Bwrdd Iechyd Prifysgol Hywel Dda University Health Board

HEALTH & SAFETY COMMITTEE
PWYLLGOR IECHYD A DIOGELWCH

DYDDIAD Y CYFARFOD: **DATE OF MEETING:**	10 January 2022
TEITL YR ADRODDIAD: **TITLE OF REPORT:**	Policy 382 Estates Ventilation Policy
CYFARWYDDWR ARWEINIOL: **LEAD DIRECTOR:**	Andrew Carruthers, Director of Operations
SWYDDOG ADRODD: **REPORTING OFFICER:**	Paul Evans, Assistant Head of Operations

Pwrpas yr Adroddiad (dewiswch fel yn addas)
Purpose of the Report (select as appropriate)

Ar Gyfer Penderfyniad/For Decision

ADRODDIAD SCAA
SBAR REPORT

Sefyllfa / Situation

The Health & Safety Committee (HSC) is requested to approve Policy 382 Estates Ventilation Policy. The report provides the required assurance that Policy 190 – Written Control Documentation has been adhered to in the review of the above mentioned written control document and that therefore the document is in line with legislation/regulations, available evidence base and can be implemented within the Hywel Dda University Health Board (HDdUHB).

Cefndir / Background

The Policy outlines how the organisation will manage and maintain ventilation systems in line with current legislation. It is the policy of HDdUHB to ensure that all ventilations systems comply with the relevant statutory and industry standards. Furthermore, that they are adequately maintained and fit for purpose to offer maximum resilience and safety.

Argymhelliad / Recommendation

The Health & Safety Committee is requested to approve Policy 382 Estates Ventilation Policy.

Amcanion: (rhaid cwblhau) **Objectives: (must be completed)**	
Committee ToR Reference: Cyfeirnod Cylch Gorchwyl y Pwyllgor:	3.16 Approve organisational Health and Safety Policies, Procedures, Guidelines and Codes of Practice (policies within the scope of the Committee).
Cyfeirnod Cofrestr Risg Datix a Sgôr Cyfredol: Datix Risk Register Reference and Score:	This discipline covers a variety of operational risks that have been scored and identified on the Datix system.
Safon(au) Gofal ac Iechyd: Health and Care Standard(s):	2.1 Managing Risk and Promoting Health and Safety

Nodau Gwella Ansawdd: Quality Improvement Goal(s):	Protect Patients From Avoidable Harm From care
Amcanion Strategol y BIP: UHB Strategic Objectives:	All Strategic Objectives are applicable
Amcanion Llesiant BIP: UHB Well-being Objectives: Hyperlink to HDdUHB Well-being Objectives Annual Report	10. Not Applicable

Gwybodaeth Ychwanegol: Further Information:	
Ar sail tystiolaeth: Evidence Base:	The content of this Policy has been developed utilising expert advice, with reference to legislation and guidance documentation.
Rhestr Termau: Glossary of Terms:	Contained within the body of the report.
Partïon / Pwyllgorau â ymgynhorwyd ymlaen llaw y Pwyllgor Iechyd a Diogelwch: Parties / Committees consulted prior to Health and Safety Committee:	Ventilation Safety Group and NHS Wales Specialist Estates Services NWSSP-SES – Authorising Engineer for Ventilation Systems

Effaith: (rhaid cwblhau) Impact: (must be completed)	
Ariannol / Gwerth am Arian: Financial / Service:	There are direct financial consequences associated with the content of this Policy. This is in the form of estates related mechanical infrastructure backlog and the necessary ongoing statutory funding to continue with testing and maintenance of ventilation systems.
Ansawdd / Gofal Claf: Quality / Patient Care:	There are direct patient care consequences associated with ventilation systems across HDdUHB.
Gweithlu: Workforce:	There are direct legal responsibilities for staff (workforce) associated with this Policy. Particularly staff who have been appointed by HDdUHB to ensure effective maintenance arrangements are in place.
Risg: Risk:	There are a variety of related risks associated with ventilation systems, which are individually referenced in the Datix system, complete with the necessary mitigation plans and further actions to be implemented.

Cyfreithiol: **Legal:**	HDdUHB has implicit legal responsibilities as defined by the Health and Safety at Work etc. Act 1974 and supporting legislation relevant to this discipline, such as The Control of Substances Hazardous to Health (COSHH) Regulations 2000 and subsequent approved codes of practice such as L8 and published guidance documentation such as Health Technical Memorandum (HTM) 03-01 Specialised Ventilation Systems for Healthcare Premises and HTM 04-01, The Control of Legionella, to ensure that it meets the criteria and standards for Ventilation Systems within its control.
Enw Da: **Reputational:**	There are potentially significant reputational and damaging consequences on HDdUHB particularly where there is clear evidence of failings as a result of non-compliance with ventilation systems.
Gyfrinachedd: **Privacy:**	Not Applicable
Cydraddoldeb: **Equality:**	The equality impact assessment for this policy has been included for information.

SUMMARY EQUALITY IMPACT ASSESSMENT – 382 – Ventilation Policy

Organisation:	Hywel Dda University Health Board

Proposal Sponsored by:	**Name:**	Paul Evans
	Title:	Assistant Head of Operational Facilities
	Department:	Estates Department

Policy Title:	Policy 382 - Ventilation Policy

Brief Aims and Objectives of Policy:	The aim of this Policy is to establish mandatory requirements for the management of Ventilation Systems installed within Hywel Dda University Health Board (HDdUHB) premises.

Was the decision reached to proceed to full Equality Impact Assessment?		**No ✓**
	The Policy has no direct relevance to duties under the Equality Act 2010, having a neutral impact on protected groups. A trawl of similar policies in other Health Boards in the UK indicated a similar outcome.	

If no, are there any issues to be addressed?	**Yes ✓**	**No**
	Copies of the Policy in alternative formats may be made available on request **Review December 2021** Language in the Policy requires changing to be gender neutral.	

Is the Policy Lawful?	**Yes ✓**	The Policy complies with Health and Safety legislation.

