

CURTIN UNIVERSITY
PROJECT DELIVERY GUIDELINES

HAZARDOUS MATERIALS
PROJECT GUIDELINES

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Curtin University

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1 INTRODUCTION

The purpose of this document is to provide an overview of planning and design principles when providing consultancy for Curtin University projects involving facilities/spaces where hazardous materials are/will be used, handled, generated or stored. This document is intended for use by consultants, architects, engineers and other design service providers. The lead design consultant and hazardous materials consultancy should consider, in the design phase of any project, the best design outcomes, coordination of services, coordinated installation and ensure that all selected building materials and services are fit for purpose, provide value for money, are of sound construction, offer local support, integrate with other services and design concepts, are easily maintained and can be scaled within the University environment.

Sustainability is fundamental to the ongoing success of Curtin University's business. All users of these Hazardous Materials Project Guidelines must do so in consultation with the University's Sustainable Design Guidelines.

The University has a vital interest in the quality of its built environment. A quantitative measure is life-cycle costing and such costs should be minimised as far as possible. The qualitative terms 'buildability' and 'maintainability' are equally relevant.

The as-installed project must conform to established University building standards and represent the best possible value for money consistent with planning and financial restraints. It must also be easy to maintain, energy efficient, easy to clean and environmentally and aesthetically acceptable, both internally and externally. It must be buildable and in the final form must be flexible enough to allow ready and inexpensive alterations.

Flexibility in laboratory spaces and the ability of the space to respond to the rapidly changing and unpredictable nature of University research activity is considered a key indicator of space performance.

The delivery of appropriate facilities that can be operated safely is a key performance indicator for project teams.

2 DEFINITIONS

The following table provides definitions for the purpose of this document:

Name	Definition
Hazardous Substance	A substance that has the potential to cause acute or chronic health effects, as listed in the List of Designated Hazardous Substances [NOHSC:10005 (1999)]. In addition, this can also include biochemical and biological agents.
Laboratory	For the purposes of this document, a 'laboratory' includes engineering research space, workshops, pilot plant areas and any space where hazardous materials may be used, handled, generated or stored.
HazMat Infrastructure	For the purposes of this document, 'HazMat Infrastructure' includes any fixed equipment (e.g. safety showers, gas reticulation systems and ducted fume cupboards) that is stored or used within a laboratory, and/or used in processes involving hazardous materials or provided as an engineered control for the management of hazards resulting from the use, handling, generation or storage of hazardous materials.
HazMat Equipment	For the purposes of this document, 'HazMat Equipment' includes any equipment that utilises hazardous materials in its operation or in processes associated with its operation (i.e. calibration), and/or equipment that generates a hazardous materials or may itself be considered hazardous as result of contact with a hazardous materials (i.e. radioactive substances).

3 HAZMAT EQUIPMENT

Unless otherwise engaged, design responsibility of the project team will end at the equipment. The responsibility to procure fit-for-purpose equipment and to use that equipment in accordance with design parameters is held by the University.

However, the project team must engage with space users in order to understand the needs of the space as well as potential usage of the space in the future.

Where a project team identifies a potential that equipment does not meet Australian regulatory requirements or design standards this must be reported to the Properties, Facilities and Development (PF&D) Delivery Manager. Project teams may refuse to execute a project where the scope of that project may facilitate the operation of equipment that does not meet Australian regulatory requirements or design standards.

4 DANGEROUS GOODS STORAGE AND LICENSING IMPLICATIONS

Where a project is increasing the dangerous goods storage capacity of a space or will result in an increase in the storage of dangerous goods or dangerous goods storage locations, an assessment of the implications to the site of dangerous goods storage volumes in relation to dangerous goods licensing thresholds as defined by the Dangerous Goods Regulations shall be undertaken.

Where a project will trigger an exceedance of dangerous goods placarding or manifest quantities, a dangerous goods consultant shall be engaged and the project scope shall include measures to ensure site storage capacities meet dangerous goods regulations including the provision of a dangerous goods licence should dangerous goods regulations trigger such a need. If the project identifies placarding or manifest quantities, the HSEM Dangerous Goods Compliance Officer must be contacted to determine if the overall risk to the University and neighbouring properties is acceptable to the University.

5 HAZARDOUS MATERIALS AND LABORATORY SAFETY SPACE CAPABILITY DATABASE (GIS MAPPING)

A multi-layer GIS map (HazMat GIS Map) is under preparation to display the location and capability of hazardous materials infrastructure and associated risk, by location.

The following information will be displayed on the HazMat GIS Map:

- laboratory location, and functionality/storage capability
 - Storage capability shall be defined by the capacity of the store as defined in the Guidelines for the Storage of Chemicals
- HazMat Infrastructure location and capability, e.g. the location of a fume cupboard and the capability of the fume cupboard
- HazMat Equipment location (where that equipment is being maintained by Operations & Maintenance (O&M))
- Dangerous Goods Site
- space user details: faculty, department/school/research group and technical officer responsible for space
- Safety in Design Risk Register (final)
- limitations on the space, such as design or building infrastructure limitations
- types of laboratory or workshop uses the room is not suitable for.

