

**Scottish Hospitals Inquiry**  
**Witness Statement of**  
**Susan Grant**

1. My Name is Susan Grace Grant.
2. I work for NHS Scotland National Services Scotland ("NHS NSS"). Within NHS NSS, I work for NHS Scotland ("NHSS") Assure and, within that, Health Facilities Scotland ("HFS"). I am a Principal Architect.
3. NHS Scotland Assure was created in 2021 by the Scottish Government bringing together two existing NHS NSS divisions, HFS and Antimicrobial Resistance & Healthcare Associated Infection ("ARHAI"). It builds on the strength of both organisations and formalises their prior collaboration and processes to provide greater assurance that the Healthcare Built Environment ("HBE") is safe, fit for purpose, cost effective and capable of delivering sustainable services over the long term.
4. The creation of NHSS Assure provided additional resource to develop and augment key HBE work streams, processes and support, under a single point of accountability. These include HBE research and development, subject matter expertise, guidance production and critically, assurance processes such as the existing NHSS Design Assessment Process ("NDAP") and the new Key Stage Assurance Review ("KSAR") to holistically review capital projects. Together, these combine to support NHSS Boards to demonstrate HBE quality and compliance at key stages in procurement and lifecycle.
5. In 2021, following prior HFS and ARHAI reviews of key engineering elements of the Royal Hospital for Children and Young People ("RHCYP") / Department of Clinical Neurosciences ("DCN") and Queen Elizabeth University Hospital ("QEUH") projects, it was deemed necessary to have more rigorous joint HFS and ARHAI reviews for HBE engineering and infection control elements. The new KSAR was introduced to focus on construction elements where prior reviews had demonstrated potential patient safety concerns, concentrating on water, ventilation, electrical, plumbing, medical gases installations, fire, and

associated Infection Prevention and Control (“IPC”) guidance. Reviews take place at multiple points during a project, from development, through construction to hand-over and the building in-use. At the end of each review, the KSAR team draft an assurance report, to which NHSS Boards respond with an action, then the report and action plan, plus confirmation of whether the KSAR team ‘support’ the project are submitted to Scottish Government.

6. Introduced in 2010, NDAP provides a multi-stage HBE design review process, from Initial Agreement (“IA”) through to the Full Business Case (“FBC”) for any NHSS capital project. NHSS Assure partner with Architecture and Design Scotland (“AD&S”) to support NHSS Boards in the development of their HBE brief, facilitate stakeholder engagement, quality benchmarking, self-assessments and other activities to enable their project quality assurance. Prior to their business stage submission to Scottish Government, their project evidence to date is also independently reviewed and reported on by multi-discipline HBE experts from NHSS Assure and AD&S. NDAP provides project specific ‘Essential’ and ‘Advisory’ recommendations together with a ‘unsupported’ or ‘supported’ status. ‘Essential’ relate to compliance with health & safety, technical standards, NHS Guidance and project’s agreed HBE quality benchmarks. ‘Advisory’ relate to best value or peer / good practice recommendations. NDAP ‘verification’ is provided by NHSS Board’s letter of commitment and timescales to implement the NDAP recommendations.
  
7. If designed today, the QEUH and RHCYP / DCN projects would both be subject to the parallel, complimentary processes of NDAP [CEL\(2010\)19<sup>1</sup>](#) and KSAR [DL\(2021\)14](#). Scottish Government business case approval to proceed would therefore be predicated on a receipt of both NDAP and KSAR ‘supported’ status reports, plus Board ‘verification’ / ‘action plans’. Together these processes provide holistic, independent reviews, commitments by Boards, and ensure a golden thread of information and accountability throughout briefing, design, construction, handover and potentially in-use. (In

<sup>1</sup> Bundle 1 – Published Guidance – A37215536 - CEL 2010 - Letter to Chief Executives, 'A Policy on Design Assurance for NHSScotland 2010 Revision' (2) dated 2 June 2010 – No.6, pg.553

future, these two processes will continue to develop, and may ultimately lead to a seamless single HBE quality and safety review process.)

## **CAREER HISTORY**

8. I started working as an architect in 1989 with a London firm specialising in two sectors – retail and healthcare. I did healthcare, and since then I have been hooked on healthcare design for the 30 years I have practiced architecture. In 1992, I joined the NHS in Scotland for the CSA (“Common Services Agency”) Building Division and did about two to three years there. We were then part of a TUPE transfer to a private design practice firm, primarily to deliver healthcare projects. I spent 17 years there, designing largely NHSS work but also on healthcare projects across the UK NHS, Ireland, Middle East and Canada. I spent 2012-13 as a client lead/ project manager at Glasgow University, where I delivered several joint University and NHS projects. My current role as HFS Principal Architect, began in September 2013.
9. As a member of the Architects Registration Board (“ARB”), Royal Incorporation of Architects in Scotland (“RIAS”) and Royal Institute of British Architects (“RIBA”), I am a fully qualified chartered architect. There are no specific qualifications for a healthcare architect. However, as an Architect, for 30 years the healthcare sector has been my primary focus. Healthcare design is uniquely technically complex, but its core aim is the active promotion of health and wellbeing outcomes for all users, and particularly those most vulnerable. I have designed for a diverse range of projects, from strategic planning for health boards, on major regional strategies- such as where they want future clinical services to be in 25 years' time; through to design lead for +200-bed new build hospitals. I have also worked on many specialist clinical refurbishments and extensions of health centres. For 20 years, I was a regular user of NHS Guidance, whilst in private design practice and/ or within the NHS/ University in a role directly delivering healthcare facilities.
10. Since 2013, my HFS Principal Architect role is to support NHSS Boards and Scottish Government to deliver quality healthcare facilities. In this role, I

administer the NHSS NDAP, which involves reviewing NHSS capital projects as they are developed. It also involves acting as 'custodian' for our NHSS Guidance publications related to NHS property and design (see Paragraph 13. below). Our NHS Guidance covers everything in HBE, from how to design a general hospital; through to what does a cancer unit need to function, down to the door ironmongery specification.

11. This witness statement is based on my Inquiry interview of 15 November 2022, and my answers are in relation to specific themes for discussion which were provided by the Inquiry in their email of 9 November 2022 in the Paragraphs A – D referenced as headings below. Some themes and questions predominantly relate to specific NHS Guidance ventilation series from my HFS engineering colleagues. I therefore caveat my answers below, that any detail related to SHTM 03-01 series should be directed to my HFS engineering colleagues. My responses relate to my experience and roles as HFS Principal Architect, and prior to this my healthcare architect, design lead, project manager roles, and regular user of of NHS Guidance and ADB system.

