

SECTION 2 : HEALTH AND SAFETY

TABLE OF CONTENTS

2.1.	INTRODUCTION.....	3
2.2	INTEGRATING DESIGN AND RISK MANAGEMENT – SAFETY IN DESIGN.....	3
2.2.1	Buildings and Structures Requiring Reviews	3
2.2.2	Design Stages for Review	3
2.2.3	Review Process	5
2.3	GENERAL DESIGN CONSIDERATIONS	6
2.3.1	Space And General Physical Layout	6
2.3.2	Thermal comfort and air quality	7
2.3.3	Flooring and Pedestrian Surfaces.....	7
2.3.4	Light and Lighting	8
2.3.5	Noise	9
2.3.6	Doors and Handles	10
2.3.7	Storage, systems and wall fitments and shelving.....	11
2.3.8	Chemicals	12
2.3.9	Dangerous Goods Stores	13
2.3.10	Portable Fire Extinguishers and Fire Blankets	14
2.3.11	Safety Showers	14
2.3.12	Emergency Eye - Wash Stations	15
2.3.13	Safety Signs	15
2.3.14	Asbestos and Hazardous Materials.....	15
2.3.15	Heights.....	15
2.3.16	Plant.....	16
2.3.17	First Aid Equipment.....	16
2.3.18	Emergency Refuge.....	16
2.3.19	Traffic Management.....	17
2.4	IONISING RADIATION	17
2.4.1	Ionising Radiation Control.....	17
2.5	LABORATORIES	18
2.5.1	General	18
2.5.2	Wet Laboratories	19
2.5.3	Dry Laboratories.....	20
2.5.4	Biological Safety Cabinets, Cytotoxic Drug Safety Cabinets and Fume Hoods	21
2.5.5	Microscope Workstations	21
2.6	OFFICES/ ADMINSTRATIVE AREAS AND TEACHING SPACES	21
2.6.1	General	21
2.6.2	Offices.....	22
2.6.3	Meeting Rooms	22

2.6.4	Service Counters/Reception Desks.....	23
2.6.5	Teaching and Collaborative Learning Spaces.....	24
2.6.6	Lecture Theatres.....	24
2.7	WORKSTATION FURNITURE	24
2.7.1	General	24
2.7.2	Desks.....	24
2.7.3	Computer hardware (Laptop devices) and Monitor Arms	25
2.7.4	Mobile pedestals and tambours (under desk) - <i>See also 2.3.7</i>	26
2.7.5	Tables.....	26
2.8	SEATING- GENERAL REQUIREMENTS AND SPECIFICATIONS	27
2.8.1	Seating– General Requirements and Specifications The type and purpose seating must be considered and shall comply with the latest edition of all relevant Legislation, Standards and Codes including but not limited to:	27
2.8.2	Staff Computer Workstation Chairs.....	27
2.8.3	Student Task Chairs	28
2.8.4	Meeting Room, Interview/Consulting Room Chairs	28
2.8.5	Staff High Desk /Counter (Drafting) Chairs.....	28
2.8.6	Student High Desk Drafting Chairs	29
2.8.7	Wet Laboratory Chairs/stools	29
2.8.8	Examination Room/Seminar Room and Events Chairs	29
2.8.9	Occasional Seating Chairs	30
2.9.10	Lecture Theatre Seating	30
2.9	DESIGN CHANGE AUTHORISATION	31

2.1. INTRODUCTION

The University is committed to providing a safe and healthy working and learning environment. These Design Standards support that commitment by ensuring that health and safety requirements are included in the design of buildings, structures, and landscape works.

This section details the health and safety requirements during the design phase of new works and refurbishment projects.

Project architects and consultants, in designing the building and the contractor during the construction process, shall adhere to:

the latest edition of all relevant Acts, Regulations, Compliance Codes and Standards (listed throughout this Design Standard); and

other relevant sections of the University's Design Standards and documents.

Consultants must be aware of their obligations to carry out risk assessments during the design phase for work areas as per the Occupational Health and Safety Act 2004.

2.2 INTEGRATING DESIGN AND RISK MANAGEMENT – SAFETY IN DESIGN

2.2.1 Buildings and Structures Requiring Reviews

Safety in design (SiD) reviews shall be completed for works associated with the following:

- buildings/structures to be used as workplaces (ongoing or occasional);
- parts of the building/structure including fixtures integral to its use as a workplace;
- temporary structures; and
- roads, footpaths, and landscape areas.

For any design where it can be reasonably expected that people may need to work within, on, or around the building or structure, either as an end-user and/or maintainer of the building or structure, then a SiD review shall be completed.

2.2.2 Design Stages for Review

SiD reviews (Figure 1) shall be carried out in line with the [Model Code of Practice: Safe design of structures](#) (Safe Work Australia). They shall be completed as early in the design process as practicable, during the design phase and throughout the life of the project. This can be outlined as follows:

- pre-design phase (siting, feasibility study);
- conceptual and schematic design phase;
- design development phase;
- construction documentation; and
- construction, refurbishment, or modification.

It is recommended that at each SiD review a representative from each of the following project stakeholder groups is in attendance or is given the opportunity to contribute prior to the review.

Representatives include but are not limited to:

- designers (e.g., building, industrial, landscape, interior);
- architects;
- health and safety consultants and experts;
- people who will be utilising the building/structure as a workplace;
- people who will be constructing the building/structure;
- people who will be maintaining/managing the building/structure and associated facilities.

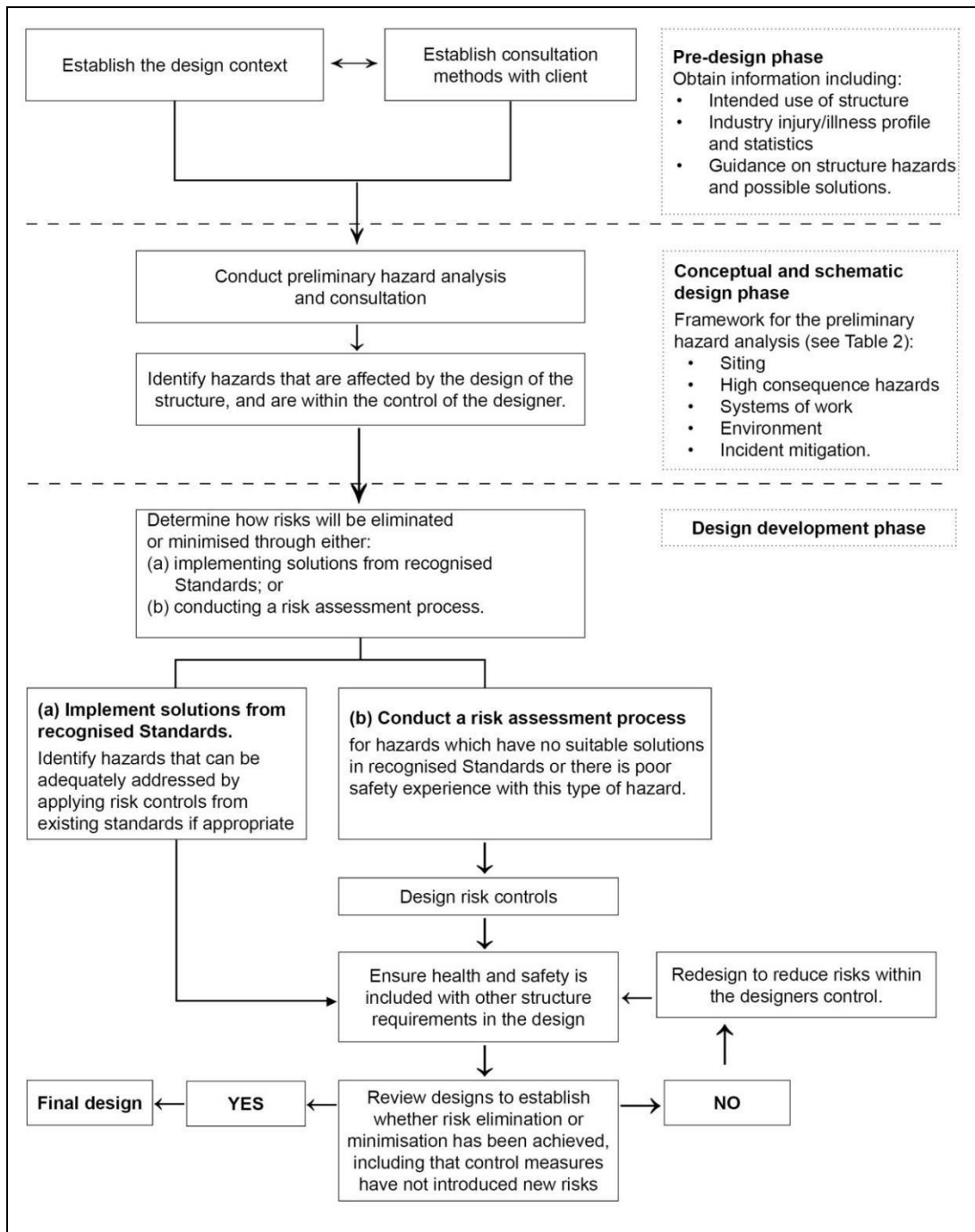


Figure 1: Safe design of structures. Code of practice (SafeWork Australia)

2.2.3 Review Process

The SiD review process throughout each stage of the project is defined in Figure 2.

