GUIDELINES FOR IDENTIFYING HAZARDOUS AREAS

Identify a Hazardous Area

1. Hazardous areas are areas where flammable gases, vapours, liquids, or combustible dusts, fibres or flyings may occur in dangerous quantities and where explosives materials/substances are exposed to the atmosphere.

How to Recognise Hazardous Areas

NOTE: No one should be allowed to access these Hazardous Areas without the appropriate awareness training (specific to each individual Hazardous Area) or unless under the direct supervision of an appropriately Competent Person. Necessary control measures may include appropriate anti-static clothing, access control, appropriate signage/markings and exclusion of personal portable equipment that is battery operated including watches, hearing aids, cameras, remote controls, car keys, test meters, torches, power tools and mobile phones.

2. Three types of Hazardous Areas are recognised as follows:

   • Group II - Hazardous Areas (gas or vapour) in which an explosive atmosphere is present, or may be expected to be present, in quantities such as to require special precautions for the construction, installation and use of the equipment.

   • Group III - Hazardous Area (dust) in which combustible dust in cloud form is, or can be expected to be present, in quantities such as to require special precautions for the construction and use of equipment in order to prevent ignition of an explosive dust/air mixture.

   • Explosives Hazardous Areas – An area in which explosives material/substances of Explosives Ordnance are exposed to the atmosphere such that they require special precautions for the construction and use of equipment in order to prevent ignition of an explosives material/substance.

3. Group II classification and examples of flammable gas and vapour Hazardous Areas are provided in AS/NZS60079.10.1:2009.

4. Group III classification and examples of combustible dusts Hazardous Areas are provided in AS/NZS60079.10.:2011.

5. The responsibility for the classification of a Hazardous Area rests with the Persons in Control of the installation. However, the actual process of Classification requires specific Competencies to do so. Classification may be undertaken by a competent third party engaged by the Person in Control of the Hazardous Area. Refer to AS/NZS 3000:2007 (Clause 7.7.2.1) for more information.

7. The Department of Defence has its own standards relating to electrical safety in installations containing explosives ordnance eDEOP 101. Vapours and gases from explosives
and dusts from explosives already have the oxidiser, so they do not need to mix with air. This means they are explosive in any quantity.

Check Lists for Typical Hazardous Areas

8. The following is a list of some of the typical Hazardous Areas. The list is not exhaustive. Other areas that are suspected of giving rise to flammable gases, vapours, liquids or combustible dusts need to be assessed.

- Flammable liquid cabinets (normally do need appropriate signage and exclusion markings but not a Verification Dossier if there is no electrical installation in the associated Hazardous Area).
- Explosives Areas.
- Vehicle workshops.
- Vehicle parking and standing areas (mainly underground or otherwise enclosed such that ventilation is restricted).
- Fuel dispensing stations.
- Fuel storage tanks and ventilation pipes from storage tanks.
- Pollution control equipment.
- Waste collection storage vessels, drains, sumps or pits.
- Aircraft hangars and refuelling areas.
- Above ground fuel storage tanks.
- Underground fuel storage tanks.
- Packaged fuel storage.
- Fuel loading.
- Waste liquids collection and drainage.
- Gas equipment.
- Fume cupboards and laboratories.
- Flammable medical agents.
- Anaesthetising areas.
- Sewage treatment.
- Surface coatings and adhesives.
- Finishing processes (paint and lacquer).
- Vessels containing flammable liquid.
- Degreasing, cleaning processes.
- Ammonia systems.
- Refineries.
- Grain silos, dust hoppers, bag emptying station, cyclone and filter as part of a suction extraction system.

Common Hazardous Areas in the Defence Estate

9. The most common Hazardous Areas in the Defence Estate appear to be:

- Flammable liquids cabinets and stores.
- Flammable liquid decanting areas.
- Paint and lacquer spray cabinets and rooms.
- Degreasing and cleaning areas.
- Fuel dispensing facilities.
- Bulk Fuel Installations.
• Aircraft hangars.
• Explosives ordnance handling and processing.
• Fuel storage tanks (i.e. Ground Fuel).
• Waste treatment areas.
• Vehicle maintenance facilities.
• Fume cabinets.
• Gas storage tanks and equipment (see AS/NZS5601.1:2010 for more information on Gas Installations).