Will the Policy be adopted?	**Yes ✓**	The Policy will be adopted.
	No evidence gathered to indicate a negative impact. The implementation of this Policy will enhance human rights aspects in so far as HDdUHB will ensure that their facilities are appropriately ventilated and comfortable where ventilation systems are installed and operational.	

Are monitoring arrangements in place?	**Yes ✓**	
	The Policy will be subject to regular reviews to assess its performance and implementation. Any complaints received in relation to equality, diversity and human rights received following implementation of the Policy will be addressed on an individual basis and appropriate action taken.	

Who is the Lead	**Name:**	Paul Evans

Officer?	**Title:**	Assistant Head of Operations
	Department:	Estates
Review Date of Policy:	Two yearly	

Signature of all parties:	**Name**	**Title**	**Signature**
	Paul Evans	Assistant Head of Operational Facilities	November 2021
	Alan Winter	Senior Diversity & Inclusion Officer	16th December 2021

Please Note: An Action Plan should be attached to this Outcome Report prior to signature

Bwrdd Iechyd Prifysgol Hywel Dda University Health Board

ESTATES VENTILATION POLICY

FOR REVIEW AND APPROVAL

Policy Number:	382	Supersedes:	N/A	Classification	Corporate

Version No	Date of EqIA:	Approved by:	Date of Approval:	Date made Active:	Review Date:
V2		HSC			1 year

Brief Summary of Document:	The aim of this Policy is to outline the necessary mandatory requirements for the management of Ventilation Systems installed within all Health Board premises.
Scope:	This policy applies to all premises owned or occupied by the HB where Ventilation systems are installed and maintained. The policy covers the maintenance of all ventilation/air handling equipment within the Health Board, to ensure a safe environment for patients, staff and the public.
To be read in conjunction with:	144 – Maintenance Policy 242 - Fire Safety Policy 010 – Health and Safety Policy WHTM documentation

Owning Committee/ Group	Senior Operational Managers Group (Chair – Head of Operational Facilities Management)

Executive Director:	Andrew Carruthers	Job Title	Director of Operations

Reviews and updates		
Version no:	Summary of Amendments:	Date Approved:
1	New Policy	

Glossary of terms

Term	Definition
HDUHB	Hywel Dda University Health Board
COSHH	Control of Substances hazardous to health
HTM	Health Technical Memorandum
HB	Health Board
AHU	Air Handling Unit
HCAI	Health Care Associated Infections
PPM	Pre-Planned Maintenance
O&M	Operations & Maintenance Manual
SOM	Site Ops Managers
AE(V)	Authorised Engineer Ventilation
TVC	Total Viable Count
CFU	Colony Forming Units
BMS	Building Management System
LEV	Local Exhaust Ventilation
UCV	Ultra Clean Ventilated
CEO	Chief Executive Officer
DP	Designated Person
DFECM	Director of Facilities, Estates and Capital Management
HoO	Head of Operations
OCM	Operations Compliance Manager
AP(v)	Authorised Persons Ventilation
CP's	Competent Persons Ventilation

Keywords	Ventilation, Air Handling, Damper, Maintenance.

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1. INTRODUCTION

The Hywel Dda University Health Board, hereinafter referred to as the HB, acknowledges it's responsibilities under the Health and Safety at Work etc. Act 1974 and supporting legislation relevant to this discipline, such as The Control of Substances Hazardous to Health (COSHH) Regulations 2000 and subsequent approved codes of practice such as L8 and published guidance documentation such as Health Technical Memorandum (HTM) 03-01 Specialised Ventilation Systems for Healthcare Premises and HTM 04-01, The Control of Legionella, to ensure that it meets the criteria and standards for Ventilation Systems within it's control.

2. STATEMENT

The HB attaches great importance to all Health and Safety aspects and its impact on patients, public and staff to ensure that it provides healthcare facilities safe and fit for purpose.

The Health Board will ensure that all ventilation/air conditioning units (AHU's), are installed, inspected, serviced and maintained in accordance with all Statutory Instruments, NHS Guidelines, Health Technical Memoranda or similar, to ensure that such equipment does not pose a health or operational risk to either, staff, patients or members of the public.

3. SCOPE

This policy applies to all premises owned or occupied by the HB where ventilation systems are installed and maintained.

The policy covers the maintenance of all ventilation/air handling equipment within the Health Board, to ensure a safe environment for patients, staff and the public.

4. AIMS

The aim of this Policy is to establish mandatory requirements for the management of Ventilation and Ventilation Systems installed within HB's premises.

The Policy has been developed to ensure compliance with existing legislation, helping ensure that good practice standards are applied to all ventilation systems in use within the organisation. The Policy will ensure the organisation complies with the law and fosters confidence amongst both public and staff that the organisation takes its responsibilities regarding maintenance of these systems seriously.

5. OBJECTIVES

This Policy will provide guidance to those responsible for the management of ventilation systems and will ensure that adequate liaison is established between key members of staff and persons with overall responsibility for maintenance management.

Ensure that ventilation systems operate at optimum levels of performance and within the intended design criteria.

Maintain a clean and appropriate environment which facilitates the prevention and control of HCAI (Health Care Associated Infection) in a manner conducive to quality clinical care.

Ventilation is provided in healthcare premises to improve air quality, reduce the spread of infections and for the comfort of the occupants of buildings. More specialised ventilation will also provide comfort but its prime function will be to closely control the environment and air movement of the space that it serves in order to contain, control and reduce hazards to patients and staff from airborne contaminants, dust and harmful micro-organisms.

The HB recognises its obligations to take necessary measures in the provision of effective maintenance of engineering plant, systems and services.

5.1. Legislative and NHS requirements

It is the policy of the Organisation to comply with NHS, UK and EU statutory and other legislative requirements in relation to the use and management of ventilation systems. The legislation and Health Service guidance documents that must be considered in the development and maintenance of this policy are:

- The Health and Safety at Work Act 1974;
- The Control of Substances Hazardous to Health (COSHH) 1998;
- The Management of Health and Safety at Work Regulations 1992;
- Workplace (Health, Safety and Welfare) Regulations 1992;
- Provision and Use of Workplace Equipment Regulations 1992;
- Approved Code of Practice on the Prevention or Control of Legionella (L8);
- Health Technical Memorandum 03-01 Specialised Ventilation in Healthcare Premises. Part A and B.
- Health Technical Memorandum 04-01 The Control of Legionella, Hygiene, safe hot water, cold water and drinking water systems.
- The Regulatory Reform (Fire Safety) Order 2005
- Building Regulations Part F & Part L2

6. MAINTENANCE OF VENTILATION SYSTEMS

All ventilation air handling units (AHU), plant, ductwork and systems shall be included in the planned preventative maintenance (PPM) system.

