ERGONOMIC DESIGN PROCEDURE

SCOPE

This Procedure relates to all activities under the management and control of Monash University in Australia and applies to affected staff, students, contractors and visitors.

Specifically this applies to staff, students, visitors and contractors that have input into the ergonomic design of existing space, refurbishment works or new building projects.

PROCEDURE STATEMENT

This procedure sets out the ergonomic design requirements for general and open plan office space, reception areas and flat floor teaching spaces.

1. Abbreviations

ABW	Activity Based Work
AFRDI	Australasian Furnishing and Research Development Institute
DDA	Disability Discrimination Act
OH&S	Monash Occupational Health & Safety
OHS	Occupational Health and Safety
OHSMS	Occupational Health and Safety Management System

2. Use of this Procedure

2.1 Whilst each project will bring together a different range of design challenges, the information contained in this procedure must be taken into account, when new building or refurbishment works are undertaken.

2.2 In addition, Project Managers are responsible for ensuring that plans comply with all other relevant requirements, e.g. the National Construction Code, Disability Discrimination Act (DDA), OHS legislation, Australian Standards and the latest edition of the Monash Design and Construction Standards.

3. Work Area Analysis

3.1 Space

3.1.1 When planning new offices, space provisions as outlined in AS1668.2: 2012 and *Officewise - A Guide to Health and Safety in the Office* should be used as guidance. In addition, a risk assessment of the specific activities should be conducted to determine the appropriate amount of space required.

- The recommended space per workstation is 6m^2 plus additional space for storage amenities, corridors etc.

- For enclosed offices, AS/NZS 1668.2:2012, Table A1 specifies an allocation of 10m2 per person, based on ventilation requirements. In addition, functional needs such as technology, visitors, meeting chairs, etc. should be considered.

3.2   Circulation spaces

3.2.1   Corridor widths are dictated by:

- The National Construction Code based on emergency escape requirements. Wider unobstructed corridors are required closest to emergency exits;
- AS1428.1:2009 which stipulates minimum widths based on disabled access needs;
- DDA: Guideline on the Application of the Premises Standard 2013.
- The minimum recommended for access ways is an unobstructed width of 1000mm.

3.2.2   Current ergonomic practice recommends:

- Entrance to workstations or offices: 900mm - 1000mm;
- Corridors with frequent use in open plan area: 1200mm;
- Corridors with storage units along one side: 1500mm.

3.3   Storage spaces

3.3.1   Ergonomic principles specify storage allocations as:

Primary

- Items of personal nature or frequently accessed at workstation;

Secondary

- Items shared by team or requiring occasional access;
- Can be stored in corridor or nearby storage area, however stored items must not impede clear access and egress as defined in 3.2.2.

Tertiary

- Infrequently accessed items;
- Stored in compactus, storeroom, archives, or amenities areas.

Note: The layout of equipment and resources on a workstation should be arranged, so that they are within comfortable reach, according to their use.

3.3.2   Shelving

- Only light items (easily lifted with one hand) are to be stored above shoulder height.
- Heavier items must be stored between shoulder height and mid-thigh height.
- Bookcases should generally be no higher than 1800mm. However, if they are up to 2400mm in height, they must be fixed to the wall securely in accordance with AS/NZS4442:2018.
- Appropriate steps/ladders that comply with relevant Australian Standards, must be provided to access high shelves.

3.4   Head to head distances

3.4.1   This is the distance between the heads of adjacent workstation users. The distance relates to the perception of 'personal space', as well as the functional interferenace due to noise and the space needed to move around a work area.

3.4.2   Ideally, 1500mm or more should be provided from head to head of adjacent workstation occupants.

4.   Desk Design

4.1   Shape of desks

   4.1.1   Rectangular desks

      The standard supplied desks are rectangular

- Require PC across centre of desk to provide symmetrical posture;
- Desk returns can only be provided with prior BPD Planning approval.

4.2   Strength of desk

   4.2.1   AS/NZS4442:2018 requires that the design of the desk is sufficiently strong to withstand a minimum 90kg of load

   4.2.2   Where practical, the manufacturer should provide certification relating to the design of desks through an independent agency, e.g. Australiasian Furnishing and Research Development Institute (AFRDI).

4.3   Edges, corners and desk thickness

   4.3.1   Edges or corners must be rounded to avoid contact injuries.

   4.3.2   The recommended thickness for the desk surface is 25 - 35mm

4.4   Desk length

   4.4.1   For desks used only for computer-based taks, 1500mm is the minimum length.

   4.4.2   For mixed function tasks, a length of 1800mm - 2100mm is recommended

4.5   Desk depth and monitor type

   4.5.1   The depth of the standard supplied desk is 800mm in accordance with AS/NZS 4442:2018. This is adequate for one or more flat LCD monitors of standard size.

