

Multi Trades Hub

Design Standard

TAFE NSW would like to pay our respect and acknowledge Aboriginal and Torres Strait Islander Peoples as the Traditional Custodians of the Land, Rivers and Sea. We acknowledge and pay our respect to the Elders; past, present and emerging of all Nations.



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This document was commissioned by TAFE NSW and prepared by JHA Consulting Engineers (NSW) Pty Ltd.

For enquiries please send email to: designteam@tafensw.edu.au

TAFE Infrastructure NSW Design Team
 Level 2, Building A, 1 Mary Ann Street
 Ultimo NSW 2007
 PO BOX 707, Broadway NSW 2007
 02 9338 6600
tafensw.edu.au

The project team retains responsibility for the coordination, design, procurement, and delivery of mechanical services which will include taking all reasonable steps to make sure that the mechanical services design, and selection complies with all applicable Australian Standards required by the NCC, WHS Legislation, Statutory planning approval processes, TAFE NSW Procedures & Policies, and all other relevant statutory requirements.

Rev	Issue date	Issue	Amendments since previous issue
A	29 September 2021	Draft for Reference	-
B	25 March 2022	Final	Accessibility Review
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Introduction

1 Introduction

1.1 Overview

As part of the TAFE NSW ITN Design Book, the 'Multi Trades Hub Design Standard' is intended to improve the quality of trade spaces and achieve consistency across TAFE NSW.

This Design Standard applies to all projects defined as a Multi Trades Hub which may include new buildings, alterations or additions to existing buildings, or a cluster of spaces within a building.

Key principles for the design of the Multi Trades Hub Design Standard have been derived from intensive user workshops and an iterative design process.

This Design Standard provides specific guidelines for the planning, design and construction of Multi Trades Hubs across TAFE NSW.

The objectives of this Design Standard are to:

- Define the guiding design strategies for the successful delivery of Multi Trades Hubs across TAFE NSW, including:
 - Respecting and enhancing TAFE NSW's diverse and inclusive culture
 - Adapting to current and emerging learning needs
 - Providing efficient, flexible and diverse spaces
- Provide performance-based requirements to allow flexibility for design and delivery of Multi Trades Hubs that are adaptable to multiple scales, locations and the changing needs of skills and industry
- Provide high level guidance towards the briefing, project planning and design processes

1 Introduction

1.2 Audience

The table below broadly defines the numerous and diverse groups this Design Standard is written for and their contribution to the planning, design and delivery, and ongoing maintenance.

Who should use this Design Standard?

Group	Members	Group's Roles
Project Delivery	<ul style="list-style-type: none">Strategic PlanningProgram ManagersProgram DirectorsProcurement & LogisticsFacilities ManagementProject Managers	<ul style="list-style-type: none">Establish project requirements and define the project brief and scope based on project complexity and scale.Manage the delivery of the project including inputs from users, designers, consultants, contractors and end users throughout the life of project.Assess the design and selections against the requirements of this Design Standard.
Design	<ul style="list-style-type: none">Design ManagersEducation SpecialistsArchitectsInterior DesignersEngineers & Consultants	<ul style="list-style-type: none">Guide planning & design.Understand design principles and strategies & how the design of the Multi Trades Hubs can contribute to learning, teaching and user experience.Support collaboration and cross-pollination through design outcomes.Provide opportunities for innovation including: learning environment, industry partnerships and sustainable design.
Construction	<ul style="list-style-type: none">Project DirectorsProgram ManagersProcurement & LogisticsProject ManagersConstruction Contractors	<ul style="list-style-type: none">Guide delivery and construction in accordance with this Design Standard.
Operations & End Use	<ul style="list-style-type: none">Procurement & LogisticsFacilities ManagementLearner Support GroupsWork Health & SafetyTeaching SpecialistsProduct GroupCustomer ExperienceStaff & LearnersSystems GroupSustainabilityIndustry Partners	<ul style="list-style-type: none">Understand design principles and strategies & how the design can better support learning, teaching and user experience.Understand how spaces can be used for innovative delivery and adapted to meet future needs.Monitor or assist with evolving user needs across life cycle.Inform service delivery planning and identification of future trends in vocational education.

1 Introduction

1.3 Standards & Documents

The following standards and documents, as relevant to the project, should be read in conjunction with the Design Standard when designing, documenting & delivering a Multi Trades Hub. This list is not exhaustive and other documents may apply.

1.3.1 External Requirements

Statutory Requirements

- National Construction Code and referenced Australian Standards
- Disability Discrimination Act
- NSW Work Health & Safety legislation
- Applicable statutory planning requirements

NSW Government Policies & Strategies

- NSW Department of Planning and Environment
 - Government Resource Efficiency Policy (2019)
 - Net Zero Plan Stage 1: 2020-2030
 - Electric Vehicle Strategy (2021)
- Government Architects NSW
 - Better Placed - a Strategic Design Policy for the Built Environment of NSW (2017)

External Certification Schemes

- Green Building Council of Australia (Green Star)
- Tertiary Education Facilities Management Association

1.3.2 TAFE NSW Requirements

TAFE NSW Overarching Policies

- Environmental Sustainability Policy
- Reconciliation Action Plan
- Diversity and Inclusion Policy
- Work Health and Safety Policy
- Disability Inclusion Action Plan and Implementation guide
- Asset Management Policy

TAFE NSW Interconnected Training Network

- Interconnected Training Network Design Principles
- Interconnected Training Network Design Procedures
- Other Design Standards relevant to project

1 Introduction

1.4 Definitions

Abbreviation	Definition
AR	Augmented Reality
AS	Australian Standard
AV	Audio Visual
BCA	Building Code of Australia
BYOD	Bring Your Own Device, refer to TAFE NSW Electrical Services Design Standards
CLP	Connected Learning Point, as defined in the TAFE NSW Connected Learning Point Design Standard, including the definitions below:
-CDS	Connected Delivery Space
-CLS	Connected Learning Space -Group and Individual
-SDS	Specialist Delivery Space -Fixed, Semi-Portable and Portable
Connected Learning	Virtually connects learners and teachers at different TAFE NSW campuses and other remote learners
DIAP	TAFE NSW Disability Inclusion Action Plan
Dw	Weighted Level Difference
GBCA	Green Building Council of Australia
GECA	Good Environmental Choice Australia
HDC	Head Design Consultant
IT	Information Technology
ITN	Interconnected Training Network
MTH	Multi Trades Hub
NCC	National Construction Code [Formerly BCA]
NR	Noise Rating
SSD	State Significant Design
this Design Standard	TAFE NSW Multi Trades Hub Design Standard
VR	Virtual Reality

Applications

2 Applications

2.1 Scope

2.1.1 How This Design Standard Applies

Compliance

This Design Standard is intended to support and assist the design and delivery of Multi Trades Hubs. All Multi Trades Hub projects must comply with this Design Standard.

This Design Standard must also be read in conjunction with:

- Statutory and legislative requirements
- Contractual Agreement with TAFE NSW
- The Project Brief and relevant project requirements
- Other TAFE NSW Design Standards, including but not limited to
 - TAFE NSW Structured Cabling System Specification v2-0
 - TAFE NSW SCS Specification for Patch and Fly Leads December 2020

Where there is a conflict between this Design Standard and any statutory or legislative requirement, the more onerous standard applies.

Mandatory /Must:

Where the word “must” is used, this indicates that a statement is mandatory

Preferred / Should:

Where the word “should” is used, this indicates that a statement is a recommendation

Contractual Responsibility

The content of this Design Standard does not relieve any consultant, contractor or supplier from their contractual responsibility relevant to the project.

This document does not relieve any user of their responsibility to comply with the requirements of all relevant statutory codes, standards and guidelines.

If this document appears to contradict or deviate from good practice or any statutory requirements, this issue is to be brought to the attention of the TAFE NSW party/parties who are responsible for the delivery of the Multi Trades Hub project.

Queries

Any project specific queries are to be raised through their TAFE NSW Project Lead.

2 Applications

2.1 Scope

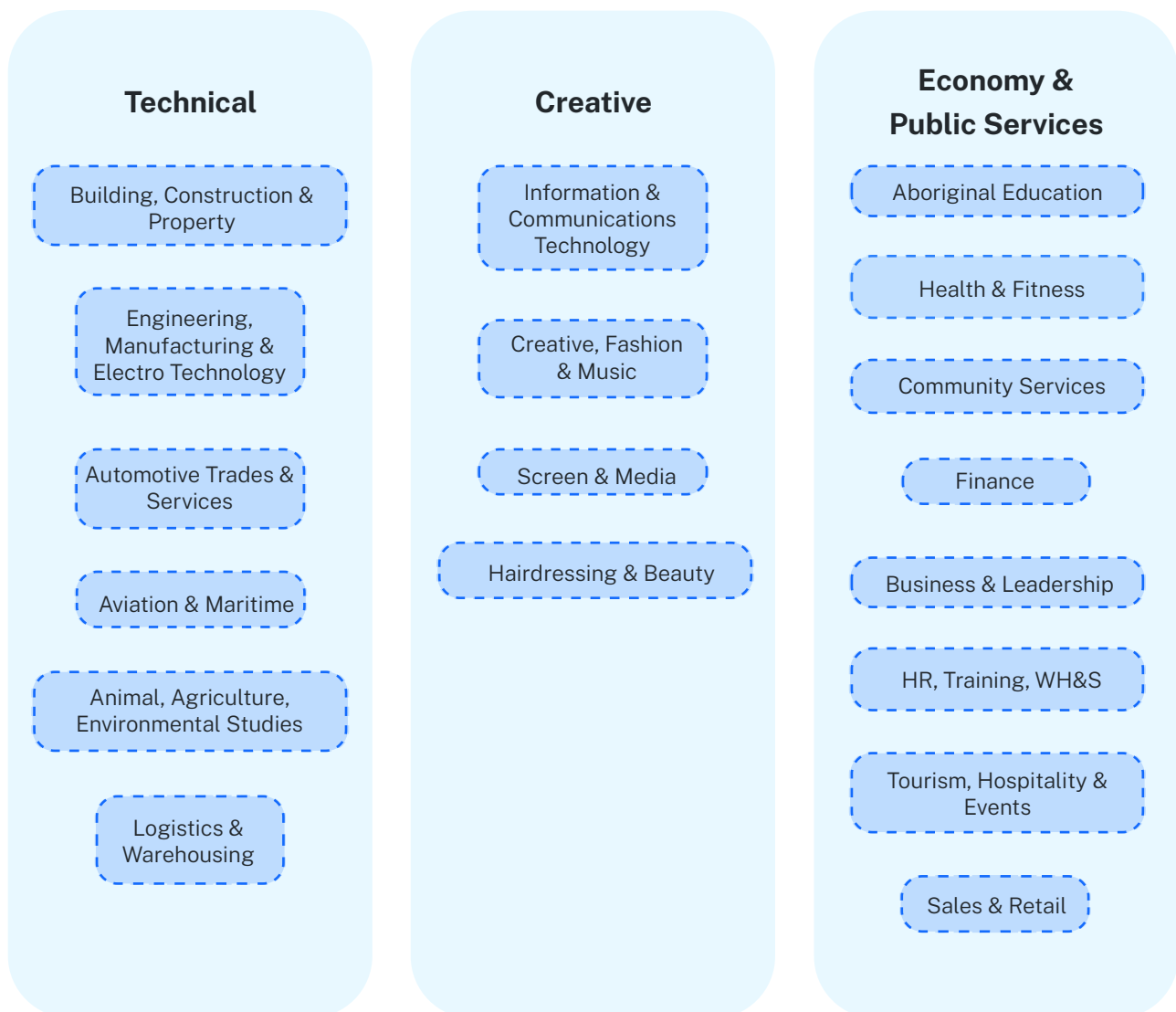
2.1.2 Defining a Multi Trades Hub

This Design Standard provides the framework for TAFE NSW facilities which combine any technical skills delivered by TAFE NSW to create an engaging interdisciplinary experience where learning opportunities mirror real world practices such as joint industry partnerships, interdisciplinary collaboration and integration of applied technology.

To better reflect this real world practice, TAFE NSW has embarked on a program to deliver new Multi Trades Hubs that can accommodate any combination of related technical skills within a collaborative and interdisciplinary environment.

This Design Standard expands the definition of a Multi Trades Hub to *any* combination of *any* trade or course offered by TAFE NSW. It enables design strategies for spaces, spatial relationships and spatial qualities that enable the potential for interdisciplinary collaboration.

The diagram below lists the variety of skills areas that TAFE NSW provide and could potentially be included in a Multi Trades Hub (this is not an exhaustive list).



2 Applications

2.2 Project Application

Due to differing project requirements, priorities may vary from project to project. The below outlines the level of adherence to this Design Standard that is required for the scale of the project.

2.2.1 Project Types

Major Works & Special Works projects

This Design Standard applies to all Major Works & Special Works projects defined as a Multi Trades Hub including major refurbishments, new builds and special projects.

Additional project specific requirements such as statutory conditions, Green Star and other sustainability certification schemes may apply.

Major Works projects and Special Works projects must comply with this Design Standard

Minor Works Projects

This Design Standard applies to all Minor Works projects defined as a Multi trades Hub including minor refurbishments and reconfigurations of existing spaces. Minor Works projects should make every effort to comply with the relevant parts of this Design Standard where possible, particularly the Design Principles and Strategies.

Design Strategies

3 Design Strategies

3.1 Brief & Scope

A project return brief must be developed for each Multi Trades Hub to define the brief, scope, budget, accommodation schedule, building capacity and any other critical project requirements.

The return brief must document:

- The additional enrolments the project will support
- The capacity of the building
- The training packages and course profiles to be delivered
- The assessment requirements of the training packages

3.1.1 Developing the Return Brief

The return brief must be established at the commencement of the project and reviewed at the beginning of each project phase. Project requirements may change during the life of the project due to changes in enrolment projections, skills demand, government initiatives & partnerships, policies, or training package requirements so it is important to review the document regularly.

The relevant project requirements must be reviewed with all key TAFE NSW stakeholders, including but not limited to:

- TAFE NSW Strategy and Research Group
- TAFE NSW Strategic Asset Planning
- TAFE NSW Product Group
- Relevant TAFE NSW teaching staff
- Any other project stakeholders

The following documents and sources should be reviewed:

- TAS (Training and Assessment Strategy)
- Training package requirements listed on www.training.gov.au
- Any changes to training package requirements or outcomes of performance assessments (audits) carried out by ASQA (Australian Skills Quality Authority)
- Assessment requirements for all courses to be delivered including:
 - NNR (Non-nationally recognised training)
 - NRT (Nationally recognised training)

3 Design Strategies

3.1 Brief & Scope

3.1.2 Project Scope

Once the project requirements have been established, the project team must map the spatial requirements of the training and assessment packages to determine the building accommodation schedule. Each space must be fit for purpose and appropriately sized to enable the activities required for training and assessment.