Any projects that will impact any of the above shall trigger a requirement to update the HazMat GIS Map.

The HSEM Dangerous Goods Compliance Officer must be contacted to obtain access to the Map once it is available.

6 RISK ASSESSMENT OVER THE PROJECT LIFE CYCLE

For projects that impact hazardous materials infrastructure/facilities, hazard identification and risk mitigation methods shall be integrated with design from the early stages of the project in order to minimise operational health, safety and environmental risk and the need to address such issues after project completion.

Documentation of risk control measures and determination of residual risk and the storage of this information in a manner that is useful and easily extracted is integral to understanding the University's overall hazardous materials risk profile. This shall be achieved by maintaining a Safety in Design Risk Register over the life of the project. The following subsections identify specific focus areas for risk management on hazardous materials projects over the project lifecycle.

While the primary intent of integrating safety in design is to minimise risk through the use of control measures at or above engineered controls, administrative control measures and collaboration with laboratory users in the preparation/updating of Laboratory Standard Operating Procedures (SOPs) shall also be considered from the early design stages.

The risk assessment process shall adopt a consultative approach with relevant stakeholders, shall be led by an appropriately qualified facilitator and shall utilise appropriate risk assessment techniques.

6.1 PROJECT PROPOSAL

There are financial and operational implications of relocating research or retrofitting engineered controls to mitigate the risks arising from non-compliant use, handling, generation or storage of hazardous materials once a research group or teaching department has become established in a space. A space suitability risk assessment shall be undertaken by a lead design consultant or specialist consultant who has demonstrable experience in the design of laboratories, chemical stores and/or gas stores in a university environment as a part of the project proposal submission, and shall be undertaken in collaboration with the end users via a risk workshop led by an appropriately qualified facilitator.

The intent of undertaking a high-level 'space suitability' risk assessment is to identify health, safety and environmental risks that may present a risk to effective project delivery and cost, and will assist to inform PF & D in project approval. The project team shall demonstrate high-level understanding of the processes and hazardous materials risks associated with undertaking these processes in the proposed space. The intent shall be to challenge the capability of the space to support the operations proposed.

The space suitability risk assessment shall consider adjacent functions and utilisation of existing space; the availability of identical or similar functions nearby shall be considered and the need to proceed with the project considered in the context of existing functions and opportunities for co-location/equipment sharing.

6.2 SCHEMATIC DESIGN AND SCOPE DEVELOPMENT

The culmination of the schematic design and scope development shall be a risk assessment developed over the project initiation, proposal and scope development phases, and formalised through a risk workshop led by an appropriately qualified facilitator and including all relevant stakeholders such as lead design consultant, specialist consultants, end users and applicable University technical stakeholders from PF&D, Health, Safety and Emergency Management (HSEM) and/or the Office of Research and Development (ORD).

Understanding of the processes being undertaken that use, handle, generate and store hazardous materials shall be integral to project scope development, such that potentially costly controls can be adequately scoped. A detailed functional brief shall be developed that incorporates user workflows.

Imposing restrictive or unrealistic management controls or space limitations due to inadequate project scoping is not considered an acceptable alternative for engineered controls.

6.3 DETAILED DESIGN

The responsibility for developing and implementing SOPs to provide a safe working environment is held by the facility/laboratory manager/person responsible for the space. However, project design teams shall collaborate with the facility/laboratory manager in the preparation or updating of laboratory SOPs such that engineered controls and design safety features, as well as design limitations, are documented in this format.

An operational risk register shall be developed as a part of these SOPs, which records engineered controls and design safety features in addition to operational controls and limitations imposed by the design.

SOPs and operational risk registers must take into account the requirements of Operations and Maintenance to be able to maintain and clean the space in a safe and compliant manner.

A specialist laboratory safety consultant may be required to facilitate the development or updating of SOPs and this cost shall be borne by the project.

The Safety in Design Risk Register shall form the basis of the Operational Risk Register, such that Safety in Design principles are being utilised to achieve delivery of spaces that can be operated safely.

The use of design drawings is not always an effective means of communication when dealing with stakeholders who are not used to such a tool. The culmination of the detailed design process shall be an interactive risk workshop to review risk registers and SOPs to ensure that end users understand the engineered controls and design safety features and design limitations.

6.4 IMPLEMENTATION

Contamination of spaces or equipment, especially those that are being refurbished or demolished as part of the building works that have generated, contained or come into

contact with hazardous materials may present a risk to contractors and university staff and students.

Equipment, fittings or furnishings that have come into contact with hazardous materials may have specialised decontamination or disposal requirements.