### **PARAGRAPH B – SUMMARY OF GUIDANCE FROM HFS**

12. NHS Guidance publications setting national healthcare built environment quality standards for a general hospital has a history almost as old as the NHS itself. They emerge from a need to set standards for Government investment in the NHS, and ultimately are the responsibility of the Government. In 1955, Nuffield Provincial Hospitals Trust published 'Studies in the Functions and Design of Hospitals'. Ministry of Health in 1961 first published Hospital/ Health building notes ("HBNs") 1 to 4. The first topics were, Building for Hospital Service, their cost, the District General Hospital and the Ward. HBNs still continue today, from HBN 00 up to 57, to give best practice guidance to support the briefing, design and planning of new healthcare buildings and on the adaptation or extension of existing facilities. Since 1970s Health Technical Memoranda ("HTMs") series have given comprehensive advice and guidance on the design, installation and operation

of specialised building and engineering technology used in the delivery of healthcare. NHS Guidance topics evolved and expanded over many decades, adding to both the number of HBNs and HTMs, and to other miscellaneous series of NHS Guidance publications, e.g. Health Facilities Notes (“HFNs”), Fire Practice Notes (“FPNs”). HFNs dealt with a variety of topics out with HBN/ HTM traditional scopes, such as Disability access audits, Energy efficiency, Case Studies, or Infection Control. NHS Guidance, typically HBNs, often had schedules of accommodation, room layouts, details etc, at the rear of the hardcopy, sometimes in loose sheets for copying. Since 1990s Guidance these elements became collated in a digital ‘Design Briefing System’ called NHS Activity DataBase (“ADB”); which is described later in this Statement.

13. In England, [www.england.nhs.uk/estates/health-building-notes/](http://www.england.nhs.uk/estates/health-building-notes/) provides their complete list of [NHS England estates related guidance](#) past and present.
14. In Wales, current and archived NHS Guidance are all on a dedicated website: [nwssp.nhs.wales/ourservices/specialist-estates-services/publications-info/](http://nwssp.nhs.wales/ourservices/specialist-estates-services/publications-info/)
15. In Scotland, [www.nss.nhs.scot/publications](http://www.nss.nhs.scot/publications) holds current, and some archived Guidance, including our [HFS Guidance Index](#), which provides a history. Historically Scotland typically used existing English NHS Guidance, plus also re-published some with ‘kilted’ Scottish amendments, or created its own NHS Scotland specific guidance.
16. The blend of each of these changes with the times. To enable continuity across NHS UK, the unique code is retained and an “S” prefix identifies ‘kilted’ or specific Scottish Guidance. By the 1970s, Scottish Home & Health Department issued Guidance for NHS Scotland such [new health centres](#) or [cost allowances](#). By 1990s CSA Building Division (fore-runner of NSS HFS), was responsible for listing and publishing Guidance. In the last two decades, HFS was created by Scottish Government to be the NHS Scotland Guidance custodian and has ‘kilted’ or created an increasing number of solely Scottish publications. Some are now used by England or Wales as NHS Guidance.

17. I use the term 'custodian' of NHS Guidance, to denote HFS and my responsibility for not only a few new or updated individual documents during our tenure, but to ensure a continuity of NHS Guidance as a whole. That is, to ensure a new document works with every NHS Guidance series, thus enabling the whole to provide fit-for-purpose, best practice for the HBE and NHS facilities. NHS Guidance has undergone continuous development since 1961, and I believe this will continue, for as long as healthcare facilities continue to be developed and are funded by Government.
18. Regarding 'Paragraph B' on the NHS Guidance, I agree this is a fair summary of the technical guidance made available by NHS, which is relevant when a new Scottish hospital is being planned and implemented. It covers the vast majority, but not every document series. I address this in further detail in my Statement below.
19. HFS is responsible as custodian for all of our Guidance for NHSS facilities. It would be our NHSS Assure Director, then three HFS deputy directors, then the relevant technical topic HBE expert, or what we call the subject matter expert, that are responsible for those publications that fall under their expertise. For example, there are Scottish Health Technical Memorandum ("SHTMs") series. These include about 60 engineering topic SHTMs, but there are also 14 building component SHTMs as well. Plus several SHTMs that are on fire safety or decontamination topics, e.g. [General Fire Precautions and Training \(SHTM 83\)](#); [Central Decontamination Unit for medical devices \(SHTM 01-01\)](#)
20. The Principal Architect is the subject matter expert responsible for the building component SHTMs, and my colleagues, Bill Connolly and Andrew Tweedie are responsible for the fire safety and decontamination SHTMs respectively. The engineering team are responsible for the bulk of the rest, i.e. engineering topic SHTMs. Scottish Health Facilities Notes ("SHFNs") are miscellaneous topics; therefore typically require a mix of different expertise, usually with an agreed lead on each document, similarly the Scottish Health Technical Notes ("SHTNs"). Scottish Health Planning Notes ("SHPNs") all belong to HFS

Principal Architect and are typically Scottish equivalent NHS England Health Building Note (“HBN”) series.

### **ADDITIONAL GUIDANCE ISSUED BY NHS RELEVANT TO VENTILATION SYSTEMS IN HOSPITALS**

21. NHS Guidance infrequent users have suggested it would be easier for them, if we produced a single large NHS Guidance document, rather than the multiple series that our guidance system has aggregated over six decades. NHS Guidance series are a piecemeal product of ever changing policies, directors, technologies and resource inputs across those decades. (Note: in 2010s NHS UK wide ‘Space for Health’ initiative, tried and failed to deliver a single, digital approach to host all NHS Guidance. I believe the pilot collapsed and funding ended prior to its formal launch.)

22. As a regular user of NHS Guidance, I know the majority of the key principles of the ventilation would largely be within, the SHTMs and specifically SHTM 03-01. However, ventilation overlaps and is covered in many of the other Guidance publications the Inquiry have listed here under Paragraph B, including all SHPNs. (bundle ref). For example, SHTM 55 Windows, SHPN 4 Supp1 Isolation, and SHPN 04-01 Adult inpatients:

*2.84 Windows in single-bed rooms should be openable. Where ward accommodation requires mechanically cooling to prevent the summer ambient temperature exceeding the prescribed limit, a regime of closing windows when the cooling is in operation needs to be employed. Opening windows above ground floor will require safety restrictors.*

[www.nss.nhs.scot/publications/adult-in-patient-facilities-shpn-04-01/](http://www.nss.nhs.scot/publications/adult-in-patient-facilities-shpn-04-01/) (2010 - )

23. There are two other guidance series that I would refer to not listed in Paragraph B, but potentially relevant to ventilation design, dependant on the project. Firstly, the “GUIDs”, are NHSS specific detailed Guidance related to specialist decontamination, including design, construction and operation of central or local sterilisation units. These cover a wide range of technical requirements specific to decontamination of, for example, endoscopes. The

GUIDs series, similar to many SHPNs / HBNS etc, will provide any specific detail on ventilation airflows as part of the overall health and safety requirements of their specialist facilities.

