NSW Department of Education – School Infrastructure NSW

Master planning guidelines for schools

A framework for efficient project planning and school design

October 2020

schoolinfrastructure.nsw.gov.au

NSW GOVERNMENT

Purpose of this document

This document has been created as a guideline for the development of master plans for schools and educational facilities.

It provides:

- an overview of the master planning process including site analysis requirements, guidelines for options development and recommended content and layout of the master plan report,
- an explanation of how the master plan process may promote more efficient planning pathways that may save time and money, and
- guidance on the development of standardised design solutions at the master planning phase, and construction via Design for Manufacturing and Assembly (DfMA).

This document is to be read in conjunction with the existing Educational Facilities Standards and Guidelines as well as the *Better Placed : Design Guide for Schools* and *Better Placed : Environmental Design in Schools* by the Government Architect NSW.

This document is intended to be reviewed, updated and improved regularly as additional information becomes available.

Version	Date	Notes
1.0	21/05/2020	Working draft for consultation with the architects Community of Practice
2.0	26/10/2020	Final draft for Director endorsement

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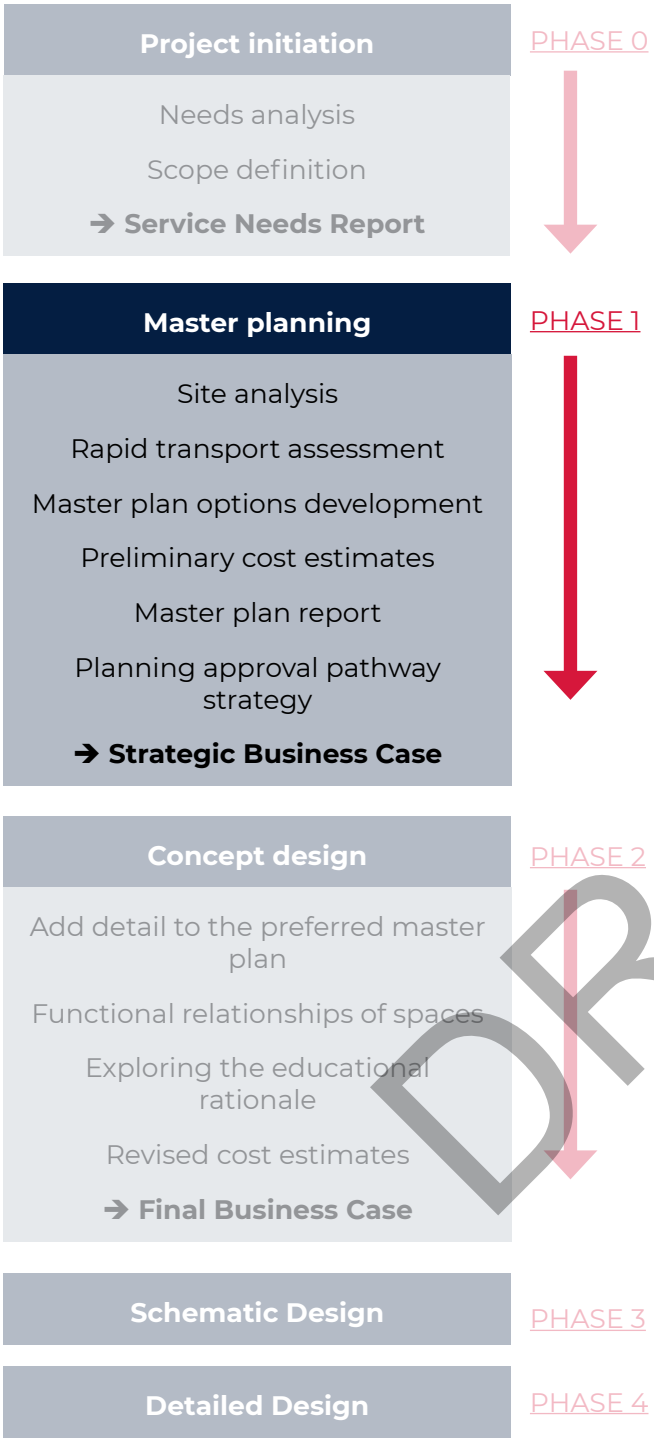


^ **SINSW Design Development Process**
Tasks and deliverables

1.0 INTRODUCTION

The master planning phase of the SINSW project delivery process is a key step in ensuring the delivery of a successful project.

The aim of the master plan phase is to uncover challenges, explore opportunities and provide appropriate solutions that meet the service need and project scope.

A good master plan provides a future focused framework for development of the site with a strong focus on the needs of the school.

It is built upon a robust analysis that considers the site context and constraints, highlights opportunities and proposes innovative solutions that explore best possible outcomes and address budget limitations.

A well considered master plan will provide a range of options and a comparative assessment from which the preferred option can be agreed.

Communication is key : the master plan should tell the story of the existing site and provide the framework for the next chapter.

Benefits of a 'good' master plan

The benefits of a well researched and documented master plan, include:

- highlighting risks early - this may include risks that prevent/limit development or incur a cost to the project,
- limiting rework - exploring a range of options in the design process provides a 'fall back' should the preferred option not be able to progress,
- standardised design solutions that utilise DfMA methods and realise benefits such as time savings, improved sustainability, reduced construction costs and new employment opportunities,
- stakeholder partnerships that may support co investment in shared infrastructure and connectivity to existing community, sporting or other local infrastructure, and
- potential for more efficient planning pathways - evidencing a commitment to meeting planning standards, minimising the impact on the environment and neighbours and developing critical infrastructure that fits with the local setting.

Source : SINSW EagleEye, 2020

2.0 ANALYSIS

Conducting a site visit, followed by the preparation of a site analysis is a crucial initial stage in the development of a master plan.

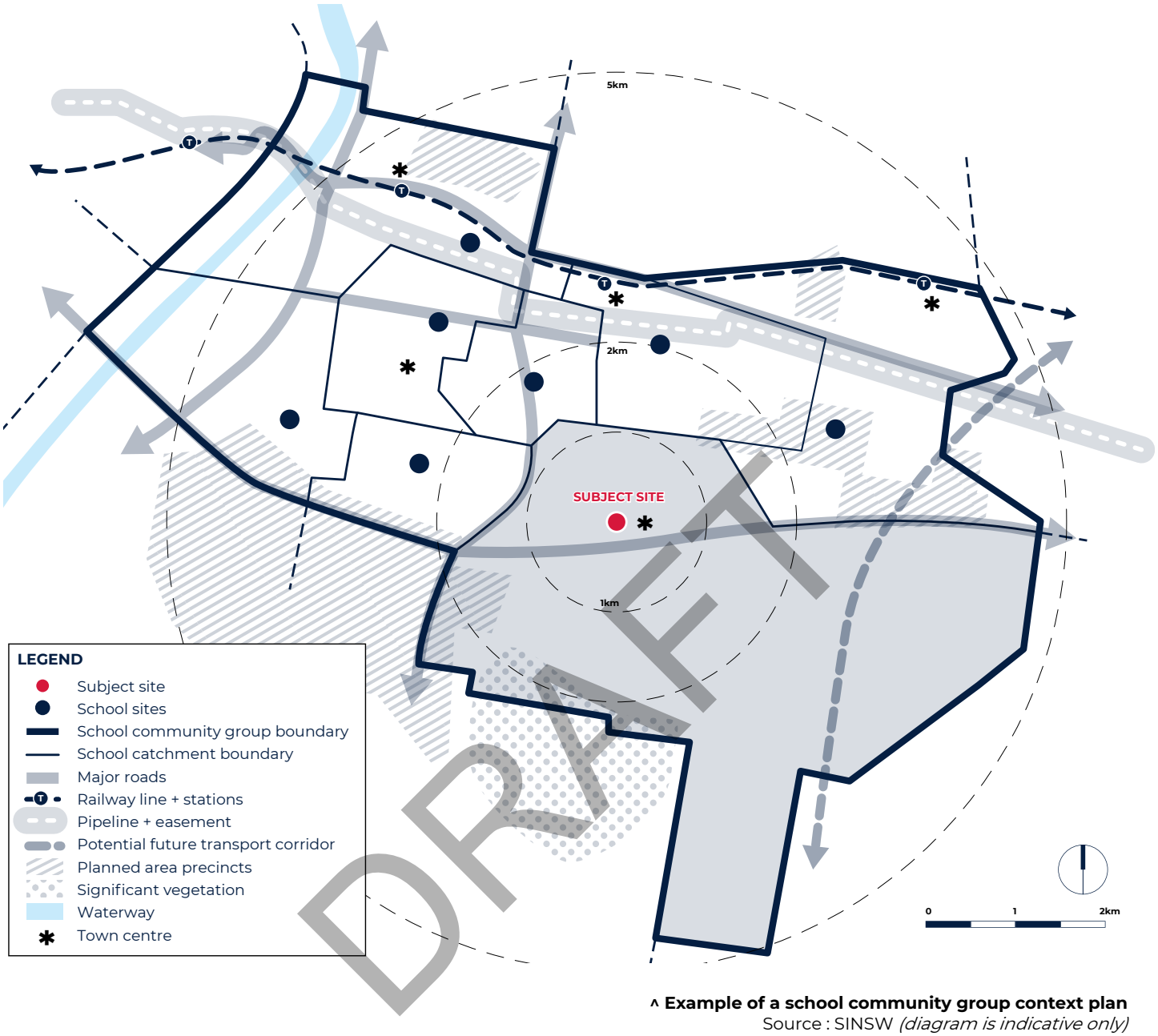
The site analysis should be presented as a series of graphics that explore the following items, at a minimum:

- Site context
- Planning overlay
- Environmental factors
- Critical infrastructure services
- Safety and security
- Existing school assets & function

These key analysis areas are outlined in detail in the following sections.

The analysis should conclude with a graphic demonstration of potential opportunities and site constraints.

> In the case that certain expert technical advice or information is not available for inclusion at this stage of the project, it is important to highlight this as a risk, recommend a way forward and document the outcome within the master plan report.

