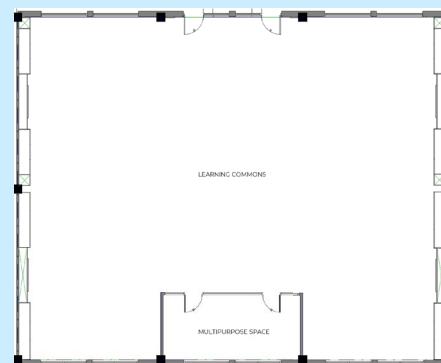
**Type C**

Traditional closed General Learning Spaces with flexible walls and access to a common learning space



**Type D**

Maximum flexibility of General Learning Spaces and Learning Commons with the ability to separate GLS's



**Type E**

Open plan with some adjoining spaces

### Changing EFSG

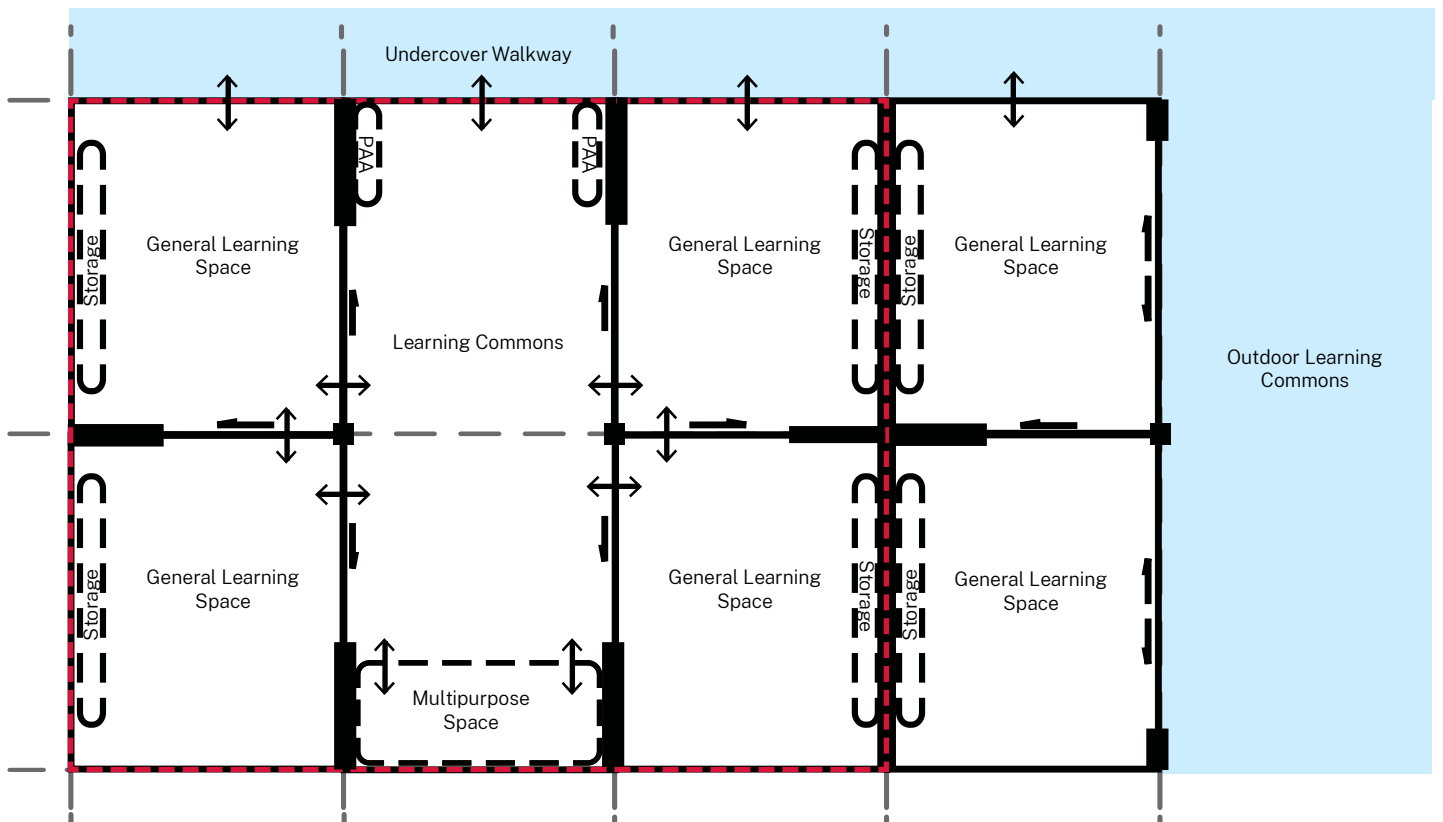
The Education Facilities Standards and Guidelines (EFSG) are adapting to enable Standardisation. By creating standardised classroom sizes planned around a grid framework we have developed a Kit of Parts (KoP); a series of components to be utilised in both new and existing schools.