   4.5.2   The use of monitors (single or dual) greater than standard size must be risk assessed to ensure the desk dimensions are appropriate.

   4.5.3   If more than one monitor is required, the primary, frequently accessed monitor must be positioned in alignment with the user's body centre and the secondary monitor to one side.

   4.5.4   If both monitors are equally used they must be placed side by side at the same height in a horseshoe configuration.

   4.5.5   If more than two monitors are used, the primary monitor must be positioned in front of the keyboard and the others on either side. Double stacking of monitors increases the risk of neck discomfort when looking up to the top row, thus should be avoided. If multiple monitors are used, then a specialist workstation design is required based on a task analysis and technology utilisation study.

4.6   Static Desk height

   4.6.1   The standard height for static desks is 730mm in accordance with AS/NZS 4442: 2018 and DDA requirements.

   4.6.2   A footrest may be required, together with a height-adjustable chair, to ensure that a fully supported seated position is achieved.

4.7   Leg space

   4.7.1   Clear leg space should be provided under all desks where operators sit.

   4.7.2   The minimum clear leg space width should be 800mm

4.8   Cable management

   4.8.1   Secure loose cables away from the leg space of the seated user. Use cable trays or electrical conduit for cable management.

   4.8.2   The cables must be accessible to computer technicians with minimal manual handling risks.

   4.8.3   Desks that have shared users should have access to the power and data from an accessible point on the desk surface.

4.9   Sit/stand desks

   4.9.1   Sit/stand desks allow the user to alternate between sitting and standing which can minimise the problems caused by static posture.

4.9.2   Sit/stand desk also allow the desk height to be lowered to less than standard height to accommodate all users.

4.9.3   The minimum range of height adjustability is 620mm – 1200mm

4.9.4   Sit/stand desks are suitable for "hot-desking" environments.

4.9.5   Further information on Sit/stand desks can be found in the [Sit/stand desks OHS Information sheet](#).

5.   Reception Desks

5.1   Desk/hob height

5.1.1   Fixed height standing workstations should be 900mm.

5.1.2   For seated workstations, the height of the work surface must meet the requirmets outlined in 4.6.

5.1.3   Reception counters designed specifically for disability access must comply with AS1428.2:1992.

5.2   Desk depth

5.2.1   Reach distances:

- If required to sit at the desk and reach to the hob, a reach distance of less than 700 mm is recommended;

- Hence, the reception desk work surface depth should be less than 700mm and, preferably 500mm - 600 mm to the hob, where the reaching occurs. This can be most easily achieved by placing the computer into the apex of the counter and reducing the reach distance to the customer hob.

- If a security risk is identified with the customers then increase the depth of the hob. This requires the customer to be further away from the staff without increasing the reach distance for the staff.

- Apart from a depth of 500mm - 600 mm where reaching occurs, the remaining desk surface must be 800mm deep. Monitors should be positioned to suit the workflow, whilst maintaining visual sightlines.

5.2.2   Recessing monitors into the desk surface and covering with glass is not refcommended, due to reflections on the glass from lighting and excessive downward neck angles for the operator.

5.3   Monitor type

5.3.1   If the customer needs to view the monitor, determine how the monitor will swiel to enable this.

5.4   Foot rest

5.4.1   If a static workstation is used, provide a footrest across the entire width of the serving area.

5.5   Document Storage

5.5.1   Frequently accessed forms, etc. should be within the secondary reach zone (up to 700mm) from the seated position.

5.5.2   Forms may also be positioned under the desk surface, but away from the leg spae and within reach between the seated height and the desk.

5.5.3   Although users can spin on their swivel seat to retrived documents, they should not twist or over-reach.

5.6   Security

5.6.1   If the desk is in a public interface area, consider if:

- A duress alarm is required;

- Physical barriers to prevent persons reaching across or jumping the counter are required.

6.   Flat Floor Teaching Spaces

6.1   Workstation height

6.1.1   The recommended static desk height for PC use is 730mm high.

6.1.2   The recommended height for static standing height tables is 900mm and no higher than 1000mm.

6.2   Desk arrangement

6.2.1   The orientation of the technology must enable the user a clear sightline to the lecturer and teaching displays.

6.3   Work Space

6.3.1   The actual desk surface width is dependent on the layout and shape of the desk.

6.3.2   A minimum width of 800mm is required for the keyboard, mouse and personal space.

7.   Chairs

7.1   The University recommends a range of task chairs, which meet the requirements of AS/NZS4438:1997 – Height adjustable swivel chairs and are certified to AFRDI Level 6 and include the traditional square back chairs and a range of mesh chairs.

7.2   For further information on the mesh task chairs refer to the OHS Information sheet on Mesh Chairs.

7.3   Meeting room chairs are not suitable for use at desks and must only be used in meeting rooms or as visitors' chairs in an office area.