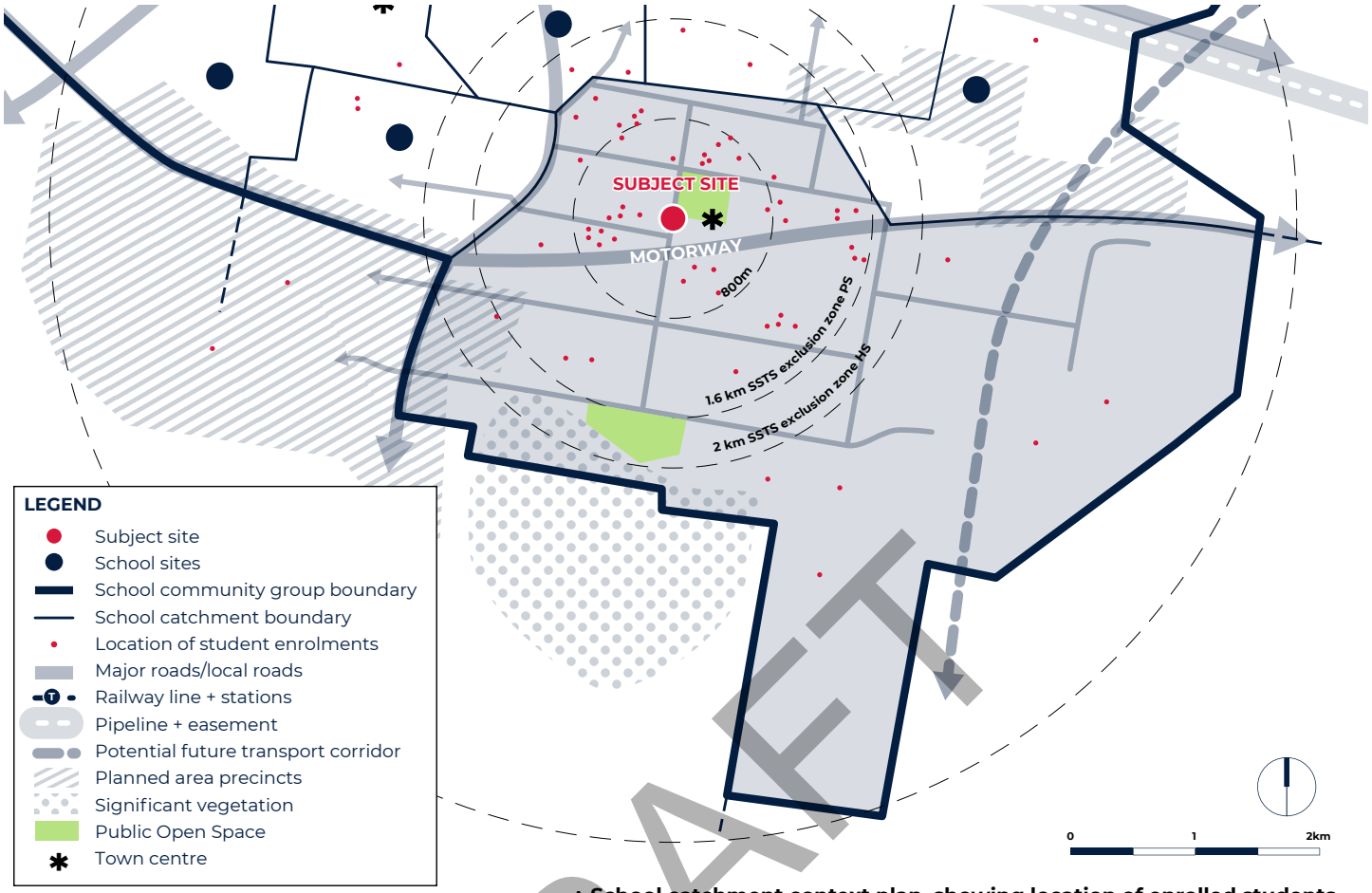


^ Example of a school community group context plan
Source : SINSW *(diagram is indicative only)*

2.1 Context

Schools provide unique place making opportunities to support and strengthen town centres, and enhance the local character. For this reason, it is important that the master planning phase closely considers the context of the school site.

School sites are important community assets that fulfill a role beyond student education during school hours. Facilities are often used by the wider community to host events such as weekend markets, polling booths, evacuation centres and extracurricular sporting activities, to name a few. There are many opportunities for schools to be jointly developed or share facilities with the community, to ensure more efficient use of space and provide quality social infrastructure.



^ School catchment context plan, showing location of enrolled students
Source : SINSW *(diagram is indicative only)*

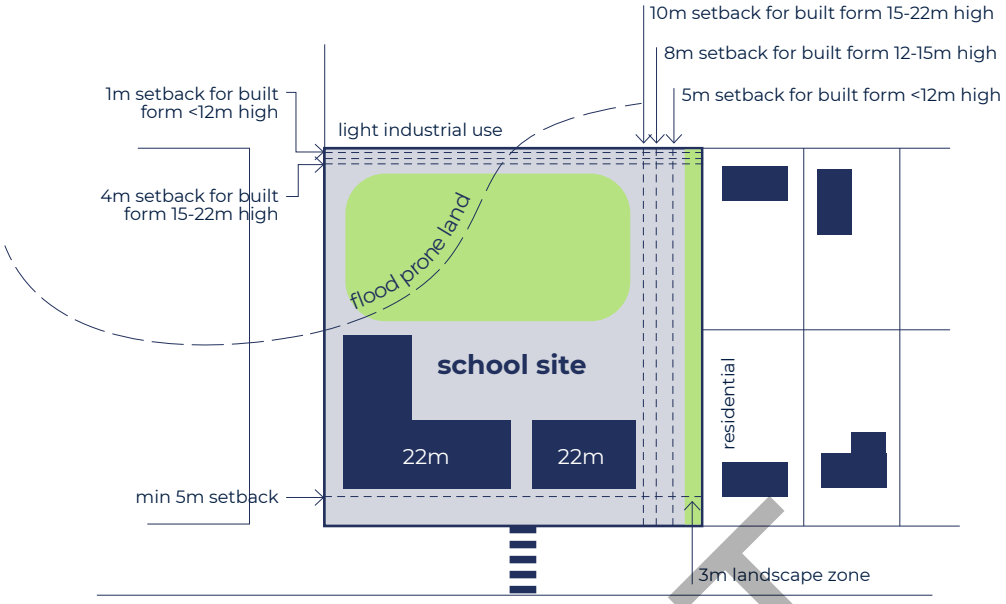
Review, validate and incorporate findings of the '**Service Needs Report**' provided by the SINSW Service Planning Team.

Review and action the '**Education Rationale**' provided by the SINSW Schools Learning Environments and Change (SLEC) team.

- Demonstrate the school site in context including **neighbouring schools**, highlighting any proposed/new projects and/or catchment boundary changes,
- Show the school **catchment boundary** (existing and/or proposed),
- Demonstrate the location of the site within the **public transport network** and proximity to railway stations and bus network,
- Explore and demonstrate **adjacent uses**, local character and potential implications of redevelopment for the school site and neighbours, such as noise impacts, overlooking, overshadowing, issues with site access etc.,
- Highlight near by **community open space**/ facilities that the school may be able to utilise,
- Show the **Aircraft Noise Exposure Forecast** (ANEF) contours and explain how they may impact development on the school site (if applicable),
- Identify areas of high **ecological** and **biodiversity significance** on and surrounding the site, such as wetlands, water bodies, rivers, creeks, water catchment areas, national parks, etc., and
- Summarise the future **education model**, highlight any existing issues raised by School Operations (DEL, Principal and staff) and demonstrate these graphically (if possible).

Need more information? Engage with...

- DEL, school principal and staff
- Government agencies and local councils (via the SINSW Partnerships Team)
- SINSW Service Planning team (in particular, Asset Utilisation)
- SINSW Transport Planning team
- SINSW Statutory Planning team



^ Indicative site plan demonstrating requirements of complying development
Source : SINSW *(diagram is indicative only, not to scale)*

2.2 Planning snapshot

Review, validate and incorporate findings of the '**Service Needs Report**' (in particular the chapter on 'Strategic Context') and the '**Planning Snapshot**'

- Demonstrate the opportunities and constraints of **existing strategies**, Precinct Plans, master plans or public domain plans (at a minimum) for the school site,
- Demonstrate opportunities and constraints of the **Local Environmental Plan** (LEP) for the school site and surrounds including, but not limited to:
  - land zoning (LZN),
  - maximum building height (HOB),
  - floor space ratio (FSR),
  - heritage items and conservation areas (refer to Section 1.1.3 for detail),
  - land reservations,
  - land based constraints, such as flood, acid sulphate soils and environmentally sensitive land (refer to Section 1.1.3 for detail).
- Consider the requirements of the local **Council's Development Control Plan** including, but not limited to:
  - site setbacks,
  - overshadowing,
  - building separation, and
  - car parking requirements.
- Consider Development Standards in **Schedule 2 of the ESEPP**. The complying development design standards in Schedule 2 are accepted by industry and community, developed to protect local character, and ensure a suitable level of environmental amenity,
- Explore **approved/proposed DAs** and/or **planning proposals** and demonstrate potential opportunities or challenges these present for the project, and
- **Local Strategic Planning Statements** (LSPS) and current 7.11 or 7.12 contributions framework.

Need more information? Engage with...

- Government agencies and local councils
- SINSW Statutory Planning team
- Expert technical consultant

2.3 Environmental factors

Identification and clear understanding of all environmental factors and the associated constraints for development, is a vital part of the site analysis phase.

2.3.1 Vegetation and bushfire

- Identify the location of any/all **significant vegetation** on the site (LEP, site visit, technical expert),
- Identify areas of **bushfire prone land** within, and adjacent to the school site (LEP) and restrictions on development of the land,
- Explain the limitations on development as a result of this constraint, and
- Research all relevant Commonwealth, State and local government data bases to confirm whether the site or adjoining lands have any known biodiversity values.

Need more information? Engage with...

- relevant technical expert
- Rural Fire Service website for further information

1.1.1 Topography

- Demonstrate the topography (desktop review, site visit, survey), and note:
  - the **fall** across the site, high points and low points,
  - any **landslide risk**,
  - any steep fall/slope and **dramatic level changes**, and
  - retaining walls.

Need more information? Engage with...

- relevant technical expert (surveyor)
- DEL, school Principal and staff

1.1.2 Contamination

- Demonstrate any **known/potential ground contamination**,
- Highlight known/potential **asbestos** in existing assets or underground (AMS), and
- Explain the limitations for development as a result of this constraint.

Need more information? Engage with...

- relevant technical expert
- local Council and other agencies
- SINSW Statutory Planning team

2.3.2 Waterways and flooding

- Demonstrate the location of **existing waterways**, within or in close proximity to the school site (desktop review, site visit, survey),
- Highlight any **riparian zones** associated with waterways and explain associated easements/ other restrictions that apply (desktop review, LEP plans, Council website), and
- Demonstrate areas of **flood prone land** and the limitations this has on development (desktop review, LEP plans, Council website).

Need more information? Engage with...

