

## Management of Medical Gas Pipeline Systems

**Summary** The purpose of this Policy Directive is to ensure that relevant NSW Health organisations have robust management systems in place for managing the installation, refurbishment, commissioning and maintenance of medical gas pipeline systems.

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**Branch contact** (02) 9391 9768

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**Applies to** Ministry of Health, Public Health Units, Local Health Districts, Board Governed Statutory Health Corporations, Chief Executive Governed Statutory Health Corporations, Specialty Network Governed Statutory Health Corporations, Affiliated Health Organisations, NSW Health Pathology, Public Health System Support Division, Cancer Institute, Community Health Centres, NSW Ambulance Service, Dental Schools and Clinics, Public Hospitals

**Distributed to** Ministry of Health, Public Health System, Divisions of General Practice, Government Medical Officers, NSW Ambulance Service, Environmental Health Officers of Local Councils, Private Hospitals and Day Procedure Centres, Health Associations Unions, Tertiary Education Institutes

**Audience** Biomedical Engineers;Asset Management;Facilities management;Work health and safety;Anesthesiology;Capital Works;Maintenance;Clinical Governance

## Management of Medical Gas Pipeline Systems

### POLICY STATEMENT

All NSW Health organisations must have robust management systems in place for managing the installation, refurbishment, commissioning and maintenance of medical gas pipeline systems.

### SUMMARY OF POLICY REQUIREMENTS

The NSW health care facility must prepare and document an operational and risk management plan prior to the commencement of any medical gas system works.

The public health organisation, NSW Health agency or the building contractor must appoint an experienced installer with responsibility for installation and testing of medical gas systems.

The installer must undertake testing, verification and certification of the medical gas system in accordance with Australian Standard AS 2896:2021 *Medical gas systems – Installation and testing of non-flammable medical gas pipeline systems* (the Standard) and this Policy Directive.

To align with specific testing requirements, which may vary, a representative of the NSW health care facility at the appropriate level (refer to Section 2, Table 1) must witness the test in accordance with the Standard (Appendix K of the Standard).

Chief executives of relevant public health organisations and NSW Health agencies are responsible for assigning responsibility for implementing and complying with this Policy Directive.

Health care facility managers and relevant NSW Health agency managers are responsible for providing local implementation of this Policy Directive.

### REVISION HISTORY

Version	Approved By	Amendment Notes
PD2022_034 August-2022	Secretary, NSW Health	Policy has been updated to align with changes to Australian Standard AS 2896:2021 <i>Medical gas systems – Installation and testing of non-flammable medical gas pipeline systems</i> . Inclusion of maintenance of medical gas systems in the policy.
March-2017 (PD2017_007)	Secretary, NSW Health	New policy (replacing a guide note dated September 2016)

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## 1. BACKGROUND

Medical gas pipelines are life support systems and their installation and testing carry particular hazards or risks.

Australian Standard AS 2896:2021 *Medical gas systems – Installation and testing of non-flammable medical gas pipeline systems* (the Standard) requires certain procedures to be followed to avoid gas pipeline hazards.

### 1.1. About this document

The purpose of this Policy Directive is to ensure that relevant public health organisations and NSW Health agencies have robust management systems in place for managing the installation, refurbishment and commissioning of medical gas systems by:

- raising awareness of and improving conformity with the Standard
- establishing testing procedure for new or refurbished medical gas systems which are additional to the Standard, and
- publicising new processes and requirements for engaging contractors for installation, testing and verification activities.

### 1.2. Key definitions

<b>Public health organisation</b>	A local health district, a statutory health corporation or an affiliated health organisation in respect of its recognised establishments and recognised services.
<b>Australian Standard AS 2896:2021 (the Standard)</b>	The Standard sets out specifications and procedures which are designed to ensure that the medical gas systems are installed and tested safely, reliably and consistently.

### 1.3. Legal and legislative framework

This Policy Directive imposes requirements which are additional to the Standards when installing, refurbishing or commissioning medical gas systems in a health care facility.

The Standard and the additional requirements in this Policy Directive need to be incorporated into the contractual documentation with suppliers and applied by the health care facility and NSW Health agency managers.

All works conducted must be done in accordance with the Standard.