Inspections and maintenance shall be carried out in accordance with the following:

- Heating and ventilation systems Health Technical Memorandum 03-01 specialised ventilation for healthcare premises Part A & B.
- Health and Safety Commission's Approved Code of Practice and guidance document 'Legionnaires' disease; the control of Legionella bacteria in water systems' (L8).
- Health Technical Memorandum 04-01 'The control of Legionella, hygiene, 'safe' hot water, cold water and drinking water systems.
- Manufactures Operation and Maintenance (O&M) Manuals.
- CIBSE Guides

The general frequency of inspections and verification for ventilation systems shall consist of:

All ventilation systems to be subject to a minimum visual inspection annually, the purpose of the inspection are to establish that:

The system is still required.

- The AHU conforms to the minimum standards.
- That fire containment has not been breached.
- The general condition of the system is adequate and operates in a satisfactory manner.

Ventilation systems servicing critical areas, such as theatres, patient isolation facilities, Intensive Care units, neonatal units and MRI units (a full list of critical environments is available in the HTM 03-01 Part B) shall be inspected quarterly and their performance measured and verified annually and written reports held in the Site Operations Manager's (SOM) ventilation portfolio. Reference should be made on the condition of filters, heavy soiling, requiring more frequent tests.

The quarterly inspection should be as detailed in HTM 03-01 Part B, simple visual check sheets associated with each quarterly inspection are to be completed and retained by the Health Board.

Examples of the check sheets are shown in HTM 03-01 Part B. If minimum recommended flow rates and pressures are not being met, a detailed verification must be completed and remedial actions taken, as necessary to ensure that the system operates to at least the minimum acceptable standards recommended in HTM 03-01 Part B.

Annual inspection forms for critical ventilation systems must be used and are identified in Appendix 1, Operating suite annual verification forms are held in Appendix 2.

All validation and verification reports on critical ventilation systems must be submitted to the Authorising Engineer Ventilation (AE(V) for signing off.

Permits to work maybe required when isolating ventilation systems for carrying out routine inspections, for confined space access or isolating of fire alarm services.

6.1. Ventilation Surveys and Risk Assessments

The SOM and their nominated deputies will be responsible for the monitoring and arranging of ventilation surveys and risk assessments with the appointed contractors as and when deemed necessary, the ventilation portfolio will clearly specify the frequencies of previous surveys and when future assessments will be needed.
The SOM will be responsible for assessing the competence of those carrying out risk assessments with advice from the AE.

It will be at the discretion of the SOM and their nominated deputies to include, total viable counts TVC/fungal swabs as part of the assessment process to identify the levels of colony-forming unit (CFU) per square centimetre of the ductwork to establish levels of micro organisms such as bacteria, mould and yeast. Similarly, the use of DDT, Dust Deposit Tests, such as Elcometer can be adopted if necessary.

Furthermore, fire damper locations, conditions, operating performance and testing may also be considered as part of the assessment process and may require the need of additional inspection hatches installed.

It will be essential to undertake a post clean survey on every occasion of ventilation cleaning to establish if work has been carried out to satisfactory conditions. These documents will also form part of the ventilation portfolio.

6.2. Ventilation Cleaning

Supply air ductwork conveys air that has been filtered and therefore requires internal cleaning only when it becomes contaminated, the frequency will depend upon the age and condition of the system and flow of air past the AHU filter, there is no requirement to clean ductwork annually. Checks should be periodically undertaken for “filter by-pass” to ensure that filters are installed correctly to avoid particulate contaminates downstream.

Extract Air Systems handle unfiltered air and are therefore cleaned as frequently as necessary in order to maintain their operating efficiency. For visual inspections of filter conditions and damper status, it is recommended that these be linked graphically to a Building Management System (BMS) to visually indicate faults. Kitchen ventilation is a fire risk and

should be subject to a quarterly visual inspection depending on how heavily it is used. See table 12 in DW172 Kitchen Ventilation (2018) for guidance.

All fire dampers should be tested by a competent person at regular intervals not exceeding one year, see HTM 03-01 Part B and BS9999 for technical guidance. There should be a comprehensive log book containing evidence of operational maintenance and testing. Furthermore, a location reference indicating the specific location and condition status of the damper. These are known as “maintenance dossiers” and are available at the each maintenance department.

Where split and cassette air conditioning units are installed, these units incorporate internal recirculation air filters and a drainage system to remove condensate from the cooling coil. These systems must be on a maintenance programme and inspected / cleaned every three months.

Local Exhaust Ventilation (LEV) systems such as fume cupboards and Category 3 rooms must be closely monitored in accordance with HTM 03-01 Part B, however these remain the responsibility of the “serving department”, and these systems must also be tested/inspected (every 14 months) and verified by specialists to comply with COSHH regulations (P601 Certified). Management of these serving departments, must maintain comprehensive records of their performance, repair and maintenance and share this information with Operational Maintenance Management site leads.

6.3. Record Management

In order that ventilation systems can be correctly operated and maintained it is essential that as-fitted drawings, operating manuals, maintenance instructions and commissioning manuals are available as well as complete asset information. This must be made available before hand over stage of a project, issued by the design lead person to the Authorised Person Ventilation.

Log books/portfolios identifying the location of equipment should be kept for each ventilation system. These must contain the maintenance records, testing/validation data, inspection and cleaning frequencies and will be the responsibility of the appointed Estates Authorised Person to ensure that they are kept up to date and available at all times.

All work shall be undertaken in accordance with the HB’s Health and Safety policies, Department of Health guidance, relevant Codes of Practice, Health and Safety Executive guidance and departmental Health and Safety procedures. Safe systems of work shall be used for all personnel working on ventilation systems.