- local Council and Department of Planning, Industry and Environment (DPIE) - often these sources have more detailed flood studies than made available online
- relevant technical expert

1.1.3 Climate

Highlight climatic conditions that may require a tailored design response, such as

- areas affected by **drought**,
- areas that experience **extreme temperatures**,
- extreme **wind conditions** and potential impact on existing environments (for example, wind tunnels, up-draughts/down-draughts in high density/high rise areas), and
- limited **solar access** (for example, in high density/high rise areas.

Need more information? Engage with...

- SINSW Sustainability Team

1.1.4 Heritage

Understand and demonstrate:

- all **state and local heritage** items within the school site and immediately surrounding (LEP, DCP),
- all heritage items listed on the **Section 170 register** and the draft Section 170 register (desktop review using AMS to identify heritage items),
- **buffer zones** from heritage items,
- all **conservation areas** that cover/adjoin the school site (LEP/DCP),
- **Aboriginal heritage** of the site - note if Aboriginal heritage is present or anticipated, an Aboriginal Cultural Heritage Assessment Report (ACHAR) may be required, and
- **archaeological heritage** of the site (desktop review).

Need more information? Engage with...

- SINSW Heritage team
- relevant technical expert
- DEL, school Principal and staff
- Elders who represent the local Aboriginal community
- the relevant Local Aboriginal Land Council and the Aboriginal Education Consultative Group (AECG) within DoE
- the Aboriginal Heritage Information Management System (AHIMS) managed by the Department of Planning, Industry and Environment's Environment, Energy and Science Group

SINSW is obliged to effectively manage our heritage assets, under the Heritage Act 1977. Sites may be of cultural heritage significance due to:

- historical significance;
- aesthetic significance;
- scientific significance; or
- social significance.

2.4 Critical infrastructure services

It is recommended that a **technical expert is engaged early in the master planning phase** to determine the location, capacity and connection points for all servicing requirements of the site.

- Demonstrate the **location** of and **connection points** for (AMS site plans, EagleEye, site visit, survey) **water, sewer, gas, communications and electricity**,
- Demonstrate any associated **easements** and/or restrictions on use of surrounding land, including the location of any high pressure gas pipelines, and
- Explain the limitations for development as a result of this constraint.

Need more information? Engage with...

- DEL, school Principal and staff
- SINSW Asset Management Unit
- Geoscience Australia Oil and Gas Pipeline Mapping datasets

2.5 Safety and security

- Demonstrate **existing security arrangements**, such as fence lines and out of hours access, and
- Highlight any potential **safety issues** with reference to Crime Prevention through Environmental Design (CPTED) principles, with the current school design and build including, but not limited to:
  - areas that are difficult to supervise,
  - issues with built form including BCA non compliances,
  - areas that require urgent maintenance, and
  - perceived concerns with overlooking of school site by adjacent land uses.

Need more information? Engage with...

- DEL, school Principal and staff
- SINSW Safety and Security team

^ **Queanbeyan East PS**
Source : SINSW

2.6 Existing school assets & function

Understanding the existing school assets (if the project involves a site that is an existing school) is an important step in the master planning process. It is essential to understand the quality of the space, the 'real world' use of these spaces (which is often different to that shown in databases and plans) and the relationships between them.

In addition to this, understanding the school's strategic vision for the future may also inform key elements of the master plan.

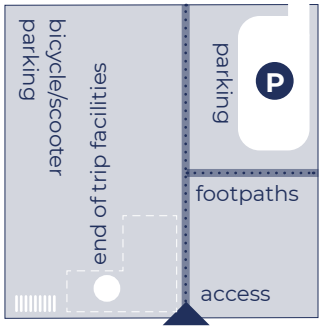
1.1.5 Buildings and spaces

- Demonstrate the location of (AMS site plans, site visit):
  - core facilities (library, administration, gymnasium, hall and the like),
  - permanent teaching spaces, and
  - demountables.
- Obtain original archival drawings for existing school buildings from the Public Works Advisory Plan Services (if required),
- Highlight **assets of significance** that may/ should be retained,
- **Condition and age** of buildings/assets including note of any new or recently upgraded assets, as well as assets that have planned maintenance scheduled (AMS can provide this information),
- Note any important variances to the use of space as shown on AMS plans, based on a site visit and/or communication with the DEL, Principal and/or school staff,
- Note the existing **quantum of open space** on the site, and make comment on the quality and usability of the spaces available,
- Note any **significant feature**s that the school wishes to retain. This may include, but is not limited to items such as memorial gardens, artwork, trees/vegetation and the like,
- Note any existing **leases or licenses** for school facilities, and
- Conduct a **'Gap Analysis'** (using the SINSW issued template) to compare the existing school assets, to those within the EFSG for the proposed Core/Stream size.

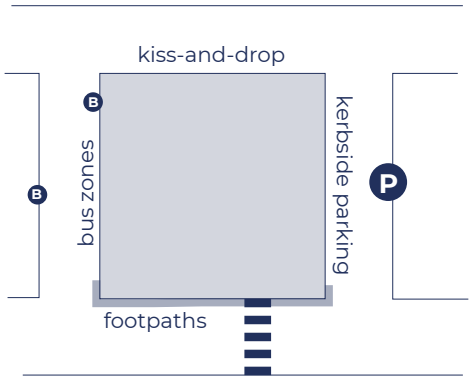
Need more information? Engage with...

- DEL, school Principal and staff
- SINSW Asset Management Unit
- SINSW Design Advisory Team
- SINSW Asset Utilisation Team

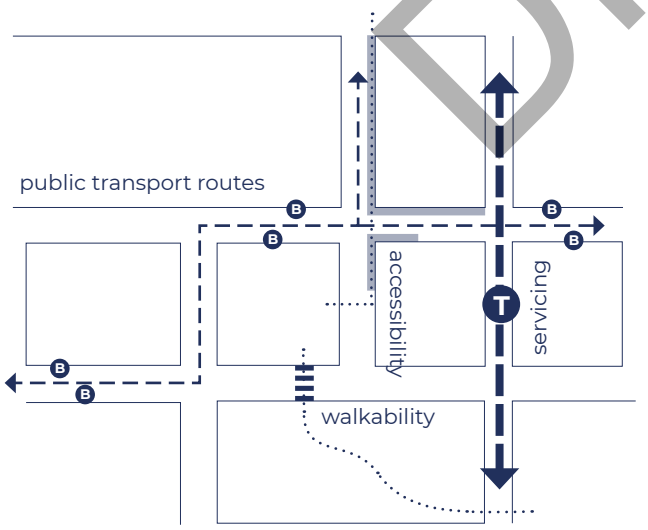
ON-SITE INFRASTRUCTURE



ADJACENT TO SITE INFRASTRUCTURE



TO SITE INFRASTRUCTURE



1.1.6 Transport and access

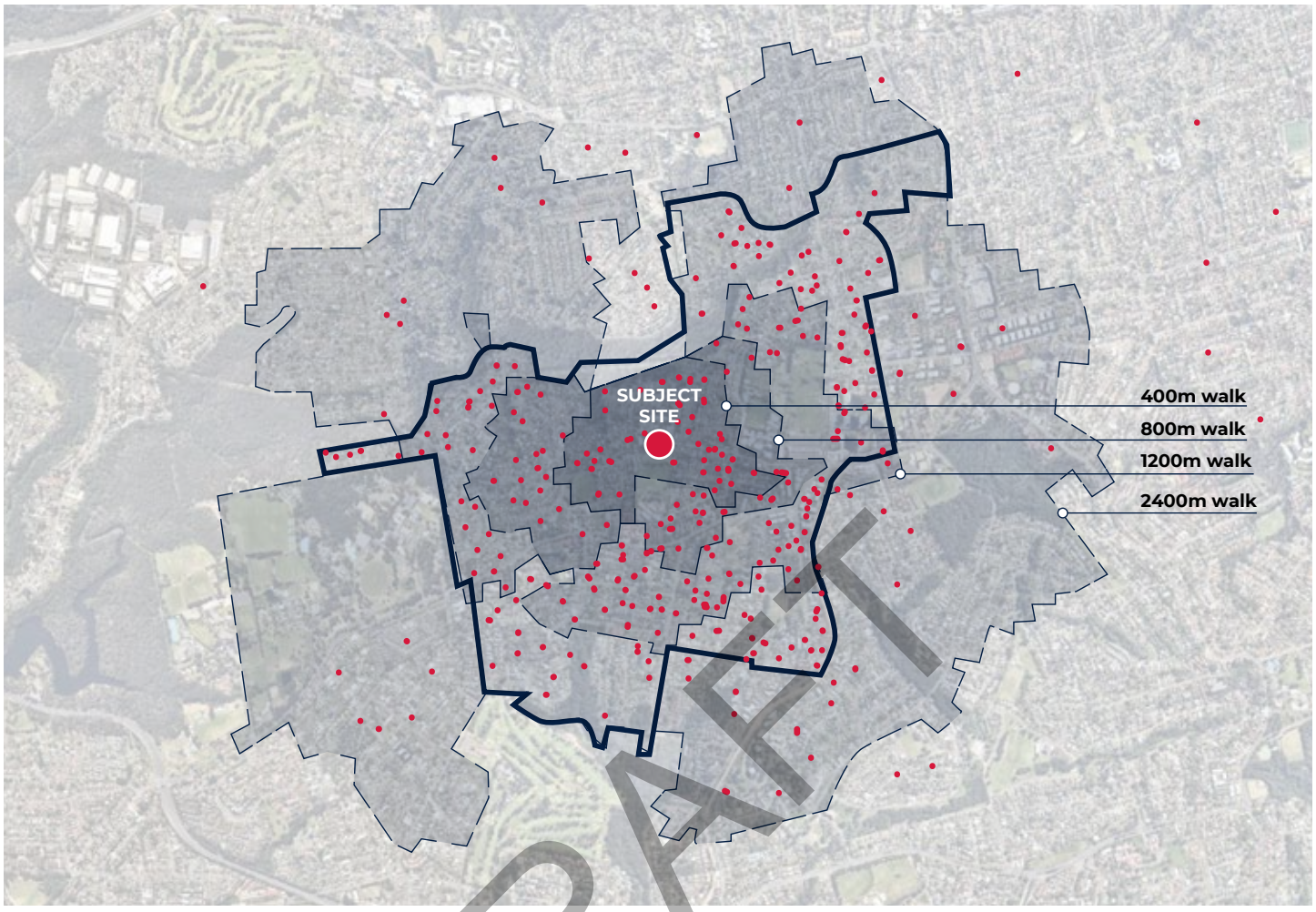
It is recommended that a **technical expert is engaged early in the master planning phase** to determine the location, capacity and connection points for all servicing requirements of the site. Refer to Section 1.2 for further information.