With shifting pedagogy and user wellness at the heart of the changes, this new approach to classrooms enables more varied learning modes. By offering a variety of furniture settings and by grouping classrooms together as hubs, flexible, open-plan co-teaching methods are enabled alongside the traditional modes.



### Future flexibility

The standardisation of rooms on a grid system enables the future flexibility to convert primary schools to high schools, or general learning spaces to specialist spaces, without the need for costly and time-consuming refurbishments. This ensures the ability to respond to a future of cross disciplinary education and open space learning.



General Learning Space Hub  
Primary and Secondary



### 3. Supporting Standardised Design

Standardisation is adopted on all projects and embedded within the early stages of Master Planning to develop strategic business cases.

Within a Master Plan for a new school, the key elements of Learning Units and Core Facilities are referred to as Standardised Hubs. These Hubs, representing pre-determined optimised functional layouts across all educational space types, are developed in consultation with subject matter experts from the representative teaching bodies, along with design and construction specialists.

The consultation process invests in continual improvement and relies on the reflection and evaluation of subject matter experts. As a result, Standardisation is always evolving in response to changes in teaching practices, design innovation, technological growth and influences and values of the current zeitgeist.



There are two distinct types of school projects that are designed with different approaches:

#### New school projects

New schools projects consist of a new environment with little to no constraints imposed upon the school site by previous assets. They can be on either greenfield or brownfield sites.

During the Master Plan stage, design teams will develop 3D modelling options which reflect standardized learning Hubs. Location of specific core facilities and learning units will respond to the site context and preferred functional relationships of the school site.

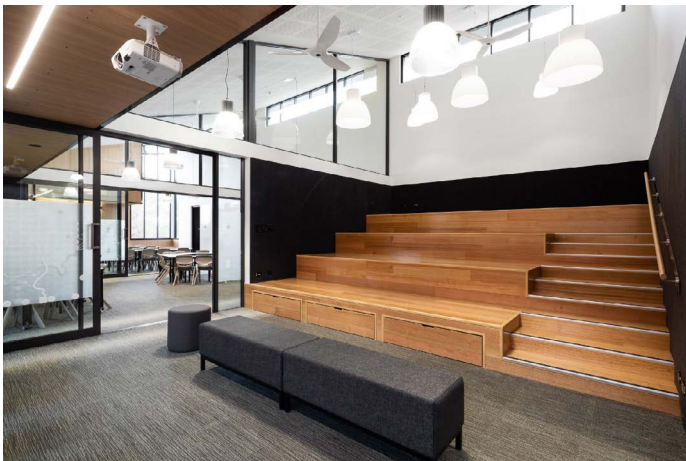
In developing the preferred masterplan option further, through the Concept and Schematic Design phase, new school projects will comply with the standard Hub layouts and will adopt Kit of Parts design solutions.

#### School upgrade projects

School upgrade projects are generally more complex in nature. In an existing and operational school environment, the adoption of Standardisation is undertaken as much as possible as part of the in-depth consideration of various alternatives and options to find the preferred solution for the school.

