Assets Planning and Delivery Group
Engineering

HA-ST-08

Electrical Equipment in Hazardous Areas (EEHA) Overhaul Standard

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REVISION 5

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FOREWORD

Electrical Equipment in Hazardous Area (EEHA) Standards are prepared to ensure that the Water Corporation's staff, consultants and contractors are informed as to the Water Corporation's EEHA standards and recommended practices. EEHA standards are intended to promote uniformity so as to simplify selection, installation and maintenance practices; their ultimate objective is to provide safe and functional plant, at minimum whole of life cost.

The Water Corporation EEHA standards and recommended practices described in this EEHA standard have evolved over a number of years as a result of capital project delivery, plant operation and maintenance experience gained through the selection, installation and maintenance of electrical equipment in our hazardous area facilities.

Deviation, on a particular project, from the EEHA standards and recommended practices maybe permitted in special circumstances but only after consultation with and endorsement by the Senior Principal Electrical Engineer, Mechanical & Electrical Assets, Engineering.

Users are invited to forward submissions for continuous improvement to the Senior Principal Electrical Engineer, Mechanical & Electrical Assets who will consider these for incorporation into future revisions.

Head of Engineering

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REVISION STATUS

The revision status of this standard is shown section by section below:

REVISION STATUS						
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1 INTRODUCTION

1.1 Scope

This Standard specifies the general overhaul and modification requirements for electrical equipment on Water Corporation facilities to ensure its continued safe use in hazardous areas. The intention of this Standard is to expand upon the requirements of AS/NZS 3800, and to specify additional Water Corporation requirements.

This Standard covers both overhaul and modification of new and existing installations.

It covers all explosion-protected electrical equipment, including those located in non-hazardous areas.

The requirements of this Standard are in addition to the general requirements for overhaul and modification of electrical equipment.

1.2 Exclusions

This Standard does not apply to the overhaul and modification of non-explosion-protected electrical equipment.

This Standard does not apply to Maintenance (refer Water Corporation's Electrical Equipment in Hazardous Areas (EEHA) - Maintenance Standard: HA-ST-07.

1.3 Abbreviations

TIC Technical Integrity Custodian

1.4 Technical Integrity Custodian

The Technical Integrity Custodian (TIC) for this Standard is the Senior Principal Electrical Engineer, Mechanical & Electrical Assets.

1.5 Referenced Documents

The following documents are referenced in this Standard. If a referenced standard has been superseded, the user shall notify the TIC and utilize the latest edition of the standard unless advised otherwise in writing by the TIC.

AS/NZS 60079.17:2017	Explosive atmospheres Part 17: Electrical installations inspection and maintenance
AS/NZS 3800:2020	Electrical equipment for explosive atmospheres – Overhaul and repair
AS/NZ 4761.1:2018	Competencies for working with electrical equipment for hazardous areas (EEHA) - Part 1: Competency Standards.
HA-ST-07	Electrical Equipment in Hazardous Areas (EEHA) - Maintenance Standard
HA-WI-05	Overhaul Documentation Work Instruction

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2 GENERAL

All explosion protected electrical equipment installed on Water Corporation's facilities regardless of whether or not it is located in a hazardous area, shall be overhauled and modified in accordance with the requirements of AS/NZS 3800 and this Standard. This is necessary in case explosion protected equipment located in a non-hazardous area is later relocated to a hazardous area. The detailed inspection after relocation will not identify changes to the equipment content that could result if the equipment was not overhauled and modified in accordance with its original certification, as required by this Standard.

All overhauls and modifications shall require the written approval of the TIC.

Whenever viable, the overhaul or modification shall be undertaken by the original equipment manufacturer.

3 OVERHAUL AND MODIFICATION

3.1 Overhaul and Modification vs Maintenance

It is vitally important to distinguish between overhaul/modification and maintenance because different competencies and standards apply to these activities. AS/NZS 3800 covers the overhaul and modification of explosion-protected equipment whilst maintenance is covered by AS/NZS 60079.17.

Prior to commencing any work, the maintenance technician must confirm that the activity required to restore the equipment to safe use is 'maintenance' or is 'overhaul or modification'. Work that is deemed to be overhaul or modification must be passed on to a Water Corporation approved repair facility for actioning in accordance with this Standard.

Work that is deemed to be maintenance may be actioned by the technician in accordance with the Water Corporation's Electrical Equipment in Hazardous Areas (EEHA) Maintenance Standard: HA-ST-07

The following definitions are based on those stated in AS/NZS 3800:

Maintenance: Routine actions taken to preserve the fully serviceable condition of the installed equipment.

Overhaul: Action to restore to a fully serviceable condition equipment which has been in use or in storage for a period of time, but which is not faulty.

Modification: Change to the design of the equipment which affects material, fit, form or function.

Guidance on determining which activities are deemed by the Water Corporation to be overhaul or modification is given in Appendix A of this Standard.

Repair: Action to restore faulty equipment to its fully serviceable condition complying with the relevant Standard.