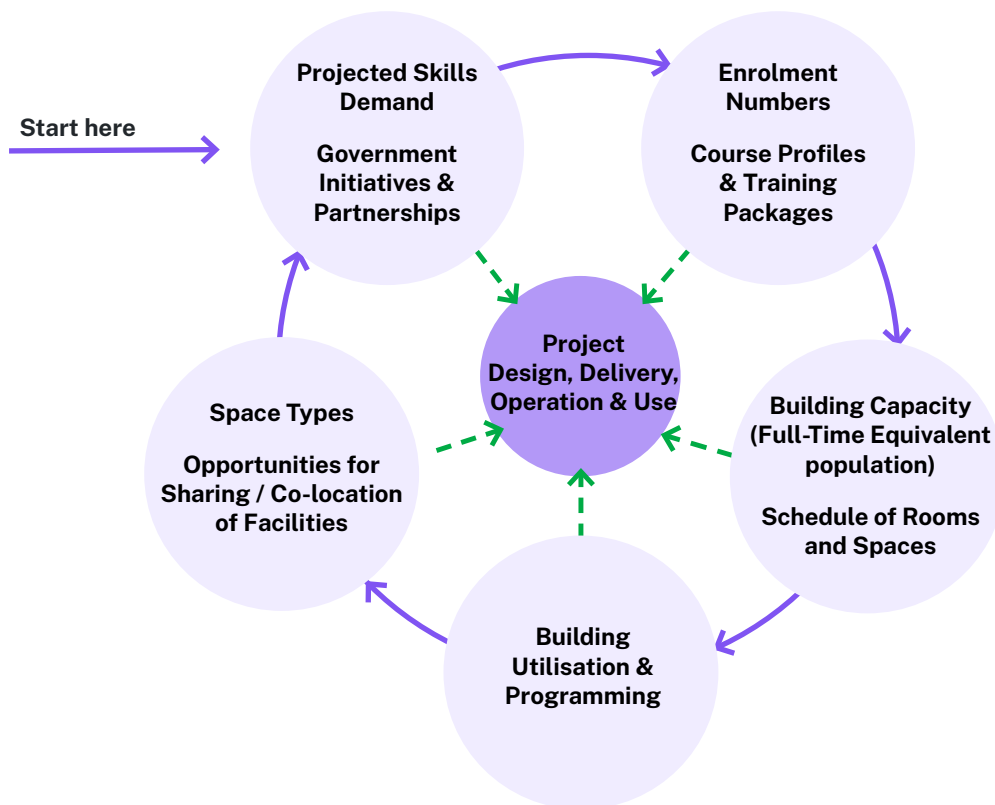
The process to map the training and assessment packages will be different for each project. However, common tasks will be reviewing courses to be delivered, assessment tasks and requirements of each course, key pieces of equipment and current timetabling of spaces. This will assist in determining the types and quantities of spaces to be provided.

Follow-on effects on building capacity, utilisation and programming of spaces, impacts on space types and sharing opportunities must be reviewed and adjusted to ensure project needs are aligned with project delivery at each phase.

Other considerations must include how the design of the building will impact on staffing and operational requirements. Can the building be operated under the current staffing model? If not, how will additional staffing be funded?

Any changes to the project brief must be reviewed against the design to ensure the revised brief can still be delivered.

Diagram 1: Briefing & Scoping Process



3 Design Strategies

3.2 Overview

The following pages identify the different design strategies and requirements which must be considered when planning, designing or delivering a Multi Trades Hub. The design strategies listed under the 4 categories **Space, Culture, Learning, and Future Oriented** describe key expectations for the Multi Trades Hub. The design requirements provide a direction on how each design strategy is to be implemented into the design. The design strategies and requirements are equally important to ensure a successful learning outcome is achieved.

Diagram 2: Design Strategies Overview



3 Design Strategies

3.3 Strategy 1 - Space

Strategy	Background	Design Requirements
S3.1: Accessible and Inclusive	TAFE NSW is fully committed to having an accessible physical and digital environment for staff and learners with disability. A MTH must embed inclusivity and accessibility by:	<ul style="list-style-type: none"> ▪ Providing functional clearance zones to all furniture, fixtures and equipment ▪ Providing teaching and learning space which are accessible with a high degree of adaptability ▪ Providing spaces with a range of visual and acoustic privacy levels ▪ Providing access to support services
S3.2: Flexible & diverse	Providing flexible and diverse spaces is important to empower users by providing a sense of agency and choice, accommodate multiple groups or learning needs, and which are able to respond and adapt to changing needs.	<ul style="list-style-type: none"> ▪ Provide a range of different group learning modes (e.g. from 1-on-1 to small groups to general learning to assemblies) ▪ Provide spaces that are able to scale up or down depending on course or enrolment sizes ▪ Identify which spaces with specific purpose, have similar activities and needs that could be shared, clustered or overlapped to support cross-pollination
S3.3: Well connected space	Well connected spaces support the strategies for interdisciplinary, inclusive, flexible and adaptable learning environments.	<ul style="list-style-type: none"> ▪ Provide meaningful physical connections between: <ul style="list-style-type: none"> • Specialist and general learning spaces (i.e. theory and practical spaces) • Functional spaces and common spaces (i.e. social, breakout, staff, support, collaboration spaces, etc.) • Indoor and outdoor spaces ▪ Provide meaningful virtual or mobile connections through: <ul style="list-style-type: none"> • Inclusion of Connected Learning Points (CLPs) in general learning and specialist spaces to enable virtual learning • Where required to support delivery, inclusion and storage of mobile training units
S3.4: Efficient use of space	Efficient use of space achieves better value for money and reduces the required building footprint and ongoing operational costs.	<ul style="list-style-type: none"> ▪ Share specialist spaces between courses where appropriate while maintaining spaces with specific needs (i.e. for safety) ▪ Provide movable furniture and equipment where possible that can be easily reconfigured for a variety of activities ▪ Provide general learning spaces (i.e. CLPs, group learning spaces, etc.), that are not specific to any subject area ▪ Provide systems to support effective room booking and timetabling ▪ Establish a flexible building grid layout to allow for easy refurbishment and change with minimal impact to base building

3 Design Strategies

3.3 Strategy 1 - Space

Strategy	Background	Design Requirements
S3.5: Safe & secure environment	Learners and Staff have a right to be safe and protected when attending TAFE NSW. All designs must support the physical and social health and well-being of users.	<ul style="list-style-type: none">▪ Create spaces which are suitable for their intended use or activity (fit for purpose)▪ Provide finishes and materials to suit the intended use or activity (i.e. clean or dirty, wet or dry) and impact resistant▪ Utilise glazing where appropriate to showcase activities and provide visual connection between spaces, and limit glazing where privacy is required▪ Provide equipment that can be easily moved in and out of workshops▪ Provide a combination of open spaces and secure spaces to manage the use of machinery and equipment▪ Manage the safety of spaces that house heavy machinery or equipment through careful consideration of security and access control systems without compromising on access to the facility.

3 Design Strategies

3.4 Strategy 2 - Culture

Strategy	Background	Design Requirements
S1.1: Community and inclusive culture	TAFE NSW is a culturally diverse community and is committed to promoting equity and access to education in NSW. It is important the Multi Trades Hub contributes to this cultural awareness and enables all users to feel culturally safe and secure, regardless of their culture or language.	<ul style="list-style-type: none"> ▪ Create environments that are inclusive of the local Aboriginal cultural context in consultation with your campus Aboriginal Education and Engagement Coordinator
S1.2: Driver for cultural change	It is important that the design of any Multi Trades Hub aligns with the social, learning and teaching aspirations of the occupants. Because the design and delivery process is usually undertaken over a number of years, the design principles need to be developed with the future occupants' needs at the forefront.	<ul style="list-style-type: none"> ▪ Consult stakeholders during the project briefing to establish current teaching requirements and opportunities to shape teaching methodologies ▪ Maintain the dialogue with stakeholders throughout the design process to refine requirements ▪ Establish how emerging and future education practices will impact on the design ▪ Review learning outcomes and consider how this impacts the requirements for education, technology and space
S1.3 Design as culture enabler	Successful learning outcomes are achieved when built form aligns with teaching methodology and practice. Key metrics for success include an inclusive and diverse cultural experience, embracing interdisciplinary learning, industry engagement, and authentic learning experiences. Spatial relationships must be designed to enable activities that reinforce culture and foster a sense of belonging amongst staff and learners alike. Learning is best supported when the community feels safe to enquire, explore and experiment.	<ul style="list-style-type: none"> ▪ Specialist spaces must be designed as a series of specialist hubs, co-locating similar trades together to encourage interdisciplinary collaboration and simulate real world experience, rather than a single trade approach ▪ Provide a large forum space to enable gatherings of multiple cohorts, industry events and guest talks ▪ Consider spaces to showcase learner work to encourage peer to peer learning & industry engagement ▪ Provide diverse spaces and purposeful spaces to support different learning needs & learning activities ▪ Design with visibility in mind, create 'shop fronts' which inspires learners and encourages active and incidental interactions. This activates the campus and creates an inclusive and diverse learning community ▪ Activate circulation spaces ▪ Provide technology-rich spaces to enable innovation and experimentation in line with latest industry technological advancement and trends ▪ Encourage the creation of 'sticky' campuses, supporting learners to stay / enjoy campus

3 Design Strategies

3.5 Strategy 3 - Learning

Strategy	Background	Design Requirements
S2.1: Interdisciplinary	The Multi Trades Hub must foster collaboration and cross-pollination between multiple disciplines and training teams.	<ul style="list-style-type: none"> ▪ Providing a variety of diverse space settings which encourage interaction between users ▪ Provide exposure, access and opportunities to other trades or disciplines ▪ Make connections, physical or virtual, beyond the Multi Trades Hub to other TAFE NSW sites.
S2.2: Contemporary teaching and learning	Spaces should inspire teachers to undertake professional development and enrich the capability of the learners.	<ul style="list-style-type: none"> ▪ Provide spaces for contemporary teaching and learning which are well connected, flexible, diverse, user focused and supported by technology.
S2.3: Engage with Industry	Support industry engagement by providing spaces that foster co-creation, collaboration, engagement and co-delivery between teachers, learners and industry partners.	<ul style="list-style-type: none"> ▪ Create meaningful relationships between TAFE NSW and industry partners ▪ Enhance pathways towards further careers and workforce participation ▪ Improve quality of education.
S2.4: Replicate Real-world experience	Provide an immersive and well-rounded teaching and learning experience that replicates the real world.	<ul style="list-style-type: none"> ▪ Utilise the building as a training tool ▪ Encourage simulated projects such as construction of tiny houses involving coordination of multiple trades ▪ Foster interdisciplinary and industry relationships ▪ Provide opportunities to secondary courses to supplement core skills (e.g. business, accounting, social media, trade certifications, etc.).
S2.5: Support learners	Access to TAFE NSW Student Services is critical to maintaining and supporting customer experience and learning outcomes.	<ul style="list-style-type: none"> ▪ Enable TAFE NSW learner access to support services, to improve customer experience and support learning outcomes, including but not limited to: <ul style="list-style-type: none"> • Aboriginal learner support services • Disability support services • Counselling and career development services • Further education • Study Support • Library Services • Learning support

3 Design Strategies

3.6 Strategy 4 - Future Oriented

Strategy	Background	Design Requirements
S4.1: Technologically advanced	Technology supports the delivery of contemporary teaching and learning and enable the delivery of remote teaching and learning through digital platforms. New technologies constantly emerge and TAFE NSW training provisions need to respond accordingly.	<ul style="list-style-type: none"> ▪ Provide convenient, easy to use and equitable access to technology in all learning areas ▪ Provide technology to virtually connect teachers and learners across TAFE NSW through connected delivery ▪ Investigate innovative technology such as VR, AR, AI, robotics, 3D printing, laser cutting, etc. ▪ Support digital needs through modern, widespread and scalable wired and wireless networks ▪ Integrate 'smart' building technology such as BMS and energy harvesting ▪ Use the design of internal and external spaces as an exemplar and learning tool for any applicable course area. For example construction, engineering, sustainability etc.
S4.2: Leadership of environmental sustainability	As a government organisation, TAFE NSW has an obligation to achieve Whole of Government sustainability targets, which extends to new developments.	<ul style="list-style-type: none"> ▪ Reduce carbon emissions to equal or better the requirements under the NSW Government Net Zero Plan ▪ Lead the implementation of sustainable strategies to reduce the environmental impact of the project. ▪ Use construction materials efficiently and consider the use of the following where appropriate: <ul style="list-style-type: none"> · Recycled / re-used content · Locally & sustainably sourced products and materials where appropriate ▪ Showcase energy efficiency and harvesting systems that can be used as a training tool ▪ Incorporate low energy use systems/fittings/equipment, energy harvesting, renewable energy systems and energy storage

3 Design Strategies

3.6 Strategy 4 - Future Oriented

Strategy	Background	Design Requirements
S4.3 Respond to future changes	<p>TAFE NSW evolves constantly to suit economic and social needs. Changes may occur throughout and at any stage of the project based on:</p> <ul style="list-style-type: none">Local or regional industry demands (e.g. skills shortage, licence changes etc.)Teaching delivery plans, training packages, course profiles, growth or reduction of tradesEmerging technologies and changing working methods such as replacement of manual labour through industrialised / computerised technologies and innovative materialsFuture learner populations, demographics and cultural needsImpacts of climate change on the occupants and increased instances of natural disasters such as floods, droughts, bush fires, cyclones and extreme temperatures	<ul style="list-style-type: none">The project team must plan for change through:<ul style="list-style-type: none">Consultation with TAFE NSW stakeholders beyond the established stakeholder group (i.e.. Strategy Team) at the beginning of each stage to ensure project needs are aligned. (Refer diagram below)Master plan how and where the campus may expand in the future, this will have a major effect on the future work-flow of the campusIncorporate flexible services and 'plug-ins' to allow for easy adaptive reuse, retrofit & refurbishmentDevelop spatial allowance based on enrolment forecasts, and review this at each project phaseConsider multi-purpose spaces and joint partnerships with other government bodies to maximise resource utilisationWhen designing for expected growth, ensure spaces can be used in a meaningful interim scenario where learner capacity is not fully achievedDesign for physical & remote audience: CLPs must be considered in workshops to enable connected learning and teachingRationalise floor layouts based on a standardised building grid to enable efficient strip out and refit of spaces.