Regional and local access

- Demonstrate fine-grain **pedestrian access**,
  - footpath network coverage
  - pedestrian operations (eg signal priority, zebra crossings, kerb outstands, lollipop)
- Demonstrate r**egional public transport** (and school bus) access for the extents of the enrolment catchment,
  - proximity and walkability to school and public transport stops / stations / wharves
  - public transport network coverage for bus / rail / ferries
  - span-of-service and frequency
- Demonstrate regional and local **road networks**, and
- Demonstrate existing movement networks and desire lines to/from the site
  - student travel demand
  - staff travel demand
  - parent / carer on-ward Journey to Work.

Site transport access

- Demonstrate existing **site access** arrangements, including:
  - pedestrian/ student entry points
  - driveways
  - deliveries and waste removal
- Demonstrate adjacent **to site infrastructure**
  - covered pedestrian access or SSP loading / unloading
  - bicycle and scooter parking
  - vehicular movement and any on-street or remote kiss-and-drop
  - any bus zones, including AM peak arrival stops and PM peak departure stops



^ Example of a walkability assessment
Source : SINSW *(diagram is indicative only)*

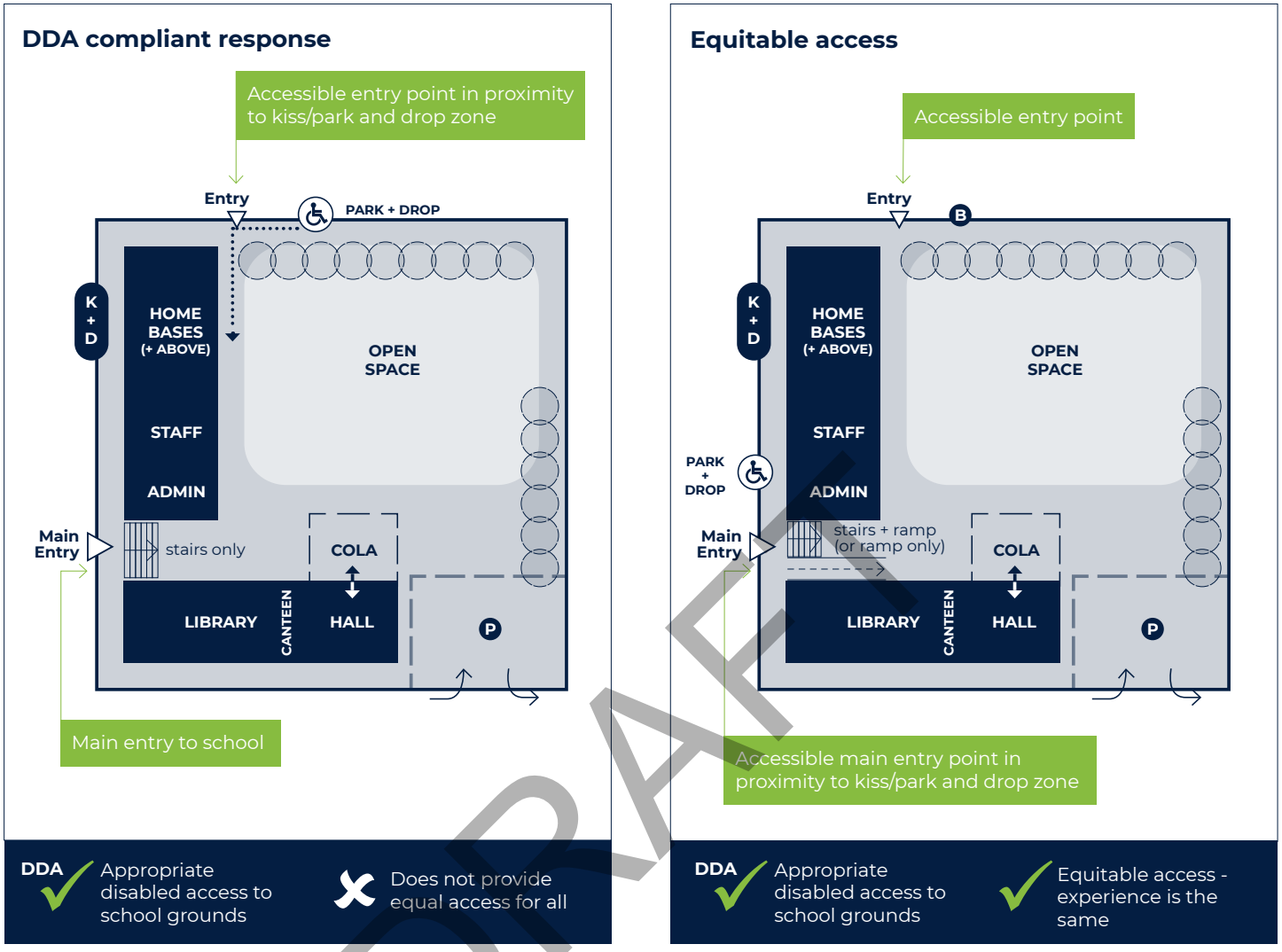
  - any visitor, staff, car share or carpool parking
- Demonstrate existing **movement networks** and desire lines within the school site
  - Greenfield: complete physical separation of pedestrians and vehicles, vehicles in operate in a forward direction only
  - Brownfield: pedestrian and vehicle risk mitigation measures (prefer separation where possible)
- Demonstrate potential **construction access** for demountable removal (brownfield) and also DFMA build types, including modular, which may require heavy vehicles / plant

Site transport provision

- Demonstrate existing **site infrastructure**
  - footpaths, ramps and covered walkways
  - student bicycle and scooter parking
  - end of trip facilities (for staff)
  - on-site car parking arrangement,
- Demonstrate existing **movement networks** and desire lines within the school site
  - Greenfield: complete physical separation of pedestrians and vehicles, vehicles in operate in a forward direction only
  - Brownfield: pedestrian and vehicle risk mitigation measures (prefer separation where possible)

Need more information? Engage with...

  - SINSW Transport team
  - relevant technical expert



^ Example of equitable access
Source : SINSW *(diagram is indicative only, not to scale)*

2.6.1 DDA compliance and equitable access

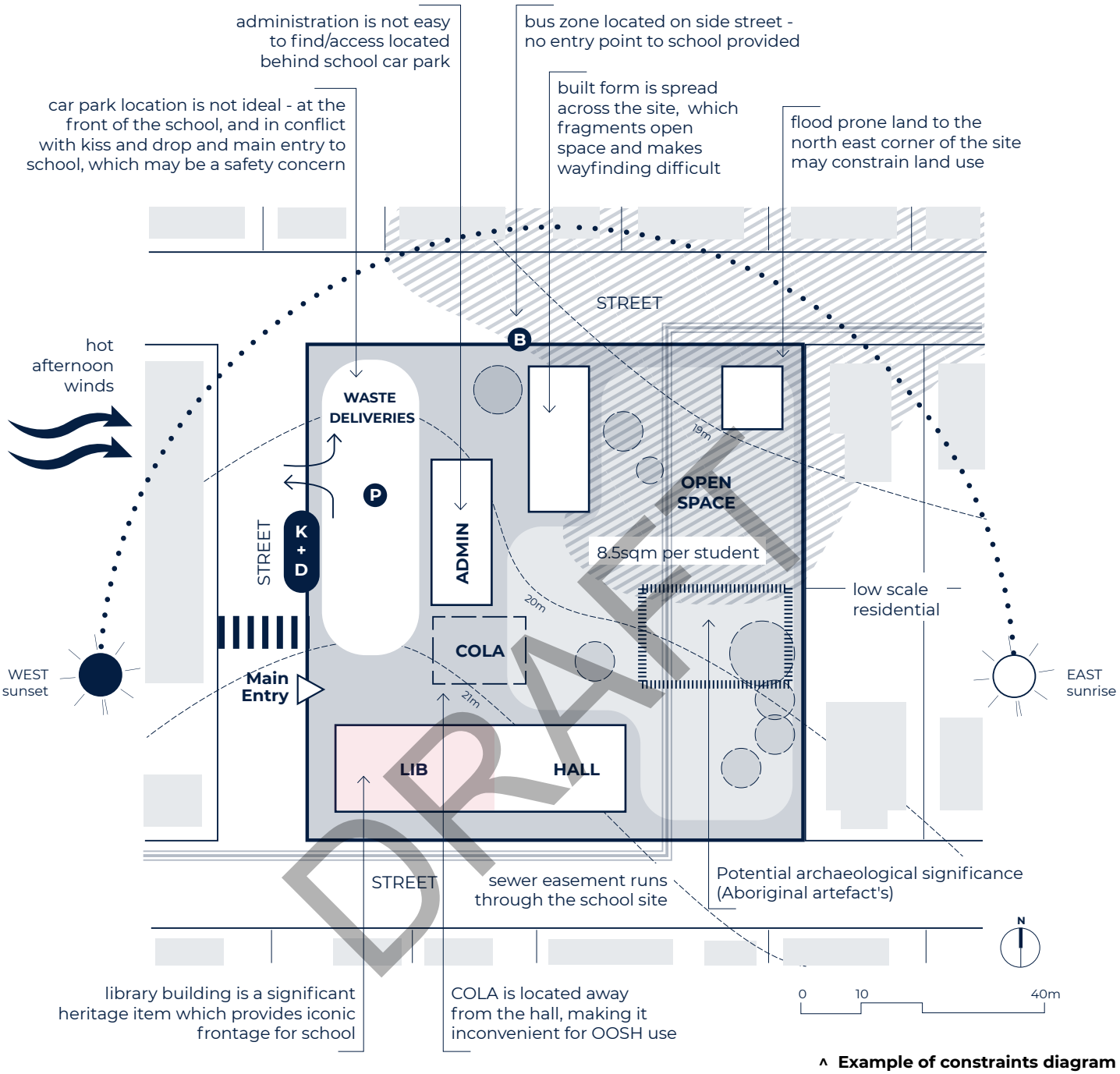
The Department of Education is required to provide school spaces that are equally accessible for all, in line with the Disability Discrimination Act (DDA).

This includes all users of the space who present with disability, including, but not limited to, students, staff and families.

It is important that the analysis stage of the master plan phase provides a thorough review of access to all areas of the school, and highlights those areas that require improvement, or may challenge provision of disabled access (such as major topographical changes etc).

Whilst improvements to access in existing buildings are only required under the DDA if significant building works are proposed in that building, it is important that all projects consider this upgrade as an important part of the master planning process.