Appendices:

2. Flow Chart 2 – Compliance Check Procedure.
APPENDIX 1

FLOW CHART 1
IDENTIFICATION OF HAZARDOUS AREAS

Is there an existing system in place where competent persons have identified all Hazardous Areas with flammable liquid, gas or vapour, all Hazardous Areas with combustible dusts and all explosives areas?

1) Identify all areas in which an explosive gas atmosphere may be present, in quantities such as to require special precautions. Refer to the check list in Appendix 1 and refer to AS/NZS 60079.10:1.2009 for completeness.

2) Identify all areas in which a combustible dust cloud is, or can be, present in quantities such as to require special precautions. Refer to the check list in Appendix 1 and refer to AS/NZS 61241.14:2005 for completeness.

3) Identify all areas in which explosives may be stored, manufactured or handled.

Are there any areas in doubt?

Obtain the services of a person competent to check and classify the hazard.

Is this task complete?

Refer to Flow Chart 2 for a compliance check procedure.

Has compliance been achieved?

Carry out the rectification procedure in Flow chart 3.

Has compliance been achieved?

Task completed.

Check again regularly in accordance with the standards or when changes are made.
FLOW CHART 2
COMPLIANCE CHECK PROCEDURE

Hazardous Areas have been identified from Flow Chart 1)

Is there a zone diagram or signage clearly indicating the extent and nature of the hazard in three dimensions?

- YES
  - Is access to the site adequately controlled?
    - NO
      - RECTIFY (got to Flow Chart 3)
    - YES
      - Do all personnel working in or near the hazard have appropriate awareness and/or training related to the Hazardous Area?
        - NO
          - RECTIFY (got to Flow Chart 3)
        - YES
          - Is there an electrical installation in, above or under the Hazardous Area?
            - NO
              - RECTIFY (got to Flow Chart 3)
            - YES
              - Is there an up-to-date verification dossier meeting the requirements of the standard relevant to the type of hazard? (Refer to AS/NZS 2381.1, AS/NZS 61241.14, eDEOP101, MIEE Ch15)
                - NO
                  - RECTIFY (got to Flow Chart 3)
                - YES
                  - Task complete, repeat process regularly or when situation changes.

For any non-conformances found, carry out rectification procedure in accordance with Flow Chart 3

Engage the services of a competent person as defined by the standards (refer to AS/NZS 4761.1:2008, MIEE Ch15, eDEOP 101) and audit the installation for compliance.

Does the Verification Dossier fully comply and demonstrate that the installation has been designed, inspected and maintained by those who have the appropriate competencies?

Are inspection and maintenance activities records up to date?

NO
FLOW CHART 3
RECTIFICATION PROCEDURE

1) Refer to the requirements of the Model WHS Act for ensuring health and safety and the definition of reasonable and practicable.

2) Liaise with the State and Territory Regulators where relevant.

3) Meet all conditions imposed by the Commonwealth and or State/Territory Regulators.

Guidelines for officers—when compliance is not reasonably practicable as defined by the Model WHS Act and ceasing the activity is prejudicial to Australia’s national security or defence.

1. Notify all relevant officers in accordance with Part 1 Division 4, Sections 12C and 12D of the Act.

2. Seek competent professional advice from:
   - Subject matter expert for electrical safety in hazardous and/or explosive areas.
   - Due diligence engineering to ensure all reasonable and practicable measures have been taken that could have been, and to document as such.
   - Legal experts in workplace health and safety to verify that actions taken are correct and defensible.

3. Follow the advice from step 2.

A non-compliant Electrical Installation has been found in, above or under a Hazardous Area has been identified (from Flow Chart 1 or 2)?

Is it safe to continue with the activity which gives rise to the Hazardous Area?

Persons in control and relevant officers are to be notified in writing of the compliance issues. The person in control will typically be the relevant SADFO, BSM or RSO.

Is the activity to continue?

Is this an isolated problem and if not does it have a well defined scope of compliance problems?

Are there adequate resources to promptly rectify the issue?

Can another control measure be put in place temporarily to make it safe to continue? This must be done in a way that demonstrates due diligence in accordance with the WHS Act using the hierarchy of controls in the WHS code of practice.