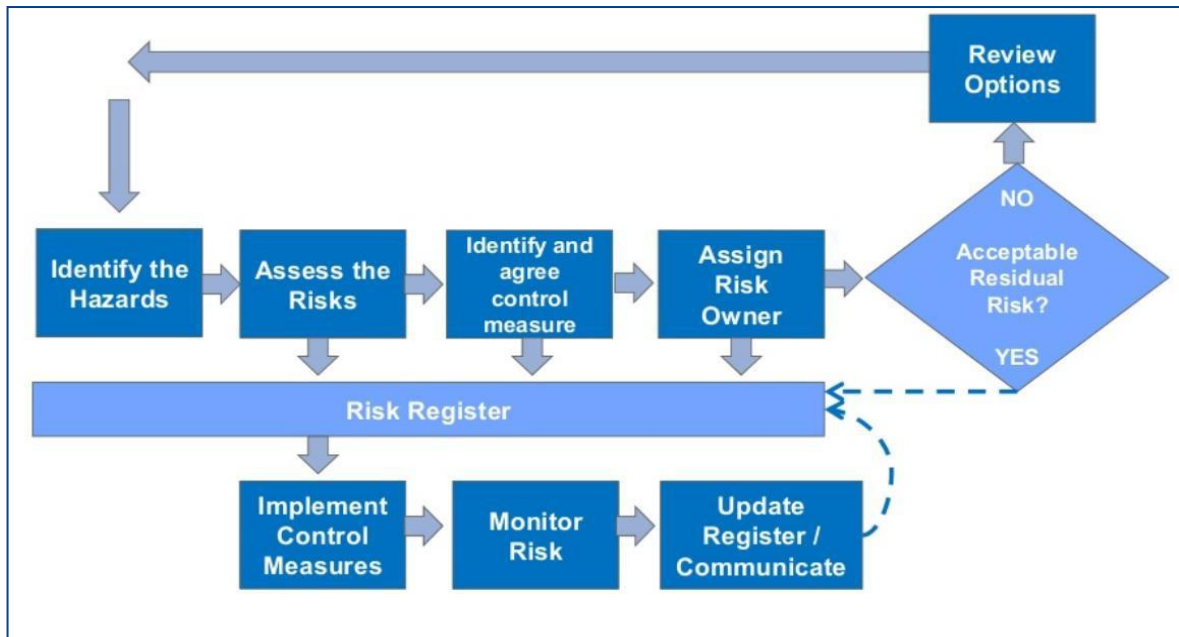


Figure 2: SiD review process (adapted from Hecker, 2011)

SiD reviews shall identify, and control hazards and risks associated with the following:

- the range of work activities associated with the intended use of the building/structure as a workplace, including fixtures integral to its use as a workplace;
- any maintenance, repair, service, and cleaning activities for the building/structure when it is in use; and
- the construction of the building/structure i.e., to make the design safer to build.

The designer shall identify, and control hazards and risks associated with the above activities and inform the University of any high risks in the University's design requirements, and recommend design alternatives that will eliminate or reduce risks arising from the original design.

Outputs from the SiD review shall include the following:

- A SiD review risk register for the design. The following information should be considered for inclusion (as appropriate):
 - design related hazards;
 - area/location of risk exposure; and
 - description of hazard and risk exposure, including existing design control measures;
- estimation of base risk i.e., risk level associated with the identified design-related hazard prior to the inclusion of any additional design control measures:
 - any additional design control measures;
- estimation of residual risk i.e., risk level associated with the identified design, including related hazards after the inclusion of any additional design control measures; and

further actions.

The findings of the SiD review shall be provided to the University Project Manager, who will ensure that this information is provided to all relevant persons.

2.3 GENERAL DESIGN CONSIDERATIONS

As each building project will present a range of different design challenges, and some projects will have unique and specialised requirements, it is not possible to cover all specifications for all scenarios in this section. General design considerations impacting the health and safety of individuals are summarized below. The Project Design team are expected to produce their own specification incorporating the elements of the following information and submit all designs to the University for review prior to any tendering or works commencing on site.

Consultation with the client/user group, University Services Health and Safety personnel and other stakeholders shall occur to understand and confirm the specific work and equipment requirements. This may require observing or analysing the work tasks. This will ensure the design is fit for purpose and optimizes the health, safety, wellbeing, and productivity of users.

Prototyping and trialing mock ups or models where there is a high user interface is recommended

It is expected that all furniture, fittings, equipment, and plant are sourced from the University's preferred suppliers where an agreement is in place.

2.3.1 Space And General Physical Layout

The design of workspaces and general physical layouts shall comply with the latest edition of all relevant Legislation, Standards and Codes including but not limited to:

National Construction Code

AS 1428 (series): Design for access and mobility

AS 1657: Fixed platforms, walkways, stairways, and ladders. Design, construction, and installation

AS1735.12 Lifts, escalators and moving walks, Part 12: Facilities for persons with disabilities

[Officewise – A guide for health and safety in the office](#) (WorkSafe Vic)

[Compliance Code: Hazardous Manual Handling](#) (WorkSafe Vic)

Compliance code. Workplace Amenities and Work Environment (WorkSafe Vic)

When designing for any workspace, it is critical to understand the scope of tasks undertaken in the workspace, the requirement for furniture, equipment and materials, and the way the users operate within their work environment.

Workplace design and layout should enable workstations to be accommodated in the safest configuration.

Space requirements should be based on an assessment that takes into account: the task, the physical actions needed to perform the task, the need to move around while working, whether the task is to be performed from a sitting or standing position, access to and egress from the workstation, the equipment to be handled, accommodation of size, weight and movement of appropriate manual handling equipment through the space and personal protective equipment that might have to be used.

The minimum clear circulation space for users to move and work safely between plant, equipment, structures, and materials shall be 800 mm.

Work processes, interaction with equipment and the handling of materials may justify clearance

around workstation spaces to be increased.

Aisles, passageways and access to cupboards, storage or doors need to be considered in the calculation of accessible workstation space. A clear space of 1000 mm is required in front of a cupboard or filing cabinet.

Minimum corridor widths shall comply with the National Construction Code and AS 1428.1 and generally requires:

- main spine corridors between buildings: 2400 to 2700 mm;
- primary corridors in buildings (main corridor linking rooms on a level): 1800 mm;
- secondary internal corridors linking groups of rooms in a section of a level: 1500 mm; and
- accessible path of travel requires a minimum unobstructed width of 1000mm

Lifts must be available and of an appropriate design and dimensions for transporting any required items between floors

2.3.2 Thermal comfort and air quality

Temperature and air quality levels must be well controlled and/or regulated and shall comply with the latest edition of all relevant Legislation, Standards and Codes including but not limited to:

AS 1668.2: The use of ventilation and air conditioning in buildings. Mechanical ventilation in buildings

The recommended ambient office temperature is 20 to 25°C. Perception of thermal comfort will vary between individuals.

Avoid locating workstations directly in front of or below air conditioning outlets. For internal environments the following is recommended:

- control direct sunlight (radiant heat) with blinds;
- install air conditioning units with draught control technology providing flat air-flow directed along the ceiling;
- insulate/enclose hot processes and locate them away from people;
- install shields or barriers to reduce radiant heat from heat sources;
- install shade cloth to reduce radiant heat from the sun;
- minimise draughts between the head and feet (thermal gradients); and
- maintain an airflow rate between 0.1 and 0.2 metres per second.

Refer to the Design Standard, Section 9, *Mechanical Services* and Section 10, *BAS and Controls* for additional requirements.

2.3.3 Flooring and Pedestrian Surfaces

Flooring and pedestrian surfaces must be suited to the location and the work undertaken and shall comply with the latest edition of all relevant Legislation, Standards and Codes including but not limited to:

National Construction Code

AS 1428.2: Design for access and mobility. Enhanced and additional requirements - Buildings and facilities

AS/NZS 4663.2004 Slip resistance measurement of existing of pedestrian surfaces

HB 197 An introductory guide to the slip resistance of pedestrian surface materials

In all circumstances the selection of floor coverings shall take the work processes into account. Some work processes create hazardous floor conditions, such as spillages, (e.g., grease, water, food, or body fluids or off-cuts of materials), which can create slip and trip risks.