Schools should be designed as safe and inclusive environments, providing equal opportunity for all users. It is important that the design of school facilities not only comply with the minimum standards of the DDA, but also consider equitable access in every sense. Refer to the diagram above for an example of DDA complying design and design for equitable access.



^ Example of constraints diagram
Source : SINSW *(diagram is indicative only, not to scale)*

2.7 Constraints and opportunities

2.7.1 Environmental constraints

At the conclusion of the site analysis, an opportunities and constraints diagram should be provided that clearly indicates all environmental constraints (including those which require further investigation). This will lay the foundations for the master planning options and may also provide a level of clarity as to the appropriate planning approval pathway for the project.

LEGEND

- School site
- Existing buildings
- Heritage
- Contours lines (1m intervals)
- Flood prone area
- Existing vegetation
- Existing school entry points
- Existing kiss and drop location
- Area of potential archaeological significance (TBD)
- Sewer line/easement

For further information on sharing with the community, contact the SINSW Partnerships Team

^ Joint use of playing fields, Bella Vista PS
Source : SINSW

2.7.2 Opportunities for joint use projects

The potential for 'joint use' projects, that is, projects that are mutually funded, is an opportunity on all school sites. Joint use opportunities should be explored and raised with the SINSW Partnerships Team early in the master planning phase, to ensure sufficient time for engagement with other parties.

There are a variety of types of joint use projects than may be appropriate, including:

- **shared use of open space**: for example, sharing of school owned open space or multipurpose courts with the community, in return for upgrades to the asset (such as lighting, synthetic turf and the like) or agreement to utilise Council/other owned open space during school hours, in return for access to other school facilities. On small or constrained school sites, this can be an opportunity to redevelop the school beyond its allowable site capacity and provide the required 10sqm of open space per student.
- **shared facilities**: school owned facilities such as libraries, halls, performing arts facilities and the like, may also be required for community use.

In some cases, there may be potential to jointly fund a facility that includes the specific needs of another party, and is beyond the standard design under the EFSG. The external party is benefited the land to build (conditionally) on the school site, and out of school hours access, whilst the school is provided access to the extra-ordinary facility during school hours.

- **joint redevelopment of the school site as a mixed use/other arrangement**: there may exist opportunities to redevelop/upgrade a school in part, or in whole, with another party. This opportunity is likely to exist where the school site is large, and within an urban renewal area, which is driving the need for additional student capacity. Alternatively, in dense urban areas, where school development may be appropriate in a vertical setting, joint development of the school asset, in an integrated environment, may be appropriate.
- **upgrades to community infrastructure**: such as footpaths that improve access and provide safe walking routes to and from the school, and throughout the local community

It is important to note that joint use projects are intended to be mutually beneficial for both parties.

2.8 Rapid transport assessment

SINSW use the School Transport Process (Rapid Transport Assessment) to document the existing travel demand, access, site infrastructure, policies and programs to implement.

This holistic transport assessment process informs the development of master plan scenarios and options to test in the Business Case and set the transport budget. It should then be used to inform development of the concept and detailed design and assist with the preparation of the construction and operational transport plans.

Ultimately, the process informs the preparation of the School Transport Plan, Travel Plan and the Operational Transport Plan.

The Travel Plan and Operational Transport Plan are required for environmental assessment and planning approvals.

These must be in place prior to construction and remain in use throughout the school's operation.

Scoping the transport planning context early in the master plan is vital for identifying appropriate access routes to the school, by all forms of transport and for all users of the site.

For further information on Transport Planning, contact the SINSW Transport Planning Team

There are a number of ways the transport assessment should be used to inform the master planning process:

- **Analysis of student residence and/or the school catchment boundary, and the paths available for commute to the school**
  This may uncover, for example, opportunities to quickly promote existing transport options during construction or barriers that limit safe and easy movement such as major roads, creeklines or lack of suitable pavement infrastructure. It may also assist in determining where the most suitable entry points for the school should be and hence, where the administration block would be best located. It will also indicate where local footpaths should connect.
- **Identification of the appropriate location, number and access point/s to on-site car parking**
  Analysis of the LEP or DCP parking requirements and assessment of car parking requirements of the school and community may help to determine the need.
- **Identification of the appropriate location and size of the required kiss-and-drop and bus zones**
- **Analysis of the public transport network, servicing requirements and accessibility**
- **Analysis of the walkable catchment and suggested ways to improve it**
  This may include additional or revised entry points to the site.
- **Vehicle risk mitigation assessment**
  Students are vulnerable road users and student safety is essential: physical separating vehicles, lower vehicle speeds and reduce "stranger danger" walking to school, bus stops and stations.

CHECKLIST - ANALYSIS PHASE

This checklist may be used to ensure all elements of the analysis phase have been considered.

CONTEXT	
☐ **School catchment boundary**	School catchment boundary and neighbouring schools shown and considered.
☐ **Capital works projects**	Capital works projects at surrounding schools noted and impact understood.
☐ **Public transport network**	Public transport network considered - what are the major walking routes to the school from public transport?
☐ **Transport infrastructure**	Has a Rapid Transport Assessment been undertaken and documented? Have the issues raised in this assessment been considered in the analysis?
☐ **Adjacent uses**	Adjacent land uses noted and potential redevelopment constraints and opportunities have been documented.
☐ **ANEF**	Considered for areas in proximity to airports.
☐ **Areas of ecological and biodiversity significance**	Ecological and biodiversity has been documented and constraints and opportunities of school redevelopment noted.
☐ **Education model summarised**	Education model noted (from educational rationale) and issues with function of the current school explained.
PLANNING	
☐ **Overview of existing planning strategies**	Relevant strategies, Precinct Plans, master plans or public domain plans have been explored, and constraints and opportunities for the school site have been documented.
☐ **LEP and DCP**	Relevant elements of the LEP and DCP have been documented and constraints and opportunities explained.
☐ **Education State Environmental Planning Policy (ESEPP)**	Design standards understood and issues with the existing school noted.
☐ **Future rezoning and development**	Relevant and available planning proposals/future rezonings have been documented and the impact on the school discussed. Approved/pending development applications on land adjacent/in close proximity to the school are documented.

ENVIRONMENT	
☐ **Environmental constraints and opportunities**	Has the analysis considered all potential environmental constraints and opportunities, including, but not limited to: • significant vegetation, • bushfire risk, • topography, • contamination, • waterways and flooding, and • climate. Have all easements/asset protection/buffer zones been documented and the impact on development explained?
☐ **Archaeological and built heritage**	Has the analysis documented all heritage impacts including, but not limited to: • significant buildings, • significant vegetation, • culturally significant items such as Aboriginal artefact's, artwork, scarred trees and the like, • other significant structures/elements such as fences, monuments, signage and the like, and • known/potential archaeological heritage. Have all heritage considerations been documented and the constraints and opportunities for each explained? Is an Aboriginal Cultural Heritage Assessment Report (ACHAR) required?
☐ **Critical infrastructure services and associated easements**	Has the analysis considered all infrastructure services, including, but not limited to: • water, • sewer, • gas, • communications, and • electricity. Have all easements and upgrade requirements been documented and the constraints and opportunities explained?

EXISTING ASSETS AND FUNCTION	
☐ **Built form**	Has a gap analysis identified shortcomings in teaching space sizes or core facilities against the appropriate EFSG core/ stream? Has a site visit been conducted to confirm use of built form in line with existing plans? Is a site survey required?
☐ **Asset condition and planned maintenance**	Has the condition of all buildings been assessed and documented? Has all recent/planned maintenance and or upgrades been documented?
☐ **Safety and security**	Have concerns relating to the safety and security of the existing school been documented? This may include, but is not limited to: • issues with school layout (eg. space that is hard to supervise, unclear wayfinding, administration located away from street frontage and the like), • vehicles risk mitigation - is there unsafe vehicle access/ movement within/onto the school site? Are school buildings and walkways appropriately and physically separated from vehicular movements in line with the SINSW Vehicle Risk Mitigation policy? and • requirement for access to the school grounds outside of school hours - how is this currently managed? What are the issues?
☐ **Accessibility**	Has the school accessibility level been measured? Have the major issues with disability access to all areas of the school been noted?
OPPORTUNITIES AND CONSTRAINTS	
☐ **Opportunities and constraints**	Has a comprehensive analysis of site constraints been presented? Have all opportunities been identified and documented?
RISK IDENTIFICATION	
☐ **Risk identification and mitigation**	Have all risks to the project been noted throughout the analysis phase? Have risk mitigation measures been considered and documented?

3.0 MASTER PLAN OPTION DEVELOPMENT

Once a thorough site analysis is complete and the developable land area is established, the option development phase of the master plan may commence.

A minimum of three (3) master plan options are required to demonstrate appropriate solutions to address the project scope.

1. Minimal intervention (low disruption, low cost)
2. Compliance solution (in accordance with design standards outlined in Schedule 2 (see Section 1.1.2) of the ESEPP and buildings proposed within developable area only)
3. Optimal outcome (most desirable solution for the future of the school)

Exploration of additional options is encouraged as part of the master planning process, however the master plan report should focus on the 'top' three (3) options only. This may or may not include those options listed above, and should be determined by the project team based on scope .

The Project Reference Group (PRG) and Project Control Group (PCG) should be presented with the 'top' three options, from which they may choose the preferred for progress to Concept Design.

3.1 Key considerations within option development

All options must:

- ✓ address the **project scope** and education rationale,
- ✓ demonstrate '**future proofing**' of the site for further expansion (if possible) ensuring efficiency is maximised,
- ✓ demonstrate **compliance** with the EFSG,
- ✓ demonstrate application of the **DfMA planning grid** of 9m x 7.5m to allow for standardised design solutions,
- ✓ consider **construction access** for various build types, including DfMA which will utilise large trucks and cranes to place components on site,
- ✓ explore **built solutions** that are appropriate for the site, including traditional school design of four storeys (and below), as well as taller building solutions (where appropriate),
- ✓ explore project **staging** options,
- ✓ consider the **impact on school operations** during construction and the need to decant or provide temporary solutions to maintain business as usual,
- ✓ consider and work towards meeting known **budget** limitations,
- ✓ provide **'value for money'** solutions - development of master plan options should occur in close consultation with the project cost planner,
- ✓ consider potential for **joint use projects** (as outlined in Section 2.7.2),
- ✓ be developed with reference to **technical advice**, and
- ✓ be based on **sound urban design** principles and appropriate design solutions that demonstrate quality outcomes, as outlined in Section 3.2 below.