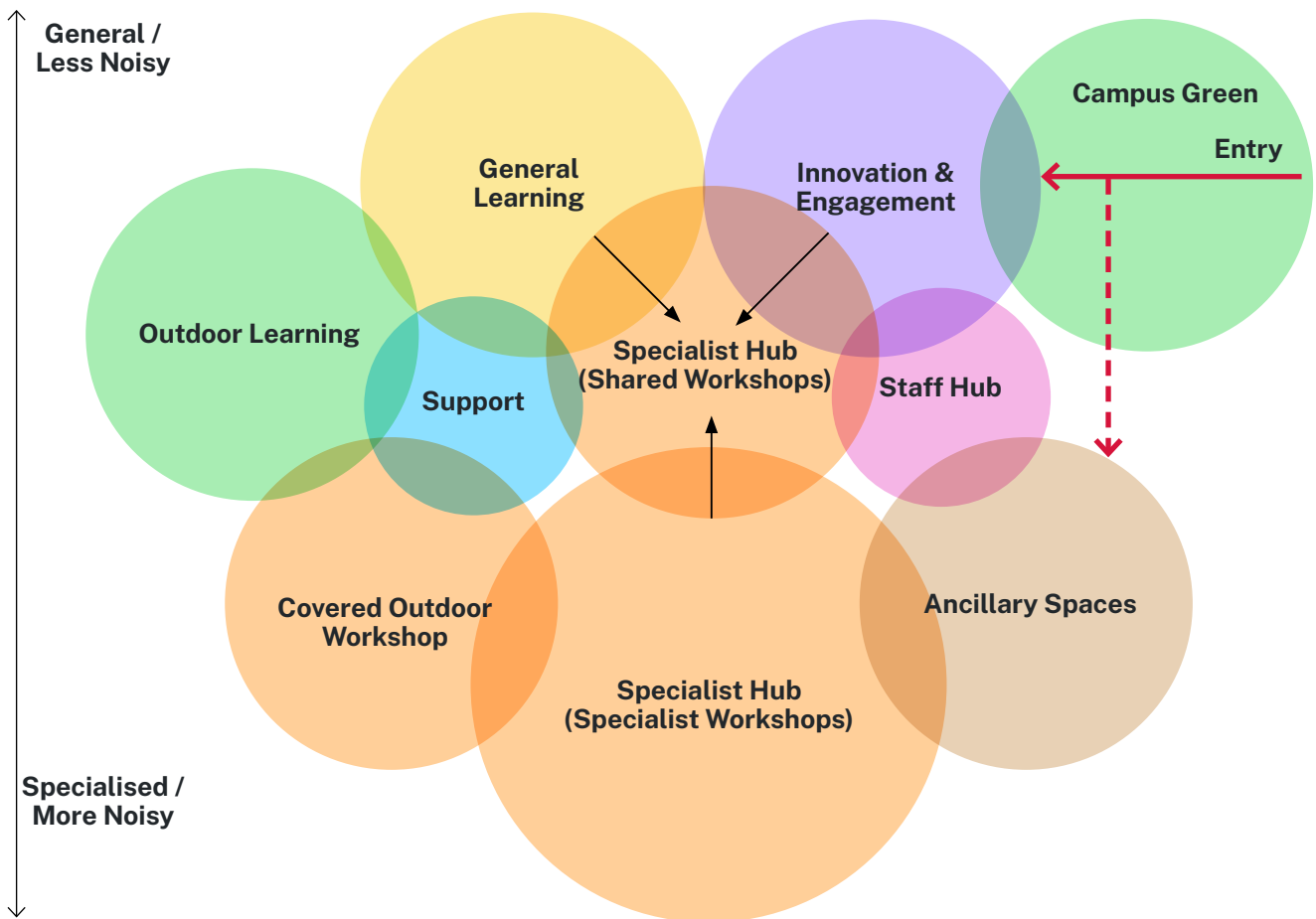
Technical Sections

4 Technical Sections

4.1 What Makes a Multi Trades Hub

The following diagram illustrates the Hubs that form a Multi Trades Hub. Each Hub is assembled by a cluster of components which form the individual spaces. Section 4.3 details the components forming each Hub and details their spatial requirements.

Diagram 3: Components of a Multi Trades Hub

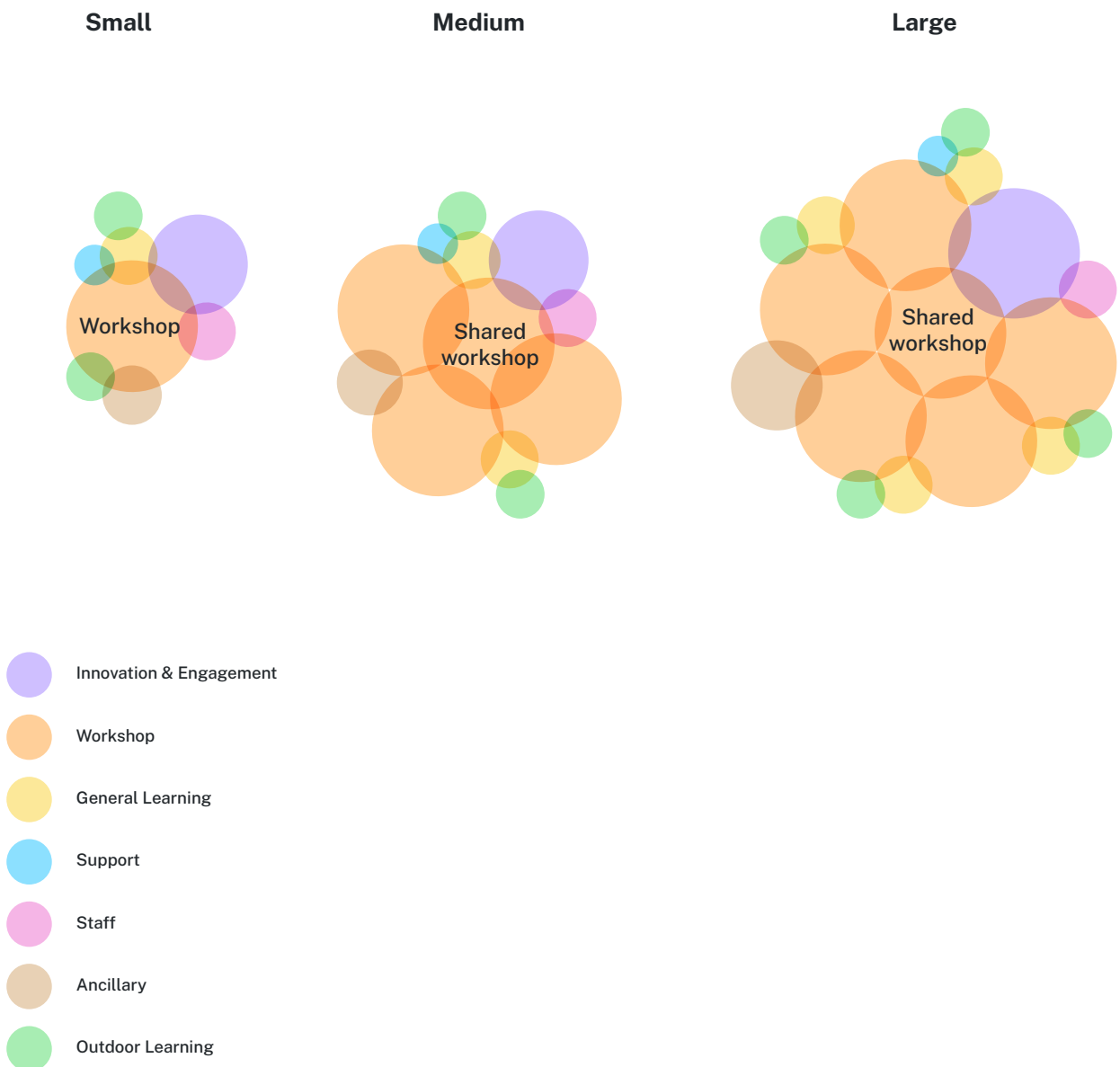


4 Technical Sections

4.2 Scalability of a Multi Trades Hub

Each Multi Trades Hub will differ in course profile, scope and size. Over time, the Multi Trades Hub may be impacted by expansion, contraction or change in course profiles. In some cases, these impacts could occur during the design phase of a project. When designing a Multi Trades Hub project, the project team must take into account the scalability - how it will accommodate future expansion and contraction - and how that will affect the critical work flow of an operational Multi Trades Hub. The following diagrams illustrate how additional Specialist Hubs may 'plug in' over time to expand the campus.

Diagram 4: Scalability of Multi Trades Hub



4 Technical Sections

4.3 Hubs and Components

4.3.1 Specialist Hub

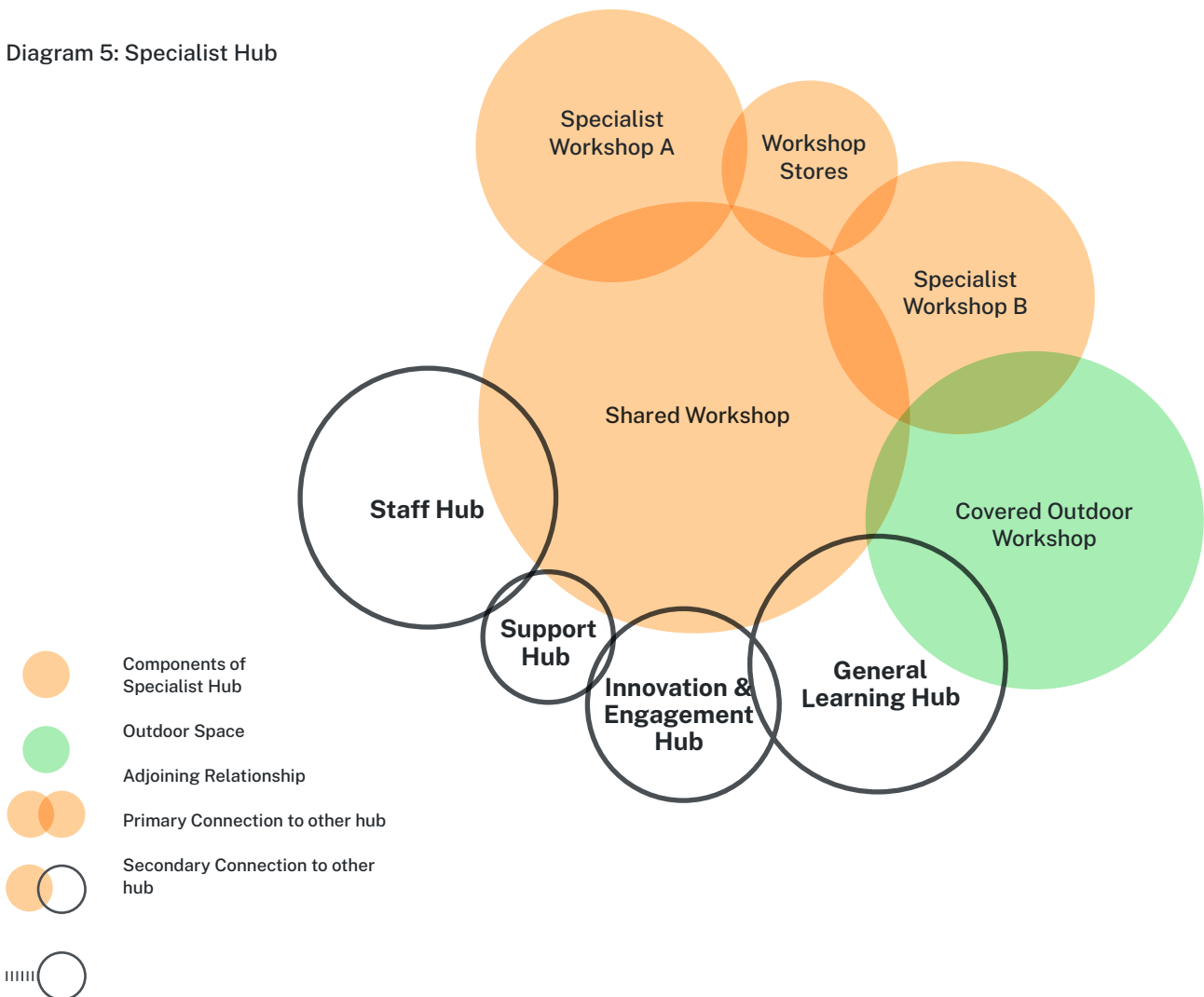
Workshops have traditionally been segregated with little consideration for cross-over between trades outside their course, which is not an accurate reflection of how industries work together.

As such, specialist learning areas must group similar trades or courses together to create hubs with common specialist requirements. This will encourage interdisciplinary learning and collaboration which mimics real world experiences.

Consider how different specialist hubs interact or overlap to provide access to shared services and create visibility with other disciplines. These interactions aim to spark curiosity & empower users to enhance their learning in new ways.

The following diagram demonstrates the potential interactions between specialist trades that could form a specialist hub enabling interdisciplinary collaboration. Note: The below shows two Specialist Workshops for illustrative purposes, but the number of Specialist Workshops will vary dependent on the course profiles of each Multi Trade Hub.

Diagram 5: Specialist Hub



4 Technical Sections

4.3 Hubs and Components

4.3.1 Specialist hub

Spatial Requirements for the key spaces are shown in the following table.

Refer to Section 4.7 for technical requirements for each space.