Floor coverings also need to be selected for hygiene and for their lack of resistance to push/pull forces exerted by employees on mobile equipment.

Low slip resistant floors e.g., polished concrete, timber or tiles should not be selected for administrative areas where chairs with castors will be used.

Floor surfaces should be designed to minimise impact noise.

Refer to Design Standard, Section 5, *Internal and External Building Elements* for requirements on approved carpets.

Consideration should be given to supplying floor insulation at workstations where employees are required to stand on concrete, masonry, or steel floors.

Anti-static vinyl/marmoleum shall be considered for wet, dry, and electronic laboratories and information technology/communications rooms.

Entrance matting of sufficient length (taking into account external surfaces and shelter) shall be provided to doors at the entrances to buildings and should be designed to limit ingress of dirt, debris, water and mud and be of a light weight to enable easy removal and cleaning by one person.

All external surfaces around and between buildings should provide a consistent, even, slip resistant pathway, with suitable drainage and shelter/coverage where required. Rough, raised surfaces, uneven paving and changes in level should be avoided.

Surfaces that become slippery when wet – e.g., pebbles, tiles, some painted timbers, or affected by wet leaves, moss, sand, or gravel should not be selected.

2.3.4 Light and Lighting

The type and placement of lighting shall consider the tasks being undertaken and shall comply with the latest edition of all relevant Legislation, Standards and Codes including but not limited to:

AS/NZS 1680.0: Interior lighting. Safe movement

AS/NZS 1680.1: Interior and workplace lighting. General principles and recommendations

AS/NZS 1680.2.1: Interior and workplace lighting. Specific applications – Circulation spaces and other general areas

AS/NZS 1680.2.2: Interior and workplace lighting. Specific applications – Office and screen-based tasks

AS/NZS 1680.2.3: Interior and workplace lighting. Specific applications – Educational and training facilities

AS/NZS 1680.2.4: Interior lighting. Industrial tasks and processes

AS/NZS 1680.2.5: Interior lighting. Hospital and medical tasks

Lighting must be adequate for the tasks being undertaken. Lighting installation should be installed at the appropriate distances to ensure evenness, comfortable visibility and no shadows at task viewing level.

AS/NZS 1680.1 provides specific guidance on recommended maintenance illumination levels for various workplaces, activities, and interiors.

The key principles for lighting design include:

design for the task which includes understanding the tasks and activities performed; and

select the appropriate type and number of luminaires for the work being done including:

- artificial lighting that most closely resembles natural light
- down lights if used should be fitted with baffle trims – sufficient numbers are required to ensure light is distributed evenly across the work surfaces.
- highly reflective glossy, silver or mirrored surfaces on luminaires should be avoided as these are a known source of discomfort glare
- batten lights fitted with diffusers are effective in delivering even illumination
- indirect or uplighting systems can be effective in workplaces as they direct all light to the ceiling eliminating shadow and glare
- fixtures should be designed so bare or exposed lamps are not visible to the eye

Control direct lighting by using dimmers, glare filters, diffusers, baffles (to reduce, redirect, soften light sources).

Control external light sources using suitable blinds. Blinds should be selected according to the level of sunlight entering the window. The best solution is to combine a partially transparent sunscreen blind with a block-out blind. Ensure operating cords are accessible without having to climb or reach excessively and cords can be secured with either tie-downs (cleats) or tension devices that enclose cords and chain loops

Locate workstations or work points so that luminaires are parallel with the worker's line of sight and not in front of, or behind or directly overhead.

Change lighting levels gradually. Sudden contrasts in light levels e.g., coming out of a well-lit area into a dark area or vice versa can be a problem because it takes the eye several seconds to adapt to new lighting conditions.

Minimise glossy reflective surfaces. Sources of light 'bounce' and create sources of glare. This includes glossy display monitors, glass partitioning, windows with a privacy treatment applied (two-way glass), whiteboards, keyboards etc.

Walls should have 50 to 75% reflectance and a matte finish. Ceilings should preferably be white reflecting approximately 80% of light. Avoid black ceilings with mounted lights as they create a high contrast which is fatiguing for the eyes

Portable desktop task lamps where used should have a flexible arm and head, cast light evenly over the length of the workspace, effective heat dispersion and dimming capability

Low hanging pendant or suspended lights should be generally avoided as they can create pools of direct light. With the move to sit/stand workstations greater proximity to the light source can result in a glare source in the visual field.

Refer to the Design Standard Section 7, *Electrical Services* for emergency lighting requirements.

Refer to the Design Standard Section 5, *Internal and External Building Fabric* for additional requirements.

2.3.5 Noise

Damaging noise and nuisance noise shall comply with the latest edition of all relevant Legislation, Standards and Codes including but not limited to:

Occupational Health and Safety Regulations 2017 (Vic)

Compliance Code. Noise (Vic)

AS/NZS 1269: Occupational noise management. Noise control management

AS/NZS 2107: Acoustics. Recommended design sound levels and reverberation times for building interiors

AS2822, Acoustics: Methods of assessing and predicting speech privacy and speech intelligibility

Where hard surfaces that reflect noise (e.g., timber and glass) are used extensively, consideration should be given to the installation of sound absorbing structures or materials.

Noise generating plant and equipment should be selected, installed to minimise the risk of noise exposures above 85 Db(A). Where possible noise generating plant and equipment should be isolated in separate rooms with adequate ventilation.

Noisy printing or photocopying equipment should be isolated in separate rooms with adequate ventilation.

Refer to the Design Standard, Section 12, *Acoustics, Vibration and EMI* for additional noise requirements.

2.3.6 Doors and Handles

Doors and handles must be suited to the location/placement and consider the environment and shall comply with the latest edition of all relevant Legislation, Standards and Codes including but not limited to:

National Construction Code

AS 2047: Windows and external glazed doors in buildings

AS 4145 (series): Locksets and hardware for doors and windows

AS 5007: Powered door for pedestrian access and egress

AS 6905: Smoke doors

AS 1905: Components for the protection of openings in fire-resistant walls. Fire-resistant door sets

Refer to the Design Standard, Section 5 *Internal and External Building Fabric* for additional requirements.

Doors

Building entrance and high traffic doors shall be automated wherever possible preferably bi-parting sliding glass doors.

Doors shall not open directly into a primary or secondary path of travel. If a door is required to do so to meet fire egress or other Code requirements, an appropriate recess or protection shall be provided.

Force requirement to open and close any manual doors to spaces accessible to the public shall not exceed 2 kg/f or 20 N. Inward opening swing doors should be installed where there is sufficient space.

Sliding doors should be installed where there is limited space.

Door closers shall be tensioned to provide time for individuals with mobility impairment to move through and not give rise to entrapment hazards.

Double doors may be required to enable installation or passage of large pieces of equipment, materials, artwork, or instruments.

Doors through which trolleys move must have a means of being secured open.

Solid high traffic doors and entry doors including teaching, learning, research, and meeting rooms shall be fitted with glazed viewing panels. Where there is double doors a glazing panel is to be installed in at least one door leaf. The size of the panel shall ensure visibility for everyone, including wheelchair users.

Handles

“D” type lever door handles with a 30 to 50 mm circumference and 50 mm clearance (aperture) should be selected for all swing doors and located between 900 and 1100 mm above floor height.

A long vertically placed door handle with 30 to 50 mm circumference from approximately 700 to 1100 mm above floor height is acceptable on a sliding door

Avoid handles with square profile or sharp edges or other surface features, large circular or other unusual shapes.

Door handles should be positioned well away from door jambs to prevent trauma to the knuckles.

2.3.7 Storage, systems and wall fittings and shelving

Storage shelves must be robust, stable, and well secured.

Where applicable the specified safe working load (SWL) shall be clearly visible.

Shelving should be designed so heavier and more frequently used items can be located within the optimal reach zone- shoulder to mid-thigh range.

Higher shelving must accommodate a safe means of accessing the required level of storage. i.e., sufficient space to use (and store) an approved step ladder, ladder, or mechanical means of access.

Glass display cabinets, including glass doors, track and locking mechanisms, shall comply with all safety standards.

Compactus

All compactus storage units shall be designed and supplied to minimise risk of entrapment between bays during operation. An effective engineering method of lock-out must be specified

The minimum aisle width within the compactus system shall be 600 to 700 mm. The selected compactus should not require significant operating force.

Large, multiple bay compactus models shall have electric motors with keypad controls fitted to eliminate the manual effort of moving multiple bay stacks.