3.2 Original Equipment Manufacturer

Whenever viable, explosion-protected electrical equipment should be returned to the original equipment manufacturer for overhaul or modification. When this is not possible or viable, the equipment must only be overhauled/modified by a Water Corporation approved repair facility, whose scope covers the required activities.

3.3 Repair Facilities

3.3.1 General

Overhaul and modification work shall only be performed by a repair facility approved by the TIC on a case-by-case basis.

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3.3.2 Approving Repair Facilities

Only repair facility accredited in accordance with AS/NZS 3800 for the required scope can be used.

Prior to use, the repair facility must successfully complete a pre-qualification assessment. This assessment will cover the repair facility's workshops, systems and personnel competencies.

The results of the pre-qualification assessment including all the collected evidence shall be recorded in the hazardous area verification dossier.

Guidelines for conducting the pre-qualification assessment are contained in Appendix B of this Standard.

3.4 Documentation

Work Instruction HA-WI-04 details the documentation to be supplied to and received from the repair facility when conducting overhaul in accordance with this Standard.

3.5 Competency

The competency of persons overhauling or modifying electrical equipment in hazardous areas shall be covered via the repair facility's accreditation to AS/NZS 3800.

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APPENDIX A: EXAMPLES OF OVERHAUL/MODIFICATION ACTIVITIES

This appendix provides some common examples of activities on Water Corporation facilities that will be deemed overhaul or modification and therefore must be undertaken by a Water Corporation approved repair facility in accordance with this Standard. It also gives some examples of activities that are deemed to be maintenance, which may be undertaken by personnel holding current Water Corporation Inlec Technician EEHA Competency. The TIC should be consulted whenever the Electrical Technician is not sure if the activity is maintenance.

The following activities on Water Corporation facilities are deemed to be overhaul or modification, which must only be carried out by a suitable repair facility.

- The rewinding of a motor would be overhaul
- Replacement of a bearing on a motor is overhaul
- The addition of an extra entry to an Ex d junction box would be a modification
- The re-drilling and tapping of an existing entry to an Ex d junction box would be a modification
- The replacement of a component on a circuit board in an intrinsically safe instrument with an identical component would be overhaul.

The following activities on the Water Corporation's facilities are deemed to be maintenance:

- The replacement of a circuit board, switch assembly, or similar, in a certified instrument with an identical board or switch assembly manufactured by the original equipment manufacturer. The TIC shall be consulted if an identical board, switch assembly, etc. is not available.
- The replacement of gaskets, seals and bolts.
- The replacement of a fluorescent tube in a luminaire.
- The adjustment of a pressure switch set point.
- The calibration of an instrument.
- The replacement of a terminal block in a junction box or on a barrier.

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APPENDIX B: GUIDELINES FOR CONDUCTING A PRE-QUALIFICATION ASSESSMENT OF A REPAIR FACILITY TO AS/NZS 3800

This appendix provides some guidelines to assist assessors during pre-qualification in determining if an AS/NZS 3800 repair facility should be used by the Water Corporation.

BACKGROUND

All repair facilities accredited in accordance with AS/NZS 3800 for the overhaul and modification of explosion-protected electrical equipment will already have been audited by an independent body in accordance with AS/NZS 3800. The auditors will have considered the repair facility's systems and the competency of the repair facility personnel.

Industry experience has shown that the explosion-protection integrity of overhauled and modified equipment is highly dependent upon the knowledge and skills of the repair facility personnel. Prior to the advent of AS/NZS 4761, the competency of the repair facility personnel was assessed to criteria determined by the auditor. Weaknesses in the knowledge and skills of the personnel could result in 'unsafe' equipment being returned to Water Corporation facilities. It is the Water Corporation's preference that the repair facility personnel hold Statements of Attainment in the relevant units of competency.

WATER CORPORATION ASSESSMENT

Prior to using an AS/NZS 3800 repair facility, the Water Corporation shall conduct a pre-qualification assessment of the repair facility. It is recommended that the assessment includes a visit to the repair facility. Following is a list of typical points to be covered in the assessment:

GENERAL

- Does the repair facility have a current accreditation to AS/NZS 3800?
- When does the accreditation expire?
- What is the accreditation's scope?
- Who are listed as the 'Competent Persons' on the accreditation document?
- Are the 'Competent Persons' still working at the repair facility?
- Do the 'Competent Persons' have Statements of Attainment for the relevant competency units (UTE NES 215, 407, and 705)?
- When were the Statements of Attainment issued? Is the competency still current?
- Do the 'Competent Persons' have endorsements in all Ex techniques covered by the accreditation scope?

CONDUCT A TECHNICAL INTERVIEW OF AT LEAST TWO PERSONNEL LISTED AS 'COMPETENT PERSONS'

- Do they know the repair facility's accreditation scope?
- Do they have a detailed knowledge of the issues involved in being able to safely action overhaul and modifications to the scope?
- Do they know what information they would need to action the work scope?

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- Do they know where to obtain the information?
- Do they know what to do if the information was not available?

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END OF DOCUMENT

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