Space	Use / Activity	Adjoining Spaces	Spatial Properties / Description	No. Occupants	Area Allowance (sqm / sqm per person)
Covered Outdoor Workshop	Outdoor workshop directly connected to specialist learning spaces.	Shared Workshop Specialist Workshops	Must be: <ul style="list-style-type: none"> Undercover and protected from inclement weather Seamless & easy access between indoor and outdoor. Secure area Provided with specialist equipment, machinery and associated building services as required. 	Class sizes dependent on risk rating and activities (learner-to-teacher ratio between 18:1 and 6:1)	Allow between 30-50% of total internal Workshop area
Shared Workshop	Shared workshop for general use and interdisciplinary joint projects. Determine common uses and activities based on briefed course profiles within MTH to encourage interdisciplinary collaboration and high utilisation. Consider longevity of learner projects taking place, e.g. the space can either be shared between different trades on a day-to-day basis or over a longer period depending on duration of collaborative projects. Enable experiential learning that reflects real working environment. e.g. building a 2 storey house.	Specialist Workshops Outdoor Workshop General Learning Hub Industry Incubators First Aid Room Ancillary Spaces Staff Hub Consider visual connection to Forum / Hearth	Must have: <ul style="list-style-type: none"> Large clear height to accommodate intended uses, equipment and machinery Public showcase of learner work/activities Capability for digitally applied technology in conjunction with Industry incubator space 	Learner-to-teacher ratio 18:1 ratio (based on low/medium risk rating)	110-130 sqm (6-7 sqm per learner)
Specialist Workshop	Specialist workshop for specific uses and activities Determine common uses and activities based on briefed course profiles within MTH to encourage interdisciplinary collaboration and high utilisation.	Shared Workshop Other Specialist Workshops Workshop Stores Ancillary Spaces Outdoor Workshop where appropriate Consider visual connection to Forum / Hearth	Must have: <ul style="list-style-type: none"> Large clear height to accommodate intended uses, equipment and machinery Specialist equipment, machinery and associated building services as required. Capability for digitally applied technology in conjunction with Industry Incubator space 	Learner-to-teacher ratio dependent on risk rating and activities (between 18:1 to 6:1)	Dependent on specific activities (between 6-10 sqm per learner)
Workshop Stores	Various types of workshop stores for project work, tools and material.	Shared Workshop Specialist Workshop Ancillary Spaces	Refer to general requirements for storage in Section 4.4.	-	10-15% of total Workshop floor area

4 Technical Sections

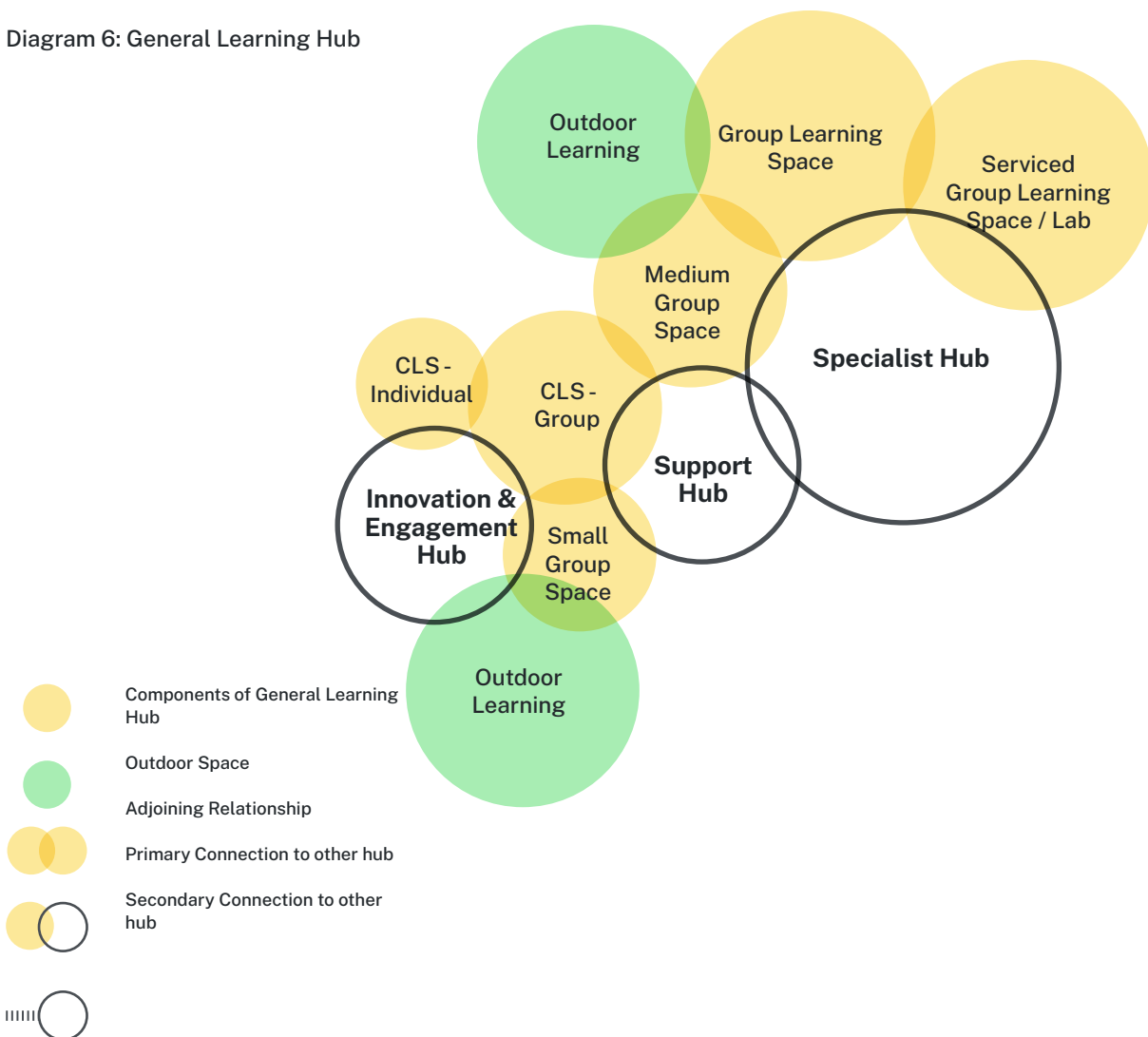
4.3 Hubs and Components

4.3.2 General Learning Hub

General learning spaces accommodate the delivery of theory-based content and must be located adjacent to specialist spaces. The flow between theory and practical activities must be seamless. General learning space design must provide:

- The ability to be used by any course. It is not owned by any particular course or department.
- A range of sizes to suit different class sizes. These spaces include:
 - Small spaces to facilitate small group collaboration, meetings or learning support,
 - Medium spaces to facilitate medium group collaboration, small class groups or seminars,
 - Large space to facilitate whole class groups. These may be combined to create spaces for a cohort of learners.
- A range of settings to enable independent learning, quiet study, small group collaboration, large groups briefing and presentation

Diagram 6: General Learning Hub



4 Technical Sections

4.3 Hubs and Components

4.3.2 General Learning Hub

Spatial Requirements for the key spaces are shown in the following table. Refer to Section 4.7 for technical requirements for each space.

Space	Use / Activity	Adjoining Spaces	Spatial Properties / Description	No. Occupants	Area Allowance (sqm / sqm per person)
Connected Learning Space - Individual	A space for individual connected learning via a laptop or phone. May also be used for individual study.	Collaboration Zone	Refer to TAFE NSW CLP Design Standard	1 person	Refer to TAFE NSW CLP Design Standard
Connected Learning Space - Group	A space for connected learning. May also be used for connected delivery and face-to-face meetings.	Specialist Hub Collaboration Zone	Refer to TAFE NSW CLP Design Standard	Up to 10 people	Refer to TAFE NSW CLP Design Standard
Group Learning Space	A space for whole class instruction & theory with the ability for connected learning. Also used for large group meetings, professional development & training.	Specialist Hub Outdoor Learning	Direct connection to workshops for ease of moving between theory & practice Acoustics must be addressed where group learning spaces are adjacent workshops. Consider capability to combine and expand Group Learning spaces to accommodate a larger cohort	18-25 people	60-75 sqm (allow 3 sqm per learner)
Medium Group Space	A space for large group learning, meetings, collaboration and discussion	Specialist Hub Outdoor Learning	Adjoining to workshops & General Learning for ease of moving between theory & practice	Up to 18 people	54 sqm (allow 3 sqm per person)
Outdoor Learning	An extension to internal spaces, used as: - Outdoor learning - Demonstration - Informal learning - Independent study	Group Learning Space Medium Group Space Collaboration Zone	Consider: <ul style="list-style-type: none">▪ Portion of space to be undercover▪ Seamless & easy access between indoor and outdoor.▪ Integrated seating	Dependent on project-specific requirements.	Dependent on project-specific requirements.
Serviced Group Learning Space / Lab	A Group Learning Space or Lab with additional specialist building services requirements appropriate to the intended uses, for example: - Power & Data - Hydraulic & Drainage - Gas supply	Specialist Hub Covered Outdoor Workshop Group Learning Space	Same requirements as General Learning Spaces plus: <ul style="list-style-type: none">▪ Consider intermodal use to increase flexibility▪ Must also be capable of being used as a Group Learning Space	18-25 people	65-90 sqm (allow 3.5 sqm per learner)
Small Group Space	A space for small group learning, meetings and support.	Collaboration Zone Specialist Hub	Adjoining Workshops & General Learning for ease of moving between theory & practice and learner support especially during class.	Up to 6 people	18 sqm (allow 3 sqm per person)

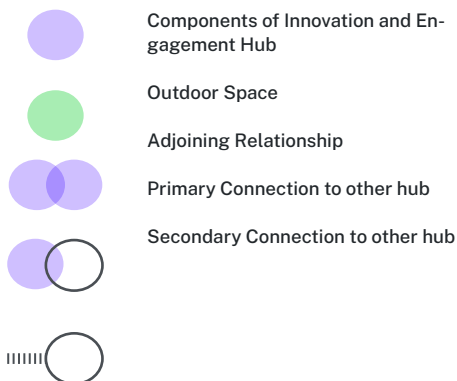
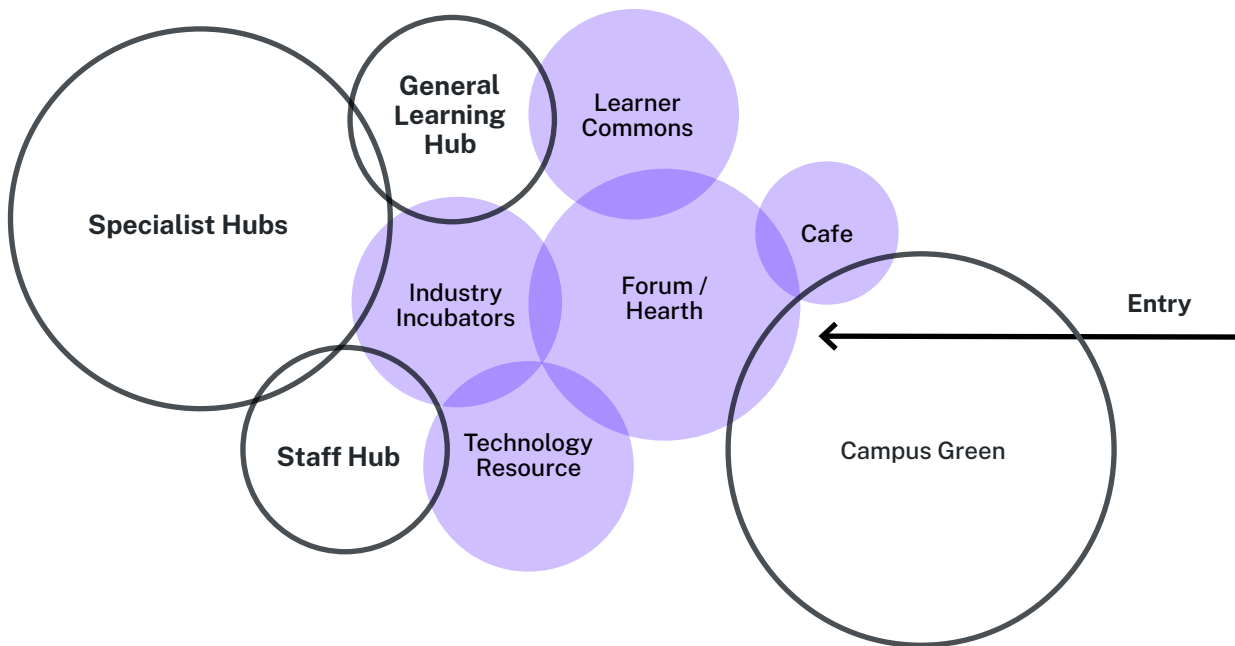
4 Technical Sections

4.3 Hubs and Components

4.3.3 Innovation & Engagement Hub

Spatial design must foster a collaborative and interdisciplinary learning culture and enable industry engagement. The below diagram illustrates some of the key spaces that should be considered when planning a Multi Trades Hub. The Innovation and Engagement Hub forms the interface between the Multi Trades Hub and the rest of the Campus and beyond.

Diagram 7: Innovation & Engagement Hub



4 Technical Sections

4.3 Hubs and Components

4.3.3 Innovation & Engagement Hub

Spatial Requirements for the key spaces are shown in the following table. Refer to Section 4.7 for technical requirements for each space.

Space	Use / Activity	Adjoining Spaces	Spatial Properties / Description	No. Occupants	Area Allowance (sqm / sqm per person)
Café	<p>A café is typically run by an external provider and may be provided where:</p> <ul style="list-style-type: none"> It is deemed commercially viable There is interest from a third party There is a direct need for training and delivery outcomes. <p>Day to day: Café</p> <p>Event Mode: Catering.</p>	Forum / Hearth Campus Green	<p>Café seating areas must have the ability to spill out to Campus Green and Forum / Hearth</p> <p>Café service and kitchen areas must comply with relevant food premises codes and standards</p> <p>If a café is not provided but a Forum / Hearth or other exhibition space is provided, the project should provide a small space for event catering. The minimum requirements include a preparation space, sink and wash up space, power and drainage.</p>	Dependent on project-specific requirements.	<p>Cafe seating area: Allow 2-2.5 sqm per person</p> <p>Cafe service and kitchen area: Allow 50-70% of cafe area</p>
Learner Commons	<p>Unprogrammed space for learners and staff for:</p> <ul style="list-style-type: none"> Informal learning Collaboration Independent work Socialising Rest/ Break 	Forum / Hearth	Refer to TAFE NSW Learning Support Spaces Design Standard	-	-
Forum / Hearth	<p>Day to day: Foyer, large group briefing and demonstration, informal gathering, collaboration, showcase.</p> <p>Event mode: Formal gathering, Industry talks & training, exhibition of learner work, careers day, etc.</p>	Campus Green Cafe Collaboration Zone Industry Incubators Technology Resource	<p>Open unobstructed floor area to allow re-arrangement of furniture to suit activity.</p> <p>Ability to spill out to other areas such as outdoor space to extend capacity.</p> <p>Ability to plug in specialist services to support multi-mode configurations and uses.</p>	Dependent on project-specific requirements.	Allow 2 sqm per person
Industry Incubator	<p>Provides opportunity for learners to engage with industry and professionals. Spaces bookable or rentable by industry groups and TAFE NSW alumni</p>	Forum / Hearth Technology Resource Specialist Hubs General Learning Hub	Warm-shell set up for potential flexible work space, capability for digitally applied technology engagement.	Dependent on project-specific requirements.	Allow 5 sqm per person
Technology Resource	<p>Centralised location for learners and staff to borrow technology resources such as laptops, headphones, camera, microphones, specialist delivery technology (portable and semi-portable), etc.</p> <p>May include spaces for technology such as VR/AR/ Robotics.</p>	Forum / Hearth Specialist Hubs	<p>May be located within library for campuses with libraries.</p> <p>Consider green screen, recording, projectors to support technology & multimedia.</p>	Dependent on project-specific requirements.	Dependent on project-specific requirements.