24. The second suite of publications that I would refer is the suite of safety alert publications that HFS colleagues publish. Our Incident Reporting Investigation Centre (“IRIC”) produce a series of safety alerts and messages that relate to NHS facilities. These generally relate to equipment failures or immediate safety issues, but this includes ventilation, water systems etc, e.g. ventilator equipment, oxygen, Covid. To ensure completeness, I recommend the Inquiry confirm whether any IRIC publications that provide guidance to NHSS Boards, are relevant to your Inquiry scope.

### **PARAGRAPH C - SUMMARY**

25. It seems reasonable that Paragraph C fairly summaries the basis on why HFS produced or maintains the SHTM series of guidance, including SHTM 00 and SHTM 03-01.
26. Regarding Paragraph D and whether it is a fair overview of the guidance, I would defer to my engineering colleagues. It is specific to SHTM 03-01 and its relationship to what it is trying to do. Therefore, I would defer to HFS engineering team who would be able to confirm all of that but, none of it seems unreasonable as a user of guidance. I would add, and this is not specific to SHTM 03-01, this is generic and applicable to all Guidance, is probably best summed up in the last section of Paragraph D, quoted below:

“Departures from the recommendations and the guidance may be justified in some circumstances, but this would have to be a matter of professional judgement based on the prevailing circumstances and be acceptable to whoever are ultimate responsibility for the hospital.”

27. I believe the above statement is true, but would elaborate on the use of the term “may be justified”. I have had examples of some circumstances in which



“may” would not always be applicable, i.e. “would” or “should” is more applicable. I reiterate earlier statements that NHS Guidance describes the aim, and then provides a series of generic recommendations to meet an aim. e.g. the underlying legal obligation or duty of care. Therefore, the legal duty always remains the aim, and similar to a Code of Practice, e.g. Highway Code, whenever NHS Guidance does not describe the exact or correct recommendation for a particular given circumstance, then it “would” or “should” be user duty to adapt guidance, and thus evidence, to ensure they meet its underlying aims or their legal duty of care. Given our ever developing clinical practice and technology, it is not practicable for NHS Guidance to describe every circumstance or scenario.

### **ACTIVITY DATABASE**

28. Paragraph 2.60 of SHTM 03-01 Part A (2014)<sup>2</sup> refers to NHS Activity DataBase (“ADB”) digital system, providing a library of specific environmental requirements for individual NHS spaces and departments. I would refer you to a 10 June 2019 freedom of information (FOI) release on ADB from NHS England (also called NHS Improvement, and previously Department of Health (“DoH”) or “DHSC”), This FOI provides background to the Inquiry on what ADB was and is; and refers to their 2017 NHS letter in which they unilaterally decided ADB was no longer to be a tool NHS would retain in-house [www.england.nhs.uk/publication/foi-activity-database/](http://www.england.nhs.uk/publication/foi-activity-database/)

29. ADB is a digital system, developed in 1990s as a database, or library of inter-related NHS departments, rooms, assemblies, components and equipment, each with relevant graphical 3D spatial data and technical text information. It can be used for healthcare built environment briefing, design, commissioning and operations, though is predominantly used for briefing only. It was developed in-house by the NHS and works in conjunction with NHS Guidance

<sup>2</sup> Bundle 1 Published Guidance – A33662259 - Scottish Health Technical Memorandum 03-01, Ventilation for healthcare premises, Part A v2.0 - Design and validation dated February 2014, No. 3, pg.149

as a world-leading, innovative digital design briefing solution to healthcare environment in the 1990s.

30. Before the 1990s we had hard copy guidance, in some cases these books had a set of loose-leaf tracing paper drawings at the back, for key space or equipment layouts of a particular room or a department. There was also paper pull-outs for details, areas and schedules of accommodation. ADB is of interest to the Inquiry, as it provides digitally, just as the old paper system within older Guidance provided, the initial briefing starting point for the client, on everything from schedules of accommodation, to the equipment list, plus 3D room drawings. In addition, as the SHTM 03-01 refers to, the ventilation requirements, the air pressurisation regime, and the finishes on the walls and the floors for each room type are listed in ADB.
31. From 1990s – 2010s, NHS Guidance and ADB were developed and updated together, with a view to make data more accessible for users and reduce risk of inconsistency errors. This was achieved by keeping strategic data and descriptions only in the Guidance document, with as much of the detail data as practical kept digitally in ADB. NHS ADB digital system had an annual software licence, providing regular updates to suite Guidance releases. Since 2017, NHS England made the unilateral decision that ADB was no longer an in-house tool, but would still be available for NHS use via commercial licence route. The direct link with each Guidance and ADB automatic update was broken in 2017. ADB still updates regularly, but only following their owner reviews after NHS Guidance is publicly available.
32. In NHS Scotland, our extant 2010 policy, the Chief Executive Letter CEL(2010) 19 for quality design in healthcare mandates NHS ADB use: [www.sehd.scot.nhs.uk/mels/CEL2010\\_19](http://www.sehd.scot.nhs.uk/mels/CEL2010_19).
33. Mandate 7 states: “*All NHS Scotland bodies...must use and properly utilise the English Department of Health’s Activity DataBase (ADB) as an appropriate tool for briefing, design and commissioning.*” The query for the Inquiry relates to definition of ‘properly utilise’ and ‘appropriate’ above. In my

view, the author deliberately allows for a project bespoke solution and inevitable development in ADB since 2010.