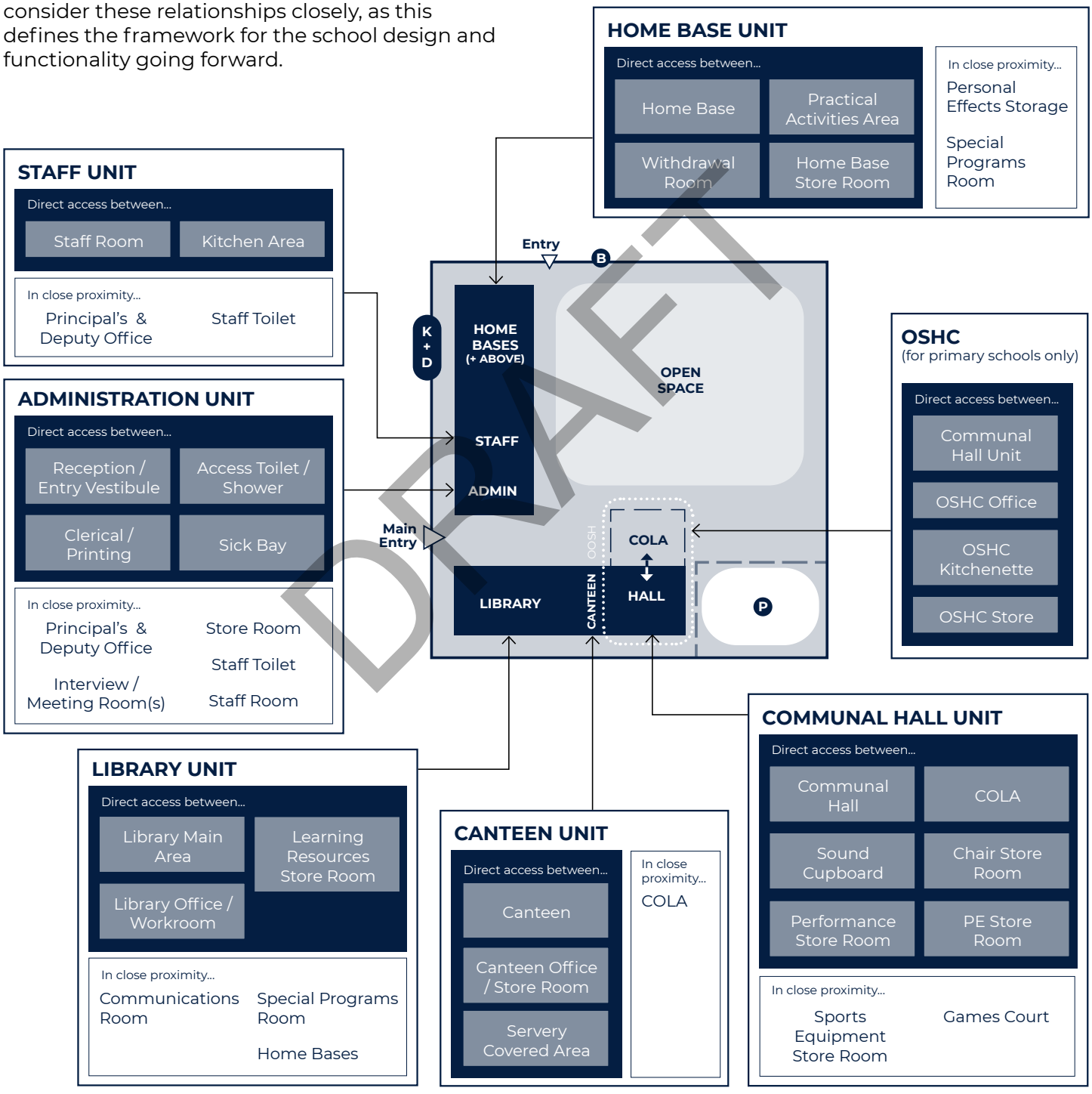
3.2 Functional space relationships

The relationship of spaces within a school plays an important role in its successful function. This page provides an overview of the desired functional relationships, in line with the Educational Facilities Standards and Guidelines (EFSG).

It is important that the master planning phase consider these relationships closely, as this defines the framework for the school design and functionality going forward.

Additional considerations for high schools:

- faculty 'neighbourhoods'
- scattered staff rooms
- library pods (particularly in high rise schools)



3.3 Design quality principles

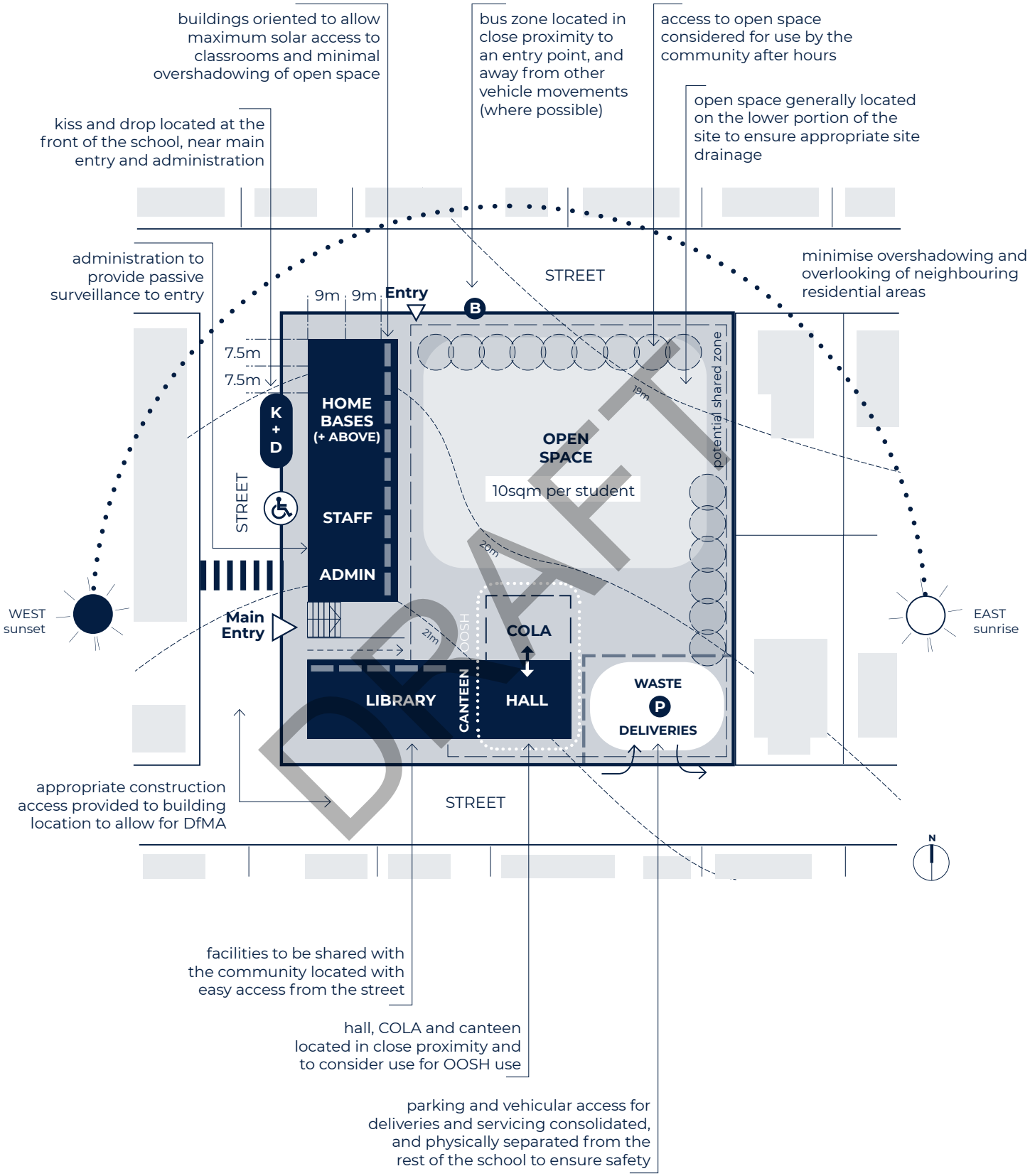
The *State Environmental Planning Policy (Educational Establishments and Child Care Facilities)* 2017 (ESEPP) aims to facilitate the effective delivery of educational establishments, early education and care facilities across NSW.

It is important that the school master planning process considers the details of the ESEPP, in particular design quality principles that form Schedule 4 of the ESEPP (as outlined in the following section).

3.3.1 Urban design principles

The design of school sites should:

- provide a clear street address, character and frontage that promotes a welcoming entry and positive learning environment,
- improve functionality of the school as a whole in providing future focused solutions,
- maximise the use of the existing asset (where possible), replacing old and/or degrading assets with a focus on safety and maintenance improvements,
- consider potential impacts on neighbouring uses such as overshadowing, overlooking, scale and character of built form,
- minimise the impact of neighbouring uses and future development on adjacent land for the school,
- optimise active and public transport access to increase use,
- minimise vehicle trips, particularly if school capacity is being increased,
- foster desirable relationships between school functions including core facilities, teaching spaces, open space and access to the school,
- focus on building envelopes that allow for appropriate layout of internal spaces and compliant fire egress solutions,
- promote of safety in design – including appropriate evacuation measures and separation of vehicles in line with SINSWs Vehicle Mitigation Strategy,
- explore sustainable design solutions in-line with the SINSW Sustainability Strategy,
- promote equity of access to the site and buildings for all users,
- provide a minimum of 10sqm per student of open space that is easy to supervise, and appropriate for use by various age groups, and
- promote heritage significance (where appropriate) as an important part of the school and celebration of local or state history.



^ Principles of school master planning
Source : SINSW *(diagram is indicative only, not to scale)*

CONTEXT, BUILT FORM AND LANDSCAPE

Schools should be designed to respond to and ***enhance the positive qualities of their setting****, landscape and heritage, including Aboriginal cultural heritage. The design and spatial organisation of buildings and the spaces between them should be informed by site conditions such as topography, orientation and climate.*

Landscape *should be integrated into the design of school developments to enhance on-site amenity, contribute to the streetscape and mitigate negative impacts on neighbouring sites.*

School buildings and their grounds on land that is identified in or under a local environmental plan as a scenic protection area should be designed to recognise and protect the special visual qualities and natural environment of the area, and located and designed to minimise the development's visual impact on those qualities and that natural environment.

Source: Schedule 4, ESEPP 2017

AMENITY

Schools should provide pleasant and engaging spaces that are accessible for a wide range of educational, informal and community activities, while also considering the amenity of adjacent development and the local neighbourhood.

Schools located near busy roads or near rail corridors should incorporate appropriate noise mitigation measures to ensure a high level of amenity for occupants.