Small compactus units should have a large handle permitting a 2-handed grip positioned at approximately chest level. This reduces the risk of one hand being placed on the edge of the unit where it can become caught between units. It also reduces the likelihood of pulling the unit behind the shoulder which is a typical (and risky) practice when a small handle is fitted.

Medium size compactus units should have a drive wheel fitted to greater allow mechanical advantage.

The size and placement of winding mechanisms, handles or wheels to open and close compactus should not present an entrapment hazard for hands or other parts of the body.

Compactus units shall not have raised platforms or rails which create a trip hazard or inhibit trolley movement or have deep tracks which trap debris and affect movement of bays.

Storage Systems – Mobile and Standalone

Mobile and standalone storage systems must be suited to the location and the work undertaken and shall comply with the latest edition of all relevant Legislation, Standards and Codes including but not

limited to:

AS 5079.1: Filing cabinets. Lateral filing cabinets

AS 5079.2: Filing cabinets. Vertical filing cabinets

AS 5079.3: Filing cabinets. Mobile pedestals

All small storage units shall be constructed of sturdy materials and positioned on a level floor to ensure that the drawers/doors open and close easily and do not tip when doors or drawers are open.

Stationery items and office supplies should be located in accessible and well-designed storage cupboard with provision for heavier items such as paper reams to be stored between chest and thigh zones.

Filing Cabinets and Lockers

Filing cabinets and lockers should not be located where they encroach into walkways.

Filing cabinets require approximately 1200 mm of space in front of them to enable the bottom drawer to be fully opened and accessed.

Filing cabinets must be on a level floor to ensure that the drawers open and close easily. They should be secured to the wall or floor to ensure that they do not tip when the top drawer is open.

The location of lockers should be decided according to the size and weight of the stored items and the frequency of use.

Mobile pedestal units and deep storage caddy units

Mobile pedestal units designed to sit under electric sit/stand desks shall be of a height that does not impede the movement of the desk to its lowest height range of 620mm- measured from floor to top of desk.

Deep storage caddy units which extend out from under the desk with storage shelving located in the side of the unit (under the desk) should be avoided. They are often selected to provide a seated surface. These encourage the adoption of awkward body postures when accessing stored items

Wall mounted fitments

All wall-mounted fitments including whiteboards, smart boards, notice boards, black boards, projector screens shall be mounted according to manufacturer's instructions and designed to prevent personal injuries from failure of components.

2.3.8 Chemicals

All areas where chemicals (including hazardous substances, dangerous goods, and scheduled poisons) are stored, handled and/or used shall comply with the latest edition of all relevant Legislation, Standards and Codes including but not limited to:

Occupational Health and Safety Act 2004 (Vic)

Occupational Health and Safety Regulations 2017 (Vic)

Dangerous Goods (Storage and Handling) Regulations 2022 (Vic)

Drugs, Poisons and Controlled Substances Regulations 2017 (Vic)

AS/NZS 1020: The control of undesirable static electricity

AS 1345: Identification of the contents of pipes, conduits, and ducts

AS/NZS 1596: The storage and handling of LP Gas

AS 1894: The storage and handling of non-flammable cryogenic and refrigerated liquids

AS 1940: The storage and handling of flammable and combustible liquids

AS/NZS 2022: Anhydrous ammonia - Storage and handling

AS/NZS 2243.2: Safety in laboratories – Chemical aspects

AS/NZS 2243.10: Safety in laboratories – Storage of chemicals

AS 2507: The storage and handling of agricultural and veterinary chemicals

AS 2714: The storage and handling of organic peroxides

AS/NZS 2927: The storage and handling of liquefied chlorine gas

AS 3780: The storage and handling of corrosive substances

AS/NZS 3833: The storage and handling of mixed classes of dangerous goods, in packages and intermediate bulk containers

AS 3961: The storage and handling of liquefied natural gas

AS/NZS 4081: The storage and handling of liquid and liquefied polyfunctional isocyanates

AS 4326: The storage and handling of oxidizing agents

AS 4332: The storage and handling of gases in cylinders

AS/NZS 4452: The storage and handling of toxic substances

AS/NZS 4681: The storage and handling of Class 9 (miscellaneous) dangerous goods and articles

AS/NZS 4757: Handling and destruction of drugs

AS/NZS 5026: The storage and handling of Class 4 dangerous goods

AS 4840: Low pressure regulators for use in industrial compressed gas reticulation systems

[Compliance code. Hazardous substances](#) (Worksafe Vic)

In general, where chemicals are stored on shelves the following shall apply:

the shelf height of shelves over benches shall not be more than 1.5 metres from the floor;

the shelving systems shall include finishes that are compatible with the chemicals to be stored, or shall be suitably protected from them;

the shelving systems shall be designed for the maximum holding capacity of the chemical packages.

2.3.9 Dangerous Goods Stores

Flammable Liquid Stores

Construction of the flammable liquid stores, including segregation requirements shall comply with the latest edition of all relevant Legislation, Standards and Codes including but not limited to:

AS 1940: The storage and handling of flammable and combustible liquids

AS/NZS 2243.2: Safety in laboratories – Chemical aspects

AS/NZS 2243.10: Safety in laboratories – Storage of chemicals

AS 4326: The storage and handling of oxidizing agents

Where the use of flammable liquid indoor storage cabinets has been specified, attention is drawn to the provision within the AS 1940 and AS/NZS 2243.10 with respect to cabinet separation and ventilation, together with ignition source requirements.

An appropriate automatic fire extinguishing flood system shall be provided in accordance with current practice. Refer to Design Standard, Section 8, *Fire Protection and Detection Services* for further requirements.

Gas Cylinder Storage and Use

The construction of areas built for storage and handling shall comply with the latest edition of all relevant Legislation, Standards and Codes including but not limited to:

AS 4332: The storage and handling of gases in cylinders

AS 4840: Low pressure regulators for use in industrial compressed gas reticulation systems

AS 4289: Oxygen and acetylene gas reticulation systems

AS 4603: Flashback arresters. Safety devices for use with fuel gases and oxygen or compressed air

AS 4706: Pressure gauges for regulators used with compressed gas cylinders

Where reasonably practicable gas cylinders are stored outdoors with one or more sides, or a roof, open to the atmosphere. Storage shall be provided with the necessary segregation of gases as determined by AS 4332.

A means of securing cylinders against falling shall be provided.

Where stored in loading bay or other similar location where external damage from motor vehicles could occur, suitable protection of the structure and stored cylinders shall be provided (eg impact rated bollards).

Protection from sunlight shall be provided.

Where practicable, gas cylinders that are connected to consuming apparatus (such as a reticulated system) shall be located outside the building in accordance with AS 4332.

Where asphyxiant gases are present, a documented risk assessment of risk of asphyxiation is required. The assessment is required to consider application of the engineering controls such as supply isolation.

2.3.10 Portable Fire Extinguishers and Fire Blankets

The correct number and location of appropriate fire extinguishers and fire blankets shall be determined and documented and shall comply with the latest edition of all relevant Legislation, Standards and Codes including but not limited to:

AS/NZS 1841.1: Portable fire extinguishers. General requirements; and

AS 2444: Portable fire extinguishers and fire blankets. Selection and location

The selection of fire extinguishers and fire blankets shall be guided by the Standards referenced above.

Health and safety factors and human factors as outlined in AS 2444 shall be considered.

The design consultant shall ensure that the supply and fixing of all extinguishers is documented in the main contract.

2.3.11 Safety Showers

These devices, and their actuating mechanisms, shall be located so that the approach to them is

unobstructed and complies with AS 4775: Emergency eyewash and shower equipment. This shall include the following.

At least one safety shower shall be installed where chemical, corrosive or flammable substances are used. There shall be not more than 10 seconds to reach such devices from any point where the substance is used.

Note: This may be a drench-type shower, a hand-held spray, or other type as appropriate to the hazards of the laboratory.

Provision shall be made to drain (e.g., sink/floor drain in close proximity) any water from these devices during regular tests.

2.3.12 Emergency Eye - Wash Stations

These devices shall be located so that the approach to them is unobstructed and complies with AS 4775: Emergency eyewash and shower equipment. This shall include the following.

An eye-wash facility of appropriate type shall be installed in each room where chemical, corrosive, or flammable substances are used or handled. There shall be not more than 10 seconds to reach such devices from any point where the substance is used.

A permanently fixed aerated type, which can be operated without using hands, is preferred. Provision shall be made to drain or restrain any excess water from these devices.

2.3.13 Safety Signs

The contractor is to supply and install evacuation plans as required. The University's preferred supplier must be used to procure. At the time of writing (November 2023), the supplier is Prensa.

All safety equipment and facilities shall be clearly sign-posted and shall comply with the latest edition of all relevant Legislation, Standards and Codes.

Where safety signs are required, they shall conform to AS 1319: Safety signs for the occupational environment.