6.4. Microbiological Air Sampling Theatres

This section of the policy has been included to ensure that the operating theatre ventilation is optimal in order to prevent airborne micro-organisms from entering surgical wounds.

This section covers the requirement for microbiological air sampling in a working theatre, commissioning of new theatres and where there has been “substantial modifications” to the ventilation system or fabric of the theatre. The areas covered include:

- Conventionally-ventilated operating theatres
- Ultra clean-ventilated (UCV) operating theatres

Airborne contaminants may enter and operating room via the following routes:

- Through the supply air
- Shed by operating staff (skin fragments with bacteria)

- Through surgical activities
- Transferred from adjacent spaces

Dilution of airborne contaminants is ensured by a well functioning ventilation system. The design of the operating theatre should seek to minimise the movement of air from less clean to cleaner areas. Overall ventilation (supply flow rates, air change rates, etc.) should give sufficient dilution of airborne bacterial contaminants as per HTM guidance.

Microbial air testing in a conventionally-ventilated theatre is a final check of supply of optimal quality-air to the operating theatre and the principles are applied for commissioning and monitoring post-maintenance (This will depend upon locally implemented procedures).

6.5. Roles and Responsibilities

The estates operational maintenance teams will carry out annual PPM's. Where necessary they will liaise with the Infection Prevention Team & Consultant Microbiologist for appropriate actions.

Infection Prevention Nurse Practitioner will liaise with clinical teams where necessary on advice from Consultant Microbiologist and Estates where there are abnormal results

6.6. Theatre Definitions

Conventionally ventilated operating theatre has a supply of air to dilute airborne contamination by minimising transfer of airborne contaminants from less clean to cleaner areas, to control temperature, of the space and to remove or dilute waste anaesthetic gases.

Ultra-clean ventilation system is a means of significantly increasing the dilution effect by providing a large volume of clean filtered air to the zone in which an operation is performed and sterile items are exposed. Air is discharged above the operating zone and, while not truly laminar, its downward displacement purges the clean zone of any contaminants and particles generated within it.

The air flow in and around the clean zone also serves to prevent particles originating outside the zone from entering.

Ultra clean air is defined as that containing not more than 10cfu/m3

6.7. Microbiological sampling

A suitable accredited external company will be contracted to undertake air sampling as directed by the Appointed AP for Ventilation (this is dependent upon local agreed arrangements).

The theatre should have received a "HIGH LEVEL" clean and should be thoroughly clean and dust-free. The air handling unit should be operating at normal flow rates (i.e. not on setback ventilation) continuously for at least 1 hour before sampling.

The supply air should be checked by closing all doors and leaving the operating room empty with the ventilation system running. An active air sampler mounted in the centre of the room approximately 1 m above floor level should then be activated remotely to sample 1000 L / per minute.

Aerobic cultures on non-selective media should not exceed 10 bacterial and/or fungal colony forming units per cubic metre (cfu/m3).

The result may take up to 5 days to come back to the estates department (however the information may be available after 48 hrs) this will then need to be discussed with Estates staff, Infection Prevention Team and/or Consultant Microbiologist.

A satisfactory microbiological sampling result is required to enable a new or refurbished theatre to be commissioned.

6.8. Commissioning

Commissioning must occur before a new operating theatre is first used or after substantial modifications (that may affect airflow patterns) are made to an existing theatre.

6.8.1. Summary for commissioning of conventionally-ventilated theatres

Commissioning is a task for both the Estates Department and the NWSSP-SES. Co-operation and co-ordination between them is important and below is a summary of matters that should be addressed when commissioning conventionally-ventilated theatres.

- The Theatre interior should be checked for obvious defects by both the Estates and end users.
- The air distribution within the theatre and between rooms in the theatre suite should be checked by smoke tracing.
- The air handling unit supplying the theatre is properly constructed, finished and functioning.
- Where “setback” (reduction of ventilation rates when theatre is not in use) is in place, there are indications in theatre of its function and there are safeguards against setback operating (i.e. going back to reduced ventilation rates), whilst the theatre is in use.
- The air change rates in theatre and preparation room are satisfactory.
- Microbiological air sampling results must be satisfactory.

6.8.2. Summary for commissioning ultra clean ventilated (UCV) theatres.

As for conventionally-ventilated theatres, new ultra clean ventilated theatres must be commissioned before being used for the first time or after substantial modifications.

Commissioning is a task for both the Estates Department and NWSSP-SES. Co-operation and co-ordination between them is important. The following matters relevant to infection prevention & control should be addressed:

- The theatre interior should be checked for obvious defects
- The airflow between a preparation room used for instrument lay-up and the theatre is satisfactory and the preparation room has an adequate air change rate as per HTM guidance.
- The air handling unit supplying the theatre is properly constructed, finished and functioning
- The air velocities in the ultra clean zone are satisfactory, the terminal HEPA filter is effective and the ultra clean airflow can resist particle penetration from outside
- The ultra clean zone resists ingress of air from outside, shown by smoke tests
- There is little value in performing microbiological sampling in a new theatre supplied with ultra clean ventilation but if agreed locally, can still be done on a sample taken in the centre of the ultra clean zone

6.9. Monitoring

Provided that engineering parameters are satisfactory and regularly monitored, microbiological air sampling in conventionally-ventilated theatres need not be done on a routine basis.

Microbiological air sampling of empty, conventionally-ventilated theatres should be done either as part of an investigation into theatre-acquired infection with a possible airborne element or after any changes that may affect airflow supply rates or distribution patterns.

This would include alterations to the fabric of the theatre or changes to the ductwork distribution that may affect airflow to or within a theatre suite, but would not include routine filter changes.

Following any annual maintenance work or work activity within the AHU, micro biological testing is to be carried out.

Such sampling should be identical to that on initial commissioning of the theatres. Any of the above problems should be discussed with the Infection Prevention Team, who may have to consider cancellation of theatre list in discussion with theatre staff.