34. ADB is currently the only briefing tool for NHS, but has many limitations some relating to dis-investment by NHS England, meaning 'appropriate' for recent NHS Scotland & NHS UK projects is limited to initial briefing only, and then other software tools are better placed to further develop the project, through briefing, design, commissioning and into operations. Unfortunately, this has impacted potential automatic feedback loops originally envisioned by CEL, to improve ADB and the next project brief. Note, ADB mandate originated in 2006 [www.scot.nhs.uk/sehd/mels/HDL2006\\_58](http://www.scot.nhs.uk/sehd/mels/HDL2006_58). This policy letter was replaced by CEL(2010)19, but the ADB mandate was replicated. Both letters placed ADB under the policy contents title of: '*Project brief*'.
35. Over the years HFS have continued to work to develop and improve both NHS Guidance, including its intrinsic links with and reliance on ADB. Recently this has involved dialogue with ADB owner/ developer and support for delivery of a set of standard repeatable rooms, with the ADB graphical room layout sheet (RLS), and textual content room data sheet (RDS) related to each: [www.nss.nhs.scot/publications/report-on-repeatable-rooms/](http://www.nss.nhs.scot/publications/report-on-repeatable-rooms/). This ongoing development of repeatable rooms will be part of this overall ADB database and software update, making them available to NHS UK briefing and mandated for NHSS briefing use. Since 2017, ADB is now licensed to a private company called Talon Solutions Ltd, who were technical partners with NHS England from 1990s onwards, and HFS continue to work with them to keep links to emerging NHS Guidance, including NHSS Guidance up to date.
36. Originally developed in-house by NHS England together with their Guidance, ADB system's textual content room data sheet ("RDS") refers to NHS England Guidance not NHS Scotland's. Largely, that is not material for vast majority of ADB initial briefing content e.g. department schedules, rooms, functions, areas, relationships, layouts, components, equipment and finishes etc, plus all the ADB graphics content are the exact same for NHS Scotland use. But, as the caveat on both policy letters HDL(2006)58 & CEL(2010)19 states, there is

a duty of care to check for Scottish Guidance. In essence, this is relevant particularly if and where quality or standard is higher in Scotland than in England. The health boards and their design team should review and flag up any conflicts or differences or changes between initial ADB outputs and NHS Scotland Guidance. For example for the current SHPNs a typical NHS England ward would have 50% single bedrooms, whereas SHPN 04-01 states 100% singles is starting point for briefing; but the ADB outputs for rooms themselves are the same. For example, ADB finishes refer to old HTM building component series, which has a direct, extant Scottish SHTM. NHS England retired these and recently replaced some only with HBN 00-10 series.

37. Please refer to my HFS engineering colleagues for all SHTM engineering series references, including for any relevant ADB Scottish variations to HTM. However as a regular user, I believe the only one difference in the respective 2021/ 2022 updates of HTM / SHTM 03-01 Appendix A1 table for room air changes impacting ADB RDS, is for the ensuite toilet.
38. Risks of errors is reduced wherever practicable, by ensuring a consistency in NHS Guidance across UK, and also ensuring ADB kept up to date. Both of these aims HFS continues to work on, in our ongoing NHS Guidance development. For example, our next ADB updates for our repeatable rooms initiative should refer to Scottish Guidance as these dozen will be Scottish specific repeatable rooms. However, we are also working with our colleagues in NHS England, who have developed a larger suite of repeatable rooms, with the aim that where practicable, we can adopt or use those ones too in NHS Scotland, and vice versa.

## **DOCUMENTS**

SHPN 04-01 Adult Inpatient Facilities

[www.nss.nhs.scot/publications/adult-in-patient-facilities-shpn-04-01/](http://www.nss.nhs.scot/publications/adult-in-patient-facilities-shpn-04-01/) (2010 - )

SHPN 04 v1 (2000 – 2010) - available as PDF<sup>3</sup>

39. The SHPN 04-01 Adult Inpatient Facilities is to provide best practice guidance on the planning and design of in-patient facilities for adults. For health boards it supports the development of their brief and to boards and their supply chains, the development of their design standards and design proposals. It also can support the operation of and any potential need for refurbishments, by providing an HBE quality standard that can be used by boards as a basis for making an investment business case. For example, to say their current Victorian hospital ward does not come up to this current inpatient quality standard, and identifying elements investment to improve, or meet SHPN's qualities.

### **SHFN 30 INFECTION CONTROL**

[www.nss.nhs.scot/publications/hai-scribe-shfn-30/](http://www.nss.nhs.scot/publications/hai-scribe-shfn-30/) (2014 - )

[www.nss.nhs.scot/publications/hai-scribe-shfn-30-archived/](http://www.nss.nhs.scot/publications/hai-scribe-shfn-30-archived/) (2002 – 2014)

40. SHFN 30 Infection Control Guidance, commonly called HAI SCRIBE (Healthcare Acquired Infection – System to Control or Reduce Infection in the Built Environment), is a suite of documents. There are currently three documents in our SHFN 30 series. This series has grown over the decades and the current suite published Oct 2014 – Jan 2015. Prior versions of this suite range from original single document in 2002 to two documents in 2007. SHFN 30 mandated in 2007 by: [www.sehd.scot.nhs.uk/mels/CEL2007\\_18.pdf](http://www.sehd.scot.nhs.uk/mels/CEL2007_18.pdf)

41. SHFN 30 suite of documents give a framework for a discussion on Infection Control related to the Healthcare Built Environment (HBE), and include details for who should be in the room for that discussion, and at what project stages those discussions should happen. SHFN 30 Part C document provides a series of question sets to facilitate discussions at key stages of project

<sup>3</sup> Bundle 1 Published Guidance – A33662184 - Scottish Health Planning Note 04, In-patient Accommodation Options for Choice Supplement 1 Isolation Facilities in Acute Settings dated September 2008, No.5, pg.518

development. Its questions cross-reference to a relevant Guidance series and/ or paragraph clauses to support that discussion.

42. HFS colleagues and I run SHFN 30 regular training sessions with the health boards around Scotland. We emphasise it is a risk management process, not a tick box exercise, in which all key stakeholders require to contribute, and record their '3Cs' of Communication, Collaboration and Compromise; is best means for boards to ensure optimal decision-making in complex challenges.
43. SHFN 30 is a key tool in our arsenal to support appropriate HBE briefing and solutions. Part of that is to know and select relevant elements from the various series of NHS Guidance. Therefore, key to success is projects need a series of stakeholders and disciplines, with expert knowledge of HBE to best understand how to interpret generic, occasionally conflicting Guidance for their particular clinical circumstances. Then achieving and recording a consensus on the optimal solution that delivers the key aims of Policy, Guidance, Regulations and NHS legal duties for their given circumstance.

### **HBN 23 HOSPITAL ACCOMMODATION FOR CHILDREN AND YOUNG**

#### **PEOPLE**

[www.nss.nhs.scot/publications/hospital-accommodation-for-children-and-young-people-hbn-23/](http://www.nss.nhs.scot/publications/hospital-accommodation-for-children-and-young-people-hbn-23/) (2004 - )

44. HBN 23 Hospital Accommodation for Children and Young people, published 2004 is one of our oldest extant NHS Guidance documents, not yet updated. As far as practicable, we try and work with NHS colleagues across the UK to prioritise NHS Guidance updates, HBN 23 has not yet risen to the top-ten next updates, but is hoped to update it in next few years. NHS clinical protocols and safety risks are predominantly consistent across the UK, and NHS supply chains deliver across the UK, e.g. builders, designers, specialist equipment. Therefore, HFS aim is to ensure there is consistency of NHS UK Guidance, unless a very unusual/ good safety reason, plus the difference is highly publicised / transparent; then this difference may itself lead to clinical or human errors, e.g. single figure of difference, which is un-highlighted and

mostly looks the same, may impact a clinician assuming a level of extra accessibility or safety which is not actually realised in treatment rooms located on either side of a UK border.