The facility is prohibitively dangerous because of the non-compliant electrical installation.

Make Safe.
Notify Persons in control.
Immediate closure or stop activity.

Arrange for a wider audit to identify other compliance issues and hence scope.

Prepare a compliance timeline. Use appropriate control measures which demonstrate that all reasonable and practicable precautions are in place. Liaise with the relevant stakeholder in accordance with the WHS Act and Code of Practice.

YES

NO

YES

NO

YES

NO

COMPLIANT ELECTRICAL INSTALLATION. Review compliance regularly.
Glossary:


**Classification:** See AS/NZS 2381.1:2005 Clause 1.8, AS/NZS 3000:2007 Clause 7.7.2.

**Competency:** as defined in AS/NZS 4761.1:2008 Clause 1.4.10.

**Competent Person:** as defined in AS/NZS 2381.1:2005 Clause 1.4.9. See also AS/NZS 2381.1:2005 Clause 1.7 in relation to qualifications of personnel.

**Electrical Equipment:** also known as *electrical apparatus*, defined in AS/NZS 2381.1:2005 Clause 1.4.12.

**Electrical Installation:** refers to the permanent fixture or non temporary presence of any Electrical Equipment. Refer to AS/NZS 3000:2007 Clause 1.4.47.

**Ex d, Ex n, Ex v:** Are used to identify the method of protection type of electrical equipment used in Hazardous Areas. See AS/NZS 2381.1:2005 Clause 2.4.2 and Table 2.1. See also and AS/NZS 61241.14:2005 for details of specific methods of protection in Dust Hazardous Areas.

**Explosives / Explosives Ordnance:** as defined in eDEOP 101.

**Explosives Hazardous Area:** an area where the explosives material/substances are exposed to the atmosphere.

**Group II:** Refers to a Hazardous Area (gas or vapour) in which an explosive atmosphere is present, or may be expected to be present, in quantities such as to require special precautions for the construction, installation and use of the apparatus.

**Group III:** Refers to a Hazardous Area (dust) in which combustible dust in cloud form is, or can be expected to be present, in quantities such as to require special precautions for the construction and use of equipment in order to prevent ignition of an explosive dust/air mixture

**Hazardous Area:** are areas that are known as Group II and Group III Hazardous Areas and Explosives Hazardous Areas. To improve readability, all these areas are collectively described in this document as Hazardous Areas...


**Licence:** Permit from the State or Territory Electricity Safety Regulator to carry out electrical work under the relevant Act and Regulations.

**Manual of Infrastructure Electrical Engineering (MIEE):** the primary Defence policy document when determining electrical engineering requirements for Defence facilities and infrastructure.
**WHS Act:** is the Work Health and Safety Bill (Cth) that was introduced into the House of Representatives on 6 July 2011 and which is expected to commence operation on 1 January 2012. See [http://www.deewr.gov.au/WorkplaceRelations/Pages/CWHandSafetyBill.aspx](http://www.deewr.gov.au/WorkplaceRelations/Pages/CWHandSafetyBill.aspx) for more information.

**Non Hazardous Environment (NHE):** This zone is used to identify environments that contain enclosed/packaged explosives as defined in eDEOP 101, Regulation 6.3 – Electrical Standards, Clause 3.6c. For more information see; [http://intranet.defence.gov.au/home/documents/data/DEFPUBS/DEPTMAN/edeop101/](http://intranet.defence.gov.au/home/documents/data/DEFPUBS/DEPTMAN/edeop101/)

**Owner:** the person or organisation who has legal ownership of the installation which allows for the existence of the Hazardous Area.

**Person(s) in Control:** is the person (or persons) who control the Hazardous Area. This would normally be the owner and/or operator of the facility.

**Static Electricity:** As defined in AS/NZS 1020.

**Verification Dossier:** as defined in AS/NZS 2381.1:2005 Clause 1.4.39.

**Zone:** Each Hazardous area is classified as comprising of one or more Zones based upon the frequency and duration of the occurrence of explosive gas/air mixtures, explosive dust/air mixtures or Explosives. See AS/NZS60079.10.1:2009 Clauses 3.6-3.8 and AS/NZS 60079.10.2:2011 Clause 6.2.