Sampling in a working theatre may be indicated where use of theatre may have been possibly implicated in an increase in surgical wound infection. This should not be done as a routine exercise and would only occur following discussions with the Infection Prevention Team.

UCV Theatres monitoring must be performed annually or following major modifications and consist of filter challenge tests, air velocity measurements, entrainment test and will be arranged by the AP for Ventilation.

6.9.1. Action on air sampling results

All sampling results must be communicated between all relevant stakeholders, such as the Infection Prevention Teams, Authorised Person Ventilation and Consultant Microbiologist for appropriate decision making.

6.10. Related Documents

This policy must also be read in conjunction with the following:

- Health and Safety Policy
- Asbestos Policy
- Fire Safety Policy
- Risk Assessment Policy & Procedures
- Related Maintenance Procedures
- Risk Management Strategy
- Waste Management Policy
- COSHH Policy
- CIBSE Guides

Compliance with all HB policies, procedures, protocols, guidelines, guidance, standards and strategies is a condition of employment.

7. RESPONSIBILITIES:

7.1. The Health Board (HB)

The HB has the overall accountability for the activities of the organisation. The HB must therefore ensure it has the appropriate mechanisms in place to meet the requirements of current legislation and the relevant guidance.

In addition, the HB will ensure that the appropriate reporting arrangements are embedded within the organisation to allow effective communication, to highlight and communicate associated risks that require managing.

7.2. The Chief Executive Officer (CEO)

The CEO has overall responsibility for the Health and Safety for the organisation, is responsible for ensuring that current legislation is complied with and relevant guidance is implemented in all premises owned or occupied by the HB.

The CEO is responsible for ensuring that adequate resources are in place to meet all of the statutory requirements and that appropriate policies and procedures are implemented.

7.3. The Board Level Director (Deputy Chief Executive) (DP)

The HB will nominate a Board Level Director appointed as Designated Person (DP) accountable to the CEO to take the lead on all operational and estates governance issues, under their control. The DP will conduct a six monthly corporate meeting, which includes HTM governance issues to update the Board accordingly. They are also responsible for appointing the Authorising Engineer Ventilation (A E (V).

7.4. The Director of Facilities, Estates and Capital Management (DFECM)

The DFECM is the accountable officer responsible within the estates department for ensuring that adequate resources and expertise is available to formulate an estates operational maintenance structure to meet the needs of this policy. This structure will deliver an effective and robust maintenance strategy for the HB, in order to meet its legal responsibilities for all statutory related issues in every respect. The DFECM will also ensure that all related issues are cascaded within the management hierarchy.

7.5. The Head of Operations (HoO)

The HoO is responsible for overseeing and coordinating the day to day activities of the site operational managers for each acute site, ensuring that there is sufficient resources and expertise in supporting and maintaining the HB's Ventilation Infrastructure to satisfy the contents of this policy. The HoO will ensure that it has implemented a clearly defined maintenance strategy which will support and assist with achieving compliance with legislation and the mandatory requirements as identified above.

To fulfil its obligations, the HB will implement a robust management structure and suitable management arrangements to monitor, maintain and assess ventilation systems within all of its premises.

The HoO shall ensure that:

- Any Critical systems are identified and subjected to testing by an AP.
- Ensure that appropriate reactive and planned preventative arrangements are put in place to deliver to the aims of this policy.
- Maintain a register of Authorised Person's.
- Ensure that competent persons undertake regular maintenance on other ventilation systems and equipment.

- Have in place a procedure for assessing competent persons.
- Maintain a register of competent persons.
- Ensure that only individuals assessed as being competent and included on the register are used by sub contractors, i.e. it is the individual not the contractor that needs to be assessed.
- Ensure that the policy and procedures are implemented by a range of in-house or contracted services.
- Audit the effectiveness of the arrangements and arrange corrective action.
- Report any deficiencies which cannot be addresses within delegated limits of resource and authority.
- Ensure that critical ventilation systems are independently verified annually in accordance with H.T.M 03-01 part B.
- Arrange for any adverse incident to be investigated by the Authorising Engineer and for the dissemination of related advice.

7.6. Project Managers

Have the responsibilities to ensure that:

- All new installations meet the latest legal and technical standards.
- A suitably qualified person is involved in the design of all new installations and that commissioning and performance checks are undertaken and documented.
- All new installations are assessable and maintainable without resort to specialist access equipment or the need for removal of finishes/infrastructure.

- Maintenance teams have comprehensive operations and maintenance manuals (O&M), handed over on completion of schemes.
- Appropriate training and familiarisation is provided to in house and contract teams.
- All new designs or major modification to existing systems are checked by the Authorising Engineer prior to the commencement of work.
- All new installations are independently validated prior to contract completion.
- All variations from the standards set out within H.T.M 03-01 Part A are listed and agreed in writing by the Authorising Engineer and ADEFCM prior to implementation.

7.7. The Operational Compliance Manager (OCM)

The OCM has a strategic involvement within the Operational Management Structure to support and assist the HoO and relevant Site Operational Managers on legislation, governance and policy arrangements in order to achieve compliance. This will also include the management of risk registers and the bidding of statutory capital funding to address actions.

Furthermore, is required to make the necessary changes to these policies and working practices following any revisions in legislation and advise the operational management team of such changes.

7.8. Authorising Engineer Ventilation (AE(V)

The AE (V) is defined as a person designated by management to provide independent auditing and advice on ventilation systems and to review and witness documents on validation. An AE(V) will be appointed in writing by the HB.

They shall:

- Provide a service in accordance with H.T.M guidance.
- Advice on technical compliance with H.T.M 03-01 Part A and B.

- Advice on interpretation of H.T.M 03-01 Part A and B.
- Assess and make recommendations for the appointment of Authorised Persons.
- Monitor the performance of the service and provide an annual audit to the Designated Person.
- To investigate any adverse incident and report on any findings.
- Advice on the consequences of any proposed variation from the standards given within H.T.M 03-01.

7.9. Site Operations Managers (SOM)

The SOM's along with their deputies are responsible, managerially and operationally for the effective delivery of maintenance services within the HB's premises. They will possess the adequate technical knowledge and must be appointed in writing by the DP following advice from the AE if acting in an AP capacity.