7.4   'Exercise balls' (Swiss/Fit balls) are not recommended due to safety risks. Further details are provided at the Worksafe Victoria website.

7.5   To assist with the selection of suitable chairs, it is recommended that project managers contact the approved suppliers and request a range of trial chairs, as part of the consultation process.

7.6   Chairs will wear and require maintenance and repairs. These costs should be included in the budget.

7.7   Glides are recommended for chairs to be used on hard smooth floor surfaces rather than castors, due to the risk of the chair slipping out from under the user.

8.   Purchasing Furniture

8.1   Furniture must meet the standard requirements outlined in sections 5-8 of this document and be purchased through Monash University approved suppliers.

9.   Work Environment

9.1   Lighting quality

9.1.1   The pverall level of illumination required for computer work is generally less than for clerical duties.

9.1.2   Glare and reflections may develop in higher luminance areas. LCD monitors and laptops perform better in these locations.

9.2   Natural light

9.2.1   It is desirable from a psychological perspective to retain an external view and to maintain natural light.

9.2.2   At times of direct sun glare, blinds may be used to control sunlight.

9.3   Task lighting

9.3.1   A desk lamp or similar may be used to supplement light levels in certain circumstances.

9.3.2   Orientation or globes should avoid a source of direct or reflected glare to the user.

9.3.3   Note: All electrical appliances used on campus must be tested and tagged in accordance with the Electrical Safety Procedure.

9.4   Noise in open plan areas

9.4.1   Conversational noise may result in distraction in open plan office areas.

9.4.2   Each work area should develop protocols relating to use of meeting rooms, breakout areas and control of excessive background noise in the open plan area.

9.4.3   Noisy equipment items, e.g. photocopiers should be located in utility rooms or similar, away from the workstation areas.

9.5   Partition height in open plan areas

9.5.1   Partitions between workstations do little to control noise but do provide some visual privacy.

9.5.2   Heights between 1100mm – 1350mm are recommended between members of work teams.

9.5.3   High partitions, e.g. 1500mm can be used where partition shelving is required. Higher partitions are generally not recommended for open plan work areas.

9.5.4   Partitions should be perpendicular to windows where possible to enable occupants in open plan areas to retain a view of windows over the 1100mm – 1350mm high partitions.

9.6   Thermal comfort

9.6.1   There are considerable individual differences between people regarding thermal comfort and it is unlikely that a single temperature or level of humidity will suit everyone.

9.6.2   Locating workstations directly in front of or below air conditioning outlets should be avoided.

9.6.3   Further information is available in the Indoor thermal comfort OHS Information sheet.

10.   Responsibility for Implementation

10.1   A comprehensive list of OHS responsibilities is provided in the document OHS Roles, Responsibilities and Committees Procedure. A summary of the specific responsibilities relevant to this procedure is provided below.

Heads of academic/administrative units: Heads of academic/administrative units are responsible for ensuring that staff are aware of the OHS Consultation Procedure and that these are implemented to ensure that input is sought from all staff when there are changes to the workplace, e.g. office space re-design.

10.1.1   **Monash Occupational Health & Safety (OH&S):** The responsibilities of OH&S include:

- Providing information and advice on ergonomic design to stakeholders;
- Providing advice on the functionality of office furniture to stakeholders and project managers;
- Participating in review meetings in accordance with the OHS Consultation Procedure.

10.1.2   Project managers: The responsibilities of project managers include:

- Providing information regarding the workplace changes to the Health & Safety Representative;
- Providing information regarding the workplace changes to OH&S;
- Issuing the latest edition of the Monash Design and Construction Standards to relevant parties;
- Ensuring that the correct data collection/information gathering process has been undertaken at the commencement of each project. This shall determine the correct configuration of furniture components that are suited to the defined work tasks for each user.
- Organising safety review and sign off meetings in conjunction with the academic/administrative unit and the local safety personnel;
- Attending safety review and sign off meetings; and
- Incorporating issues into building plans as agreed at safety review meetings.

11.   Records

11.1   For OHS Records document retention please refer to:

OHS Records Management Procedure

DEFINITIONS

A comprehensive list of definitions is provided in the Definitions tool. Definitions and terms specific to this procedure are provided below.

Key word	Definition
Activity Based Work (ABW)	ABW does not provide a specific space allocation per person. It is calculated on the overall needs of the activities to be conducted in the work area and the number of people who will use this space. Notionally there will be sufficient work points to provide one point for every 1.1 to 1.2 people who will use this area.
Head to Head Distance	Head to head distance is the distance between the heads of adjacent workstation users.
Project Manager	The project manager is the individual responsible for the day-to-day management of the project, usually from the Buildings and Property Division or the contracted company.
Sit/Stand Desk	Desks designed to be adjusted frequently to allow users to alternate between the seated and standing position.

GOVERNANCE

Parent policy	OHS&W Policy
Supporting schedules	N/A
Associated procedures	**Australian and International Standards** ISO 45001:2018 Occupational Health and Safety Management Systems AS/NZS4438:1997(R2016) Height adjustable swivel chairs AS1428.1:2009 Design for access and mobility – Part 1: General requirements for access – New building work AS*1428.2:1992*(R2015) Design for access and mobility - Enhanced and additional requirements - Buildings and facilities AS/NZS4442:2018 Office desks, office workstations and tables intended to be used as office desks - Mechanical, dimensional and general requirements and test methods *AS 1668.2-2012* The use of ventilation and air-conditioning in buildings - Mechanical ventilation in buildings **Worksafe Victoria documents** Officewise – A guide to Health and Safety in the Office (January, 2006) Fitness balls – Guidance note (January, 2020) **Monash University OHS documents** • Electrical Safety Procedure • Indoor Thermal comfort OHS Information sheet • Mesh Chairs OHS Information sheet • OHS Consultation Procedure • OHS Records Management Procedure • OHS Roles, Responsibilities and Committees Procedure • Sit/Stand Desks OHS Information sheet **Monash University documents** • Monash Design and Construction Standards

Ergonomic Design Procedure
Date effective: July 2020
Date of next review: 2023
Version: 4.1
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ISO 45001
BUREAU VERITAS
Certification

	This procedure is based on the Ergonomic design guidelines prepared for Monash University by David Caple, Director, David Caple & Associates Pty Ltd
Legislation mandating compliance	Occupational Health and Safety Act 2004 (Vic)
	Occupational Health and Safety Regulations 2017 (Vic)
	DDA (Disability Discrimination Act) Guideline on the Application of Premises Standards 2013
	National Construction Code
Category	Operational
Endorsement	Monash University OHS Committee 23 June 2020
Approval	Office of the Chief Operating Officer & Senior Vice-President (a delegate of the President & Vice-Chancellor) 13 July 2020
Procedure owner	Manager, OH&S
Date effective	July 2020
Review date	2023
Version	4.1
Content enquiries	ohshelpline@monash.edu

DOCUMENT HISTORY

Version	Date Approved	Changes made to document
3	May 2011	Computer workplace design guidelines, v3
1	February 2013	Ergonomic Design Procedure, v1

2	September 2014	1. Added the following terms to Definitions section:
		   a) Activity- based work
		   b) Sit-to-sit desk
		   c) Sit/stand desk
		2. Specified the desk depth to be 800mm in accordance with AS/NZS 4443:1997, irrespective of monitor size or number of monitors.
		3. Updated sections 8.6 and 8.9 to clearly outline separate requirements for sit-to-sit and sit/stand desks.
		4. Updated section 9.1 on desk/hob height of reception areas in line with AS/NZS 4443:1997 and AS/NZS 1428.2:1992.
		5. Added information to section 11.8 on the correct set-up of dual/multiple monitors.
		6. Added Compliance section and removed reference to legislation/standards from Purpose

3	March 2017	1. Removed references to adjustable height (sit-sit) desks, as these are no longer part of the University's preferred suppliers' range. 2. Removed references to 'controlled entities' and updated 'Facilities and Services' to 'Buildings and Property' division. 3. Updated hyperlinks throughout the document. 4. Changed wording from 'must' to 'should' as appropriate throughout the document. 5. Updated section 7.1 to clarify that AS 1668.2 and Officewise should be used as guidance, but the specific activities to be conducted in the space should also be considered when determining space requirements. 6. Updated section 8.5 – Desk depth to include requirements for the use of monitors larger

		than standard size
		7. Added link to Sit/stand information sheet to section 8.9 and removed superfluous information.
		8. Moved section 11.8 – Two or more monitors to section 8.5
		9. Added section 13 – Purchasing Furniture
		10. Replaced table in Records section with hyperlink to OHS Records management procedure
		11. Updated Compliance and Reference sections.
4.0	July 2020	1. Updated wording in Scope.
		2. Removed outdated definitions.
		3. Broadened requirements to include all flat floor teaching spaces.
		4. Updated Work Analysis, Desk Design and Reception desk sections of procedure to align with AS 4442:2018, Officewise and the Monash Design and Construction Standard as applicable.
		5. Removed Technology and Workstation Design section as these aspects are covered in the Ergonomics Principles module.
		6. Updated hyperlinks and Related Documents section.
4.1	July 2021	1. Updated certification logo in footer to ISO 45001
		2. Updated the Standard to ISO 45001 under "Associated procedures" in the Governance table
		3. Updated OHS Policy under 'Parent Policy' to OHS&W Policy