### 1.4. Related documents

- NSW Health Guidelines *Engineering Services* ([GL2021\\_014](#))
- Health Infrastructure [Design Guidance Note No.21](#), for projects managed by Health Infrastructure.

## **2. MANAGEMENT PLANNING BY THE HEALTH CARE FACILITY**

As part of any planning, the health care facility must prepare and document an operational and risk management plan for the refurbishment or upgrade of a health care facility which involves medical gas systems. The management plan must refer to the Standard, identify roles and responsibilities of key health care facility individuals and include a risk assessment.

The risk assessment provides a structured approach to identify potential areas where problems may arise. The risk assessment considers the degree of likelihood and impact of the potential risks and the actions that can be put in place to reduce the likelihood of those risks. The risk assessment must:

- include a disruption plan and disruptive work notices or other contingency arrangements required to minimise or mitigate disruption to existing services
- include a “Permit to Work” as per the format recommended in the Standard
- allow sufficient time to complete the works and address any issues which may arise during the process
- determine the appropriate level of clinical involvement (if applicable) by the health care facility in accordance the below risk assessment tool
- determine whether the installer is required to appoint a separate person, who is not part of the installation team, who must conduct the certification required under the Standard in accordance with the below risk assessment tool and
- provide for a pre-works briefing prior to the commencement of any works to ensure that the work team is “on board” with the plan, which includes the Head of Department of Anaesthetics or delegate.

### ***Risk Assessment Tool: medical gas installations, refurbishments and commissioning***

<b>Risk</b>	<b>Risk level</b>	<b>Level of clinical involvement (witness testing)</b>	<b>Separation of installation from certification</b>
High	Non-respirable gases (nitrous oxide and/or carbon dioxide) present	Head of Department of Anaesthetics or delegated anaesthetist	Separation required
Moderate	Respirable gas (oxygen and/or air) only and Any pipe is cut or any wall is penetrated	Delegate of the Head of Department of Anaesthetics who is a medical practitioner with experience in the use of the relevant gases	Separation required

Risk	Risk level	Level of clinical involvement (witness testing)	Separation of installation from certification
Low	Respirable gas (oxygen and/or air) only and Work is being done on wall outlets/panels only and No pipe is cut and no wall is penetrated	Must be witnessed by a clinician (e.g., nurse or medication practitioner) with experience in administration of medical gases to patients approved by the health care facility  Head of Department of Anaesthetics must be informed	Separation not required

### **3. ENGAGEMENT OF INSTALLER**

An installer must be engaged under the appropriate NSW Health or public health organisation contracting arrangements including all necessary compliance and access requirements: a subcontract with the construction company; a written contract with the installer; or under a purchase order.

The contractual provisions of any such engagement must ensure that the installer:

- will comply with the contents of the Standard (which needs to be specified in the contract or agreement) and provide satisfactory information and evidence required by Appendix D – *Outline for determining competence of installer*
- undertakes that the installer has the necessary skills and experience to work on or build the medical gas pipeline system, including necessary test equipment and current calibration certificates and
- where required by this Policy Directive, will appoint a separate person, who is not part of the installation team, who must conduct the certification required under the Standard.

A template work order is included in this Policy Directive which can be used for the purpose of acquiring minor refurbishment activities under a purchase order.

### **4. WORK PLAN, INSTALLATION AND VALIDATION TESTING**

#### *Work plan*

The installer is required to submit a work plan for approval [by the construction company, the public health organisation or the NSW Health agency that engages the installer] detailing how the installer will conduct and complete the project. The plan must:

- meet all requirements of the Standard, specifically Appendix A – *Guide to performance of typical medical gas pipeline systems* and
- where required by this Policy Directive, identify or indicate that a person, who is separate from the installation team, will conduct the certification under the Standard.

### ***Installation***

The installer is to carry out works in accordance with the relevant sections of the Standard. There are no additional requirements under this Policy Directive.

### ***Validation testing***

Where a building contractor has been appointed and the installer is engaged by the building contractor, the building contractor and the installer must undertake validation testing of medical gas systems in accordance with the Standard [prior to proceeding to testing, verification and certification].

The installer must provide a commissioning plan in accordance with the timeline specified in the Standard. See Appendix M – *Commissioning plans for new installations and modifications to existing installations*.