School upgrade projects will take into consideration detailed analysis of the condition, functionality and compliance of the existing facilities with current regulations and educational standards. Once existing school facilities are assessed, the design team will propose methods for cost efficient repurposing, refurbishment, or demolition, depending on the building conditions. Refurbished learning environments and core facilities will adopt Kit of Parts design elements. Specified finishes, furniture and equipment will match new facilities built on the site to promote equity both within the school and throughout the state.

New buildings on existing school sites will comply with the standard Hub layouts and will adopt Kit of Parts design solutions.



### Standard design principles (EFSG)

We are standardising planning grids and the EFSG



### Streamlined planning approval processes

We are trialling a Complying Development Certificate (CDC) streamlined approval process



### Stakeholder management

We are maintaining our stakeholder responsibilities and standardising the consultation process



### A common digital platform

We are exploring the use of Building Information Model (BIM) and other common digital platforms





### Key features of the MMC design approach

- ✓ Meets the EFSG requirements
- ✓ Maximises off-site production benefits
- ✓ Delivers the Gross Floor Area (GFA)
- ✓ Responds to site requirements
- ✓ Complies with the School Design Guide and Design Standards
- ✓ Provides greater certainty in terms of time and cost
- ✓ Achieves daylight and thermal modelling

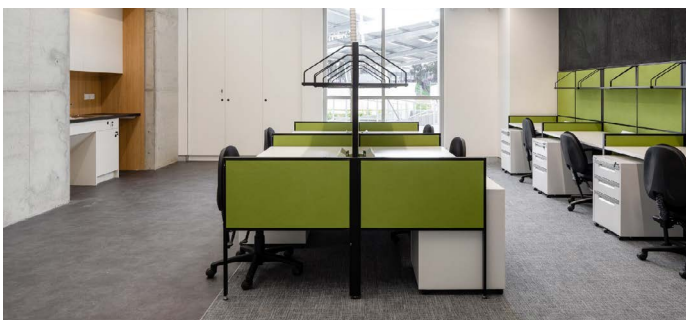
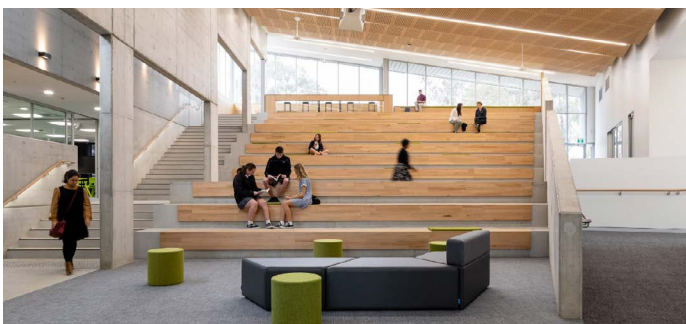
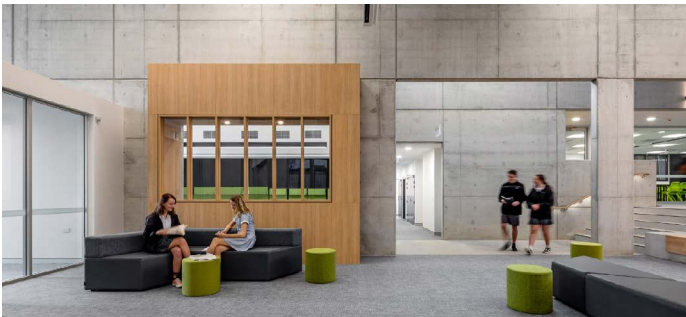


### Kit of parts (KoP)

#### A digitally enabled concept design based on Standardisation

SINSW has created a digitally enabled Kit of Parts. It is material agnostic, embedded with SINSW Design Requirements (EFSG, NCC, etc), and able to be manufactured by Industry and SINSW Delivery Partners.

The parts are based on open Building Information Model (BIM) platforms and compatible for designers, contractors and manufacturers, allowing repeatable and compliant school buildings to be manufactured and assembled.