45. HFS work closely with the rest of NHS UK colleagues and we have good relationships that shares the load of developing HBE best practice, continuity and NHS Guidance across all 4 nations, see 5. above for details. However, HFS within our own resources and priorities will deliver NHS Scotland specific Guidance e.g. [Mortuary \(SHPN 16-01\)](#); [Fire safety \(SHTM 83\)](#); [HAI SCRIBE \(SHFN 30\)](#). Recent NHS Scotland Assure investment is likely to accelerate this trend, particularly where key NHS UK Guidance are gaps identified.
46. The SHFN 30 suite is good example of NHS Scotland taking initiative on NHS Guidance. The equivalent HBN 00-09 in NHS England is one single and older document; it is not as detailed nor gives the valuable support tools to aid the Boards' delivery.
47. The custodian and policies for NHS Guidance in England has changed multiple times in the last two decades. As the largest NHS nation, England had historically taken the lead, but particularly 2010 - 2017 saw a vacuum in UK wide NHS Guidance, In 2017, England arranged a meeting across the UK NHS Guidance custodians, HFS, Wales and Northern Ireland, worked with England to create a top-10 and next 25 NHS guidance priority list to work together on. The pandemic stalled this collaboration, but to date we have jointly published 3 updates, another 5 are imminent, with progress made on a further 13 NHS Guidance new documents. England's prioritisation for the next tranche for future NHS UK wide Guidance has also commenced.
48. NHS Guidance colleagues across our 4 nations do not want to work in a vacuum because it can create a risk in its own right but, equally, sometimes we cannot wait for our colleagues in different nations to catch up. NHS Scotland Assure are developing our own Decontamination, Fire safety and Engineering priorities for NHS Guidance.

### **HBN 04-02, SHPN 27 AND HBN 57 CRITICAL CARE UNITS**

[www.nss.nhs.scot/publications/critical-care-units-hbn-04-02/](http://www.nss.nhs.scot/publications/critical-care-units-hbn-04-02/) (2014 - )

[www.nss.nhs.scot/publications/critical-care-units-shpn-27-archived/](http://www.nss.nhs.scot/publications/critical-care-units-shpn-27-archived/) (2000 - 2014)

HBN 57 Facilities for Critical Care (2003 -2013) - available as PDF

49. Applicability of NHS Guidance comes down to the timing of the Scottish SHPN 27 and the English HBN 57 Facilities for Critical Care publications; plus the key decision making dates for the project. Before I joined HFS, historically, in Scotland a designer would request client clarification on applicability of recent English versus older Scottish NHS Guidance if both potentially relevant. However, there was a consensus by everyone, if there was no Scottish Guidance option on a specific HBE topic, then you should use the English equivalent where available.
50. Ultimately, the decision on detailed applicability of NHS Guidance within their specific circumstance is up to the Boards. As it is role of the client, to set their own brief and to make very clear statements on the quality standards required to be delivered, and ultimately fulfil their legal and public sector duty of care. The NDAP gives Boards support and guidance to assist in doing that, i.e. provide an applicability list of the current guidance at a particular point in a brief, or review a design at key decision-making point. For example, CEL(2007)18 mandates SHFN 30 use, but key decisions of Guidance clause applicability are taken by key stakeholders, reflecting between X, Y, and Z options, for any given infection control scenario through design development.
51. A key challenge we raise in SHFN 30 training is there are multiple names and acronyms for things, and people often assume they know a definition, or use them interchangeably as if they were the same thing, when they are not necessarily. For example, going back to Critical Care facilities, ITU sometimes is referred to as an Intensive Treatment Unit, Intensive Therapy Unit or CCU is Critical Care unit but may be a Coronary or Cardiac Care unit; HDU is High or Higher Dependency Unit, but the required clinical level of patient care, and therefore the specific Board requirement in HBE brief can vary significantly.



52. The 2011-13 Scottish version of SHTM 03-01 Part A & B were based on an older 2007 English HTM, which HFS 'kilted' i.e. updated for use in NHS Scotland'. Both publications predate my HFS role; however, in 2013-14, I supported the HFS Principal Engineer publishing an SHTM 03-01 addendum, which clarified for all users the key differences between it and the HTM. As a user of Guidance myself, I recall only one technical difference, Scotland wanted to retain the HTM 2025 requirement not to mix clean and dirty extract ventilation systems. Note, this SHTM system requirement difference, would have no direct relevance/ impact for ADB data outputs.
53. HBN 57 was extant NHS England Guidance between 2003 – 2013. SHPN 27 was extant NHS Scotland Guidance between 2000-2014). These early 2000s publications predate my HFS role. SHPN 27 remained extant on HFS website throughout the publication of HBN 57 in England. However from my 20-year healthcare architecture and design lead career as a HBE specialist, it was often unclear as a Guidance user, what circumstances, if any, a newer NHS England publication may be used in lieu of an older NHS Scotland equivalent.
54. When I joined HFS we agreed a simple and swift process in which NHS England Guidance that HFS review and deem technically appropriate for use, i.e. best practice status in Scotland, adding a Scottish front cover to confirm its applicability. Any specific caveats for Scottish use are attached to this new cover. This was based on an extant NHS Wales process. In 2014, we published circa 18 to 20 English documents on our current website, thus clarifying their applicability. We further reinforced a clear applicability status recently by creating a HFS Guidance Index that lists all NHS Guidance current in Scotland, and their prior version history, back to 2002. The first column of this Index, allows Boards to easily pre-select the 'applicability' of each Guidance to project: [www.nss.nhs.scot/publications/hfs-guidance-index/](http://www.nss.nhs.scot/publications/hfs-guidance-index/)
55. In 2014, following the above process for NHS England Guidance, we placed their new 2013 HBN 04-02 for Critical Care on HFS website with our NHS Scotland status cover, We also archived the superseded SHPN 27 at same time. NHS Guidance is an iterative process that has gone on for 6 decades. It

will likely continue to develop and improve, I see HFS job as ensuring both the documents and the process are competent and as transparent as possible.

### **OTHER SIMILAR RESOURCES POSSIBLY RELEVANT TO THE INQUIRY**

56. I believe of key relevance to the Inquiry, would be to seek a programme or a timeline of when the project key decision-making points and/or sign-offs were done. Only then can this be matched to HFS Guidance Index to establish which publications were even available. Specifics on project 'applicability' could then be debated.
57. [www.nss.nhs.scot/publications/hfs-guidance-index/](http://www.nss.nhs.scot/publications/hfs-guidance-index/) provides a very clear list of what the extant Guidance was available at a specific point. Having done a number of project reviews over the years, it is often easy in hindsight to assume now familiar guidance, regulations, standards etc as considered 'applicable' at the time of the project. Note, a typical NHS project gestation period from inception to doors-open is 5 – 10 years. Therefore the opening day should not be the date to judge applicable Guidance, or other standards.
58. The day we publish a new NHS Guidance document, in theory is the first day that it will slowly begin to be out-dated. As each cross-refers a vast array of other NHS Guidance, technical standards, British standards, European standards, research and clinical practice extant on that publication date, it risks any of those cross references becoming out-of-date by the next day. Note, the gestation period of a typical NHS Guidance production is 1-3 years; and lifespan prior to potential obsolescence typically varies 5-20 years.
59. Many of our NHS Guidance documents, particularly newer ones, begin with a statement to the effect of: *"In reading this guidance, please make sure that you are using and cross-referencing to the most current versions of the standards referred to in this document."* (SHPN 16-01). Therefore, the Inquiry should follow similar process, but in reverse.

60. In my experience of review, the key challenge, is to determine the dates that the project key decisions were made. However, once those dates are agreed, then it is often relatively easy to determine applicable standards or Guidance.

### **SHTM 03-01 INTERACTIONS AND POTENTIAL ARISING OF CONFLICTS**

61. I have been asked how the guidance I have just spoken about interacts with SHTM 03-01<sup>4</sup>. If conflicts arise, how are they resolved and is one has greater authority than the other?

62. In construction and procurement contracts, they typically write a clause to state the authority hierarchy of various briefing data sources. Legal duties are given highest status, and then any mandated elements, then briefing bespoke or closely aligned with the project needs, then any wider briefing or generic data. Typically, each project and client customise a recent 'similar' hierarchy, to ensure suitability for their specific risks, circumstances or scenario.

63. For example, the clinicians involved in doing a new treatment in Treatment room A, may have a very different set of risks and need a very different hierarchy; to the work done say last year in Treatment room B. Even though a room is named a treatment room, in NHS Guidance and/or closest ADB, it may be used for an entirely different clinical purpose in another facility or project. Therefore to brief Treatment room A, client would reference NHS Guidance, but as treatment rooms do not have their own specific Guidance, this will involve individual clauses in multiple documents, e.g. HBN 00-03, plus one or more depending on clinical service / location of, e.g. SHPN 04-01 adult acute ward, or HBN 03-01 adult mental health, HBN 02-01 cancer service, or SHPN 36 community services, Also nearly every SHTM will likely have some applicability. The initial starting point for detail briefing is to check ADB library of 100s departments and 1000s room types, then select the nearest from say a 100 ADB Treatment rooms, to the specific clinical need of new treatment planned for Treatment room A. As an example, ADB lists 3 different

<sup>4</sup> Bundle 1 Published Guidance – A33662259 - Scottish Health Technical Memorandum 03-01, Ventilation for healthcare premises, Part A v2.0 - Design and validation dated February 2014, No.3, pg.149

Treatment room types for ophthalmic treatment alone. Given client has only one ADB licence, they download the initial brief/ starter-for-ten ADB outputs of the selected: X0267: Treatment room: ophthalmic laser at 12sqm. Typically, they will export their graphical room layout sheet (RLS) to both AutoCAD and a PDF; plus their textual content room data sheet (RDS) as msWord and a PDF, the ADB accommodation schedule and any other schedules e.g. equipment, finishes, potentially engineering, are typically exported as msExcel and a PDF. The PDFs keep a record of the original un-altered ADB starting point, and are easiest to share with many stakeholders.

64. Exporting ADB to commonly available software is typically a necessary requirement to ensure wide engagement and commentary to enable an appropriate clinical brief. If for example, the clinic's new laser equipment requires an room area increase, wider door, enhanced ventilation due to heat gains, and additional power or other key briefing requirements, these can be updated, reviewed and agreed / signed-off, using any software. From this point, keeping the developing data for the bespoke clinical brief within ADB software typically adds little value, and be detrimental to stakeholder engagement. Easier stakeholder engagement is also reason that NHS projects may opt to use an Environmental Matrix, i.e. a room schedule with key engineering services. Note, environmental data is not the only ADB data export typically formatted in a schedule or matrix, this list also includes accommodation area schedules, finishes schedules and equipment matrix. For example, using an msWord RDS, with its 4-6 individual data sheets per room, to retain all engineering, finishes or area data is an option; but this typically becomes increasingly challenging for the stakeholders review of 100s of rooms in a project. Whichever eventual digital formats are chosen for the project briefing textual data, e.g. ADB, msWord, msExcel; or graphical data e.g. AutoCAD, CodeBook; the project's quality management processes for communication and in particular document control, is key to any successful briefing, i.e. reducing risk of potential human errors.

65. In my role and experience, I am aware of a range of international healthcare briefing systems, I reviewed some of these in 2018 as potential alternatives

to ADB, but none were considered to be comparable, e.g. Middle East, US, Australia and Norway. I am not aware of any project in NHSS (or NHS UK) that use these as alternatives to ADB as a source for initial briefing. Therefore, I believe it unlikely any Board would require to assess the equivalency or otherwise to ADB, as mandated by HDL(2006)58 & CEL(2010)19.

66. As an ADB user and NDAP administrator, I do not recognise the incompatibility use of an Environmental Matrix, or any other schedule or matrix for data, and the HDL(2006)58 & CEL(2010)19's mandate of 'appropriate' ADB use. Typically, a Matrix, is simply a logical export following the production of initial data from ADB, to better enable ongoing stakeholder communication. Even if this step, was via another project or software, typically NHS room data since the 1990s all originated or was under licence from NHS ADB. For example, CodeBook is sold as commercial software for NHS use, but I understand its database originated from ADB. In my experience, if the proposed project Environmental Matrix has undergone many iterations from originating from ADB, I would request / recommend a review to ensure any updates in ADB are caught. This could be undertaken at same time as review to confirm any NHSS differences from NHS UK / England Guidance are also caught.

67. Regarding 2014 Part A of SHTM 03-01, table 1A this provides users with an aide-memoire but should not be considered as a sole source of data for briefing or design. I am not responsible for this document, therefore my engineering technical expert colleagues who are, should be consulted on all SHTM 03-01 details. I would only reiterate, given my experience as a regular user, table A1 should be read in conjunction, not only with that whole SHTM 03-01, but also with the rest of the NHS Guidance relevant to each project. Unfortunately in my experience of NDAP reviews and HAI SCRIBE training, table A1 is often seen as the easy go-to place to find information; with elements taken out of context. For example, SHPNs, HBNs GUIDs for each particular clinical service contain details related to the specific patient comfort

or safety, including ventilation see 10. above, e.g. SHPN 04-01 Adult inpatients “2.84 *Windows in single-bed rooms should be openable...*”; and HBN 26’s theatre clauses, tables and diagrams e.g.

“7.45 *The following tables suggest an outline ventilation strategy for each room.*”

[www.nss.nhs.scot/publications/adult-in-patient-facilities-shpn-04-01/](http://www.nss.nhs.scot/publications/adult-in-patient-facilities-shpn-04-01/) (2010 - )

[www.nss.nhs.scot/publications/facilities-surgical-procedures-hbn-26/](http://www.nss.nhs.scot/publications/facilities-surgical-procedures-hbn-26/) (2004 - )

## **SELECTION OF VENTILATION PARAMETERS AND VALUES**

68. How Table A1 ventilation parameters and the values are selected, I would again defer to HFS engineering colleagues; as they are responsible for upkeep and details of Part A of SHTM 03-01. This has recently been updated in Scotland - February 2022, and was based on NHS England’s HTM 03-01 Jun 2021 update. HFS engineering plan a further update in 2023. My comments are not specific to SHTM 03-01, but generic to all NHS Guidance production. New or updates utilise the limited HBE research evidence available at time of production, but the bottom line is we need more and better HBE research to justify both our parameter and value selection across all NHS Guidance. HBE evidence quality to date is typically of lowest level, may be taken out of context, or used with unintended bias to justify a particular pre-selected value. I would reiterate my earlier comments on SHFN 30 consensus decision-making on complex issues in 24. above, i.e. for NHS Guidance production we gather key stakeholders from NHS, covering all the relevant clinical and HBE expertise, to scope, draft and review these documents for best practice, parameters and values input.

69. My HFS Principal Architect role to date includes production of dozens of new or updated NHS Guidance documents. NHS Guidance, by its very complex multi-factorial nature, is predominantly produced through a consensus process with technical authors and wide stakeholder engagement. Some are led by architects, others by engineers or facility managers, but all are multi-disciplinary in scope and impact. Recent production is increasingly emphasising the importance of good quality research evidence as foundation

for NHS Guidance and support. This includes new HFS research scientist roles and commissioning of Literature Reviews and new research with academic partners. New documents will be more transparent, in terms of what the evidence tells us and what the consensus has agreed. This will reduce risks and prior burden on users applying generic or conflicting Guidance to the challenges of a unique new clinical treatment or service.

70. I would emphasise to the Inquiry, that patient safety and care is not guaranteed by a number on a table, any more so than any single element e.g. architectural image, contained in any one of our 170 NHS Guidance documents. NHS Briefing, Design and Delivery is a whole process, with a series of documents that requires multi-disciplinary clinical and HBE experts to support. This process starts with questions, e.g. what do we need to do clinically in that room?, what are the risks?, what quality standards are applicable?, how will outcomes be measured/ met?, and what are the key components from a variety of guidance and ADB inputs, that will allow us to meet the NHS's overarching legal duty of care? Success is not, a blind application of individual sections of NHS Guidance, as out of context, an individual element could breach a legal duty of care.

71. In my experience, NHS Guidance could be taken out of context or alternative interpretations placed on a specific clause, table, parameter or value. For specific projects, the appropriate application requires each element of Guidance to be read as part of the key aims of the whole Guidance and ADB system, and also relies on the appropriate experience and skills of the project team involved.

72. NHSS Assure including HFS engineering colleagues, will provide clarification on interpretations / applicability of all NHS Guidance via each project's NDAP and KSAR processes dependant on specific clinical function/ risks etc. e.g. mental health single bedrooms are typically predominantly natural ventilated with extract via ensuite, per above alternative interpretation of SHTM 03-01 table A1, and in conjunction with HBN 03-02: "4.14 ...*fresh air – access to*

*outdoor spaces is essential, as are natural light and ventilation for interior spaces.”*

[www.nss.nhs.scot/publications/mental-health-facilities-for-children-and-adolescents-hbn-03-02/](http://www.nss.nhs.scot/publications/mental-health-facilities-for-children-and-adolescents-hbn-03-02/) (2018 - )

## **GENERAL WARD**

73. SHTM 03-1 Table A1 does not define what is meant by its first row ‘General ward’, e.g. how many beds should be present in a general ward, or what impact / risks that greater patient and staff/ visitor numbers may have on ventilation parameters?. The table shows two differences between its first and third rows. The ‘General ward’ has removed the ‘Single room’s requirement for both ‘E’ (extract) and ‘-‘ relative air pressure as ventilation parameters. I will defer to my HFS engineering colleagues to explain the rationale for these differences. However in my role, I am unaware of any recent NHS 4-bed ward (HBN 00-03) not requiring extract ventilation, due to their relative area/ volume to adjacent spaces. Again I reiterate my deference to HFS engineering colleagues on the details for each of these parameters.

74. SHPN 04-01 (2010) & HBN 00-03 (2014) give details for a 4-bed ward. SHPN 04-01 includes the percentage mix of multi-bed and single rooms, i.e. a minimum 50% singles, but as close as clinically practicable to 100%; and refers to the CEL policy letters, on “Provision of single rooms.”; CEL(2008)48 and CEL(2010)27. These state there should be a clinical and agreed justification for a departure from new build recommendation of 100% single rooms. It is not a black and white compliance, to ensure a balanced clinical and technical risk consideration. In recent years applicable % of single rooms is typically evidenced and agreed as ‘supported’ via our NHSScotland Design Assessment Process (NDAP) review at a key briefing/ design stage.

[www.sehd.scot.nhs.uk/mels/CEL2008\\_48.pdf](http://www.sehd.scot.nhs.uk/mels/CEL2008_48.pdf)

[www.sehd.scot.nhs.uk/mels/CEL2010\\_27.pdf](http://www.sehd.scot.nhs.uk/mels/CEL2010_27.pdf)

75. I would repeat the same concerns above for SHTM 03-1 A1 table for both neutropenic and critical care patient facilities. Both are challenging to define



clinically and their resultant designs, to be safe and healthy require very careful clinical considerations and HBE expert support in briefing and delivery. For example, A1 table refers to the SHPN 4 Supplement 1 for the general isolation rooms, yet 2008's SHPN 4 has an opening paragraph that explains when the document was written, stating it did not cover highly infectious diseases units, nor severely immunocompromised / neutropenic patients. Since then, there has been some further research, but this was not available mid 2000s when the document originally written.

[www.nss.nhs.scot/publications/in-patient-isolation-shpn-4-sup-1/](http://www.nss.nhs.scot/publications/in-patient-isolation-shpn-4-sup-1/) (2008 -)

76. I am involved in NHS England update to SHPN 4 Sup 1, which is out for technical consultation now. New HBE research evidence, should result in clearer guidance about the range of clinical isolation types, hierarchy of bedroom suite types and the ventilation details related to each space. A1 table, would subsequently require further update, following our SHPN 4 Sup 1 update. As much as I may occasionally wish all of NHS Guidance could be magically updated, cross-reference and coordinate with each other, across UK all at one time, this is unrealistic. Not least due to time and resource required for intensive stakeholder involvement including with all appropriate Royal Colleges, clinicians and HBE technical experts, plus need to commission HBE research. It is inevitable therefore, that NHS continue to develop and update guidance on a regular basis, plus to meet specific clinical or economic priorities, plus for emerging clinical and HBE research evidence.

77. In relation to the detailed requirements that SHTM imposes or recommends in terms of ventilation and why, I would have to defer to my engineering colleagues, especially for the details, overall rationale and research evidence. In relation to all NHS Guidance, I reiterate above Statements that our overall aim is for safe and health promoting facilities for all NHS users. There is a pipeline of NHS capital projects based on Government funding priorities, which since 1961 in turn influences priorities and the process for NHS Guidance development. In addition, in NHS Scotland, we uniquely provide HBE expert support to Boards on all major projects, including reviews through the NDAP (2010 - ) and KSAR (2021 - ) processes. These provide

independent reports, including 'supported' status and a Board 'verification'/ 'action plan' for each project key stage, as mandated by Scottish Government for their business case approval. It is also worth noting that the learning from our NDAP and KSAR process, in-turn benefits prioritisation and feedback into our next round of NHS Guidance development. .

78. Regarding my view on how guidance was to be applied to, the multi bedrooms or the critical care areas: it should be Guidance and ADB as a whole system approach that is part of a quality controlled briefing process with an "informed client" and benefiting from both good stakeholder involvement and HBE expert support. to enable successful decision-making. NDAP & KSAR processes will also support this.

79. In the event of ambiguity or uncertainty over the Guidance and/ or ADB, which arises in the briefing or design of parts of the hospital, how may this have been resolved or addressed.

80. This is a repeat of my answer above, as ambiguity and uncertainties are typical challenges in complex NHS projects, To elaborate on NDAP, this process gives a framework and ongoing support with NHS Guidance interpretation by our subject matter experts who are custodians of this Guidance. NDAP asks for a priority list of the relevant guidance to a particular project at inception stage. It also asks the client for any specific derogations/ variations that they may know of ahead of even the design team being appointed. For example, with HBN 02-01 cancer care, certain parts apply but other parts do not. NDAP engages with client on their Guidance / ADB clarification process is part of the briefing stage, and then it is further detailed and expanded upon as the project goes through and the design solution develops. For a major Guidance question or clarification, NHSS Assure have developed a multi- disciplinary, 'SBAR' (Situation Background Assessment Recommendations), process to enable a clear and rapid response to Boards.

81. NHS Scotland Assure and our NHS England colleagues are currently working to develop a derogation / variation tracker process and tool to better support

for health boards and enable a consistent approach including definitions for derogation, variation/ clarification and non-compliance. We would not anticipate derogations in a new build without strong clinical/ technical justification. However a unique and complex NHS project is liable to have multiple HBE variation/ clarifications that they require to review, agree/ sign-off, and where required escalate to their Board and / or an NHSS Assure SBAR process.

82. Updates to the Guidance I can comment on whether there have been any changes to the various sources on which the guidance is based.
83. NHS Guidance production is a continuous and iterative process to meet ever-changing demands of the NHS. Review and production rarely stops, though may slow down, or accelerate dependent on demand, resource and priorities. Some demands relate to NHS Policy developments, others are clinical or technological change, plus in near future we hope more demand will be from emerging HBE research evidence. For example, sustainability and net zero has recently been a big driver, and has resulted in new policy and NHSS Guidance e.g. SHTN 02-01 (2021 - ). Our Equality legal duties, shifting care expectations, demographics and Covid/ HBE research have strengthened NHS single rooms policy. Keeping people safe and healthy in an NHS facility has multiple, inter-related factors, including environment psychological support for both patients and staff. Infection control is key for safety, but it is not the only consideration, especially with growth of vulnerable NHS users e.g. HBN 08-02 Dementia. [www.nss.nhs.scot/publications/dementia-friendly-health-and-social-care-environments-hbn-08-02/](http://www.nss.nhs.scot/publications/dementia-friendly-health-and-social-care-environments-hbn-08-02/) (2016-).
84. In my experience, each project interpretation of NHS Guidance can be iterative and dependant on single disciplines or viewpoints. The SBAR process introduced by NHSS Assure and discussed above will enable a consensus and consolidated statement of recommendations to health boards, from our range of clinical experts and HBE experts, who are also the custodians of NHSS Guidance, so are best placed to apply its intent to a

specific scenario. This SBAR service is available to all health boards, but may also be a recommendation in NDAP or KSAR review of a project.

85. In my role as Principal Architect I have studied NHS Guidance history from first 1960s publications, see Paragraph 15. above for summary. These were created for Bevan's newly formed NHS, and initially based on 1955 Nuffield Trust time and motion ward studies. The evidence gathered was for a typical ward procedures, layout and treatment rooms of the era, i.e. 12-15 sqm room directly off an open plan multi-bed 'Nightingale-type' ward. The Nuffield study stated each morning the patient throughput of their treatment room was circa six patients an hour, with shortest turnover period for a single patient as 6 minutes for a wound dressing change. NHS generic treatment room's ventilation parameters and value e.g. 10 air changes per hour (ACH), will flush room air every six minutes. In my 30-years as a user of NHS Guidance, a generic treatment room has remained as 10 ACH. Yet over past 60 years, or even 30 years, NHS clinical services, functions and facility designs for both treatment rooms and single bedrooms have significantly transformed, and would likely be unrecognisable to the 1955 staff and findings of the original Nuffield study and subsequent 1960s NHS Guidance.

86. I believe that the facts stated in this witness statement are true, that this statement may form part of the evidence before the Inquiry and be published on the Inquiry's website.