An OHS notice board is to be provided by the contractor in appropriate areas throughout the building, to highlight safety issues.

2.3.14 Asbestos and Hazardous Materials

Prior to commencing building works the design team, or person sponsoring the work shall reference any existing, relevant asbestos/hazard audit information for the building or area by:

referring to the University of Melbourne asbestos register (available through Infrastructure Services and the Hazardous Building Materials online compliance database; and

using an auditable process, determined by WorkSafe Victoria, to verify the presence of asbestos-containing material (Occupational Health and Safety Regulations 2017 [Vic]).

Generally, any known asbestos removal work shall occur prior to the letting of the construction contract, alternatively the works may be detailed and included in the contractor's tender. Options are at the University's Project Manager's discretion.

2.3.15 Heights

The design of internal and external locations which involve working at heights (or there is an opportunity to fall) shall comply with the latest edition of all relevant Legislation, Standards and Codes including but not limited to:

Occupational Health and Safety Regulations 2017

National Construction Code

AS/NZS 1891 (series): Industrial fall arrest systems and devices

AS 5203: Protection of openable windows/fall prevention. Test sequence and compliance method

Access to roofs shall be restricted and available for authorised entry only. Door lock furniture will be access controlled or of the EKA key type.

It is preferable that fall prevention is included in all new designs (and refurbishments) that eliminate the requirement for passive fall prevention devices and/or fall arrest systems.

Where passive fall prevention devices are required, the layout and design incorporate suitable access for those devices.

Refer to the Design Standard, Section 5, *Internal and External Building Elements* for additional requirements.

2.3.16 Plant

The design of installations, commissioning and maintenance of plant shall comply with the latest edition of all relevant Legislation, Standards and Codes including but not limited to:

Occupational Health and Safety Regulations 2017

AS/NZS 2243.6: Safety in laboratories. Plant and equipment aspects

AS/NZS 4024.1601: Safety of machinery. Design of controls, interlocks, and guarding – Guards – General requirements for the design and construction of fixed and movable guards

AS/NZS 4024.1602: Safety of machinery. Interlocking devices associated with guards – Principles for design and selection

AS 4024.1603: Safety of machinery. Design of controls, interlocks, and guards – Prevention of unexpected start-up

AS/NZS 4024.1604: Safety of machinery. Design of controls, interlocks, and guarding – Emergency stop – Principles for design

AS 4024.2601: Safety of machinery. Design of controls, interlocks, and guarding – Two- hand control devices – Functional aspects and design principles

AS/NZS IEC 60825.4: Safety of laser products. Laser guards

Refer to the Design Standard, Section 9, *Mechanical Services* for requirements.

2.3.17 First Aid Equipment

For each new building, the contract documentation is to include provision and installation of an AED in wall a mounted cabinet in a suitable location (usually near the entrance to the building). The preferred supplier is INTEGRITY HEALTH & SAFETY PTY LTD and the AED Unit with a Cabinet: Zoll AEDs Plus ZOLL AED Plus Fully Automatic, Wall Alarmed Cabinet with Strobe Light, 3D AED Sign Defibrillator Bundle

For new buildings and refurbishments, wall mounted first aid kits are to be provided and installed by the contractor in each laboratory, each kitchen and in other locations in accordance with the first aid assessment.

2.3.18 Emergency Refuge

Each new building will be provided with a suitable fire isolated refuge (usually incorporated in the fire

stair landing). The refuge and path to the refuge will be suitably signed.

The refuge will be provided with a suitable accessible communications system, usually in the form of a WIP.

The number of refuge spaces will take into account the occupancy of building/floor.

2.3.19 Traffic Management

Risk assessment associated with vehicular traffic supporting the operations of the building must be undertaken. The assessment will take into account deliveries, collections and vehicle transit and parking.

Where practicable designs should eliminate vehicle reversing movements and interaction between pedestrians and moving vehicles. Other risk controls will be implemented in accordance with the hierarchy of controls will be implemented so far as is reasonably practicable.

2.4 IONISING RADIATION

2.4.1 Ionising Radiation Control

The design and subsequent working procedures within buildings shall comply with the latest edition of all relevant Legislation, Standards and Codes including but not limited to:

Radiation Act 2005 (Vic)

Radiation Regulations 2017 (Vic)

Radiation Protection Series 10. Code of Practice and Safety Guide - Radiation Protection in Dentistry

Radiation Protection Series 11. Code of Practice for the Security of Radioactive Sources

Radiation Protection Series 14. Code of Practice for Radiation Protection in the Medical Applications of Ionizing Radiation

Radiation Protection Series 17. Code of Practice & Safety Guide for Radiation Protection in Veterinary Medicine

Radiation Protection Series 19. Code of Practice for Radiation Protection in the Application of Ionizing Radiation by Chiropractors

AS 2243.4: Safety in laboratories. Ionizing radiations

All facilities containing radioactive sources shall be identified by the appropriate signage outlined in the relevant Radiation Protection Series Code of Practice.

Appropriate shielding shall be provided that complies with the exposure limits (dose limits) as listed in the Radiation Regulations 2017 (Vic) and the University of Melbourne [ionising radiation management plan](#).

The University Chemical and Radiation Safety Specialist shall be consulted during the preparatory planning stages.

All radioactive sources shall be purchased and/or acquired after permission for their possession and use are included in the University of Melbourne Radiation Management Licence.

2.5 LABORATORIES

2.5.1 General

Refer also to Section 20: Laboratory Design.

The design and subsequent use of laboratories shall comply with the latest edition of all relevant Legislation, Standards and Codes including but not limited to:

AS/NZS 2982: Laboratory design and construction

AS/NZS 2243.1: Safety in laboratories. Planning

AS/NZS 1680.1: Interior and workplace lighting. General principles and recommendations

AS/NZS 2243 (series) Safety in laboratories

AS 61010 (Series): Safety requirements for electrical equipment for measurement, control, and laboratory use

A wide range of different laboratories exist in which a range of functions are carried out including research, quality control, testing, teaching and/or analysis. Whilst certain common design principles apply to all, the design and layout should be developed from a knowledge of the processes to be carried out, the space needed for each, and the desired workflow.

Consultants will work to specific briefs based on the functions to be accommodated - an array of physical sciences, computing, electronic and robotics in the case of dry laboratories; and biology, chemistry, biomedical and some engineering and materials science in the case of wet laboratories.

In all situations the functional needs of the user group must be considered. This can only be done by engaging the user group and undertaking a formal planning brief. AS/NZS 2982:1 outlines the requirement for a planning brief.

In teaching laboratories, a clear view of the lecturer, screens, boards, presentation materials and equipment should be possible from each workstation without the student having to adopt awkward or twisted postures.

Direct lighting must be adequate for the tasks being undertaken and achieve the level of illumination as specified in AS/NZS 1680.1. Generally, 300 to 600 lux is appropriate for laboratory applications.

Task lighting may need to be installed under shelves to supplement the ceiling lighting system.

Temperature, humidity, and air quality should be designed to suit the requirements of the laboratory processes and instrumentation, or, in the absence of any special requirements, to provide acceptable user comfort and safety. Room ventilation should be in accordance with AS/NZS 2243.1 and AS/NZS 2243.3.

Where required, break out rest areas should be provided outside laboratories.

Laboratory workstations should be designed to accommodate the various equipment and materials used in them and permit optimal work postures during task performance. The appropriate height for a workbench therefore depends on the person's work posture (sitting/standing), the work activity (precision/light/heavy), the size/height of the materials and tools used and the elbow height of the individual. Adjustable height work surfaces should be considered for certain activities.

Consultation with the user group should be undertaken to determine the nature of the work and the bench heights shall be designed accordingly.

Figure 3 demonstrates a guide to the height level for bench work dependent on the activity. These heights are intended to accommodate most users in a standing posture however an adjustable height stool (and high footrest) should be provided to enable a seated option.

If an adjustable height work bench is supplied, it should provide the height range of 620 to 1250 mm

above floor level.

For precision work, where elbow support is needed to reduce neck and shoulder muscle strain, the recommended bench height is 950-1200mm above floor level (preferred 1200mm) above floor level .

For light work, such as the use of computer keyboard and mouse for data entry, using a tablet, completing paperwork etc. the recommended bench height is 850-1100mm (preferred 1100mm) above floor level .