4 Technical Sections

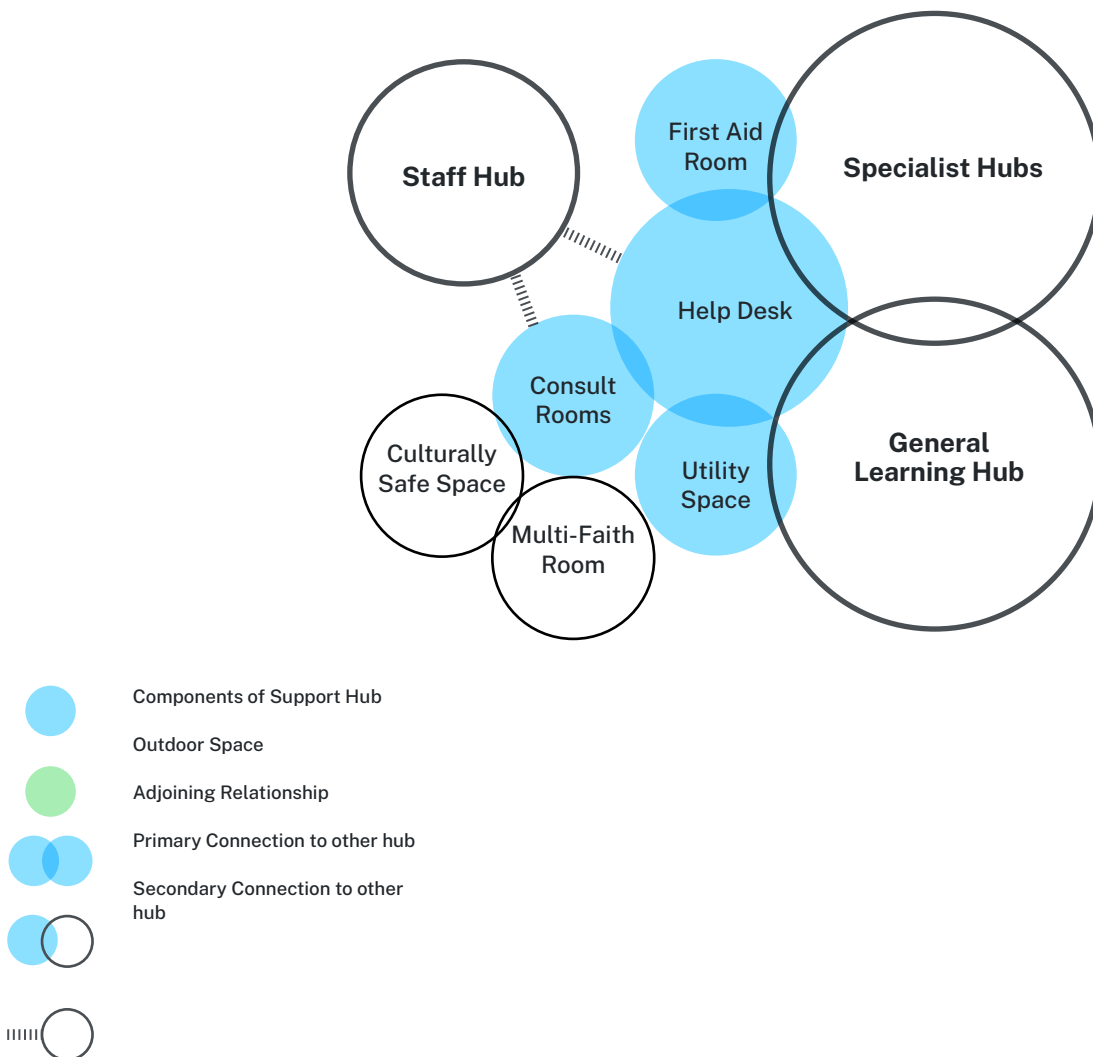
4.3 Hubs and Components

4.3.4 Support hub

Support spaces must be welcoming and feel safe for learners and staff to seek advice, support or assistance with any aspect of their experience at TAFE NSW, including but not limited to Learning, Career, Community, Indigenous, Accessibility & Disability Support. The design of support spaces must:

- Be located where they can be easily accessed by learners and staff, and where similar services are co-located
- Be provided close to other resources and knowledge support hubs such as libraries and staff hub
- Be welcoming and safe for people to seek advice, support and help
- Provide spaces for private meetings and confidential discussion
- Provide informal spaces such as lounge and open booth settings for less sensitive conversations
- Consider other amenities such as tea points.

Diagram 8: Support Hub



4 Technical Sections

4.3 Hubs and Components

4.3.4 Support Hub

Spatial Requirements for the key spaces are shown in the following table.

Refer to Section 4.7 for technical requirements for each space.

Space	Use / Activity	Adjoining Spaces	Spatial Properties / Description	No. Occupants	Area Allowance (sqm / sqm per person)
Consult Room	A private setting for learners to seek help & support from staff.	Help Desk Staff Hub	Welcoming, comfortable friendly space & furniture. Consider strategies for visual privacy.	Up to 4 people	18 sqm
First Aid Room	First Aid Room to treat injuries. A first aid room may be required if: <ul style="list-style-type: none"> There is no other first aid room on site An existing first aid room is not in close proximity to the MTH There are high risk activities occurring in the MTH There is a high volume of learners and the existing first aid space does not have sufficient capacity 	Specialist Hub	Must include: <ul style="list-style-type: none"> Hand wash basin Seating Sick bed / Medical table Antimicrobial finishes 	1 person	12 sqm
Help Desk	Friendly & welcoming point of contact for learners to seek help. Primary use is Support Help/ Enquiry Point. Pending size of facility, it may also function as a reception point for the public.	Consult Rooms Utility Space First Aid Room	Consider: <ul style="list-style-type: none"> Mobile type (mobile/ flexible options where staff is able to roam with laptop or tablets) or fixed type (reception desk) Security / safety of staff Accessibility 	1-2 staff	2 l.m. per staff member, plus accessible service area.
Utility Space	Space for learners to access printing, photocopying and administrative resources.	General Learning Hub Help Desk	Refer to TAFE NSW Workplace Accommodation Design Standard.	-	-

4 Technical Sections

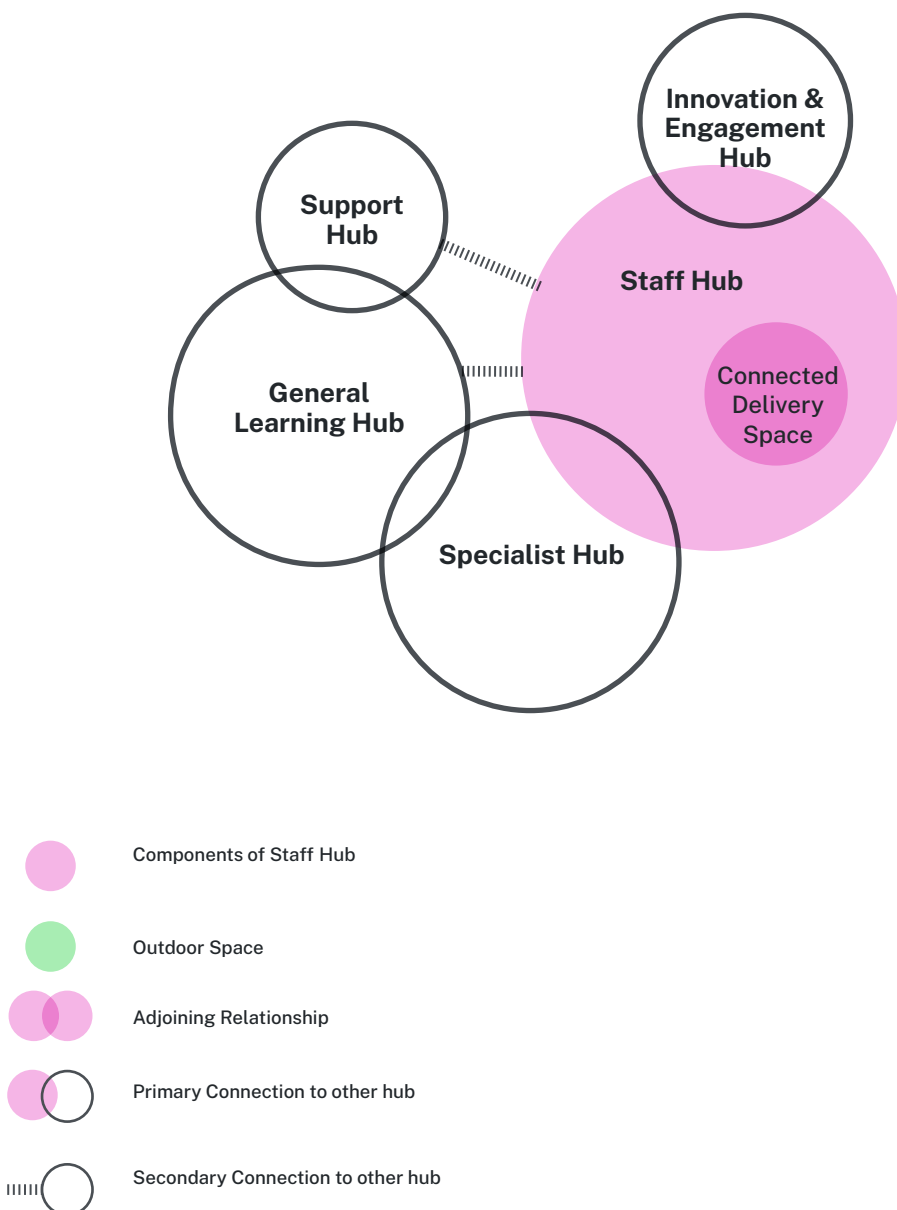
4.3 Hubs and Components

4.3.5 Staff Hub

Staff spaces must be designed to encourage interdisciplinary collaboration. Similar to learning spaces, staff areas must be designed with a diverse range of spaces to meet the differing needs of the staff & the task to be carried out.

Staff spaces must be designed in accordance with the TAFE NSW Workplace Accommodation Design Standard, the TAFE NSW Asset Management Policy and the TAFE NSW Workforce Planning Policy. Staff spaces may be located within the Multi Trades Hub or centrally located elsewhere on site. Each project must determine the requirement for and location of staff spaces in accordance with the relevant policies.

Diagram 9: Staff Hub



4 Technical Sections

4.3 Hubs and Components

4.3.5 Staff Hub

Spatial Requirements for the key spaces are shown in the following table.
Refer to Section 4.7 for technical requirements for each space.

Space	Use / Activity	Adjoining Spaces	Spatial Properties / Description	No. Occupants	Area Allowance (sqm / sqm per person)
Staff Hub	A centralised workspace for teachers and TAFE NSW staff.	Help Desk Consult Rooms Collaboration Zone Specialist Hub	Refer to TAFE NSW Workplace Accommodation Design Standard.	-	-
Connected Delivery Space	A dedicated space for staff to deliver lessons virtually.	Staff Hub	Refer to TAFE NSW CLP Design Standard	-	-

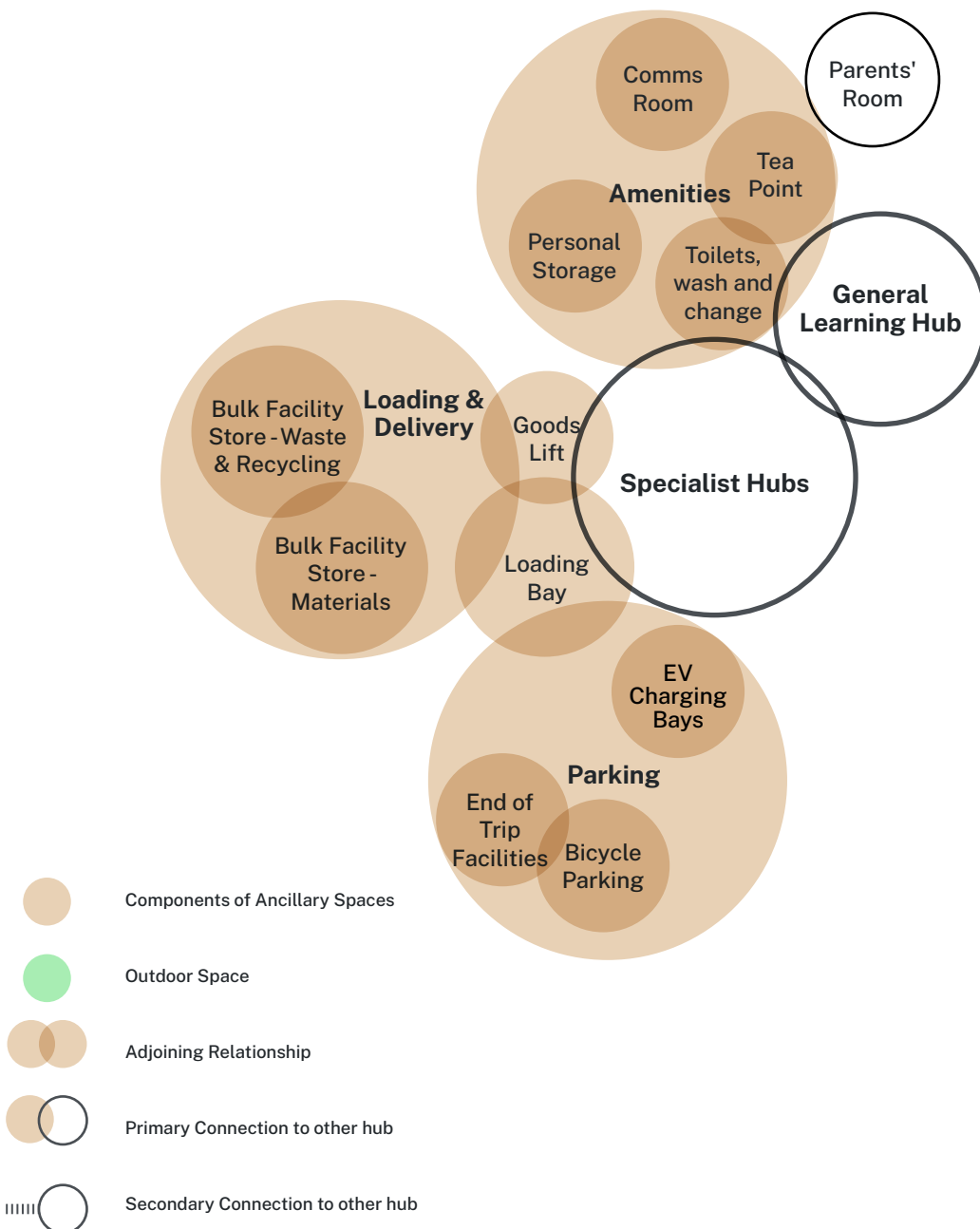
4 Technical Sections

4.3 Hubs and Components

4.3.6 Ancillary Spaces

All ancillary spaces as noted below must be considered as part of a site wide strategy of the provision of services. Where a new Multi Trades Hub is constructed it may increase the staff and learner capacity of the site and additional facilities may need to be constructed to meet the additional demand. Where the site has sufficient capacity to accommodate the increased demand, or there is already site provision of a space that only needs to be provided once per site (such as end of trip facilities or parenting rooms), additional spaces do not need to be provided.