The SOM along with their deputies will ensure that all Maintenance Policies and Procedures are followed across the HB premises and will ensure that inspection, service and maintenance activities are carried out safely without hazard to staff, patients and members of the public.

This will be delivered via a robust Pre Planned Maintenance (PPM) regime, utilising in house Competent Persons (CP's) and/or the engaging of specialist contractors to undertake regular risk assessments and remedial work where and when necessary.

It will also be essential for the SOM's to hold accurate ventilation portfolio's for all air handling equipment to assist in the effective management and frequencies of inspection and cleaning regimes. The portfolios will indicate both critical and non critical equipment.

The SOM along with their deputies will also be involved in discretional and major capital projects where necessary and will:

- Ensure the maintenance team have appropriate input to design and maintainability of all new installations.
- Ensure that maintenance teams have comprehensive operations and maintenance manuals handed over on completion of schemes.
- Ensure that appropriate training and familiarisation is provided to the in-house maintenance teams upon scheme handover.
- Fulfils the role of AP for specialist engineering services.
- Coordinate and communicate with the end users of the equipment where access or shut-downs are required and liaise with Infection Prevention & Control Team if required.

7.9.1. Authorised Person (Ventilation) (AP(V)

Will be an individual possessing adequate technical knowledge and having received appropriate training, appointed in writing (following advice from the AE (V)), who is responsible for the implementation and operation of Management's safety policy and procedures relating to the engineering aspects of ventilation systems.

7.9.2. Infection Prevention Team

The IPT may be required by management to advise on monitoring the infection prevention & control policy and microbiological performance of the systems, the SOM will work closely with the IPT staff on all aspects of ventilation maintenance including periodic air sampling in critical ventilation systems.

It is the responsibility of the Infection Prevention Team (IPT) to provide input for all matters relating to the hospital environment, maintenance of hospital buildings and engineering systems and to work with the Estates Team including:

- To promote the use of ESR for mandatory training for infection control and reduction in HCAI's
- Provide guidance and support when advice on controlling the environment is required
- Provide advice on risk assessments for controlling the environment decisions
- Identify priorities for action

7.9.3. Competent Persons Ventilation (CP(V)

The CP(V) is defined as a person designated by management to undertake maintenance, validation and periodic testing of ventilation systems.

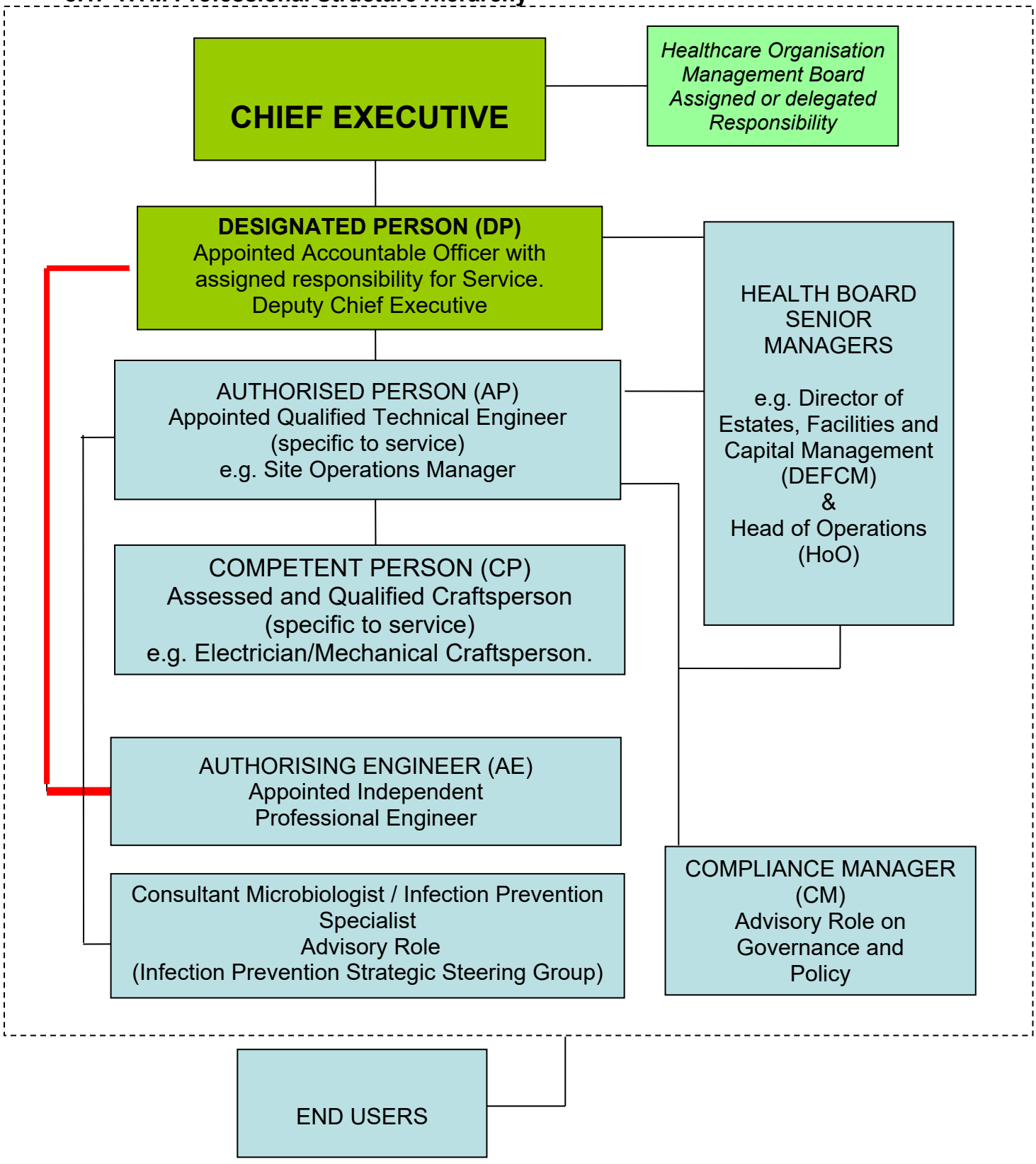
Trade staff or contractors must have sufficient technical knowledge, received appropriate training and experience to carry out their defined duties, and to understand fully any dangers involved and will be directed, appointed, or authorised to work (if a contactor), by the Supervisor or Authorised Person (AP) dependent on the work involved. Maintenance Assistants provide support to this role with direction from more senior grades of staff.