For heavy work **or work involving bulky or dimensionally large/high materials or equipment e.g., operating a microtome or cryostat** the recommended bench is height 650-950mm

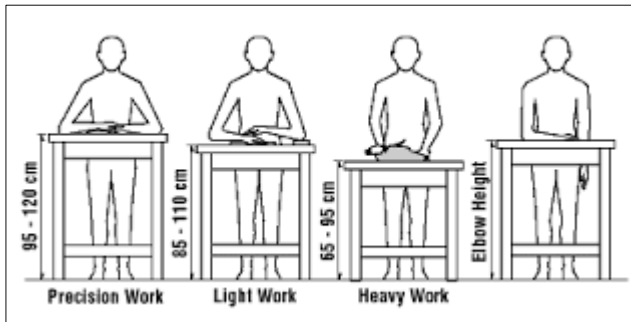


Figure 3; Guide to bench height for different work activities

Workstations should be designed without fixed structures underneath to enable seated users to get their legs under and to enable cleaning

2.5.2 Wet Laboratories

In addition to the requirements listed in Section 2.5.1, the design and subsequent use of wet laboratories shall comply with the latest edition of all relevant Legislation, Standards and Codes including but not limited to:

AS/NZS 2243.3: Safety in laboratories. Microbiological safety and containment

AS/NZS 2982: Laboratory design and construction

AS/NZ 4586: Slip resistance classification of new pedestrian surface materials

DAWR Approved arrangements biosecurity containment requirements

Wet laboratories may involve the use of hazardous materials and organisms and flammable substances that will require appropriate containment.

Floor surfaces must be stable, firm, smooth, impervious, easy to clean and be resistant to chemicals as well as have high slip resistance in accordance with AS/NZ 4586. Joins in slabs and/or openings in floors shall be avoided or designed and constructed in such a way that they are sealed against penetration by hazardous materials.

Wet laboratories generally require:

- Adjacency to apparatus, preparation, and safe stores.
- Room configuration to suit layout of laboratory benches and related ancillary and research workspaces.
- All bench surfaces to be chemically resistant, with laminate to the underside and bullnose leading edges.

- Services combined and aligned vertically for efficient deployment.
- Wet activities as required, including biological and chemical agents.
- Sinks with integral drainers of high-grade stainless steel at the end of bench runs.
- Suitable bench heights, with access for people with disability Consideration of height benches.
- Under and over bench shelving and storage for chemicals, apparatus, and equipment within comfortable reach range.
- Adjustable laboratory stools and chairs with wet and chemical resistant impervious material (e.g., vinyl or rubber) and appropriate features including a castor or glide fitting suited to achieve safe rolling/moving resistance across the selected floor surface.
- Minimum of one single sided fume cupboard per wet laboratory. The final number and arrangement of fume cupboards shall be determined by project/users.
- Door entry mats or shoe bath facilities as required by laboratory PC rating.
- Magnetic or glass whiteboards, pin boards, smart boards as required.
- Projection screens, lecterns or other points of delivery, flexible equipment stations, as required.
- Blinds provided to external windows for brown-out as required.
- Splash back behind basins.
- Floor finish for industrial wet and corrosion resistance, with integral coving.
- Accessible, non-combustible, sealed ceiling grid for services.
- Observation window panels viewing in, out and between laboratory spaces, preparation rooms and so on.
- Shower and emergency eye-wash station shall be installed where chemical, corrosive or flammable substances are used. See Section 2.3.11 and Section 2.3.12 for requirements.

Additional shower and emergency eye wash station requirements may apply in biocontainment facilities; the University Project Manager will advise.

Additional requirements must be considered when designing wet biological laboratories including:

- most biological laboratories will require Physical Containment Level 1 (PC1) as per AS/NZS 2243.3;
- more advanced laboratories may require Physical Containment Level 2 (PC2), Physical Containment Level 3 (PC3) or Physical Containment Level 4 (PC4) as per AS/NZS 2243.3; and
- where required, wet laboratories should be suitable for registration under the Office of Gene Technology (OGTR) and the Department of Agriculture and Water Resources (DAWR) such that the faculty/University can satisfy these regulators.

2.5.3 Dry Laboratories

Dry laboratories are general purpose spaces for practical teaching and learning. Dry laboratories generally do require plumbing, but on occasions may require a single plumbed service point for general use, preferably located adjacent to the entry point.

Dry laboratories generally require:

- Direct adjacency to preparation and apparatus rooms and safe stores.
- Electrical services to island tables and benches are to be achieved where possible either through shallow ducts on floors or dropper ducts from the ceiling

- Robust benches constructed from inert material.
- Suitable and adjustable table and bench heights and/or stool and chair heights accessible for people with disability.
- Sufficient storage, shelf space and cupboards for exhibits, samples, tools and partially completed Projects.
- Magnetic or glass white boards, pin boards, smart boards as required.
- Projection screens, lecterns or other points of delivery, flexible instruction stations as required.
- Blinds provided to external windows for brown-out as required.
- Accessible, non-combustible, ceiling grid for services.

2.5.4 Biological Safety Cabinets, Cytotoxic Drug Safety Cabinets and Fume Hoods

Where biological safety cabinets, cytotoxic drug safety cabinets and fume hoods are provided they shall be designed, sited, constructed and installed and shall comply with the latest edition of all relevant Legislation, Standards and Codes including but not limited to:

AS 2252.4: Controlled environments. Biological safety cabinets Classes I and II – Installation and use

AS 2252 (Series): Biological safety cabinets

AS 2252.5: Controlled environments – Cytotoxic drug safety cabinets (CDSC) – Design, construction, installation, testing and use

AS/NZS 2243.1: Safety in laboratories. Planning

AS/NZS 2243.3: Safety in laboratories. Microbiological safety and containment

AS/NZS 2243.8: Safety in laboratories. Fume cupboards

Biological Safety Cabinets, cytotoxic drug safety cabinets and fume hoods should be designed and installed at an appropriate height so that the user can adopt optimal work postures and movements during task performance. There should be no fixed panels or cupboards underneath preventing the user getting close to the work when sitting or standing.

Consider installing an adjustable height table rather than a fixed cabinet.

2.5.5 Microscope Workstations

Microscope workstations should be designed and installed at an appropriate height so that the user can adopt neutral seated work postures during task performance. The microscope should be elevated and angled appropriately to enable the user to look directly into the eyepiece whilst maintaining a neutral posture.

There should be no fixed cabinetry or other structures interfering with comfortable leg positioning.

2.6 OFFICES/ ADMINISTRATIVE AREAS AND TEACHING SPACES

2.6.1 General

This section provides details of minimum requirements for interior design of office, administrative and teaching spaces. These spaces shall comply with the latest edition of all relevant Legislation, Standards and Codes including but not limited to:

National Construction Code

[Officewise – A guide for health and safety in the office](#) (WorkSafe Vic)

AS1668.2: The use of ventilation and air-conditioning in buildings. Mechanical ventilation in buildings

[Compliance Code: Hazardous Manual Handling](#) (WorkSafe Vic)

Compliance code. Workplace Amenities and Work Environment (WorkSafe Vic)

2.6.2 Offices

Offices vary from multistorey open plan floor layouts to small rooms in terrace houses. Office design should incorporate flexibility of layout, environment, furniture, and equipment to suit the functional needs of the users – i.e., tasks and equipment. Providing adequate space in an office for people to operate effectively and safely is essential.

Three types of space need to be considered:

- Primary space- amenities, meeting rooms, lift lobbies and similar areas
- Secondary space- corridors and storage
- Tertiary space – space required in a workstation to accommodate a desk, chair, drawers, filing cabinet, and other necessary equipment

A functional analysis of the needs of workers in modern offices reveals a minimum of 6 square metres per person is required for tertiary space with additional space for secondary and primary purposes. AS 1668.2 recommends an overall 10 square metres per person for building ventilation purposes. In all situations the functional needs of the user –personal space, technology needs, requirement for other equipment and materials, visitors, meeting chairs etc. must be considered.

Office layouts shall include the following important elements:

- Distance between heads: minimum 1500 mm to allow adequate functional, mobility and personal space requirements.
- Distance (clearance) between rows of linear desks: minimum 2000 mm measured between front edges of desks.
- Clearance above desks: A clear space of 700 mm above the height of the desktop must be preserved for unimpeded movement of monitor.
- Fixed over desk cabinetry/joinery should be avoided.
- Copy machines should be in a well-ventilated and accessible area – not in walkways or obstructing exits. Adequate space for operation and maintenance access must be available.

2.6.3 Meeting Rooms

Meeting rooms vary greatly in size and design and should provide an effective environment for discussion and presentations with adequate acoustic privacy to protect confidentiality and minimise disturbance to surrounding spaces.

Appropriate numbers of meeting rooms and sizes shall be supplied to allow groups to conduct meetings.

Materials used should facilitate dampening of noise. Extensive use of glass and hard surfaces should be avoided unless accompanied by sound absorbing mediums around them.

Where activities such as handwriting and lap top use are undertaken at a fixed seated height meeting

room table, the table height shall be 720 mm measured from floor level to top of table with a desktop thickness of approximately 32 mm. The table top shall have a light, non-reflective matte finish. All other dimensions (depth and length etc.) should be determined by the room size and function.