Schools should include appropriate, efficient, stage and age appropriate indoor and outdoor learning and play spaces, access to sunlight, natural ventilation, outlook, visual and acoustic privacy, storage and service areas.

Source: Schedule 4, ESEPP 2017

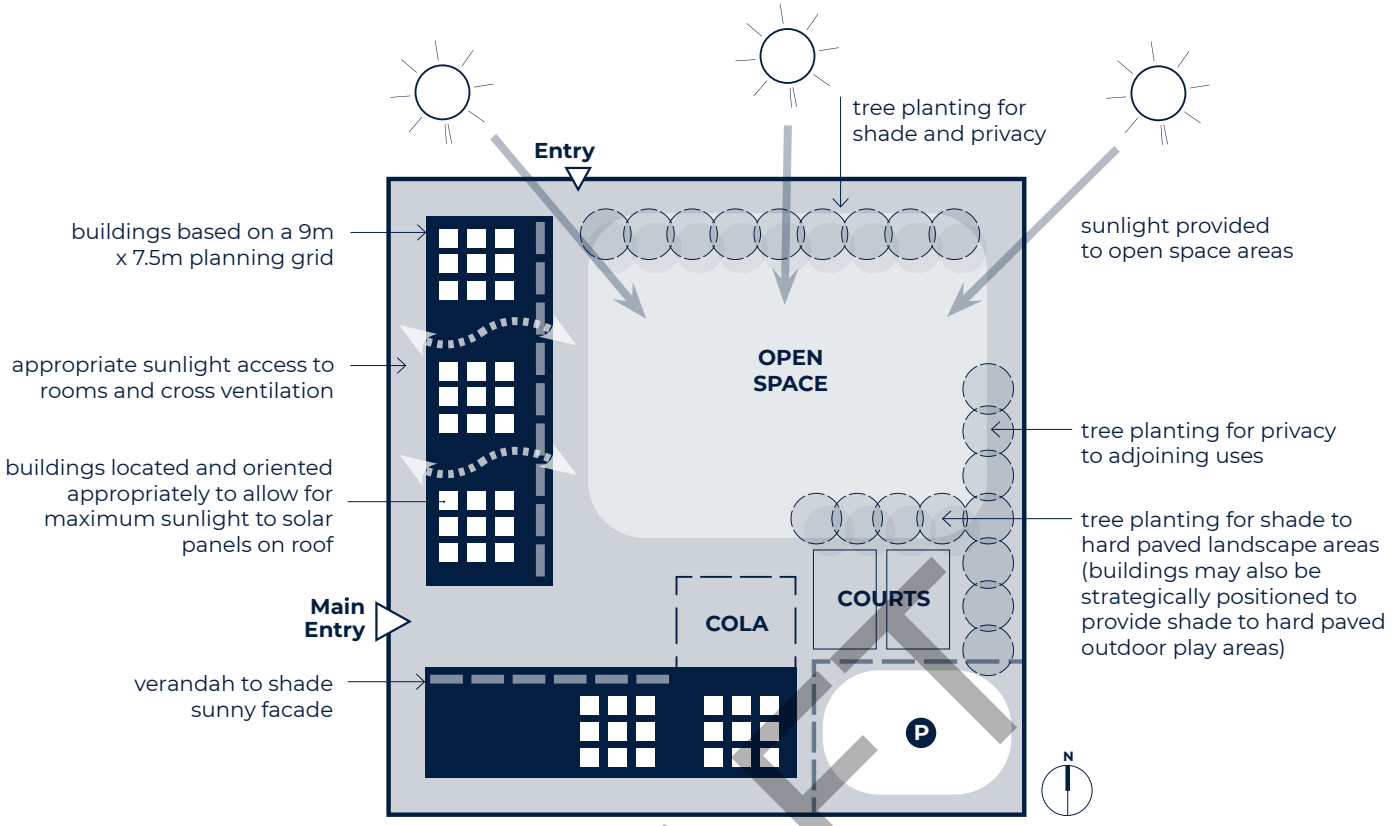
SINSW's heritage vision is to:

"Celebrate, conserve, manage and adapt our heritage assets for the benefit of the community and future generations."

It is important that the redevelopment of school sites considers the heritage value of all existing assets, including, but not limited to, buildings, significant trees, landscape elements such as fences and plantings - even the layout of the school in some cases may have significance.

The master planning phase should highlight any heritage value, and promote solutions that maintain and enhance heritage assets. Of equal importance is an understanding of the cultural heritage of the site - this should be considered closely and celebrated in the design of the school.

Refer to *Designing with Country, Discussion Paper by the Government Architect NSW* for further information and inspiration on designing spaces that are culturally aware.



Sustainability principles of school master planning ^
Source : SINSW *(diagram is indicative only, not to scale)*

SUSTAINABLE, EFFICIENT AND DURABLE

Good design combines positive environmental, social and economic outcomes. Schools and school buildings should be designed to minimise the consumption of ***energy, water and natural resources*** *and reduce waste and encourage recycling.*

Schools should be designed to be ***durable, resilient and adaptable****, enabling them to evolve over time to meet future requirements.*

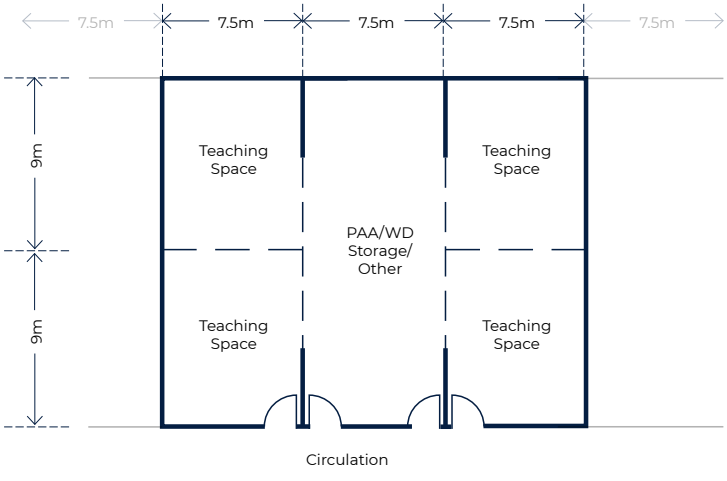
Source: Schedule 4, ESEPP 2017

For further information, refer to the SINSW Sustainability Strategy.

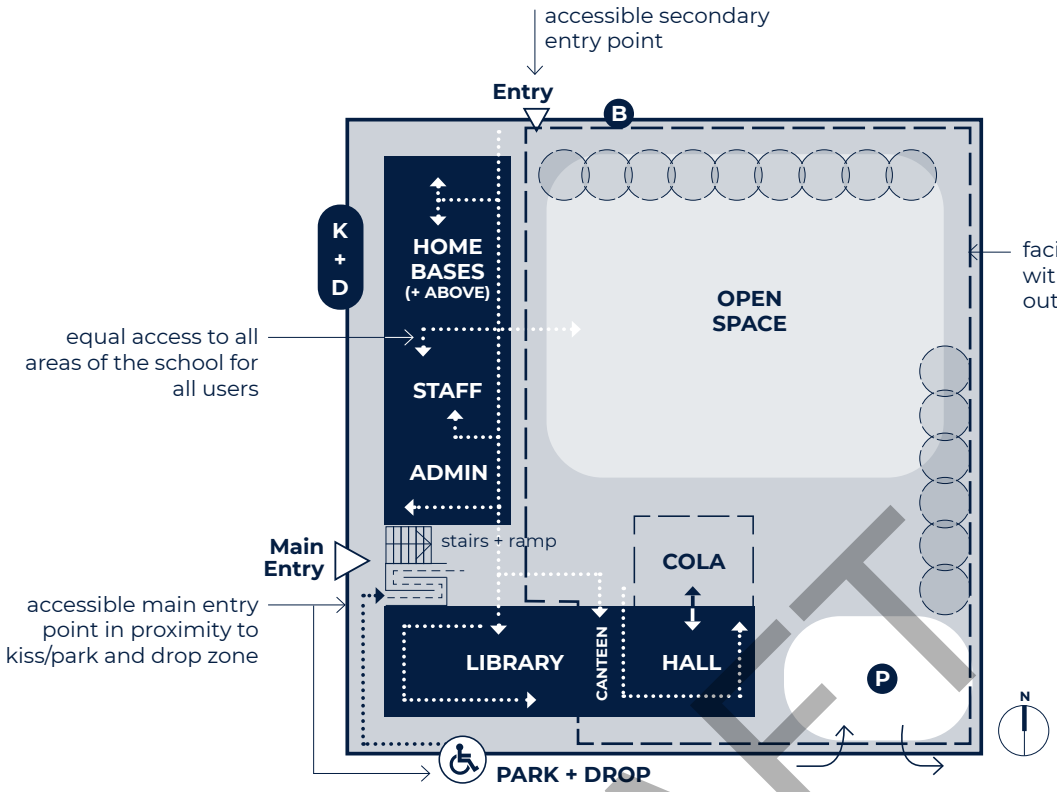
Design for Manufacturing and Assembly (DfMA)

DfMA is the preferred construction method for schools in NSW due to the numerous benefits provided, including the potential to reduce waste (materials, water, energy) and emissions during the construction phase.

There also a range of construction types available via this construction method, including the use of Cross Laminated Timber (CLT) - a natural and renewable resource.



^ Example of design within the 9m x 7.5m grid



^ Accessibility principles of school master planning
Source : SINSW *(diagram is indicative only, not to scale)*

PRINCIPLE 3 - ACCESSIBLE AND INCLUSIVE

*School buildings and their grounds should provide good **wayfinding** and be welcoming, accessible and **inclusive** to people with differing needs and capabilities.*

*Schools should actively seek opportunities for their facilities to be **shared with the community** and cater for activities outside of school hours.*

Source: Schedule 4, ESEPP 2017

For further information on sharing with the community, refer to Section 2.7.2.

Support classes and disabled access

Mainstream schools in NSW often cater for students with special needs by way of support classes or Special Education Learning Units (SELUs). These classes cater for a range of needs including learning difficulties, behavioral and physical disabilities. Each school will require an individual approach to the provision of support classes, based on the requirements of the needs of the students enrolled/likely to be enrolled at the school.

It is important that schools are designed to provide equal access and opportunity for all users, regardless of ability, and encouraged to actively participate as part of the school community. Equally as important is the requirement for learning spaces to be flexible in catering for the unique requirements of these support units. As the demand and type of support classes changes over time, general teaching spaces should be able to cater for both teaching modes.

HEALTH AND SAFETY

Good school development optimises health, safety and security within its boundaries and the surrounding public domain, and balances this with the need to create a welcoming and accessible environment.

Source: Schedule 4, ESEPP 2017

WHOLE OF LIFE, FLEXIBLE AND ADAPTIVE

School design should consider future needs and take a whole-of-life-cycle approach underpinned by site wide strategic and spatial planning. Good design for schools should deliver high environmental performance, ease of adaptation and maximise multi-use facilities.

Source: Schedule 4, ESEPP 2017

AESTHETICS

School buildings and their landscape setting should be aesthetically pleasing by achieving a built form that has good proportions and a balanced composition of elements. Schools should respond to positive elements from the site and surrounding neighbourhood and have a positive impact on the quality and character of a neighbourhood.

The built form should respond to the existing or desired future context, particularly, positive elements from the site and surrounding neighbourhood, and have a positive impact on the quality and sense of identity of the neighbourhood.

Source: Schedule 4, ESEPP 2017

Security and sharing school facilities

It is important that the master planning phase considers the potential for joint development and/or shared use of facilities, in the context of day to day school operations.

Whilst sharing of school facilities with the wider community is encouraged, it is important that the school (including open space) is able to be secured appropriately during school hours, and shared components easily accessible to the community of outside school hours.

Secure lines should be considered early in the master planning phase. Buildings should be considered as secure lines where possible, to avoid the over use of fences which may be uninviting.

Future focused flexible learning environments

The DfMA construction method encourages a standardised approach to school design, to ensure efficient delivery and consistent solutions across all new school projects. Designing with a 'kit of parts' provides the flexibility to change or upgrade elements as required over time, as well as streamlining building maintenance.

Design standardisation for schools is focused on the provision of flexible learning environments, that provide users with the opportunity to change the physical space to suit needs.

Innovative design solutions

Whilst it is preferable to maintain building heights of up to 4 storeys with open space provided at grade (particularly for primary schools), innovative solutions for school design in dense urban areas may be appropriate. School designs that demonstrate building heights above 4 storeys (in context with the surrounding area) may explore open space within levels of the building, on rooftops, under the building and/or shared with the community.

The appropriateness of this approach should be determined on a project by project basis, subject to a range of criteria including context, appropriate access and transport networks, safety and security.

Example table of facts to accompany each option >

Table should be tailored to suit individual projects

OPTION 1	
Site Area	1.89ha
Total Gross Floor Area	9,546m²
Existing	5,397m²
Refurbished	875m²
New	3,274m²
Total Teaching Spaces	44
Existing (Permanent)	25
Existing (Demountables)	10
New	19 (inc. 10 demountables replaced and 4 new support classrooms)
Core Facilities	
Hall (refurbished)	504m²
New library	370m²
Total Student Capacity	1,000
Total open space on site	1.25ha
Open space per student	10.4m² (at total capacity)
Preliminary Cost Estimate	$35.6m

3.4 Presentation of options

The master plan options are to be presented as 2D and 3D diagrams supported by clear and concise explanatory text.

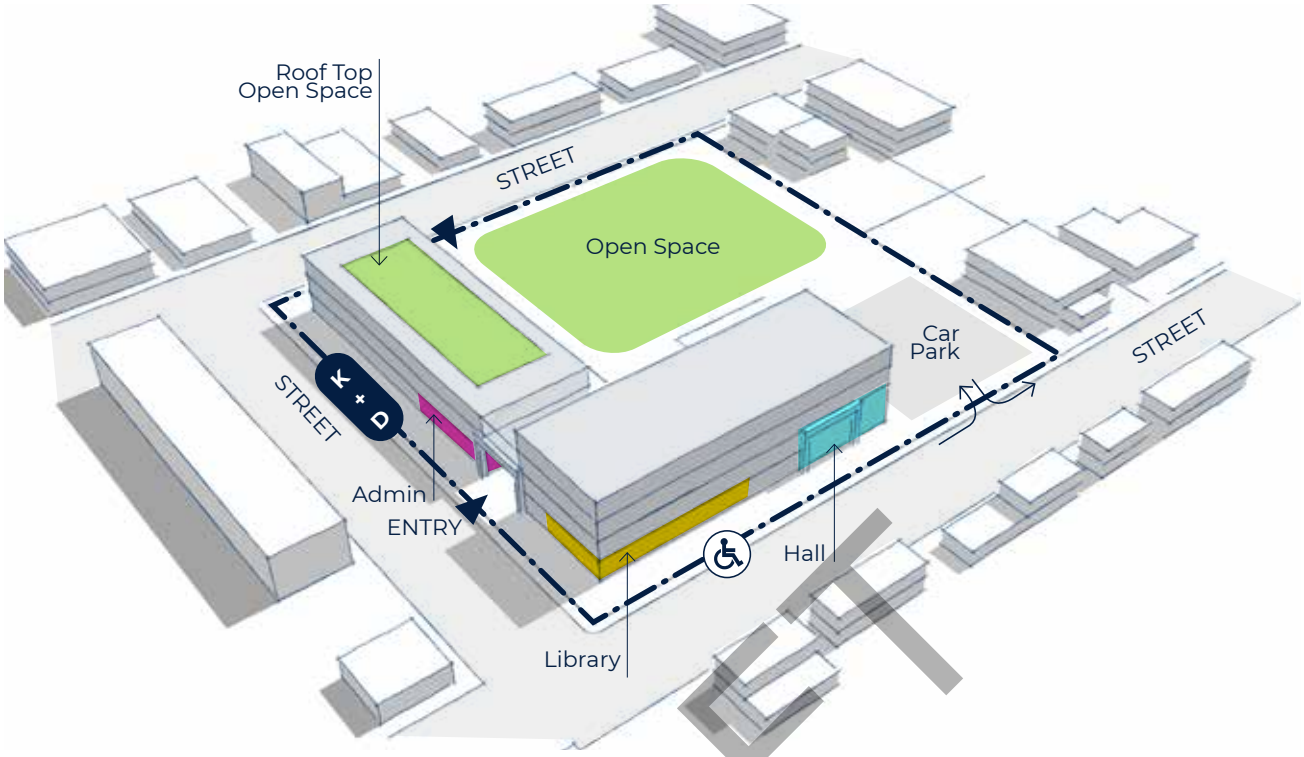
A table of facts is to accompany each option to demonstrate (at a minimum):

- the total gross floor area, broken down into existing floor area, refurbished floor area and new floor area,
- the total teaching spaces provided, additional teaching spaces provided and details of new/ upgraded core facilities,
- open space provision per student, and
- the preliminary cost estimate.

3.4.1 2D diagrams

All 2D diagrams are to be presented in accordance with the following:

- ✓ with north facing up the page and a north point shown
- ✓ to a standard measurable scale with a scale bar shown
- ✓ accompanied by a legend/key that explains all elements included on the graphic
- ✓ site to be shown within the surrounding context, including the immediate road network and surrounding uses that may have an impact/may be impacted by development on the school site
- ✓ labels for roads, railway and stations, notable surrounding uses/landmarks
- ✓ clear definition between existing assets (labeled with building letter/number) that are being retained, those that are proposed to be demolished, proposed for refurbishment and proposed as new
- ✓ height of new buildings (at a minimum) should be shown
- ✓ location of existing and proposed core facilities should be noted (including hall/gymnasium, library, administration, toilets and the like) and
- ✓ new and proposed school pedestrian entry points, student scooter and bicycle parking, pick up/drop off, bus zones, staff car parking, bicycle parking and end of trip facilities, deliveries and vehicular entry points shown clearly.



^ Example of a 'block and stack'/3D diagram
Source : SINSW *(diagram is indicative only, not to scale)*

1.1.7 3D 'block and stack'

Each option should be accompanied by a 3D diagram/s that provides a visual representation of the master plan within the surrounding content. The images should be presented in a simple 'block and stack' style, demonstrating building heights, intended use of space over levels of the built form and overshadowing impacts where applicable.

Cross sections may also be required, in particular when presenting complex designs with varying building level changes or located on sloping sites.

A minimum height of 4.2m floor to floor should be applied.

CHECKLIST - OPTION DEVELOPMENT PHASE

This checklist may be used to ensure all elements of the option development phase have been considered.

PROJECT MANAGEMENT	
☐ **Quality outcomes**	Do the options demonstrate future proofed solutions? Do they consider the impact on school operations (if an existing school site) during construction? Do the options demonstrate 'value for money' solutions?
☐ **Scope and budget**	Are options consistent with guidelines in Section 3.0? Do they provide a range of solutions that meet the scope and budget of the project? Do they provide options for staged solutions (if required)?
CONTEXT	
☐ **School context**	Have the options presented addressed the school site as part of the wider community? Have joint use projects been explored, identified and raised with the SINSW Partnerships team for further action?
DESIGN QUALITY	
☐ **Compliance with standards**	Do the options present EFSG compliant solutions? If not, have reasons for departure been justified and documented? Do the options address design quality standards as outlined in the ESEPP and instill principles of good urban design?
☐ **DfMA**	Do the options explore construction via DfMA? Has the method of construction (volumetric, 'kit of parts' or traditional) been agreed?
☐ **Accessibility**	Do options present DDA compliant solutions? Do they explore and implement equitable access across the school?
COMMUNICATION	
☐ **Graphics**	Does imagery clearly demonstrate the intent of the solution? Are graphics considerate of the guidelines in Section 3.4?
☐ **Documentation**	Are all challenges/opportunities/risks clearly documented? Have recommendations been made to ensure smooth transition into the Concept Design phase?

document the process >> tell the story >> set the scene

3.5 The master plan report

The master plan report should tell the story of design evolution and explain the process and decisions that have lead to the development of the preferred option.

It should provide the following, at a minimum:

1 An overview of the original **scope** of the project, including the desired pedagogical response as outlined in the Educational Rationale.

2 The **site analysis**, as a series of easy to read diagrams, that identify opportunities and constraints for the school site

This should include commentary derived from other technical experts reports and recommendations of further studies required (as appropriate). Complete copies of technical reports are to be appended to the master plan report.

3 An overview of the **options development**, as a series of easy to read diagrams, that explain the approach and clearly identify new works, refurbishments, demolition and existing assets retained.

The 'top' three (3) options should be supported by an explanation of how the project scope is met, and identify strengths, weakness, opportunities and risks for comparison purposes.

4 An overview of the **preferred option** (as determined by the Value Management Workshop process) to progress through to Concept Design.

The preferred option should be accompanied by an explanation of the process and reasoning that determined it as preferential against other options. It should also note any risk to the progress of the option, any unresolved analysis, buildability concerns, operational uncertainties and the like.

For more information or to provide feedback, please contact us at

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NSW GOVERNMENT