8. HTM MANAGEMENT STRUCTURE

Clear lines of managerial responsibility must be in place so that no doubt exists as to who is responsible for the safe operation and maintenance of the equipment, the HTM hierarchy below depicts and summarises the key appointments.

Communications between all parties involved must be considered where ventilation work is required to ensure that each key member of staff is fully aware of their involvement and responsibilities.

8.1. HTM Professional Structure Hierarchy



9. DEFINITIONS

For the purpose of this document the following definitions apply:

- The environment means the totality of a patient's surroundings when in healthcare premises. This includes the fabric of the building and related fixtures, fittings and services such as air and water supplies.
- Ventilation is a means of removing and replacing the air in a space. In its simplest for this may be achieved by opening windows and doors etc. Mechanical ventilation systems provide a more controllable method. Basic systems consist of a fan and collection of distribution ductwork; more complex systems may include the ability to heat and filter the air passing through them. Ventilation equipment may be required in order to remove smells, dilute contaminants and ensure that a supply of fresh air enters a space.
- Air conditioning is the ability to heat, cool, humidify, dehumidify and filter the air. This means that the climate within a space being supplied by an air conditioning plant can be maintained at a specific level regardless of changes in the outside air conditions or the activities within the space. Air conditioning may be required in order to provide comfort conditions within a space.

10. STAFF TRAINING:

The HB will ensure that there are adequately trained formally appointed AP to take the lead role for ventilation management, additionally any personnel carrying out maintenance of Ventilation Systems must receive suitable training, which includes information about any significant hazards arising due to their maintenance activities which may either affect them personally or any other person who may be affected by their actions or omissions. Training records shall be kept up to date for all staff and training needs be established each year.

11. MONITORING AND EVALUATION

Audits shall be conducted in accordance with designated staff functions 'Authorised Persons' and external 'Advisors' or 'Authorising Engineer' and in accordance with the Estates Governance Framework.

Maintenance performance along with other aspects of this policy shall be formally reported to the following:

Senior Operational Managers Meetings
Infection Prevention & Control Committee
Health and Safety Assurance Committee
Capital Planning Committee

12. LIMITATIONS

This policy applies to hospital staff and contractors employed by the HB. The policy compliments the Department of Health Policies and Principles in the HTM series and does not detract from other estates guidance.

13. DATE OF REVEIW

This policy will be reviewed biennially.

14. MONITORING EFFECTIVENESS AND COMPLIANCE:

The DEFCM will periodically instigate audits to monitor and review compliance of this discipline and other Estates policies within the Health Board.

An annual performance report will be presented and discussed at the Senior Operational Mangers Meeting and tabled at other relevant meetings if requested.

The report will contain key performance indicators to confirm:

- Any critical systems are clearly identified.
- Where they exist, that appropriate validation checks have been undertaken.
- That any non-conformance on systems is clearly documented and deemed satisfactory.
- That required plant investments are designed, installed and commissioned in line with current legislation.

15. MAJOR INCIDENT PROCEDURE

If a major incident is declared that has a potential to affect the operational status of the ventilation infrastructure, the HB's Major Incident Plan must be deployed and subsequent "action cards" / "local operational procedures" followed in order to maintain services as far as reasonably practicable.

16. APPENDIX 1 – ANNUAL INSPECTION OF CRITICAL VENTILATION SYSTEMS AHU AND PLANTROOM EQUIPMENT:

Definition of terms used on survey form

General condition

End of useful life
This should be clear from the condition of the AHU and its associated services and plant. The main indicators will be: • extensive internal and/or external corrosion of the AHU casing; • failure of filter housings to prevent air bypass; • general corrosion of heater and cooling battery fins, attenuator surfaces etc; • significant failure to meet minimum standards; • associated plant services and control elements in a poor condition or not able to fulfil their purpose; • AHU aged 20 years or more.
Action: Urgent replacement indicated.

Poor
Should be fairly apparent but would include an assessment of the degree of corrosion; cleanliness of coils and batteries; quality of filter mountings and their ability to prevent air bypass; fan and drive train condition; the control system elements' ability to fulfil their function; condition of the access doors and inspection covers. The age of the AHU is generally less important.
Action: Extensive refurbishment or programmed replacement indicated.

Average
Some faults but generally free of significant corrosion, clean internally and conforming to minimum standards.
Action: Faults capable of correction at next maintenance period.

Good
Conforming to the minimum standards, obviously cared for and subject to routine maintenance.
Action: Routine maintenance will preserve standard of the equipment.

Compliance with minimum standards (questions 2 to 23, 32 and 33)

Poor
More than three answers are negative.
Action: Management action required by estates/facilities department.

Average
No more than three answers are negative.
Action: Maintenance action required.

Good
No answers are negative, full compliance.
Action: None.

Maintenance quality (questions 5, 12, 26 to 31 and 34 to 40)

Poor
More than three answers are negative.
Action: Management action required by estates/facilities department.

Average
No more than three answers are negative.
Action: Maintenance action required.

Good
No answers are negative.
Action: None.

HYWEL DDA UNIVERSITY HEALTH BOARD

Annual inspection of critical ventilation systems – AHU and plantroom equipment

Hospital

Plantroom

Air-handling unit Age of unit

Area served by unit

Date of survey Name

General condition: End useful life Poor Average Good

Compliance with minimum standards (Questions 2 to 23; 32 and 33) Poor Average Good

Maintenance quality (Questions 5, 12, 26 to 31, 34 to 40) Poor Average Good

No	Survey question	Yes	No	Comments
1	Plant running?			
2	Is the unit and its associated plant secure from unauthorised access?			
3	Is the unit safely accessible for inspection and maintenance?			
4	Is the air intake positioned to avoid short circuiting with extract or foul air from other sources such as gas scavenging outlets?			
5	Are all inspection lights operating?			
6	Are motorised dampers fitted to the intake and discharge?			
7	Are fan motor(s) outside of the air stream?			
8	Is the fan drive train visible without removing covers?			
9	Is the cooling coil located on the discharge side of the fan?			
10	Is an energy-recovery system fitted (state type)?			
11	Are condensate drainage systems fitted to all energy recovery systems, cooling coils and humidifiers in accordance with Chapter 3 of Health Technical Memorandum 03-01, Part B?			