Select meeting room chairs with features outlined in meeting room selection.

2.6.4 Service Counters/Reception Desks

Reception desks and service counters can vary from fixed joinery to adjustable height. In all situations the functional needs of the user group –tasks, equipment and materials, customers, visitors, etc. must be considered. Counter design includes the traditional ‘across counter’ models and side by side models.

Counter design shall comply with the following:

- Have a minimum of 1000 mm circulation space behind the counter to allow users space to move, access drawers etc. This may be significantly greater in the case of library service counters where there may be a requirement to move and position trolleys in this space.
- Allow clearance for legs underneath for sitting.
- Avoid fixed cabinetry underneath which projects into the leg space area.

Standing counter height – fixed: The recommended height is 1000 mm measured from floor to finished desktop.

Electric height adjustable Sit/stand counter height: The recommended height range is 620 to 1250 mm measured from floor to finished desktop.

Sitting counter height – fixed: The recommended height is 720 mm measured from floor to finished desktop.

Counter hob (on patron side) if fitted should not rise more than 250 mm above height of counter measured from floor to finished counter hob.

Counter depth requirement may vary according to the functions of the counter. The minimum recommendation is 700 mm to accommodate all screen-based equipment, focal distance, required desk top items and for displaying and/or signing documents, placement of delivery items etc.

However, the following must be considered:

- Comfortable reach distances across the counter for the user and customer. Maximum reach distance should not exceed 500 to 600 mm
- Consider incorporating a curved or cut out section in the centre of the desktop.
- Adequate depth to meet security requirements.
- Workstations located behind the counter/reception must have a clear sight line to the counter.
- Where there is a regular requirement for the user and patron/student to simultaneously view a monitor screen, consider back-to-back screens. If not possible, a flexible monitor arm is required.
- Recessing a monitor onto the desk surface and covering it with glass is not recommended as it involves an awkward forwards neck posture and potentially generates glare.
- **Duress buttons**, if required, should be installed within comfortable reach (within 150 mm of the front edge of the desk and in the work zone).

2.6.5 Teaching and Collaborative Learning Spaces

Teaching and collaborative learning spaces and lecture theatres shall comply with the latest edition of all relevant Legislation, Standards and Codes including but not limited to:

National Construction Code

Collaborative teaching and learning spaces should be multipurpose flexible student-centred spaces have a level floor and movable furniture which promote students working together. As such the clearances and space requirements are different from a staff office layout.

Floor plans and layouts shall be designed to maximise eye contact and sight lines between students, staff, and visual/teaching aids. It is important to configure seating to ensure that users do not have to adopt awkward or twisted postures.

A solid stable writing surface shall be provided for each student, such as chairs with tablets or tables which may be mobile, flip tables, configurable to many layouts

Minimum clearances between tables should be 1700 mm to allow chair and pedestrian movement.

2.6.6 Lecture Theatres

Lecture theatres are generally designed with a tiered or stepped floor surface and a single teaching point at the front with fixed seating and a stowable tablet to accommodate a portable electronic device.

Electronic screens should be positioned to facilitate viewing from all seats.

A spatial allowance of 1.1 to 1.3 square metres per student should be allowed for new theatres.

Aisles should be provided on either side of the theatre with a minimum width 1200 mm.

Tiered row spacings, distances of seats from aisles must comply with the National Construction Code.

Tiers or step riser should be a minimum of 150 mm. Adequate visual cues on tread and landing shall be provided to aid visibility in dimmed lighting conditions.

A clear view of the lecturer, screens, boards, presentation materials and equipment should be possible from each seated position of the theatre without the user having to adopt awkward postures.

Access to wall mounted writing surfaces should be available without interference from projection screens or the need to exert force to manually lift or lower panels.

Refer to Design Standard, Section 8, *Fire Protection and Detection Services* for further requirements regarding escape routes, exit doors and exit and emergency lighting.

2.7 WORKSTATION FURNITURE

2.7.1 General

All workstation furniture must be procured from the University preferred supplier panel to ensure furniture meets the required Australian and University of Melbourne Design Standards.

2.7.2 Desks

General Requirements Desks must be suited to the location and the work undertaken and shall comply with the latest edition of all relevant Legislation, Standards and Codes including but not limited to:

AS/NZS 4442: Office desks, office workstations and tables intended to be used as office desks - Mechanical, dimensional, and general requirements and test methods

Certification to AFRDI (Australian Furniture, Research and Design Institute) is required. This must be obtained from the manufacturer/supplier.

A range of desk designs are available including rectilinear, L shape or corner, curved 120-degree, round, kidney shape, or other versions. All desks selected should be electric height adjustable as these enable all users to be accommodated safely to conduct their work as well as offering the option of standing to work. Fixed height and manual height adjustable desks should be avoided.

When selecting desk size and shape consideration shall be given to the purpose of the space, the intended user group, the tasks they undertake and equipment they require. In open plan offices and teaching spaces desks and tables are often arranged in clusters or pods.

Height: to incorporate the range of 620 to 1250 mm measured from floor level to finished desktop.

Depth: 700 minimum 750mm preferred. This is necessary for appropriate monitor positioning in relation to viewing/focal distance and to enable sufficient space for a laptop or document holder between the keyboard and monitor or other materials

Length: Depends on desk design and tasks undertaken – Unless a need is established 1800 mm is preferred. Anything less will not comfortably accommodate 2 monitors or an under desk mobile pedestal unit. Lateral clearance under the desk to accommodate thigh width and leg/chair movement: 800 mm minimum (400 mm either side of navel). There should not be a frame or cable tray or other structure to encroach into this zone

Desk top thickness: Between 25 mm and 3 mm. It is preferable to preserve a depth of 450 mm minimum under desk at knee height and 600 mm minimum at feet level (120 mm above floor level) for unobstructed leg clearance. No frame or cable tray or other structure to encroach into this zone.

Cable management: all cables to be contained neatly in a horizontal cable tray which is connected to the desk frame and rises / lowers with the desk so as not to stretch or strain cables or connection points

Soft wiring: Desk top mounted (moveable) power rail – power and data points - located at rear (either end) of desktop not in the centre which may interfere with monitor arm clamping.

Privacy/acoustic screen:

A vertical screen should be affixed to the rear of the desk to offer visual and acoustic privacy.

Modesty panel if required: Fitted to rear of desk- commencing no higher than 400 mm above floor height

Load tolerance: Minimum 150 kg.

Desk surface: matte, non-reflective natural light wood tone, e.g beech melamine. White desks are not recommended as they reflect high levels of light. Glossy, reflective, and bright surfaces should be avoided.

Desk finish: all desks should be free of sharp edges, corners, points, or protrusions.

Other features and requirements:

Sit/stand desks should be fitted with anti-collision technology.

Clearance (gap) between rear of desk and partition/screen: 25 mm across the length to accommodate flexible clamping of a monitor arm/s if required.

Clearance: minimum 40 mm between desks positioned side by side to eliminate risk of hand entrapment

2.7.3 Computer hardware (Laptop devices) and Monitor Arms

Laptops

Laptops are widely in use across the University. They are connected to a dock and supported by an

external keyboard and mouse

Monitor Arms

Monitor arms are preferred for flexibility of monitor positioning.

Single monitor arms clamped to the rear of the desk are recommended, they offer the most flexible monitor configuration. Dual monitor capacity arms limit configuration options and can create postural problems.

Monitor arms should have:

- finger touch movement capability and be readily adjustable from a seated position without effort
- load capacity to support the monitor size and weight at a suitable level of tension

2.7.4 Mobile pedestals and tambours (under desk) - See also 2.3.7

Mobile pedestals intended to fit under desks must have the following design features:

- Must not impede the desk achieving the lowest height range of 620mm (top of desk above floor)
- Be stable and non- tip
- Be easily moveable
- Have no sharp edges or finger pinch or entrapment points
- Be lockable
- Must not interfere with leg clearance
- Must be accessible from the front of (facing) the desk with no storage under the desk requiring bending and reaching under the desk

2.7.5 Tables

Tables should be smooth, light in colour and have a non-reflective, matt, or satin finish.

Fixed height tables designed for sitting to engage in learning activities should preferably have a height range of 720 mm measured from floor level to top of table.

Fixed height benches, bars designed for standing or sitting at a high drafting stool to work should have a height range of 900 to 1100 mm measured from floor level to top of bench.

All tables and benches should be a maximum of 33 mm thick and have no frame encroaching into the leg space to a depth of 450 mm.

Folding or flip tables must have instructions for folding, no entrapment points or sharp corners or edges and move easily.