Diagram 10: Ancillary Spaces



4 Technical Sections

4.3 Hubs and Components

4.3.6 Ancillary Spaces

Loading & delivery

Loading & delivery areas will be highly utilised at Multi Trades Hubs. There must be clear delineation of pedestrians & vehicles including forklifts. The loading bay must be in close proximity to goods lifts (for a vertical campus) and resource stores associated with the workshops. This zone must be away from the main entry of the building to prioritise pedestrian safety.

Workflow of materials handling is critical to the success of a Multi Trades Hub. The following workflow must be considered in the loading, delivering and storing of materials:

- Material delivery/ receiving
- Machinery area for cutting down of oversized material
- Transfer of material pallets to bulk storage racking
- Material retrieval from pallet racking to workshop store
- Forklift access

Spatial Requirements for the key spaces are shown in the following table. Refer to Section 4.7 for technical requirements for each space.

Space	Use / Activity	Adjoining Spaces	Spatial Properties / Description	No. Occupants	Area Allowance (sqm / sqm per person)
Bulk Facility Store - Materials	Bulk facility store for materials received through loading bay, including machinery space for cutting of oversized material.	Loading Bay Specialist Hub Goods Lift	Usable and efficient layout based on bin / hopper sizes, pallet / stillage modules and maneuvering requirements for forklifts and waste collection vehicles	-	Dependent on project-specific requirements.
Bulk Facility Store - Waste & Recycling	Bulk facility store for waste and recycling.	Loading Bay Specialist Hub Goods Lift	Usable and efficient layout based on pallet / stillage modules & clear forklift circulation paths.	-	Dependent on project-specific requirements.
Goods Lift	Goods lift for movement and handling of bulky or heavy equipment and materials between floors.	Loading Bay Specialist Hubs Bulk Facility Stores	Refer to TAFE NSW Vertical Transport Design Standard	-	To suit pallet modules & material sizes
Loading Bay	Delivery, loading & unloading of material from cars and trucks, located away from main building entry.	Bulk Facility Storage Specialist Hubs Mobile Training Units	Must include: <ul style="list-style-type: none"> ▪ Truck clearance zones ▪ Forklift vehicle circulation 	-	Dependent on project-specific requirements.

4 Technical Sections

4.3 Hubs and Components

4.3.6 Ancillary Spaces

Parking

Carparking must be carefully considered as some staff and learners often need to carry tools and equipment. In addition to statutory and sustainability obligations, a site specific transport assessment should be undertaken to determine parking requirements. The location of accessible parking and bicycle parking should be prioritised over general car parking.

Car parking for electric vehicles must be in accordance with the TAFE NSW Electrical Design Standards and TAFE NSW Sustainable Design Standard. Sites may have independent requirements for fleet vehicles and general use EV charging bays. In addition, some forklifts and other utility vehicles require access to charging infrastructure.

Spatial Requirements for the key spaces are shown in the following table. Refer to Section 4.7 for technical requirements for each space.

Space	Use / Activity	Adjoining Spaces	Spatial Properties / Description	No. Occupants	Area Allowance (sqm / sqm per person)
Car Parking	<p>Where additional car parking is required, provide car parking as per Statutory requirements and Sustainability strategies.</p> <p>Review TAFE NSW Mobile Training Unit fleet interface with the Hub, and allow for setup, parking and maintenance areas as/where required</p>	Mobile Training Units adjacent workshops / covered outdoor workshops	<p>Car parking must include accessible spaces as per Statutory requirements.</p> <p>Provide:</p> <ul style="list-style-type: none">▪ Bicycle parking▪ Parking for Mobile Training Units	Dependent on project-specific and site-specific requirements	-
EV Charging Bays	In addition to any fleet or general EV charging provided in accordance with the TAFE NSW Electrical Design standard, EV parking and charging spaces for forklifts and other utility vehicles may be required as per Statutory requirements.	Car Parking	Spaces for forklifts and utility vehicles to be located near workshops and stores	Dependent on project-specific and site-specific requirements	-

4 Technical Sections

4.3 Hubs and Components

4.3.6 Ancillary Spaces

Amenities

Other key Ancillary Spaces must be distributed across the site or the Multi Trades Hub where additional facilities are required. Ensure easy and fast access from learning & working spaces. Ancillary spaces may include:

- Toilets, wash and change rooms
- End-of-trip facilities
- Personal Storage
- Tea Point
- Comms Rooms

Spatial Requirements for the key spaces are shown in the following table. Refer to Section 4.7 for technical requirements for each space.

Space	Use / Activity	Adjoining Spaces	Spatial Properties / Description	No. Occupants	Area Allowance (sqm / sqm per person)
Toilets, wash and change rooms	Toilets, wash and change facilities for Workshops	Workshop Personal Storage General Learning Hub End of Trip Facilities	Distributed in large Multi Trades Hubs	Calculation of staff and learner toilet provisions as per statutory requirements	-
End of Trip Facilities	Toilets, wash and change facilities for commuters arriving by bicycle	Bicycle Parking Personal Storage Workshop	Can be co-located or combined with amenities serving workshops	Dependent on project-specific and site-specific requirements.	-
Personal Storage	Storage of personal effects through lockers	Specialist Hubs Staff Hub Learner Commons Change Facilities	Refer to general requirements for storage in Section 4.4. If located in circulation areas, allow additional 800mm in front of lockers to avoid congestion in corridors.	Dependent on project-specific requirements.	Dependent on project-specific requirements.
Tea Point	Refer TAFE NSW Learning Support Spaces Design Standard	Learner Commons Distributed evenly throughout the building	-	-	-
Comms Room	Refer TAFE NSW Structured Cabling System Specification	-	-	-	-

4 Technical Sections

4.4 General Requirements

This section identifies general requirements which must be considered when planning, designing and delivering a Multi Trades Hub.

4.4.1 Structural Requirements

Structural System

- The structural system must be designed with flexibility and adaptability in mind.
- The structural grid should be designed to a modular grid which allows modular sizing of rooms and spaces.
- Columns:
 - For spaces with large spans such as workshops, offices or industry incubator spaces, a regular column grid should be established to suit the use of the space
 - For small spaces that sit within a single column grid such as classrooms, meeting rooms or similar spaces columns must be integrated in walls. Columns set within small spaces should be avoided to allow for flexible room configurations and a safe learning and working environment.
- Structural design loads must be calculated to accommodate the intended equipment, machinery and vehicles, including but not limited to forklifts, trucks, heavy equipment and storage racking systems.
- Where appropriate, spare loading capacity on floors should be considered to allow for flexible use of spaces and easy re-configuration of equipment.
- Where workshops are located above work / learning spaces slab isolation must be provided.
- Investigate opportunities or innovations to use the building as a learning tool and enrich learning delivery. Opportunities include making building elements visible such as exposed structure, exposed connections or exposed services.

4.4.2 Design Requirements

Rooms and Spaces

- When designing room configurations, design spaces to not limit future flexibility. Rooms and spaces must be able to be re-configured easily by allowing for the ability to up-size or downsize should the need arise in the future.
- Sizes of rooms and spaces must be determined by learner group sizes and based on the following learner-to-teacher ratios.
 - 20:1 or 25:1 - general teaching areas
 - 18:1 - workshops / labs with low/medium risk activities
 - 9:1 - workshops / labs with high risk activities
 - 6:1 - workshops / labs with very high risk activities
- Room sizes should be based on modular sizes. Room dimensions should be rounded to the nearest whole number.
- Every teaching space must have the capability for connected learning. Room sizes must accommodate connected learning and delivery as per the TAFE NSW Connected Learning Points Design Standard.

4 Technical Sections

4.4 General Requirements

Room Heights

- Spaces with particular functions or equipment must be provided with a room height to support the intended activity. The room height must be determined in conjunction with the project stakeholders. Examples of activities which require additional room height include:
 - Plumbing stacks
 - Working at heights
 - Rigging and dogging
 - Ship building
 - Storage areas with stillage or other racking systems
 - Bulk material transportation routes.
- Review the requirements of all training packages to be delivered and assessment task requirements to determine required ceiling heights of spaces
- Review requirements of any equipment to be used including forklifts, elevated work platforms, pallet stackers, etc. to determine required ceiling heights of spaces

Circulation

- All circulation must be accessible. It includes circulation around furniture, joinery, fixtures, equipment & machinery within workshops.
- The hierarchy of circulation routes and workflows must be defined in the planning process.
- Pedestrian, vehicular and forklift routes must be separated and clearly identified via line markings. Cross overs are to be avoided where possible.
- An appropriate minimum width of circulation pathway is to be maintained throughout. If equipment like lockers or tea points are provided alongside circulation pathways, additional space of 800mm depth in front of the equipment is to be provided to avoid encroachments into the circulation path.
- The following circulation widths must be provided. The dimensions stated below are minimum widths and must be adjusted up in accordance with project specific population numbers and other project specific requirements. Provisions for passing and turning must be provided in accordance with statutory accessibility requirements.
 - Primary circulation such as public corridors: min. 2.1 m
 - Secondary circulation within staff areas: min. 1.6 m
 - Secondary circulation within general learning areas: min. 1.6 m
 - Circulation routes for forklifts: 4.5 m
- Covered pathways from the car park to the main building entry should be considered to provide safe passage and shelter from sun and rain. As a minimum a covered pathway must be provided from accessible car spaces to the main building entry.
- Resources handling and delivery requirements must be considered in all circulation provisions.

4 Technical Sections

4.4 General Requirements

Handling and Deliveries

- The work flow of activities from the delivery of materials & equipment, their storage, distribution and their use inside the teaching areas must be mapped out and planned for to ensure a safe and well functioning learning environment.
- The requirements for the handling of materials must be established at the planning phase with the relevant stakeholders and must be based on frequency and sequence of deliveries, type and size of materials being delivered, whether these materials need to be cut down before being stored and how often they are used for teaching.
- Transportation routes within the building need to allow for appropriate clearances for forklifts, trolleys, etc. Including the dimensions of materials being transported. Doorways are to be adequately sized and provide the same clearances as the main pathway.
- Confirm requirements for materials handling equipment such as forklifts, elevated work platforms (EWP), pallet stackers, etc. Provide charging bays, parking locations, ventilation and all spaces required to suit the selected systems for the project.

Storage

- Storage areas should be shared between workshops and must be positioned in a central location. Shared storage may include stores for tools, equipment, machinery and repairs, materials and learner projects. Storage must be designed to suit the specific needs of the project and the tools or equipment being stored. Refer also to the TAFE NSW Electrical Services Design Standard, TAFE NSW Mechanical Services Design Standard, TAFE NSW Storage Space - Safe Design Guideline, and any TAFE NSW policies regarding store operations.
- Storage areas must be designed to accommodate storage systems like stillage, cages and racking systems and the safe movement of vehicles such as forklifts and pallet stackers, etc. The type of storage system must be determined during the planning phase with relevant stakeholders.
- Storage within individual workshops / labs which store specialist tools and equipment must be located in mobile storage units or in fixed storage units located to the room periphery. A maximum of 85% of work benches should have under bench storage with a minimum of 15% to be provided without under bench storage for accessibility.
- Storage in general learning areas must be located in storage cupboards to the room periphery and provide space for teaching peripherals and technology. Individual ownership is not intended for this shared storage.
- Personal storage for learners must be able to accommodate personal tools / tool box, PPE equipment and a carry bag. This storage can either be fixed learner lockers distributed throughout the learning areas or mobile storage units. For further details and locking requirements, refer TAFE NSW Furniture Design Standard.
- Storage in staff areas should be integrated into general work spaces.
- All storage must be lockable.
- Hazardous chemical storage must be in accordance with relevant statutory codes and regulations.

4 Technical Sections

4.4 General Requirements

Daylight Access

- Seek opportunities to provide more natural daylight than required under the NCC for any spaces where staff, learners and visitors are occupying. Balance requirements for natural light with the TAFE NSW Sustainability Design Standard and any competing statutory requirements.
- Glare control measures such as blinds, screens and other shading elements must be provided to those spaces to ensure a high level of user comfort.
- Daylight access is required to be coordinated with any project specific sustainability benchmarking requirements.

Natural Ventilation

- A higher level of natural ventilation must be provided to spaces where learners, staff and visitors are spending a considerable amount of time and where room functionality permits it.
- For all working or learning spaces natural ventilation should be provided at a rate of 50% greater than the minimum required by AS1668.4 2012.
- Natural ventilation is required to be coordinated with any project specific sustainability benchmarking requirements.

Acoustics

- Section 4.6 outlines general requirements which must be considered in the acoustic design of the Multi Trades Hub. Further acoustic assessment must be undertaken for each specific project.
- Rooms and spaces which provide connected learning must be designed with the appropriate level of acoustic separation, internal noise level and reverberation control. Refer TAFE NSW Connected Learning Point Design Standard for further details.

Furniture

- For details on furniture selection refer to TAFE NSW Furniture Design Standard
- Furniture should be mobile and easy to move to allow for easy re-configuration of room layouts
- Provide a variety of furniture settings to enable choice of learning and working environments
- Allow for appropriately sized work surfaces for the activities taking place.

4 Technical Sections

4.4 General Requirements

4.4.3 Services Requirements

Services - General

- Building services infrastructure must be designed with adaptability in mind.
- A services grid must be defined in the planning process and should be based on a modular grid for ceiling and floor services.
- Services provisions must be located to the room periphery where possible to allow for flexible space configurations.
- Spare capacity for services and spare access points like power points etc. Must be provided in accordance with the TAFE NSW Electrical Services Design Standard.
- All building services must comply with relevant codes and regulations as a minimum. The sustainability strategy for building services must be established early on in the planning phase.
- Building services should be made visible where possible to provide learners with the opportunity to see the learning content applied in real life.
- The provisions for building infrastructure such as services cupboards, risers and plant rooms must be considered early on in the design and coordinated with requirements for access, ventilation, acoustics and fire safety.

Audio Visual

- The audio visual design including hearing augmentation must comply with statutory requirements as a minimum.
- Every teaching space including workshops must have the capability for connected learning. The AV provisions must comply with the requirements of connected learning and delivery as per the TAFE NSW Connected Learning Points Design Standard.
- Some spaces may require specialist AV provisions for presentations, display or room-enabling interface with technology such as VR, AR, Robotics and the like. Refer technical data sheets in section 4.7.