#### The KoP will:

- ✓ enable the design of all new school facilities planned to utilise the SINSW standard grid (9x7.5m)
- ✓ be a catalogue of all components required to build and fitout schools
- ✓ support all functional requirements of the Schedules of Accommodation (SoA's)
- ✓ be interchangeable between Primary and High Schools and their respective Hubs.
- ✓ embody all performance and compliance requirements in accordance with the NCC and EFSG
- ✓ facilitate Schematic and Detailed Design phases to occur simultaneously with Master Planning and Concept Design
- ✓ include all construction, performance and costing information to be essentially 'plug-and-play'



## 4. Benefits of a Standardised approach

Standardised school Hubs have been through a rigorous planning and design process, based on thorough expert consultation. They are developed with innovative approaches and crafted from a deep understanding of the wide range of performance requirements.

These standard hubs provide several key benefits:



### Improved sustainability

MMC manufacturing and assembly reduces Co2 emissions, as well as material and water waste.



### Improved health, safety and productivity

MMC improves student and teacher mental health, through larger teaching spaces, more outdoor space, and more circulation.

Manufacturing of building parts takes place in safe site environments and on-site assembly requires less interfaces, increasing both safety and productivity.



### Time savings

SINSW expects to experience significant time savings across all project phases, as a result of standardised design, by greatly reducing time required for initial briefing, costing, design time, manufacturing and onsite assembly and construction.



### Opportunities to reduce cost

Design standardisation and repetition reduces cost in the design phases.

The portfolio application of Standardisation, particularly in the Kit of Parts (KoP), will reduce the cost of construction significantly.

Easy to use performance guidelines set simple rules and allow for cost-saving innovations

Whole-of-life costs are reduced using careful site selection and master planning to maximise passive design principles. This is carried through in the detailed design phases for efficiencies to reduce operational and life cycle costs.

Competitive opportunities are maximised, including regional and small-medium sized businesses.

Cost and value for money are balanced.



### Design efficiencies

Following the Standardisation Guidelines and Standardised Hubs, school designs can achieve greater building efficiency by maximising the functional user space against the built footprint area.

Construction methods support adaptive reuse and recycling.



### Design flexibility

The Standardised Planning Grid accommodates all required Primary and High School typologies within a 9m x 7.5m framework.

Interchangeability is optimised, which facilitates future growth and expansion as briefing requirements adapt over time.



### Structural grid flexibility

While a standardised approach to design through KoP and MMC remains consistent, the practice of Standardisation allows for evolution over the course of its development. Through extensive consultation with educators and stakeholders the initial standards have evolved and will continue to evolve. A systematic deepening of the processes allows for measured adaptability and flexibility, strengthening the long-term quality of the assets.

While the planning grid module dimensions remain the same to ensure consistency of product and repurposing for future use, structural grid systems can be tested throughout the design stage and the most efficient structural grid solution agreed upon as part of the final construction contract.

This systemised consistency creates a second order of derivatives in its modular componentry known as the Kit of Parts.



### Kit of parts consistency and flexibility

The Kit of Parts can be configured to suit differing contextual environments, education and operational objectives. Whilst there are consistent Standardised Hub modules, there is flexibility in the arrangement and orientation of these modules, the connections of circulation spaces and the configuration of collaboration spaces.



### Upskills the workforce and develops market capability

Standardisation through MMC affords establishes a demand to grow NSW manufacturing capacity, creating new jobs, training, and local upskilling.

The implementation of manufactured products for on-site assembly lowers the construction costs per sqm over time, which increases the capacity to deliver greater assets.

MMC supports training and upskilling on advanced manufacturing and assembly capabilities that are transferrable across sectors, and uses a common digital platform to enhance competition and promote collaboration and planning across the supply chain.



### Minimised impact on operations

The off-site manufacturing and on-site assembly means less trades on school sites, generating less noise, dust, traffic and disruption and reducing the length of disruption to school operations.

Overall school enrolments, yearly populations, and both curriculum and program based activities are constantly shifting. With interchangeable modules for all primary, high school and special education teaching spaces, there is an enhanced level of catchment flexibility.



### Improved workplace conditions

Harnessing the productivity gains inherent in MMC supports further research into the benefits of a 5-day working week, as part of the work of the Construction Industry Culture Taskforce to improve the conditions and appeal of our industry for all.