Castors on tables must be durable, suited to the floor type so they roll without undue resistance and lockable.

2.8 SEATING- GENERAL REQUIREMENTS AND SPECIFICATIONS

2.8.1 Seating– General Requirements and Specifications

The type and purpose seating must be considered and shall comply with the latest edition of all relevant Legislation, Standards and Codes including but not limited to:

AS/NZS 4088.1: Specification for burning behaviour of upholstered furniture. Upholstery materials for domestic furniture - Smouldering ignitability

AS/NZS 4438: Height adjustable swivel chairs

AS 4688.2: Furniture. Fixed height chairs – Determination of strength and durability

Note: For all bulk orders of *staff task seating* the following applies:

80% medium size chairs, 10% larger size (seat pan depth and width), 10% smaller size (seat pan depth only)

Trialing of task seating with user groups is recommended prior to specification or purchase.

Relevant AFRDI Standards and certification

[Ergonomic principles and checklists for the selection of office furniture and equipment](#) (Safe Work Australia)

General requirements for chairs/seating include:

- a stable base.
- a load rating to a minimum 100 kg.
- an underframe eg. legs, castors that does not protrude more than 120 mm beyond the outermost dimension of the chair seat (including arms if present) so as to cause a trip hazard.
- no sharp projections, or other features that constitute a risk to users. There should be no sharp edges, rough surfaces or features that may trap clothing or cause injury. The ends and feet of tubular metal components shall be capped or closed and finished smoothly.
- covering materials and filling materials that meet burning behaviour performance requirements as set out in AS/NZS 4088.1.
- permanently marked with the manufacturers /importers name and address and year of manufacture and care, flammability, and summarised operating details
- certification to AFRDI (Australian Furniture, Research and Design Institute) shall be provided by the manufacturer/supplier.

2.8.2 Staff Computer Workstation Chairs

Requirements for computer workstation chairs include:

- Five-star base with castors, swivel mechanism, waterfall edge design.
- Five adjustment points – seat height, back rest height, seat tilt, back rest tilt, seat depth slide.
- Medium size seat base and backrest standard but options must be available to accommodate larger and smaller staff.
- Seat height adjustability range 400 to 550 mm. Options for alternative gas struts to be available.

- Back rest tilt range approximately 45 degrees.
- Arm rests (adjustable height) are not routinely required but chair must have provision for arm rests.
- Meet the requirements of AS 4438 and AFRDI certified level 5 or 6.
- Smaller and larger, deeper seat pans shall be provided to accommodate smaller and larger users. Numbers shall be determined in consultation with the client department and the University Project Manager.

2.8.3 Student Task Chairs

Requirements for student task chairs include:

- Where students are working on computers or other portable electronic devices:
- Two-adjustment points – seat height and back rest height.
- Seat height adjustability range 400 to 550 mm.
- Medium size seat base and backrest.
- Arm rests optional.
- Meet the requirements of AS 4438 Functional classification Type 2 and AFRDI certified level 5 or 6.

2.8.4 Meeting Room, Interview/Consulting Room Chairs

Requirements for meeting room, interview/consulting room chairs include:

- Five-star base with castors, swivel mechanism, waterfall edge design.
- Two-adjustment points Back rest tilt, seat height
- Medium size seat base and backrest standard but options must be available to accommodate larger and smaller staff.
- Arm rests.
- Meet the requirements of AS 4688.1 and AFRDI certified level 4 or 5.

2.8.5 Staff High Desk /Counter (Drafting) Chairs

Requirements for staff high desk /counter drafting chairs include:

Where staff are working on high reception counters, customer service counters or library service desks:

Five-star base with castors, swivel mechanism, waterfall edge design.

Depending on the floor covering, pressure locks/brakes to 2 to 3 castors may be required. It is expected a trial will be undertaken to ensure safe rolling resistance is achieved. Four adjustment points – seat height, back rest height, seat, and back rest tilt,

Height adjustability range 650 to 780 mm.

Arm rests (adjustable height) preferred to assist transfer on/off.

Meet the requirements of AS 4438 Functional classification Type 1 and AFRDI certified level 5 or 6.

Smaller and larger, deeper seat pans shall be provided to accommodate smaller and larger users.

Numbers shall be determined in consultation with the client department and the University Project

Manager

2.8.6 Student High Desk Drafting Chairs

Requirements for student high desk/ drafting chairs include:

- Five-star base with castors, swivel mechanism, waterfall edge design
- Minimum two adjustment points – seat height, back rest height
- Seat height adjustability range 650 to 780 mm
- Depending on the floor surface pressure locks/brakes may need to be applied to 2 to 3 castors to overcome freewheeling. It is expected a trial will be undertaken to ensure safe rolling resistance is achieved
- Arm rests (adjustable height) preferred to assist transfer on/off.
- Meet the requirements of AS 4438 and AFRDI certified level 5 or 6.

2.8.7 Wet Laboratory Chairs/stools

Requirements for wet laboratory chairs include:

- In wet laboratories for both staff and students with a workstation height range approximately 900 to 1000 mm:
- Five-star base with castors, swivel mechanism, waterfall edge design
- Four- independent adjustment mechanisms –seat height, back rest height, seat, and back rest tilt,
- Medium size seat base and backrest standard but options must be c o n s i d e r e d to accommodate larger and smaller staff
- Height adjustability range 650 to 780mm
- Depending on the floor surface pressure locks/brakes may need to be applied to 2 to 3 castors to overcome freewheeling. It is expected a trial will be undertaken to ensure a safe level of rolling resistance is achieved.
- Non-permeable rubber or vinyl covering
- Arm rests (adjustable height) preferred to assist transfer on/off.
- Options for perching or saddle stools for laboratory seating should be considered.
- Meet the requirements of AS 4438 1 and AFRDI certified level 5 or 6.

2.8.8 Examination Room/Seminar Room and Events Chairs

Requirements for examination room/seminar room chairs include:

- For staff, students, and others (e.g., general public):
- Non-adjustable, 4 legs, no arms
- Lightweight <10 kg for ease of moving
- Stackable and moveable with trolley
- Meet the requirements of AS 4688.1

2.8.9 Occasional Seating Chairs

Requirements for occasional seating/chairs include:

- Used for a wide range of applications such as public spaces, waiting rooms and cafes. Seating may include sofa's, armchairs, stools, ottomans. Seating shall include the following:
- Stable with load rating to minimum 100 kg
- No sharp edges, points, or entrapment/pinch points
- Front edge of seat well rounded to avoid compression

If the intention is to move the seating, a safe method of moving and storing the seating needs to be clearly defined.

Consideration to seat height in relation to table height where it is intended to be used at a table or bench/bar. Seat height should ensure vertical clearance for knees of largest users. 250 mm gap is sufficient.

Options of seating with armrests for users with restricted mobility.

The following features are also desirable:

- Cushioning on the seat and backrests
- Seat height should be selected to minimize pressure under thighs- approximately 400 to 450 mm.
- Seat depth should allow users to get benefit from the back support without slouching approximately 400 to 450 mm
- Backrest (if present) angle and shape should offer lumbar support
- No horizontal strut/leg between the front legs of the chair preventing placement of the feet beneath the centre of gravity
- Seat height at a high bench/bar should be approximately 675 to 725 mm and a foot bar should be fitted.

2.9.10 Lecture Theatre Seating

Requirements for lecture theatre seating include:

- Stable with load rating to minimum 100 kg
- No sharp edges, points, or entrapment/pinch points
- Front edge of seat well rounded to avoid thigh compression
- Tablet arms should be folded down and easy to operate. They must be robust and be free of sharp projections, rough surfaces or features that could cause entrapment of clothing or body parts. They must be of sufficient dimensions to accommodate a laptop or portable device. Approximately 15 % of tablet arms should accommodate left hand dominant users. These must be easily identifiable. Consideration should be given to seat height in relation to foldable tablet. Seat and tablet height should ensure clearance for knees of largest users. Tablet height from floor level between 650 to 700 mm
- Options of seating with armrests for users with restricted mobility.

The following features are also desirable:

- Seat height should be selected to minimize pressure under thighs- approximately 400 to

450mm.

- Seat depth should allow users to get benefit from the back support without slouching approximately 400 to 450mm
- No horizontal strut/leg between the front legs of the chair preventing placement of the feet beneath the centre of gravity.
- Backrest angle and shape should offer lumbar support.

2.9 DESIGN CHANGE AUTHORISATION

The requirements and standards noted in the University Design Standards are to be complied with. Any request for change to the requirements of the Design standards must be made on the Modification Request Form.

No design work is to proceed on the basis of the proposed modification until the modification request has been approved in writing.

As part of the project handover requirements, a schedule of modification requests and a signed copy of all approved modifications is to be provided to the University's Project Manager.