## **5. TESTING, VERIFICATION AND CERTIFICATION**

### ***Verification and certification***

For any cross-connection testing and operational testing, the installer is required to verify that there is no cross-connection, the concentration of the medical gas is correct and there is no contamination. Cross-connection testing is generally carried out in conjunction with operational testing.

### ***Appointment for conducting certification***

Where required by this Policy Directive, the installer is to appoint a person, separate from the installation team, to conduct the certification. The certifier may be from the same company or organisation as the installer but must not have been part of the installation team.

### ***Witness testing***

NSW Health requires all testing by the health care facility to be witnessed by the appropriate health care facility representative determined in accordance with this Policy Directive and the Standard, Appendix K – *Roles and Responsibilities*.

## **6. CERTIFICATE OF COMPLIANCE RECORDS FOR INSTALLATIONS AND REFURBISHMENTS**

The installer is to provide the representative of the health care facility with the records and certificate of compliance in accordance with the Standard.

The public health organisation or the NSW Health agency must ensure that the records and certificate of compliance are retained for safekeeping in accordance with its asset management procedures and the *State Records Act 1998* (NSW).

## **7. MAINTENANCE AND REPAIRS**

### *Engagement of licensed contractor*

NSW Health organisations must confirm that the vendor is appropriately licenced in-line with NSW Legislation (as identified on the Fair-Trading website), trained in compliance with Australian Standard AS 2896:2021 *Medical gas systems – Installation and testing of non-flammable medical gas pipeline systems* and that the engagement process complies with this Policy Directive and local contractor management policies.

### *Validation of works performed*

Validation of all works performed (service records of maintenance and repairs) will be received and retained by the NSW Health organisation.

All repairs, maintenance and validation testing must be performed by a licenced contractor who must be identified on the maintenance service report.

## **8. ATTACHEMENT**

1. Work order using the NSW Health Purchase Order Standard Terms and Conditions



## 8.1. Work order using the NSW Health Purchase Order Standard Terms and Conditions

*Introduction: this is an example only of a work order for the purpose of NSW Health agencies ordering services from an independent person or company for an upgrade an existing health care facility to introduce piped medical gases and which will be undertaken under a purchase order arrangement. It is only applicable for low-value arrangements. Advice must be sought where there is doubt about using this work order.*

[Company  
name]  
[Address]

Dear [insert details]

**Work order:** the purpose of this work order is to set out the details of the services which the company (Supplier) agrees to supply to [insert name of NSW Health agency] at [insert name of health care facility] under a NSW Health purchase order.

### Description of work and pricing:

Description	Milestone completion date	Specifications	Price (excluding GST)
[installation]	[insert dates]	[if applicable, insert or annex detailed statement of services]	[insert service fee e.g., fixed fee/daily rate/per hour]
[testing and certification]	[insert dates]	[if applicable, insert or annex detailed statement of services]	[insert service fee e.g., fixed fee/daily rate/per hour]

**Standards of performance:** the Supplier is provided with a copy of the current NSW Health Policy Directive for the management of medical gas pipeline systems (attached). As part of this, the Supplier is required to acknowledge and agree that it:

- will comply with Australian Standard AS 2896:2021 “Medical gas systems – Installation and testing of non-flammable medical gas pipeline systems” [as amended or varied from time to time]
- will comply with all other relevant standards and legislation
- has the necessary skills and experience to work on or build the medical gas pipeline system, including all necessary test equipment and current calibration certificates and will submit a work plan to us for approval prior to the commencement of any work which is consistent with the Policy Directive, including (where applicable under the Policy Directive) the requirement for a separate person, who is not part of the installation team, to undertake the certification in accordance with the Standard.

**Acceptance:** acceptance of this work order is subject to us issuing a purchase order to the Supplier which incorporates the terms and conditions set out in the NSW Health

Purchase Order Terms and Conditions (attached).

Please indicate acceptance by the Supplier to this work order by signing and returning a copy of this work order to us. Upon acceptance, we will issue the purchase order to the Supplier and be in contact to confirm the arrangements to provide the services.

Please contact *[insert name and contact details]* should you have any questions.

Yours sincerely

[insert name of authorised officer] [insert date]

**Sign and date this work order, keep a copy for your records and return it to our contact person identified above.**

Supplier Name: .....

ABN/ACN .....

Supplier address .....

Signed for and on behalf of Supplier  
(authorised representative)

Print name:

Date: