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## BEHAVIOURAL STANDARDS FRAMEWORK

To help create a great place to work and a great place to be cared for, it is essential that our Trust policies, procedures and processes support our values and behaviours. This document, when used effectively, can help promote a workplace culture that values the contribution of everyone, shows support for staff as well as patients, recognises and celebrates the diversity of our staff, shows respect for everyone and ensures all our actions contribute to safe care and a safe working environment - all of which are principles of our Behavioural Standards Framework.

### Behavioural Standards Framework – Expectations ‘at a glance’

Introduce yourself with #hello my name is. . .	Value the contribution of everyone	Share learning with others
Be friendly and welcoming	Team working across all areas	Recognise diversity and celebrate this
Respect shown to everyone	Seek out and act on feedback	Ensure all our actions contribute to safe care and a safe working environment
Put patients at the centre of all we do	Be open and honest	For those who supervise / manage teams: ensure consistency and fairness in your approach
Show support to both staff and patients	Communicate effectively: listen to others and seek clarity when needed	Be proud of the role you do and how this contributes to patient care

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## 1. SUMMARY

To prevent, as far as is reasonably practicable, the disruption of medical gases as a result of the failure of Trust plant and equipment and the provision of Cylinder supplies.

To ensure that medical gas is available as appropriate and that contingencies are in place to provide an alternative provision. To ensure the purity of gases (Medical Air) that are manufactured by Trust plant

- Clear Roles and Responsibilities
- Clear Principles of Control
- Periodic Maintenance and ongoing monitoring and alarms systems
- Incident Procedures
- Competency training and Auditing Arrangements

## 2. PURPOSE

To provide a means of delivering the above policy objectives by ensuring that that the administrative processes and responsibilities are clearly defined and that the people operating the process are sufficiently trained and competent.

## 3. SCOPE

These procedures describe the University Hospitals of Morecambe Bay NHS Foundation Trust (hereafter referred to as the Trust) arrangements and responsibilities for the provision of piped Medical Gases

- Medical Air 4
- Medical Air 7 (Surgical)
- Oxygen
- Vacuum
- Nitrous Oxide
- Anaesthetic Gas Scavenging (AGS).

And the provision of cylinder gases

- Medical Air
- Oxygen
- ENTONOX
- Nitrous Oxide
- Anaesthetic Gas Scavenging (AGS)

## 4. POLICY

### 4.1 Action in Event of an Emergency (Serious Gas Leak, Fire, Explosion)

In addition to calling the Fire Brigade staff must contact the Hospital Switchboard telling them the site where the emergency has occurred and ask for the On Call Engineer as a

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matter of URGENCY

In addition to this see Appendix 5 for a list of staff to contact for general enquiries

## 4.2 Cylinder Stores

- A copy of emergency action instructions must be displayed.
- A copy of cylinder colour codes must be displayed.
- All appropriate protective clothing and handling/transporting equipment must be made available and used.
- All stores should comply with the requirements of HTM 02<sup>1</sup>.
- All stores will be kept locked when not in use – access is restricted to staff directly involved in the handling and transport of cylinders.
- The main key holder for these stores is the Senior Porter on site. Keys are held in a keyboard at each hospital controlled by the Porter Supervisor/ delegated portering staff.

### 4.2.1 Ready to use stores

For Theatres, Intensive Care and High Dependency Ward Areas observe these General conditions.

- i. Keep minimum stocks of cylinders (normally 24 hours supply).
- ii. Keep the store clean and tidy and free from oil and grease.
- iii. 'No Smoking' conditions must be strictly observed.
- iv. Use cylinders in rotation.
- v. Make sure that an up-to-date cylinder identification chart is available.
- vi. Keep full and empty cylinders well separated.
- vii. When cylinders connected to regulators are returned, check for leaks, close the cylinder valve and vent contents from flow meter before removing the regulator – replace cylinder dust caps.
- viii. Ensure that an adequate supply of the correct cylinder keys are available.

## 4.3 Medical Gas Manifolds and Manifold Rooms

Location and types of manifold can be found in the appropriate site appendices:

The following rules apply:

- i. Manifold rooms must not be used as general storage areas.
- ii. Store the minimum number of cylinders required – those connected to the manifold(s) and sufficient to replenish one bank.

**For Entonox keep sufficient to replenish two banks.**

- iii. Keep the manifold room clean, tidy and free from oil, grease and dirt.

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- iv. Ensure that fire extinguishers are clearly visible, of the correct type and in good order.
- v. Ensure that appropriate hazard warning notices (fire/pressurised cylinders/no smoking) are clearly displayed.
- vi. The manifold room will be locked at all times, and access keys are kept secure.
- vii. Only staff who have received suitable training and whose names are kept on a register, should change cylinders on manifolds.
- viii. Cylinders held in manifold rooms for 'ready use' must be replaced immediately on changing cylinders and empty cylinders removed to the medical gases store.
- ix. Cylinders used for standby should be rotated annually to ensure that only in-date cylinders are being used at all times.

Any cylinder, which is not sealed, ie the plastic cover is not intact, should be treated as empty. All cylinders not connected to the manifold must have their dust caps in place

#### 4.3.1 Keys for manifold rooms are held as follows:

##### Location

- i. The Porters lodge keyboard at main entrance.
- ii. The Estates Department medical gas keyboard.

#### 4.4 Changing Cylinders

- i. Remove empty cylinder from the manifold one at a time, replacing each empty cylinder with a full cylinder according to the following procedures.

Check that the name of the gas and the colour around the collar of the cylinder are appropriate:

- ii. Inspect for the presence and condition of the bodok seal in the cylinder yoke. Change if necessary, taking care not to expose the surfaces to grease or oil.
- iii. Connect the cylinder to the manifold and tighten firmly by hand only taking care not to put undue strain on the manifold tail pipe.
- iv. Ensure that there are no leaks between the cylinder valve and the manifold. This can usually be determined by sound. If in doubt an 'oxygen safe leak detector' solution can be used. Care must be taken to wipe off solution with a clean damp cloth.
- v. Once the bank has been fully changed check that the contents gauge is reading maximum. **IMPORTANT.** Where the bank of cylinders is empty all cylinders must be changed. Failure to do this could endanger a patient's life.
- vi. Complete the manifold log book held in the room stating date, time, number of cylinders changed and contents gauge reading. Sign the register.

If a problem or fault is suspected, advise the Principal Pharmacist or Hospital Authorised Person immediately.

**A NOTICE SHOULD BE DISPLAYED IN EACH MANIFOLD ROOM DETAILING THE PROCEDURE FOR CHANGING CYLINDERS.**

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#### 4.5 Central Vacuum and Compressed Air Plant

All such plant should comply with current specifications for the supply in Medical Gas Pipeline Systems (HTM 021-1<sup>1</sup>).

Site list and location of plant are in the appropriate appendices.

All plant rooms are to be kept locked except during essential maintenance.

Access is limited to:-

- i. Engineering staff for maintenance / testing.
- ii. Porter staff for changing cylinders on emergency manifolds
- iii. Quality Control Pharmacist (QC) for quality control tests.

Keys are held by:

Estates Department

#### 4.6 Liquid Oxygen Installation:

Vacuum insulated evaporators (VIE)

FGH BOC main VIE

Location: Adjacent to Plant Room A      Size: 11115lts      m<sup>3</sup> Gas capacity:  
Serial Number Serial No: 30619      6.5T

FGH Reserve VIE

Location: Adjacent to Boiler House  
BOC      banks of - J sized cylinders      Size: 3321lts      m<sup>3</sup> Gas capacity  
Serial Number: 30214      2.6T

WGH BOC main VIE

Location: Adjacent to Works Department      Size: 1,350m<sup>3</sup> Gas capacity  
Serial Number Serial No 535382/10533/3493

WGH Reserve VIE

BOC Two banks of 5 - J sized cylinders      Size: 67.8m<sup>3</sup> Gas capacity

RLI BOC main VIE

Location: Adjacent to Works Department      Size: 14,500 lts Liquid capacity  
Serial Number: 538177/UB2769/2769/5

RLI BOC Reserve VIE

Location: Behind Boiler House      Size: 4,500 lts Liquid capacity  
Serial Number:537141/AMUB2676/2767/35

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**Actions to be taken to shut down VIE Unit in cast of fault:**

**Valve positions for VIE NORMAL operation**

VALVE 5	CLOSED
VALVE 7	OPEN
VALVE 9	OPEN
VALVE 11	OPEN
VALVE 12	CLOSED
VALVE 13	CLOSED
<b>Valve positions for gas take off only</b>	
VALVE 5	OPEN
VALVE 7	CLOSED
VALVE 9	OPEN
VALVE 11	CLOSED
VALVE 12	CLOSED
VALVE 13	CLOSED
<b>Action on safety valve lifting</b>	
Close VALVE 11, let VIE vessel pressure fall below 16 bar and then reopen valve. Observe vessel pressure to ensure no further rise.	
<b>Action on bursting disc rupture</b>	
Close VALVE 11, let VIE vessel pressure fall below 16 bar and then change VALVE 6 to the alternative bursting disc station. Replace damaged disc.	

Because of the inherent dangers of liquid oxygen – ie is highly supportive of combustion and at a very low temperature (nearly minus 200°C), access to the plant is strictly controlled by the Estates Department.

**BOC Products Telephone Numbers:**

**24 hour emergency                      0800 222888**  
**Liquid Oxygen Supplies 0800 861861**

Access to the Liquid Oxygen Plant on all sites is by Digi / key operated pad locks.

Keys are held by:

The Estates Department (Authorised Persons)  
Duty on Call Engineers (for outside normal hours)

In the event of a telemetry failure, content readings of the liquid oxygen plant, will be recorded daily by the Estates Department

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The BOC liquid oxygen plant has automatic monitoring for filling and alarm functions. This is monitored 24 hours per day by Switchboard Staff and BOC.

**In the event of an emergency contact the Estates Department.**

**Outside normal working hours contact the ‘Duty On Call Engineer’ for the respective hospital via the telephone switchboard.**

**Telephone: Internal Telephone: DIAL ‘ 0 ‘**

#### **4.7 Medical Gas Alarm Systems**

The central alarm panels are located in the Switchboard Office at each Hospital. These alarms are retransmitted to the Porters room and the Estates department. It is the duty of the switchboard operator to inform the appropriate staff as follows:

<b>ALARM</b> (On all systems except vacuum)	<b>OPERATOR TO INFORM</b>
Reserve in use	Duty Porter
Reserve empty	Duty Porter The Estates Department  The Duty On Call Engineer (outsidenormal hours)
Emergency	Duty On Call Engineer (outside normal hours) Duty Porter The Estates Department
Plant Faults	Contact the Estates Department or the Duty On Call Engineer out of normal hours.

On vacuum any signal other than NORMAL should be reported immediately to the Estates Department or The Duty On Call Engineer if outside normal working hours.

The plant alarms for medical gas manifolds and vacuum plant at each Hospital are monitored, via the A&E Reception at RLI and FGH and the main telephone switchboard at WGH for WGH, RLI and fGH

The A&E staff monitoring these alarms need to ring the telephone switchboard at WGH to contact the above staff for routine cylinder changes, emergency and plant faults.

#### **OXYGEN & NITROUS OXIDE**

Change cylinders                      Porters  
Change immediately                Porters

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## OXYGEN, NITROUS OXIDE & VACUUM

Pressure fault, Plant faults Contact the Estates Department and System Alarm or the Duty On Call Engineer out of normal hours.

### 4.8 Terminal Units

Terminal units will be inspected for leaks/damage as appropriate on a 3 monthly basis. Remedial work will be performed by Competent Persons (Contractor/Works Staff) as necessary. The second fix components of terminal units complying with the requirements of BS5682:2015<sup>2</sup> can be dismantled and replacement parts inserted without disruption of the medical gas supplies. Work on terminal units will be assessed by the Authorised Person and controlled under the Permit to Work System if the work is categorised as a Low or High Hazard.

Leakage or damage observed at any other times must be reported immediately to the Estates Department or The Duty On Call Engineer if outside normal working hours.

### 4.9 Valve Boxes (AVSU)

Valves controlling gases to wards/units are normally labelled with:

- i. The name of the gas.
- ii. The area served.
- iii. A number (for engineering use).
- iv. Emergency instructions.

Valves may require isolation.

- i. To permit essential engineering work. (Controlled under a Permit to Work).
- ii. In emergency conditions eg serious gas leak/fire in ward.

Medical staff must be trained in the method of isolation in emergency conditions. Engineering staff must not isolate a valve in an emergency until medical staff, have ensured the safety of all patients served by that valve.

### 4.10 Flexible Hoses

It is the policy of the UHMBT that flexible hoses used to connect medical equipment such as anaesthetic machines to terminal units will not be made up by hospital works staff but supplied by specialist contractors.

All hose assemblies shall be made, tested and maintained to the standards described in BS5682<sup>2</sup>. No in-house personnel will be allowed to construct hose assemblies.

NB All hoses in use by engineering staff as multipurpose test hoses must be made of RED coloured material and be kept locked in the Main Engineering Office and under the control of an Authorised Person.

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#### 4.11 Emergency Arrangements

Emergency/reserve manifolds are provided in each of the UHMBT hospitals distributing the following systems (see Appendices for non-compliance):

OXYGEN

NITROUS OXIDE

MEDICAL AIR

VACUUM

AGSS

The location of each sites individual manifolds and plant are in the appropriate sites appendices.

**THE ABOVE MANIFOLDS NEED TO BE BROUGHT ON LINE AUTOMATICALLY (See Appendices for non-compliance)**

Emergency action will be to.

- i. Monitor the emergency/reserve supply.
- ii. Shut down failed plant.

In all cases, the use of emergency/reserve manifold back up cylinders will be ordered by The Porter Supervisor with authority of the Pharmacy Manager.

Emergency Manifold Cylinder pressures should be checked on a regular basis at the time of exchanging standby banks of cylinders by Porter staff and recorded in the log book.

#### 4.12 AGSS (Anaesthetic Gas Scavenging Systems)

The University Hospitals of Morecambe Bay (NHS) Trust will only use active gas scavenging systems which are certified to BS EN ISO 7396-2: 2007<sup>3</sup>. This will be a triplex system (see Appendices for non-compliance).

#### Performance Testing the AGS System

Testing frequencies and methods specified in the British Standards will be adopted. All results will be recorded in the plant log book.

Tests will be performed by the Estates Department Approved Person (AP Med Gases) or suitable contractor. Three quarterly tests and one annual test are required.

Where annual tests are required, the tests are to be undertaken by the Estates Department test equipment will be kept by the Estates Department and calibrated on a 6 monthly basis. Records of all calibrations will be kept with the plant log book.

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## 4.13 System Management

### a. **CYLINDER HANDLING AND SAFETY**

The procedures outlined in HE 1163<sup>3</sup> shall, be followed by all staff responsible for cylinder handling and safety. Safety procedures when changing cylinders on (automatic) manifolds are outlined in (section 5).

Medical staff handling cylinders and related equipment must be trained in their safe use. This training is to be repeated every 3 years and records kept of this training.

Any problems encountered when working with cylinders eg leakage/damage to valves, must be reported immediately to the Estates Department during normal working hours or the Duty Works Officer outside normal working hours, for the respective hospital.

### b. **PERMIT TO WORK SCHEME**

A copy of the Permit to Work section of HTM 02<sup>1</sup> is attached. This will be followed by, all suitably trained staff.

The following staff will be recognised as taking part in the system.

#### **Responsible Person**

#### **Authorised Persons and Base Location**

#### **Competent Persons and Base Location**

#### **Quality Control Pharmacist**

#### **Designated Nurse(s)**

#### **Designated Medical Officer(s)**

The duties and responsibilities of the above are as defined in HTM 02<sup>1</sup> Medical gas pipeline systems (Operational Management).

#### **Contracts**

Medical Gas Contractors will have Quality Assurance BS EN ISO 9000<sup>5</sup>.

A list of Competent Persons working for approved contractors should be held by the Estates Department at the Furness General Hospital, Westmorland General Hospital, Lancaster Royal Infirmary, and the Queen Victoria Hospital.

The Form attached as Appendix 1

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c. **KEY CONTROL/SECURITY**

Relevant information on key holders and security is provided in each section of this policy.

d. **EMERGENCY ACTIONS**

**Note: For emergencies contact the Estates Department during normal working hours. Outside normal working hours contact the Duty Engineer On Call for the respective site who will arrange for an authorised person to attend.**

**4.14 A.V.S.U Area Valve Service Units**

**Severe Gas Escape**

(In a ward area)

Medical staff to isolate required valve after ensuring patient safety. Efforts should be made to make safe the situation by lowering the gas concentration, by opening windows and doors and ensuring patients and staff are not smoking, also ensuring electrical equipment in the vicinity of the gas escape is not switched on or off, then contact the Duty Engineer On Call.

- a. These are the valves you see near ward entrances in locked glass-fronted boxes, labelled with the name of the gas and the area served
- b. They are fitted in glass fronted boxes to allow isolation in an emergency by medical staff \*
- c. The valves, comprise of a ball valve within an enclosure, two blanking devices and two connectors. (See Appendices for non-compliance).
- d. When the ball valve handle is in line with the gas pipe the valve is open. To shut the gas line down the handle should be turned 90 degrees across the gas line that you wish to isolate.
- e. All ward managers should be able to perform this simple operation and bring to the attention of all key medical staff in their department the location, type, and operation. Staff should be able to isolate medical gases in an emergency.
- f. Medical gas emergency isolation should be undertaken as part of Fire Safety Training and Managers Fire training. in all areas where piped and cylinder medical gases are used.
- g. Any request to isolate medical gases in an emergency will be undertaken as soon as possible by medical staff depending on clinical needs
- h. Any damage to the glass fronted valve isolation boxes should be reported to the Estates Department as soon as possible.

The duty porter will need to be contacted if extra cylinders are required. The Estates Department may need to provide special regulator/hose assemblies for NIST/Terminal unit back feeding.

Remedial work to be completed, under Permit to Work by Competent Person.

\* Note Gasses, may only be isolated by non-medical staff if that isolation has been authorized in writing (Permit to work) by an appropriate medic (Ward Sister, Doctor) or

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in the event of fire a verbal instruction from similar appropriate medic.

Pharmacist (QC) will be required to do tests if remedial work involves any cutting-in, altering or amending pipe-work, or brazing.

(In other areas)

Such a leak will usually be detected by the noise of the escaping gas. In such circumstances the person detecting the leak should report the location of the leak immediately to the Estates Department or the Duty Engineer On Call. Persons detecting leaks must be instructed not to remain in the vicinity of the leak because of the possibility of oxygen saturation/asphyxiation/explosion/ fire etc.

The Authorised Person (MGPS) to inform QC/Head Porter of need for extra cylinders and to arrange remedial repairs and testing. Medical Officer (MO) to be informed of, possible need to isolate gas supplies. Authorised Person may need to arrange special gas supply equipment.

Remedial work to be completed, under Permit to Work.

#### **4.15 Failure of One or More Gas Supplies**

Such an incident may raise instant demands from many departments for gas supplies. Therefore, plans should be drawn up to cater for this emergency in terms of lists of relevant personnel and telephone numbers and location, quantity and control of emergency gas supply equipment (see Appendices). The use of such equipment, will be strictly controlled by, the Authorised Person (MGPS).

All remedial work will require the use of a permit and almost certainly the intervention of the QC.

#### **4.16 Over or Under Pressurisation of One or More Systems**

The alarm will be indicated on central or local alarm panels. The telephone operator should contact the Duty Engineer On Call who will in turn contact an Authorised Person (MGPS).

The Authorised Person should inform the MO of possible interruption to gas supplies so that appropriate action may be taken.

Authorised Person to take appropriate action to remedy situation.

NB Under pressurisation may be as a result of (i) or (ii).

#### **4.17 Contamination of Vacuum Plant**

The usual causes of misuse of the vacuum system are by medical/nursing staff or failure of filtration/isolation units.

In such cases liquid, will be detected in the vacuum plant separator flask. The competent

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person should report this fact to the Authorised Person (MGPS). Under no circumstances should the vacuum filter/separator unit be dismantled without the advice and guidance of the Infection Control Officer.

Usually the filter/separator unit will be bagged and removed for pathological testing. During this time the plant will have to run on the standby filter/separator unit. The procedure for changing from duty to standby filter should be fully understood by the (Competent Person).

#### **4.18 Failure of Electrical Supply**

Under normal circumstances there will be no interruption to medical gas supplies as the system electrics will be supplied from the emergency generator. There may be failure of local alarms but this will not affect gas supply.

If the emergency generator fails it will be necessary for the Duty Porter to monitor manifold supplies and arrange for the emergency medical air manifold to be operated if necessary. Cylinder supplies for this manifold may also be needed.

#### **These should be arranged via the Medical Gas/Duty Porter**

The Duty Engineer On Call must be informed immediately in this situation. In normal working hours the Estates Department will take appropriate action.

#### **4.19 Fire**

Usually the Fire Safety Instructions will include a requirement to isolate the medical gases supplying the department involved in the fire. This isolation should be performed by medical staff, after ensuring the safety of patients.

The Duty Engineer On Call and Fire Officer should be informed. Reinstatement of the gases may require a permit as repairs to the valve boxes and possibly pipeline and terminal units may be required.

The QC Pharmacist should be informed as necessary.

Fire Officer  
Duty Engineer On Call

Authorised Person

#### **4.20 Training and Assessment**

It is essential that all key personnel at all levels have a sound general knowledge of the principles, design functions of Medical Gas Pipeline Systems and Cylinder Gasses. They should be trained on those specific systems for which they will be responsible.

Evidence and records of this training must be kept within the Operational Manual.

The Trust is responsible for ensuring all staff, have received adequate training prior to using Medical Gas Pipeline Systems and Cylinder Gasses and that staff attend refresher

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courses on a regular basis. The frequency and selection of training courses to ensure this competency will be determined by the Trust Medical Gas Group on the advice of the Trust AE

All authorised and competent persons will complete an appropriate training course and obtain an accreditation by a recognised examining body prior to appointment.

Authorised persons are appointed in writing by the Authorising Engineer on recommendation of the Responsible Person / Head of Estates who has specialist knowledge and experience of Medical Gas Pipeline Systems, ideally for the hospital MGPS concerned.

Where such a manager is not available in house, then an independent Chartered Engineer with specialist knowledge and experience of MGPS will be utilised to assess the suitability of trained engineers for appointment to authorised persons.

Porters need appropriate training on changing cylinders, manifolds

#### **4.21 Systems and Maintenance**

Maintenance schedules should be defined by the manufacturers' recommendations for each plant item. These will define necessary oil filter changes, temp, motor current measurements, lubrication, routine inspections, operational and alarm tests.

The overall system maintenance at each hospital is on a service contract and this work includes:-

##### **Every 3 months**

Inspection and remedial work on terminal units.  
Checks on cylinder contents of emergency manifolds.  
Pharmaceutical testing of medical air.

##### **Every 12 months**

General inspection of system for leaks and damage.

Alarm systems. These are rarely tested on a routine basis other than a test of the electronics. The only true test would be to drop or raise the system pressure. This may be performed by, taking the manifolds/central plant out of use while gas is supplied from the emergency manifolds.

Pressure gauges should be read and the readings recorded every 3 months. (Ideally, pressure gauges should be tested and calibrated every 12 months, but this is rarely done).

Mandatory Insurance inspections should be carried out at intervals determined by the Insurer.

No person will be allowed to engage this or any other contractor on this site without

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the knowledge and permission of the Authorised Person contacted via the hospital telephone switchboard.

Failure to follow this procedure may endanger staff, visitors and patients.

## CONTRACTORS STAFF

All contractors should comply with the Trust's Control of Contractors Policy.

All contracts should be carried out by firms registered with Quality Assurance BSI Schedule, QAS 3720.1/206.1A. Evidence of current registration should be obtained from the latest issue of the Approved Contractors list available from the British Standards Institute.

The Authorised Person will be responsible for monitoring the work of the Contractor. This will involve all relevant tests on work done by the Contractor. The following items should receive particular attention.

- i. The inspection and collation of all engineering and pharmaceutical test results.
- ii. Samples of pipe joints as required by HTM 02<sup>2</sup> to be inspected.
- iii. The collection of all plant manuals and commissioning data.
- iv. The, updating of all 'as fitted' pipework diagrams.
- v. The inspection of all Permit to Work documentation for satisfactory evidence of completion of work.
- vi. Compliance with all Local Authority/Trust Health & Safety policies and procedures (e.g. Hot work Permits).

In the event of an emergency the, Contractor shall be contacted by the Authorised Person.

### 4.22 Policy Monitoring

This Policy is approved and monitored by :-

- The Trust's independent Authorising Engineer
- The Trust's Medicines Management Sub Committee
- The Trust's Medical Gas Group

Day to day monitoring of the policy, maintenance of systems and safety of plant will be the responsibility of the site Authorised Persons

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<b>5. ATTACHMENTS</b>	
<b>Number</b>	<b>Title</b>
1	FGH Asset List
2	WGH Asset List
3	RLI Asset List
4	Operational Structure
5	Staff List (Emergency Contacts)
6	EQUALITY & DIVERSITY IMPACT ASSESSMENT TOOL

<b>6. OTHER RELEVANT / ASSOCIATED DOCUMENTS</b>	
<b>Unique Identifier</b>	<b>Title and web links from the document library</b>
Corp/Pol.002	Control of Contractors <a href="http://uhmb/cs/tpdl/Documents/CORP-POL-002.docx">http://uhmb/cs/tpdl/Documents/CORP-POL-002.docx</a>
EF/Pol/018	Planned Preventative and Defect Maintenance <a href="http://uhmb/cs/tpdl/Documents/EF-POL-018.docx">http://uhmb/cs/tpdl/Documents/EF-POL-018.docx</a>

<b>7. SUPPORTING REFERENCES / EVIDENCE BASED DOCUMENTS</b>	
<b>References in full</b>	
<b>Number</b>	<b>References</b>
1	Department of Health (DH) (2006) Medical Gases. Health Technical Memorandum 02-01: Medical gas pipeline systems. (HTM-02) Available at: <a href="http://www.bcga.co.uk/assets/HTM_02-01_Part_A.pdf">http://www.bcga.co.uk/assets/HTM_02-01_Part_A.pdf</a> (accessed 25.10.18 )
2	BSI (2015) (BS 5682:2015) Dimensions of probes and terminal units for medical gas supply systems. Requirements. London: British Standards Institute.
3	BSI (2007) (BS EN ISO 7396-2: 2007) (Medical gas pipeline systems. Anaesthetic gas scavenging disposal systems. London: British Standards Institute.
4	Health and Safety Executive (HSE) Landlords' responsibility for gas safety. Available at: <a href="http://www.hse.gov.uk/gas/landlords/">http://www.hse.gov.uk/gas/landlords/</a> (accessed 25.10.18)
5	BSI (2015) (BS EN ISO 9000:2015) Quality management systems. Fundamentals and vocabulary. London: British Standards Institute.
<b>Bibliography</b>	

<b>8. DEFINITIONS / GLOSSARY OF TERMS</b>	
<b>Abbreviation or Term</b>	<b>Definition</b>

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<b>9. CONSULTATION WITH STAFF AND PATIENTS</b>		
Enter the names and job titles of staff and stakeholders that have contributed to the document		
<b>Name</b>	<b>Job Title</b>	<b>Date Consulted</b>
Mr T Reynolds	Associate Director of Estates & Facilities	
Mr G Davies	Lead Estates Manager	
Mr P Simpson	FGH Engineering Manager	
Mr I C Cummings	WGH Engineering Manager	
Mr N German	RLI Engineering Manager	

<b>10. DISTRIBUTION PLAN</b>	
Dissemination lead:	Glyn Davies and David Passant
Previous document already being used?	Yes
If yes, in what format and where?	Policy Document on Trust G Drive
Proposed action to retrieve out-of-date copies of the document:	Email new Document to all stakeholders
<b>To be disseminated to:</b>	
Document Library	
Proposed actions to communicate the document contents to staff:	Include in the UHMB Weekly News – New documents uploaded to the Document Library

<b>11. TRAINING</b>		
Is training required to be given due to the introduction of this procedural document? *Yes / No (Please delete as required)		
<b>Action by</b>	<b>Action required</b>	<b>Implementation Date</b>

<b>12. AMENDMENT HISTORY – Please complete if version 2 or higher</b>				
<b>Version No.</b>	<b>Date of Issue</b>	<b>Section/Page Changed</b>	<b>Description of Change</b>	<b>Review Date</b>
3	Oct 2018		PMG Policy and Cylinder Policy combined	Nov 2020

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## Appendix 1: FGH Asset List

### Medical gasses System Description Furness General Hospital

#### Oxygen System

Oxygen to the site is fed from two bulk liquid oxygen facilities consisting of two Vacuum Insulated Evaporators (VIE) one situated adjacent to Dane Garth car park, the other is opposite the Boiler house.

The cryogenically stored liquid is evaporated and expanded into a gas through vaporisers and control equipment. The installations consist of primary and secondary supply systems and under normal conditions will operate automatically with no requirement for manual intervention. The primary VIEs are supported by secondary VIEs which will supply oxygen to the hospital in the event of the primary VIEs running out or being isolated.

The oxygen levels in the VIEs are monitored by the supplier via telemetry and are replenished in response to hospital usage.

#### Nitrous Oxide Systems

Nitrous Oxide is supplied to the site from a manifold system, in an independent plant room on level 2. The supply units consist of two identical cylinder banks with a changeover panel, designed to provide an automatic duty and standby system of operation, with a secondary Reserve Standby Manifold (RSM) that is set to come on line automatically.

#### Medical and Surgical Air Systems

Medical and Surgical air to the site is fed from a duplex compressed medical air plant, with manifold cylinder reserve supplies. The compressed air plant is a fully automatic system incorporating 2 identical compressors designed to cater for the total load of the hospital in an N+1 configuration. The plant is designed so that in the event of failure of any one major component (pump or drier) the standby system will automatically take over and send a signal to the medical gas main alarm system. In this instance the plant control panel will indicate the fault code on the digital display and the main alarm panels will display "Plant Fault" or "Plant Emergency", depending upon severity, in the Medical or Surgical Air column. Any fault on the system alarm panels should be reported to the AP (MGPS) immediately.

#### Vacuum Systems

Vacuum (suction) to the site are fed from the medical vacuum plants.

This plant is made up of two vacuum pumps, one main receiver, along with the necessary filters and controls.

The vacuum system is equipped with duplicated components including two vacuum pumps designed in a N+1 capacity, so that with one pump stationary, the remaining pump will cater for the total demand of the hospital. In the event of failure of any individual pump, the standby system will take over. Any fault on the system will bring up an alarm on the main alarm panels and should be reported to the AP (MGPS) immediately.

#### AGSS

The AGSS suction to the site is feed from a duplex system, with an N+1 capacity. In the event of failure of any individual pump, the standby system will take over. Any fault on the system will bring up an alarm on the main alarm panels and should be reported to the AP (MGPS) immediately.

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## System details

### Oxygen

Main VIE – Adjacent to Dane Garth Car Park

11115 litres

Standby VIE – Opposite Boiler House

3323 litres

### Nitrous Oxide Systems

Manifold – Level 2 N<sub>2</sub>O room

Main 2 x 5 G size bottles. auto changeover

Reserve 2 G size bottles

### Medical and Surgical Air

Duplex compressor plant – Plant room A(hot)

Manifolds – Level 2 plant room

Duplex compressors

Duplex receivers 860 litres each

Surgical Air Manifold

2 x 5 J size bottles, auto changeover

Medical Air Manifold

2 x 4 J size bottles, auto changeover

### Vacuum Systems

Vacuum plant – Plant room A (cold)

Duplex “Busch” R5 Vacuum pumps

Single receiver

### AGSS

Duplex AGSS pumps – Plant room A (cold)

“Pelon”

2600 litres/min

### Maintenance

The maintenance for the fully Medical Gas System is held by “Medi-Technique” until 31/01/15.

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## Appendix 2: WGH Asset List

### a. Site Plans

Site plans with locations of liquid oxygen plant, medical compressed air plant, vacuum plant, manifold rooms and cylinder stores.

L1	VIE Compound details.....	No
L1	General Site Layout.(VIE across site to Hospital).....	No 3938 / 087
L1	Staff Changing Area (Main entering Hospital into risers).....	No 9788 M2761
L1	General Stores.....	No 9788/M2741
L2	Out Patients & Dental departments.....	No 9788/M2712
L2	Day Case / Accident & Emergency.....	No 9788/M2722
L2	Pharmacy/Mortuary/Accident & Emergency.....	No 9788/M2732
L2	Pathology & X-Ray.....	No 9788/M2742
L2	Missing.....	No 9788/M2752
L2	Main Ent/HSD/Telephone Ex/Medical Records/Blackhall Unit.....	No 9788/M2762
L2	Missing.....	No 9788/M2772
L2	Ward 4/Chapel & Kirkstone.....	No 9788/M2782
L2	Renal/Ward 3/Shared Accom/Admin L3.....	No 9788/M2792
L3	Operating Theatres.....	No 9788/M2713
L3	Ward 6 & Helme Chase.....	No 9788/M2723
L3	Wards 5 & 7 & Education Centre.....	No 9788/M2733
L4	Wards 8 & 9.....	No 9788/M2714
L4	Wards 9 & 10/CCU & Clinical Investigations.....	No 9788/M2724

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b. **CYLINDER STORES**

Stores details are as follows:

LOCATION	GASES	CYLINDER SIZES	NO OF CYLINDERS
Back service road at The rear of Eye Clinic	Medical Oxygen O <sub>2</sub>	D	5
		E	9
		F	14
		G	6
		PD	8
Back service road at The rear of Eye Clinic	Medical Carbon-dioxide CO <sub>2</sub>	C	2
		E	2
Back service road at The rear of Eye Clinic	Medical Air	E	5
		F	2
		G	9
Plant room M7	Medical Air Emergency back-up	J	2
Back service road at The rear of Eye Clinic	Nitrous Oxide N <sub>2</sub>	E	7
		G	7
Back service road at The rear of Eye Clinic	Entonox	F	7
		G	7
Back service road at The rear of Eye Clinic	Helium	AVX	4
Pharmacy Stores	Liquid Nitrogen N <sub>2</sub>	Model 5old Jencons Ser No 550006N4	1

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### c. Medical Gas Manifolds and Manifolds Rooms

Location and types of manifold are as follows:

MEDICAL GAS SERVICES	LOCATION	MANIFOLD TYPE	CYLINDER SIZE	TOTAL NO. OF CYLINDERS
O <sub>2</sub> to Site	VIE Liquid O <sub>2</sub> Plant Compound	Sarel Reserve VIE	J	10
N <sub>2</sub> O	Stores delivery yard	Penlon ref 3256012 2 banks (4) + emergency reserve (2)	G	10
Anaerobic Mixture 10% H <sub>2</sub> 10% CO <sub>2</sub> 80% N <sub>2</sub>	Stores delivery yard	1 Bottle Emergency reserve		1 1
Entonox	Manifold room in Yard between Main entrance Link Corridor and Dunmail	Penlon OX 3256013 2 Banks (3) Emergency reserve (2)	G G	6 2

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#### d. Site list and location of plant

PLANT	LOCATION	TYPE
Medical Air (MCOM-D1) 10bar reduced to 4bar	Plant room M7 Operating theatres, Day case, Dental and HSD.	MIM Single Receiver. Twin Compressors – MAHLE 650 Litres/Min capacity each. (Emergency manifold – 2 x J cylinders).
Medical Vacuum (MVAC-01)	Plant room M7 Operating department Day case theatre Day case Accident & Emergency Renal Dental HSD Maternity delivery Maternity ward Coronary care Wards 5,6,8,9,10 & 11	MIM type 250138 (OP-20)
Medical Vacuum	Cardiac catheter Lab Plant Room M15	Model MMV 100
Anaesthetic Gas Scavenging System (AGS 1)	Plant room M7 Theatres	Rietschi type SKG 275-2V.02
Anaesthetic Gas Scavenging System (AGS 2)	Plant room M4	Ohmeda (BOC) Ltd

#### e. Oxygen locations

- i. The VIE Oxygen Manifold Room.
- ii. M7 Theatre Medical Air Plant Room.

#### NITROUS OXIDE

- i. The Stores yard Nitrous Oxide Manifold Room.

#### ENTONOX

- i. Main entrance corridor yard to Dunmail Manifold Room.

#### MEDICAL AIR

- i. M7 Theatre Medical Air Plant Room.

#### ANAEROBIC MIXTURE

- i. Plant Room, Pathology Lab stores yard

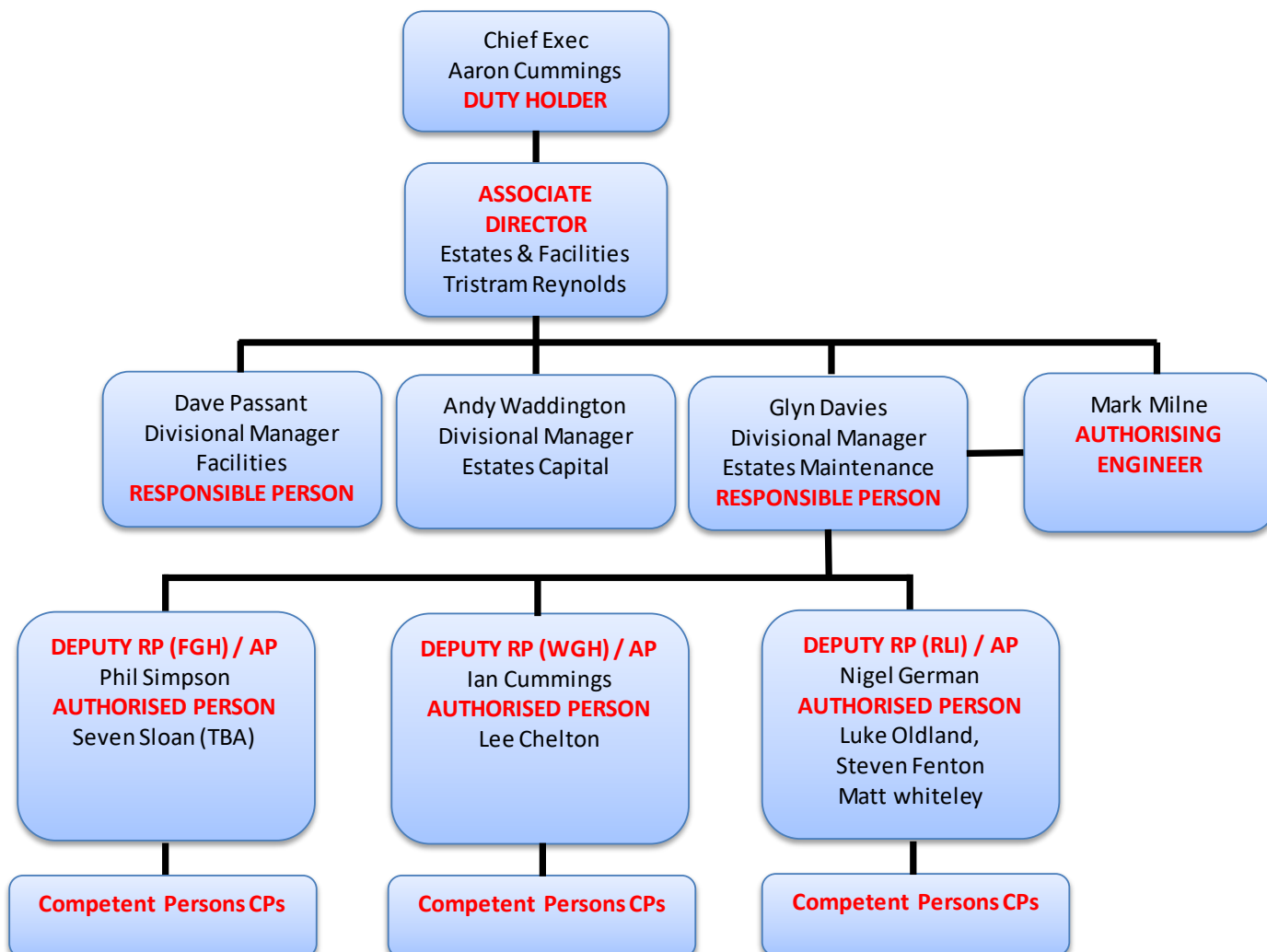
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## Appendix 3: RLI Asset List

To be added at a later date

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## Appendix 4: Operational Structure



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## Appendix 5: Staff List (Emergency Contacts)

### A) Normal Hours

#### The Estates Operations Department:

FGH Authorised Person	Phil Simpson	51303
WGH Authorised Person	Ian Cummings	55355
RLI Authorised Person	Nigel German	46308
RLI Authorised Person	Steve Fenton	41980
RLI Authorised Person	Luke Oldland	42205
Responsible Person	Glyn Davies	07788 412409

Senior Porter on site

Contact via the respective hospital telephone switchboard.

#### Fire Safety Adviser

FGH / WGH Fire Advisor	TBA	51149
RLI Fire Advisor	Russ Stephenson	46336

### B) Outside Normal Hours

The Senior Porter on site for the respective hospital via the telephone switchboard. For RLI the shift tradesman should also be advised; again via telephone switchboard.

The On Call Engineer for the respective hospitals via the telephone switchboard.

All the above can be contacted by dialling the telephone switchboard

Guidance requires that the above contact numbers of key holders must be posted on the door of the stores.

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### Equality Impact Assessment Form

Department/Function	Estates & Facilities			
Lead Assessor	Glyn Davies			
What is being assessed?	Medical Gas Systems			
Date of assessment	22/10/2018			
What groups have you consulted with? Include details of involvement in the Equality Impact Assessment process.	Equality of Access to Health Group	<input type="checkbox"/>	Staff Side Colleagues	<input checked="" type="checkbox"/>
	Service Users	<input checked="" type="checkbox"/>	Staff Inclusion Network/s	<input type="checkbox"/>
	Personal Fair Diverse Champions	<input type="checkbox"/>	Other (Inc. external orgs)	<input checked="" type="checkbox"/>
	Please give details: HAC Training Ltd			

1) What is the impact on the following equality groups?		
Positive:	Negative:	Neutral:
<ul style="list-style-type: none"> <li>➤ Advance Equality of opportunity</li> <li>➤ Foster good relations between different groups</li> <li>➤ Address explicit needs of Equality target groups</li> </ul>	<ul style="list-style-type: none"> <li>➤ Unlawful discrimination, harassment and victimisation</li> <li>➤ Failure to address explicit needs of Equality target groups</li> </ul>	<ul style="list-style-type: none"> <li>➤ It is quite acceptable for the assessment to come out as Neutral Impact.</li> <li>➤ Be sure you can justify this decision with clear reasons and evidence if you are challenged</li> </ul>
Equality Groups	Impact (Positive / Negative / Neutral)	Comments
<b>Race</b> (All ethnic groups)	Neutral	<ul style="list-style-type: none"> <li>➤ Provide brief description of the positive / negative impact identified benefits to the equality group.</li> <li>➤ Is any impact identified intended or legal?</li> </ul>
<b>Disability</b> (Including physical and mental impairments)	Neutral	
<b>Sex</b>	Neutral	
<b>Gender reassignment</b>	Neutral	
<b>Religion or Belief</b>	Neutral	
<b>Sexual orientation</b>	Neutral	
<b>Age</b>	Neutral	
<b>Marriage and Civil Partnership</b>	Neutral	
<b>Pregnancy and maternity</b>	Neutral	
<b>Other</b> (e.g. caring, human rights)	Neutral	

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2) In what ways does any impact identified contribute to or hinder promoting equality and diversity across the organisation?	n/a
--	-----

3) If your assessment identifies a negative impact on Equality Groups you must develop an action plan **to avoid discrimination and ensure opportunities for promoting equality diversity and inclusion are maximised.**

- This should include where it has been identified that further work will be undertaken to further explore the impact on equality groups
- This should be reviewed annually.

Action Plan Summary

Action	Lead	Timescale

*This form will be automatically submitted for review for Policies and Procedures once approved by Policy Group. For all other assessments, please return an electronic copy to [EIA.forms@mbht.nhs.uk](mailto:EIA.forms@mbht.nhs.uk) once completed.*

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