A specialist hazardous materials consultant may be required to provide advice on space handover/decontamination/disposal procedures such that contractors are not exposed to residual hazardous contamination and to ensure Curtin is disposing of potentially hazardous materials in accordance with regulatory requirements.

Where a biological or radiation contamination potential is identified, the ORD Bio-Safety Advisor and/or Radiation Safety Advisor must be identified as stakeholders.

Where projects works will displace laboratory materials or hazardous materials, appropriate alternative storage shall be provided in consultation with the end users.

Where contractors will be undertaking work in a space that has not been fully decanted, the contractor shall submit a Site Access Request for laboratory access including, as an attachment, a risk assessment that shows they have engaged with the person responsible for the space and have implemented adequate controls to mitigate the risk of exposure to hazardous materials.

Any consultant or contractor undertaking works inside a laboratory or hazardous materials storage space must undertake a laboratory induction delivered by the University's HSEM Department.

Management plans prepared or reviewed by suitably qualified specialist consultants may be required to ensure works involving the removal or disposal of hazardous materials or equipment that has come into contact with hazardous materials to document safe and correct removal/disposal in accordance with regulatory requirements.

6.5 PROJECT HANDOVER AND DOCUMENTATION

Delivery of spaces and projects that are able to be operated safely and in accordance with regulatory requirements, Curtin guidance documents and accepted standards is considered a key performance indicator for project teams.

While the preparation and implementation of SOPs and operational risk registers is the responsibility of the facility/laboratory manager/person responsible for the space; a key project deliverable for any project involving facilities/spaces where hazardous materials are/will be used, handled, generated or stored shall be SOPs incorporating an operational risk register that have been developed in collaboration with space users.

7 PROJECT REVIEW AND SITE INSPECTIONS

7.1 PLANNING AND DESIGN

Curtin University's Hazardous Materials Infrastructure Manager/Technical Advisor shall be identified as a PF & D stakeholder and included in the project Technical Review Group.

7.2 PRACTICAL COMPLETION

At practical completion, the consultants shall forward all commissioning data to Curtin University's Hazardous Materials Infrastructure Manager/Technical Advisor for review and comment by the University. The consultant shall also coordinate the defects inspection to be carried out with a representative of the relevant design consultants and contractors, and Curtin University's Hazardous Materials Infrastructure Manager/Technical Advisor.

7.3 FINAL COMPLETION

All new plant and fixed HazMat Infrastructure that does not already fall under Mechanical Services shall be maintained and serviced for the duration for the defects liability period in accordance with the Mechanical Services Guidelines.

At the end of the 12-months defects warranty period, a final inspection shall be carried out with a representative of the relevant design consultants and contractors, and Curtin University's Hazardous Materials Infrastructure Manager/Technical Advisor.

8 SECURE ACCESS ARRANGEMENTS

Imposing access restriction to laboratory and hazardous materials storage spaces is the primary method of mitigating risk for University students, staff and contractors whose qualifications, induction level and operational requirements preclude them from unrestricted access to the space(s).

Access restriction shall be determined through risk assessment and must consider the range of personnel who may require access (e.g. O & M contractors such as cleaners who work outside of business hours).

A Security Management Plan may be required to document the security measures in place and response measures agreed with Curtin Safer Communities for the purpose of assisting permit/licence holders in their communication with regulators. The requirement for a Security Management Plan shall be determined based on risk assessment of the hazardous materials being stored, undertaken in collaboration with the Hazardous Materials Infrastructure Manager, ORD Safety Officer, HSEM and end users.

000327 PDG Security Infrastructure Design Guidelines may be of assistance in developing a Security Management Plan.

9 HAZMAT GUIDANCE DOCUMENTS

All consultants and contractors should be adequately experienced in the delivery of projects involving facilities/spaces where hazardous materials are/will be used, handled, generated or stored, and demonstrable experience in university and/or research facilities.

Further information pertaining to storage, specialist spaces and hazardous materials infrastructure/assets can be found in the following guidance documents:

- Hazardous Substances Storage Guidelines
 - Guideline for the Storage of Chemicals
 - Guideline for Gas Management and Gas Store Design
 - Guideline for the Management and Assessment of Nanomaterials in Research
- *Speciality Guidelines (under construction)*
 - Guideline for Cryogenics
 - Guideline for Bio-hazard Facilities
 - Guideline for Radiological Hazard Facilities
- *HazMat Infrastructure/Asset guidelines (under construction)*
 - Laboratory Cupboards (Fume Cupboards – Ducted and Recirculating, Bio-Safety Cabinets, Laminar Flow Cabinets)
 - Autoclaves
 - Gas Reticulation and Gas Detection
 - Laboratory Safety Equipment.

10 REFERENCES

000327 PDG Security Infrastructure Design Guidelines