No	Survey question	Yes	No	Comments
12	Are drainage traps clean and filled with water? (see Table 3 in Health Technical Memorandum 03-01, Part B)			
13	Is the drain trap air break at least 15 mm?			
14	If a humidifier is fitted, state the type	–		
15	Is the humidifier capable of operation?			
16	Is there space to safely change the filters?			
17	Are there test holes in the principal ducts?			
18	Are the test holes capped?			
19	What is the general condition of the exterior of the AHU?	–		
20	Are the principal ducts lagged?			
21	What is the general condition of the associated control valves and pipework?	–		
22	Is the pipework adequately lagged?			
23	Is the system clearly labelled?			
24	Record prefilter differential pressure	–		
25	Record main filter differential pressure	–		
	Switch plant off. Fit padlock to isolator			
26	Did the motorised dampers close on plant shut-down?			
27	Is the vermin/insect screen clean?			
28	Is the intake section including the fog coil clean?			
29	Are the prefilters correctly fitted with no air bypass?			
30	Are all drive belts correctly aligned and tensioned?			
31	Is the cooling-coil matrix clean?			
32	Are all drip-trays fully accessible or capable of being removed for cleaning and have a fall to drain?			
33	Are the drainage trays stainless?			
34	Are the drainage trays clean?			
35	Are there any signs of water ponding in the AHU?			

No	Survey question	Yes	No	Comments
36	Is the matrix clean for each heater-battery?			
37	Have the main filters been correctly fitted with no air bypass?			
38	Is AHU and its associated main ductwork clean internally?			
	Energise plant			
39	Did unit restart satisfactorily?			
	Test automatic fan-motor change-over, if fitted			
40	Did automatic change-over operate satisfactorily?			

Additional comments

(For example: air leaks from access doors; control valves leaking or passing; general cleanliness of the area around the unit; or any other items of concern.)

Competent Person/Authorised Person .....

17. APPENDIX 2 – OPERATING SUITE ANNUAL VERIFICATION FORMS:

Definition of terms used on survey form

Assessment of compliance with Health Building Note 26 and Health Technical Memorandum 03-01 (all questions relevant to the type of theatre)

Poor
Air volumes and hence air-change rate is less than 75% of the design; room pressure differentials do not ensure a flow from clean to less clean areas; supply or extract air diffusers are not clean; pressure stabilisers not clean and/or not operating correctly; significant faults or failures of indicators on surgeon's panel; visible faults in the fabric of the suite; doors unable to close completely; general air of neglect.
Action: Urgent management action required.

Average
Air volumes and room pressure differentials approximate to the original design values; supply air diffusers clean but extracts visibly fouled; most pressure stabilisers clean and operating correctly; some of the indicators on the surgeons panel not working; minor faults in the fabric and décor of the suite.
Action: Maintenance action required.

Good
Better than average.
Action: None.

Maintenance quality (all questions relevant to the type of theatre)

Poor
More than three answers are negative.
Action: Management action required by estates/facilities department.

Average
No more than three answers are negative.
Action: Maintenance action required.

Good
No answers are negative.
Action: None.

HYWEL DDA UNIVERSITY HEALTH BOARD

Annual verification of theatre ventilation systems
Theatre suite information

Hospital

Theatre name/no. | Type of Theatre

Date of survey | AHU location & ID

Name

Compliance with HBN & HTM — Poor | Average | Good

Maintenance quality — Poor | Average | Good

No	Survey question	Yes	No	Comments
1	Has the annual verification of the AHU been carried out?			
2	Are windows hermetically sealed?			
3	Are the ceilings in the theatre and prep room complete and sealed?			
4	Are there any significant faults in the fabric of the rooms in the suite?			
5	Are room light fittings correctly sealed?			
6	Do all doors close completely and hold against the room pressure?			
7	Are the pressure stabilisers operating correctly and silently?			
8	Are all supply and extract air terminals and pressure stabilisers visibly clean?			
9	Measure and record the operating room temperature	–		
10	Does this accord with that displayed on the surgeon's panel?			
11	Measure and record the operating room relative humidity	–		
12	Does this accord with that displayed on the surgeon's panel?			
13	Measure and record the supply and extract air flow in the principle ducts	–		
14	Measure and record the air flow at all supply and extract terminals	–		
15	Does the derived air-change rate achieve at least 75% of the design?			
16	For UCV units, also measure and record the air velocities within the canopy using the method set out in Chapter 8 of Health Technical Memorandum 03-01 (Part A)	–		

No	Survey question	Yes	No	Comments
17	Do the air velocities achieve the standard appropriate for the type of canopy?			
18	Measure and record the room differential pressures	–		
19	Do the room differential pressures ensure a flow of air from the clean to the less clean areas?			
20	Measure and record the noise levels in the principal rooms of the suite	–		
21	Do the noise levels fall below the limits set out in Table 2 of Health Technical Memorandum 03-01, Part B?			
22	Check the operation of all ventilation control functions represented on the surgeon's panel.	–		
23	Do the indicators accurately represent the operational state of the ventilation system(s)?			
24	For UCV systems: is the UCV and AHU interlocked to ensure that the AHU runs at full speed when the UCV is at operating speed or at set-back? (see Table 6 in Health Technical Memorandum 03-01, Part A)			
25	With the UCV running at set-back, does the system maintain the standard of a conventional operating room?			
26	For all theatres: with the system running at set-back, does it maintain a flow of air from the clean to the less clean areas?			

Additional comments

(For example: the general décor; are the suite and its ventilation systems suitable for their designated functions?)

Competent Person/Authorised Person .....