Electrical and Lighting

- The electrical and lighting design must comply with statutory requirements, and TAFE NSW Electrical Services Design Standard and TAFE NSW Lighting Services Design Standard.
- Every teaching space must have the capability for connected learning. The electrical and lighting provisions must comply with the requirements of connected learning and delivery as per the TAFE NSW Connected Learning Points Design Standard.
- Some spaces may require specialist electrical and lighting provisions. Refer technical data sheets in section 4.7.

4 Technical Sections

4.4 General Requirements

Information and Communication Services

- Information and communications systems must comply with statutory requirements, TAFE NSW Structured Cabling System Specification and TAFE NSW SCS Specification for Patch and Fly Leads.
- Information and communications systems must provide for specialist lighting control systems such as DALI, specialist electrical systems, CCTV and other security systems and building management systems. Design requirements must be established at the planning phase in consultation with the TAFE NSW Systems Group to ensure sufficient provision and appropriate systems are implemented into the design.
- The location and size of comms rooms including cable runs and connections to external infrastructure must be considered early on in the planning phase and integrated into the spatial design.
- Wifi must be provided throughout the whole Multi Trades Hub including outdoor learning areas.
- Data points must be provided to all spaces in the Multi Trades Hub except for ancillary spaces like amenities and store rooms where not required.
- Where spaces are provided for use by external industry partners e.g. industry incubators, a separate information and communications network must be provided.

Hydraulic

- The hydraulic design must comply with statutory requirements and the TAFE NSW Hydraulic Services Design Standard.
- Some spaces may require specialist hydraulic provisions. Refer technical data sheets in section 4.7.

Mechanical

- The mechanical design must comply with statutory requirements and the TAFE NSW Mechanical Services Design Standard.
- Extraction systems for fumes / dust / gas must be provided to suit specialist equipment requirements. Identify the required system and spatial requirements in the planning phase of the project. Undertake an assessment of the cost/benefit of mobile versus reticulated extraction and confirm proposed system with the TAFE NSW Project Lead to suit the project specific requirements.
- Coordinate selected extraction system requirements including exhaust locations, locations of extraction units, emptying and collection of waste.
- The mechanical design will have a significant impact on sustainability outcomes and the sustainability strategy must be established early on in the planning phase. Natural ventilation must be part of the sustainability strategy. Refer to the TAFE NSW Sustainability Design Standard.

4 Technical Sections

4.4 General Requirements

4.4.4 Operation & Management Requirements

Building Management

- All learning spaces, meeting or consultation rooms and shared staff work points must be provided with a room booking system for efficient use and management of spaces.

Security

CCTV

- Design standards and system must comply with NSW legislative requirements and Australian Standards. The system must seamlessly integrate with TAFE NSW existing platform and fully comply with TAFE NSW CCTV standards and specification requirements

Alarm system

- Design standards and system must comply with Australian Standards. The system must seamlessly integrate with TAFE NSW existing platform and fully comply with TAFE NSW Alarm standards and specification requirements

Access control

- Design standards and system must comply with Australian Standards. Using the TAFE NSW smart campus design standards as key principles, the access control system must seamlessly integrate with TAFE NSW existing platform, including learner identification cards, printers, carpark and building access. Readers must be multi format and blue tooth enabled. The system must fully comply with TAFE NSW Access standards and specification requirements

Safety

- Work health and safety must be considered a priority when planning, designing or delivering a Multi Trades Hub.
- Safety requirements for workshops must follow relevant regulatory codes. This includes but is not limited to emergency shut off, emergency shower and eye wash bay, safety floor markings etc. This is not intended to be an exhaustive list.
- Safe access to and around machinery and equipment must be provided in accordance with regulatory requirements. Control measures such as controlled access and egress points to spaces where machinery or equipment is located must be reviewed and implemented to project specific requirements.
- High risk activities in workshop areas must be separated from activities or storage of materials which can increase the risk in workshop areas. Ensure separation is achieved either through location or adequate separation measures.
- High risk activities (i.e. Welding) must not be located in shared areas.
- Workshops must provide clear sight lines for staff overseeing learner activities.

4 Technical Sections

4.5 Work Health & Safety

4.5.1 General Requirements

The "Common Work Health & Safety Concerns" table identifies common Work Health & Safety concerns that have been identified from past TAFE NSW projects. Each project team must demonstrate that all safety concerns raised have been addressed as part of their involvement with any project to which this Design Standard applies. The safety concerns listed in the table must be included in project-specific Safety-in-Design Registers to ensure that project teams demonstrate how they have been addressed through all phases of any project.

Please note the information in the table is:

- For guidance only,
- Not exhaustive and does not take into account specific circumstances and should not be relied on in that way, and
- Does not alleviate the respective TAFE NSW team, designer, supplier or contractor from their own Work Health and Safety obligations and duties.

Legend	Level of Risk	Action Required
H	High	Implement cost effective risk control measures, and formalise procedures or management responsibility for reducing risk. Amend design to reduce risk, or seek alternative option. Only accept option if justifiable on other grounds.
M	Moderate	Incorporate cost effective risk control measures within the scope of long-term planning. Management responsibility must be specified. Check that risks cannot be further reduced by simple design changes.
L	Low	Manage by routine procedures. Check that risks cannot be further reduced by simple design changes.
Y	Yes	Action Required

4 Technical Sections

4.5 Work Health & Safety

4.5.2 Common Work Health & Safety Concerns

Safety concern raised	Potential Control or Treatment measure	Reference to Design Standards / Statutory Requirements	Level of Risk	Phase: Project Delivery	Phase: Design	Phase: Construct, Supply, Install	Phase: Operation and End use
Slips/trips/falls	Covered by statutory requirements	NCC/AS	M	-	Y	Y	-
Access to Machinery and providing adequate space around equipment	This Design Standard provides general requirements for access, egress and around equipment. Project specific assessment. To comply with statutory and project specific requirements.	NCC/AS, Section 4.4	M	-	Y	Y	-
Manual handling	This Design Standard provides general requirements for movement pathways that allow use of forklift or other handling equipment e.g., Width of doorways	NCC/AS, Section 4.4	H	Y	Y	-	-
Acoustic separation from loud and quiet spaces	Acoustic separation	NCC/AS, Section 4.6	M	-	Y	Y	-
Hazardous Chemical Storage	This Design Standard provides general requirements for storage of hazardous chemical storage. Project specific assessment. To comply with statutory and project specific requirements.	NCC/AS, Section 4.4	H	Y	Y	-	-
Commissioning & decommissioning equipment	To comply with statutory and project specific requirements.	NCC/AS, TAFE NSW Electrical Services Design Standard	M	Y	Y	-	-
Radiation issues	Project specific assessment. To comply with statutory and project specific requirements.	NCC/AS	M	Y	-	-	-
Fire & emergency	Emergency evacuation, warning & egress to statutory and project specific requirements	NCC/AS	M	Y	-	-	Y
Separation of high-risk activities	Risk assessment of multi trade activities to establish activities that should not coexist.	NCC/AS Section 4.4	H	Y	Y	-	-
Lack of general ventilation	This Design Standard provides general requirements for ventilation of spaces.	NCC/AS, Section 4.4	M	Y	Y	-	-
Dust & fumes from specific activities	To comply with statutory and project specific requirements.	NCC/AS	M	Y	-	-	Y
Isolation of services	Comply with common methods of isolating services	NCC/AS, TAFE NSW Electrical Services Design Standard	H	-	Y	Y	-
Lack of line of sight for high-risk trades	This Design Standard provides general requirements to allow line of sight for staff for specific activities	NCC/AS, Section 4.4	H	-	Y	-	-
Security for workshops	Access controls to be specified for specific activity workshops	NCC/AS, Technical Data Sheets	H	-	Y	Y	-

4 Technical Sections

4.5 Work Health & Safety

Safety concern raised	Potential Control or Treatment measure	Reference to Design Standards / Statutory Requirements	Level of Risk	Phase: Project Delivery	Phase: Design	Phase: Construct, Supply, Install	Phase: Operation and End use
Lack of secure area for staff	Review of Design Standards for staff areas	TAFE NSW Workplace Accommodation Design Standards	M	Y	Y	-	-
High temperature within Hub	Air-conditioning / heating design to provide user comfort to comply with statutory, environmental and project specific requirements.	NCC/AS	M	-	Y	Y	-
Paths of travel	Consideration of forklift / machinery paths and how they will be defined / separated from pedestrian access	NCC/AS, Section 4.4	H	Y	Y	Y	-
Access to hazardous equipment / activities	Designating which activities (i.e. Welding) are high risk and not to be contained in shared spaces	NCC/AS, Section 4.4	H	-	Y	Y	Y
Specific fire & explosion risks	Risk assessment of project specific activities	NCC/AS, Section 4.4	H	Y	Y	-	Y

4 Technical Sections

4.6 Acoustics

The purpose of this section is to describe specific acoustic considerations relevant to the future design of TAFE NSW Multi Trades Hub spaces and provide stakeholders with conceptual level items to inform design development. Further acoustic assessment must be undertaken for each specific project.

4.6.1 General

Spatial Components

The space types have been identified as comprising key components of the TAFE NSW Multi Trades Hub:

- Specialist workshops
- Forum/hearth
- Innovation & Engagement
- General learning
- Staff
- Amenities

From an acoustic perspective, some typologies comprise specific room uses requiring disparate acoustic requirements. On this basis the following room uses are covered in this Design Standard, with room uses likely to fall under one or more typology:

- Practical Spaces and Workshops
- General Learning Spaces
- Amenities
- Staff Common
 - Pods, conference and meeting rooms
 - Offices, work points, open collaborative space
- Support spaces
 - Meeting rooms and counselling
 - Offices, reception, first aid, study zone
- Innovation, Public Showcase and Engagement Spaces
 - Innovation and engagement spaces
 - Simulation VR/AR
- Cultural Spaces
 - Private Spaces, multi-purpose spaces, library space
 - Café, lounge, kitchenette, restaurant, recreation and leisure
- Corridors, circulation
- Covered outdoor learning
- Car park, loading and delivery

Key Acoustic Requirements

Key acoustic requirements comprise acoustic separation, internal noise levels and reverberation control. These attributes will vary according to use. In many instances the multi-purpose use of a space will impose differing acoustic demands, and it will be necessary to encapsulate these in the acoustic design.

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4.6 Acoustics

4.6.2 Acoustic Separation

Acoustic separation between spaces is required to ensure that:

- Noise levels arising from the use of a room or space does not impair the proper functioning of an adjacent room or space;
- Sufficient speech privacy is maintained between rooms or spaces in order to maintain the required degree of confidentiality or minimise distraction; and
- Noise from plant and equipment does not impair the proper functioning of an adjacent room or space.

Acoustic separation of adjacent spaces is typically achieved through the inclusion of internal walls or partitions, providing physical separation between rooms with competing use. Where an open plan teaching methodology is sought, physical separation of spaces is not typically feasible.

Due to the wide range of spatial layouts that may be developed for TAFE NSW Multi Trades Hub spaces, it is not feasible to document acoustic performance specifications for all eventualities. All stakeholders should be aware that where an open teaching methodology is sought, and internal physical partitions are not provided, limited options will be available for the control of noise transfer between adjacent or connected spaces.

Careful consideration will be required by any future design team to ensure a balance is found between open spaces and operational flexibility, and the need to adequately control noise transfer. This will require specialist acoustic input at the earliest stages of the design process.

The following sections outline general considerations with respect to acoustic separation. This information should be used to inform the spatial arrangement of a TAFE NSW Multi Trades Hub and provide a starting context for project specific acoustic design.

Categorisation

The required separation will depend on the noise levels within the noise source room, and the tolerance of the adjacent room or space to intruding noise.

Control of sound transfer between spaces is defined by the categories on the following page.

The term D_w in the following schedule is a reference to the difference in sound level between the built noise source space and the built receiver space, in decibels. It is the sound reduction between the spaces including all parts of the separation elements such as partitions, glazing doors, openings and services penetrations.

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4.6 Acoustics

Legend	Acoustic Separation	Requirements
VH	Very High	<ul style="list-style-type: none">Where a space with intense and noisy activities, such as a workshop, is adjacent a space that has a low tolerance to noise intrusion, such as a meeting room or teaching space.Where a space where confidential discussions are carried out, such as a counselling or meeting room, is adjacent a space that is accessible to others that are not intended to be included.Very high levels of acoustic separation will not be feasible with an open teaching methodology. Specialist acoustic design, outside the scope of this design guide, will be required.Acoustic performance for partitions related to this category should be in the order of Dw 50+The higher Dw performance related to this category indicates that the planning layout in terms of acoustic separation is not optimal and further physical separation would be preferred.
H	High	<ul style="list-style-type: none">Where a space with reduced levels of noisy activities, such as a kitchen or a room with AV presentation, is adjacent a space that has a low tolerance to noise intrusion, such as a meeting room or teaching space.Where a space where confidential discussions may occasionally be carried out, such as a meeting room, is adjacent a space that is accessible to others that are not party to the discussions. These spaces will offer a reduced level of privacy compared to spaces specifically designed for confidential discussions and lower voices levels are required in the event that confidential privacy is required.Acoustic performance for partitions related to this category should be in the order of Dw 40-50
M	Medium	<ul style="list-style-type: none">Where a space with moderate levels of activity noise, such as a general learning space, is adjacent to another similar space and minimisation of distraction is required in order that the use of both spaces can occur simultaneously.Where only a moderate level of speech privacy is required and confidentiality is less important, and only requiring reduction of voice levels from once space to another to minimise distraction. Conversation may be understood in the adjacent space on occasions.Acoustic performance for partitions related to this category should be in the order of Dw 30-40
L	Low	<ul style="list-style-type: none">Where two adjacent spaces both have high tolerance to intruding noise such as an amenities space, but a physical barrier to noise is still required.The space is not one where confidential conversations of any sort are carried out and therefore not requiring a formal target for the dividing systemsAcoustic performance for partitions related to this category should be Dw 30

4 Technical Sections

4.6 Acoustics

Impact Isolation

Where populated spaces are located above each other, separated by a ceiling/floor system, control of impact noise must be provided.

Impact isolation targets are not prescriptively provided in this design guide and specialist acoustic input will be required by the project design team.

Similar to acoustic separation developed spatial layouts must avoid placing high noise spaces, such as workshops above noise sensitive spaces such as meeting rooms or similar. Where such arrangements are unavoidable, high levels of impact noise control should be expected comprising provision of acoustically rated suspended ceilings and similar design solutions.

Discontinuous Construction

Spaces that are likely to impart structural impact noise horizontally to an occupied space adjacent require that the partition interface is of discontinuous construction. The following indicates example applications (but not limited to) for a discontinuous partition:

- Partitions with toilets, basins and water services attached
- Partitions adjacent a work bench where tools, machinery and equipment are operated
- Partitions with cupboards or cabinetry attached. Typical sources of impact noise arising from cupboards or cabinetry are the placing of objects such as tools and equipment inside cabinets or the closing of cupboard doors. To be assessed further on a project specific basis.
- Partitions that could be exposed to impacts under normal usage and activities

4.6.3 Internal Noise Levels

The noise level within a space will be due to a contribution from services such as air conditioning and noise ingress from the outside environment.

Internal room noise levels categories and associated design targets, described in terms of Noise Rating, NR as defined in ISO 1996-1:2016(en) Acoustics – Description, measurement and assessment of environmental noise – Part 1: Basic quantities and assessment procedures are detailed below.

Internal Noise Category	Noise Levels
Utility	NR 45 +
High	NR 40-45
Medium	NR 35-40
Low	NR 30-35
Very Low	NR 25-30

4 Technical Sections

4.6 Acoustics

4.6.4 Reverberation Times

Acoustic absorbent finishes are required for internal and covered spaces in order to provide satisfactory acoustic conditions. Satisfactory acoustic conditions typically refer to internal noise levels, speech intelligibility and compatibility with conferencing and audio-visual systems.

Reverberation control requirements are defined by the following categories:

Bulk

- For spaces expected to include noisy activities or plant and equipment.
- Necessary to control reverberant noise level build-up within the space and to allow some noise reduction with increasing distance from the noise source.
- Insufficient bulk absorption within a space will mean that noise does not reduce significantly as distance is increased, leading to noise level build-up.
- Bulk acoustic absorption normally requires a significant coverage in the space, typically over the ceiling area and part of the walls as necessary.

Detailed

- For spaces requiring reverberant noise control, specific targets for speech intelligibility, clarity and compatibility with conferencing and audio-visual systems.
- Detailed acoustic absorption specifications will document specific locations for areas of acoustic treatment and the type of treatment applicable to that location.
- The detailed absorption will be located to control specific acoustic reflections between adjacent and opposite surfaces within the room such that speech and audio sources are clearly understood.
- The specification will be required to meet specific speech intelligibility and clarity targets such that the space is suitable for its intended use.

4.6.5 Spatial Application

The key acoustic requirements, and their categories, have been applied to the TAFE NSW Multi Trades Hub spatial components. This information is provided to highlight critical acoustic considerations in developing the early design and spatial arrangements for TAFE NSW Multi Trades Hub spaces.

Due to wide variety of possible arrangements, and characteristic competing uses of development spaces, specific acoustic input will be required on each project, tailored to the developed project design.

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4.6 Acoustics

The provided spatial application table must be reviewed when considering the placement of spaces in relation to each other. For acoustic separation, the higher requirement is considered the critical design path e.g. for a workshop adjacent to a staff meeting room, the acoustic separation category would be 'Very High'.

Where spaces of similar acoustic separation requirements are co-located e.g. workshop next to workshop, indicating a category of 'Very High', it may be feasible to relax the acoustic separation category. This can only be done in considering the typical source room impact generation and receiving room noise tolerance.

4.6.6 Spatial Acoustic Requirements

Innovation and Engagement Hub	Acoustic separation	Internal noise level	Reverberation control
Innovation, Public Showcase and Engagement Spaces - Innovation and engagement spaces	High	Low	Detailed
Innovation, Public Showcase and Engagement Spaces - Simulation VR/AR	Very high	Very low	Detailed
Cultural Spaces - Private Spaces, multipurpose spaces, library space	High	Low	Bulk
Cultural Spaces - Lounge, kitchenette, restaurant, recreation and leisure	High	Medium	Bulk
Cafe	High	Medium	Bulk
Collaboration Zone	High	Medium	Bulk
Forum / Hearth	High	Low	Detailed
Industry Incubator	High	Low	Detailed
Technology Resource	High / Very high	Low	Detailed

Specialist Hub	Acoustic separation	Internal noise level	Reverberation control
Covered Outdoor Workshop	Low	N/A	Bulk
Practical Spaces	Very High	Medium	Bulk
Shared Workshop	Very High	Medium	Bulk
Specialist Workshop	Very High	High	Bulk
Workshop Stores	Very Low	High	Bulk

4 Technical Sections

4.6 Acoustics

4.6.6 Spatial Acoustic Requirements

General Learning Hub	Acoustic separation	Internal noise level	Reverberation control
Group Space (and other General Learning Spaces)	Medium	Low	Detailed
Medium Group Space	Medium	Low	Detailed
Covered Outdoor Learning	Low	N/A	Bulk
Serviced Group Learning Space	Medium	Low	Detailed
Small Group Space	High	Low	Detailed

Support Hub	Acoustic separation	Internal noise level	Reverberation control
Consult Room	High	Low	Detailed
First Aid Room	Medium	Low	Bulk
Help Desk	Medium	Low	Bulk
Learner support - Meeting rooms and counselling	High	Low	Detailed
Learner support - Reception, study zone	Medium	Low	Bulk

Staff Hub	Acoustic separation	Internal noise level	Reverberation control
Staff - Pods, conference and meeting rooms	High	Low	Detailed
Staff - Open offices, work points, open collaborative space	Medium	Low	Bulk

Ancillary Spaces	Acoustic separation	Internal noise level	Reverberation control
Amenities	Low	Utility	Not required
Corridors, Circulation	Very Low	High	Bulk
Carpark, delivery spaces	High	Utility	Not required
Tea point	Medium	Low	Bulk
Bicycle Parking	N/A	N/A	N/A
Bulk Facility Store - Materials	High	Utility	Not required
Bulk Facility Store - Waste & Recycling	High	Utility	Not required
End of Trip Facilities	Low	Utility	Not required
EV Charging Bays	N/A	N/A	N/A
Goods Lift	N/A	N/A	N/A
Loading Bay	High	Utility	Not required

4 Technical Sections

4.7 Technical Data Sheets

The following pages describe the individual requirements for some of the key spaces in the Multi Trades Hub. The Technical Data Sheets must be read in conjunction with all other parts of this Design Standard as well as other referenced design standards.

The design team must assess the requirements for each individual project as some spaces will have particular requirements dependant on the function of the space. Some examples of function specific requirements include:

- Specialist power
 - Three-phase power for specific machinery
 - RCD Body Protection emergency power for Nursing
- Specialist lighting
 - Display lighting for exhibition spaces
 - Lighting for presentation spaces
 - Illumination levels and light temperature for jewellery making, automotive spray painting etc.
- Specialist gas
 - Oxy-acetaline or other welding gasses
 - Generally projects should be progressing to all electric for general building operation, refer to TAFE NSW Sustainability Design Standard
- Specialist extraction (fume / dust / air)
 - Dust extraction for carpentry or woodwork workshops
 - Fume cupboards for laboratories
 - Range hoods for kitchens
 - Refer to TAFE NSW Mechanical Services Design Standard

Abbreviations

Legend	Compliance Level
M	Mandatory -Must comply
S	Site specific -To site specific statutory requirements
O	Optional -Subject to project specific requirements
-	Not required

4 Technical Sections

4.7 Technical Data Sheets

4.7.1 Specialist Hub

Space	Glare Control	AV	Specialist Power	Specialist Lighting	Cold Water	Warm Water	Hot Water	Boiling Water	Specialist Gas	Hand wash	Emergency wash	Heating & Cooling	Specialist Extraction (Fume / dust / air)	Access Control	Room Booking
Covered Outdoor Workshop	-	-	S	S	O	O	O	-	O	O	S	-	O	O	O
Shared Workshop	M	O	S	S	S	S	S	O	O	M	S	M	O	M	M
Specialist Workshop	M	O	S	S	S	S	S	O	O	M	S	M	O	M	M
Workshop Stores	O	-	S	O	O	O	O	O	O	O	S	O	O	M	-

Legend	Compliance Level
M	Mandatory -Must comply
S	Site specific -To site specific statutory requirements
O	Optional -Subject to project specific requirements
-	Not required

This sheet forms part of the Multi Trades Design Standards and must not be separated.

This sheet must be read in conjunction with the abbreviations at the start of this section and General Requirements Section 4.4.

4 Technical Sections

4.7 Technical Data Sheets

4.7.2 General Learning Hub

Space	Glare Control	AV	Specialist Power	Specialist Lighting	Cold Water	Warm Water	Hot Water	Boiling Water	Specialist Gas	Hand wash	Emergency wash	Heating & Cooling	Specialist Extraction (Fume / dust / air)	Access Control	Room Booking
Group learning space	M	M	-	-	-	-	-	-	-	-	-	M	-	M	M
Medium Group Space	M	M	-	-	-	-	-	-	-	-	-	M	-	M	M
Outdoor Learning	-	-	O	O	O	-	-	-	O	O	S	-	-	-	-
Serviced Group Learning Space	M	M	O	O	O	O	O	O	O	O	S	M	S	M	M
Small Group Space	M	M	-	-	-	-	-	-	-	-	-	M	-	M	M

The following spaces are not included in the technical data sheets. Refer separate TAFE NSW documents for details.

- **Connected Learning Space - Individual** - Refer to TAFE NSW CLP Design Standard
- **Connected Learning Space - Group** - Refer to TAFE NSW CLP Design Standard

Legend	Compliance Level
M	Mandatory - Must comply
S	Site specific - To site specific statutory requirements
O	Optional - Subject to project specific requirements
-	Not required

This sheet forms part of the Multi Trades Design Standards and must not be separated.

This sheet must be read in conjunction with the abbreviations at the start of this section and General Requirements Section 4.4.

4 Technical Sections

4.7 Technical Data Sheets

4.7.3 Innovation & Engagement Hub

Space	Glare Control	AV	Specialist Power	Specialist Lighting	Cold Water	Warm Water	Hot Water	Boiling Water	Specialist Gas	Hand wash	Emergency wash	Heating & Cooling	Specialist Extraction (Fume / dust / air)	Access Control	Room Booking
Café	M	-	S	S	M	M	M	M	S	M	-	M	S	M	-
Forum / Hearth	M	M	S	S	-	-	-	-	-	-	-	M	-	M	M
Industry Incubator	M	O	S	S	O	O	O	-	S	O	-	M	S	M	M
Technology Resource	-	O	S	S	-	-	-	-	-	-	-	M	S	M	M

The following spaces are not included in the technical data sheets. Refer separate TAFE NSW documents for details.

- **Learner Commons** - Refer to TAFE NSW Learning Support Spaces Design Standard

Legend	Compliance Level
M	Mandatory - Must comply
S	Site specific - To site specific statutory requirements
O	Optional - Subject to project specific requirements
-	Not required

This sheet forms part of the Multi Trades Design Standards and must not be separated.

This sheet must be read in conjunction with the abbreviations at the start of this section and General Requirements Section 4.4.

4 Technical Sections

4.7 Technical Data Sheets

4.7.4 Support Hub

Space	Glare Control	AV	Specialist Power	Specialist Lighting	Cold Water	Warm Water	Hot Water	Boiling Water	Specialist Gas	Hand wash	Emergency wash	Heating & Cooling	Specialist Extraction (Fume / dust / air)	Access Control	Room Booking
Consult Room	M	O	-	-	-	-	-	-	-	-	-	M	-	M	M
First Aid Room	O	-	-	-	M	M	-	-	-	M	S	M	-	M	-
Help Desk	-	O	-	-	-	-	-	-	-	-	-	S	-	S	-

The following spaces are not included in the technical data sheets. Refer separate TAFE NSW documents for details.

- **Culturally Safe Space** -Refer to TAFE NSW RAP Culturally Safe Spaces Guideline. (currently in development)
- **Multi-Faith Room** -Refer to TAFE NSW Multi-Faith / Quiet Room Guideline and TAFE NSW Learning Support Spaces Design Standard
- **Utility Space** -Refer to TAFE NSW Workplace Accommodation Design Standard
- **Staff Hub** -Refer to TAFE NSW Workplace Accommodation Design Standard
- **Connected Delivery Space** -Refer to TAFE NSW CLP Design Standard

Legend	Compliance Level
M	Mandatory -Must comply
S	Site specific -To site specific statutory requirements
O	Optional -Subject to project specific requirements
-	Not required

This sheet forms part of the Multi Trades Design Standards and must not be separated.

This sheet must be read in conjunction with the abbreviations at the start of this section and General Requirements Section 4.4.

4 Technical Sections

4.7 Technical Data Sheets

4.7.5 Ancillary Spaces

Space	Glare Control	AV	Specialist Power	Specialist Lighting	Cold Water	Warm Water	Hot Water	Boiling Water	Specialist Gas	Hand wash	Emergency wash	Heating & Cooling	Specialist Extraction (Fume / dust / air)	Access Control	Room Booking
Amenities	-	-	-	-	M	M	M	-	-	M	-	-	S	O	-
Bicycle Parking	-	-	-	-	-	-	-	-	-	-	-	-	-	O	-
Bulk Facility Store - Materials	-	-	S	-	O	O	O	-	O	O	S	O	S	O	-
Bulk Facility Store - Waste and Recycling	-	-	S	-	S	-	-	-	-	-	-	-	S	O	-
End of Trip Facilities	-	-	-	-	M	M	M	-	-	M	-	-	S	O	-
Loading Bay	-	-	-	-	O	O	-	-	-	O	S	-	S	O	-

The following spaces are not included in the technical data sheets. Refer separate TAFE NSW documents for details.

- **Car Parking** - Comply with statutory requirements
- **Parking Bays for Mobile Training Units** - Comply with statutory requirements and TAFE NSW specific requirements for mobile training units
- **Parents' Room** - Refer to TAFE NSW Learning Support Spaces Design Standard
- **Personal Storage** - Refer to TAFE NSW Furniture Design Standard
- **Tea Point** - Refer to TAFE NSW Learning Support Spaces Design Standard
- **Comms Room** - Refer TAFE NSW Structured Cabling System Specification
- **EV Charging Bays** - Refer TAFE NSW Electrical Services Design Standard
- **Goods Lift** - Refer TAFE NSW Vertical Transport Design Standard

Legend	Compliance Level
M	Mandatory - Must comply
S	Site specific - To site specific statutory requirements
O	Optional - Subject to project specific requirements
-	Not required

This sheet forms part of the Multi Trades Design Standards and must not be separated.
This sheet must be read in conjunction with the abbreviations at the start of this section and General Requirements Section 4.4.



TAFE Infrastructure NSW
Level 2, Building A, 1 Mary Ann Street,
Ultimo NSW 2007
PO BOX 707, Broadway NSW 2007
02 9338 6600
tafensw.edu.au