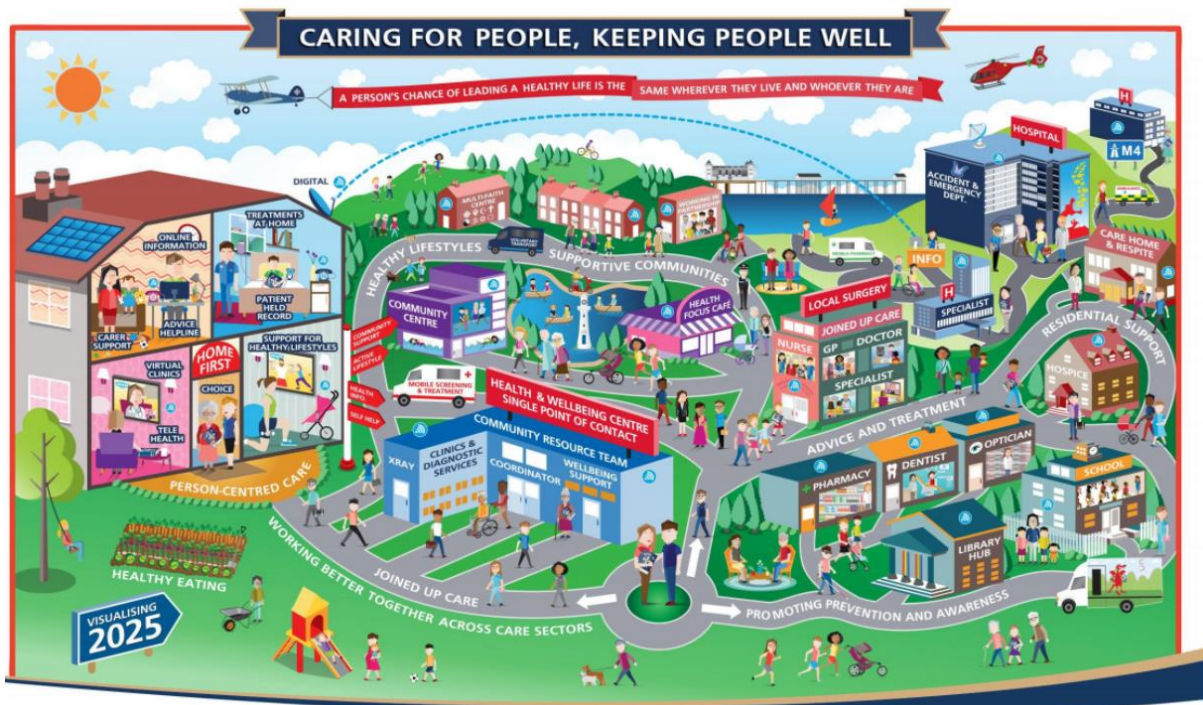




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University Health Board

## Shaping Our Future Wellbeing – Future Hospitals Programme



## Critical and Urgent Infrastructure Issues Impacting On Service – Addendum to Programme Business Case

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## Executive Summary

During a meeting with NHS Wales Executive and Cardiff and Vale UHB on 22<sup>nd</sup> June 2021 to discuss the Our Future Hospitals Programme Business Case, a request was made to set out the critical estates issues that are likely to be felt over the next 10 years that would need to be addressed. The Gateway 0 Review also recommended the critical nature of the condition of the main estate at UHW was drawn out more explicitly as it creates the 'burning platform' for change. This report focuses on the condition and associated challenges at UHW. We know that should the preferred options reflected in the PBC be progressed, UHL will also need significant investment to bring the facilities up to the standards required to meet the transformed role it will play in our health and care system in the future.

Cardiff & Vale aspire to providing the best possible service to our population every day, however, our patients in UHW are being treated in a facility that is not fit for purpose and out of date. Extremely sick patients are treated in compromised clinical areas, share sanitary facilities, and many of our wards have too few single rooms and are not able to offer privacy and dignity we would like. Despite the challenges presented by the environments in which we are providing patient care, our staff go the extra mile to make the experience for patients, their families and carers the best it can be. This lack of suitability and the general condition of our infrastructure creates clinical risk which is managed every day by our clinical teams. The size, configuration, infrastructure failures/constraints and compliance breaches within the clinical areas at UHW, as described in this report, have a significant negative impact on clinical care and working conditions for staff.

To exemplify the urgency, at the time of writing, it is the middle of summer and we are experiencing a heatwave. Our critical care colleagues are operating in full PPE in a hot, poorly ventilated, non-air-conditioned, undersized, open, mixed-sex environment looking after our sickest patients. For our patients, it is an environment that allows little dignity and needs to be tackled urgently. The same also holds true in our Emergency Unit.

The time is now to consider the future of our main hospital infrastructure. It is also important to consider our current constraints within the changing clinical context including:

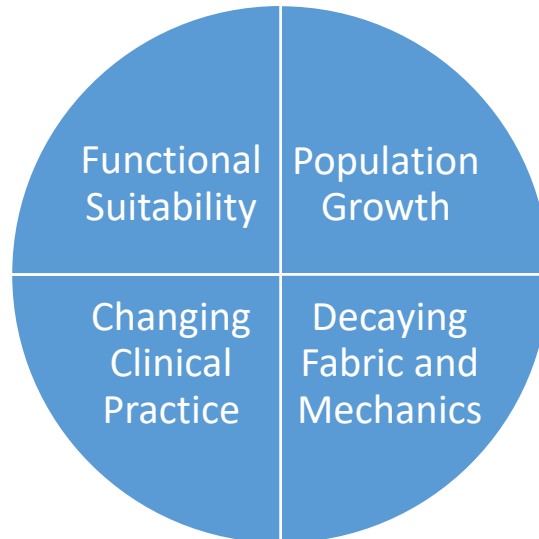
- Increasing clinical complexity and patient co-morbidity (and conversely a reduction in low risk, low complexity case-mix)
- Increasing need for/use of medical and digital technologies
- Increasing Infection Prevention and Control risks and requirements
- Increased provision of regionalised highly specialised clinical services
- New treatments coming on stream requiring new care settings – including novel treatments that require quick access to critical care

This paper answers the request made on 22<sup>nd</sup> June 2021, providing a list of must-do schemes based upon the following factors:

- **Population growth:** with Cardiff being one of the fastest growing cities in the UK.
- **Changing Clinical Practice:** The ever more complex activity we currently carry out on ever more sick patients is undertaken in an estate that is not able to grow, flex or adapt, which will exacerbate as the as the population of Cardiff, the Vale of Glamorgan and Wales grows in the next 10 years and beyond. The report provides a view on the clinical risk arising.
- **Functional Suitability:** The increasing volume of complex activity being undertaken in sub-optimal facilities that given their age, do not meet Health Building Notes standards or others forms of accreditation.

- **Decaying Fabric and Mechanics:** A flavour of the estate issues that are tackled daily and will require root cause resolution if the estate is to be in use for longer than around a decade. See Appendix 2 for a report prepared by our Director of Capital and Estates.

**The four challenges faced with our estate**



The poor condition, lack of flexibility and lack of adaptability of our estate has reached a critical point such that decisive action must be taken.

We are proud of the role we provide for our local population and the wider Wales. We are also proud of our infrastructure and our ability to maintain services through a dedicated Capital, Estates and Facilities Team. Maintaining services is however becoming more of a challenge as the infrastructure at UHW in particular ages and decays.

UHW is now 50 years old. Physical assets don't last forever and our infrastructure has reached the point that decisions need to be made on its future. Should UHW need to be kept for a further 10+ years, major renewal work would be required in order to maintain services as is.

Given the four challenges mentioned, the infrastructure that C&V believe will need to be tackled, must-do schemes – over the next 10 years without line of sight to a replacement UHW are the following along with estimated scale (DN, these are initial estimates of scale for illustration purposes):

Scheme	Estimate of High/Med/Low Cost Impact: Low = £0 – 10m Medium = £11 – £100m High = £101m+	Assumptions
Haematology/BMT, Theatres, Major Trauma, Advanced Cell Therapies, acute oncology and Velindre@UHW cancer services.	High	Estimated at £120m in 1/2020, inflation factor would need to be applied to this.
HBN uplift of Critical Care	Medium	Estimate

<b>Scheme</b>	<b>Estimate of High/Med/Low Cost Impact: Low = £0 – 10m Medium = £11 – £100m High = £101m+</b>	<b>Assumptions</b>
Theatre redevelopment	Medium	Was included in Academic Avenue but will need to be addressed including decant theatres
Emergency Department	Medium	Substantial redevelopment required to provide fit for purpose environment for adult and paediatric emergencies and full compliance with MTC standards.
Replacement of key mechanical and engineering plant, windows, lift replacement and heating	Medium	Over and above routine backlog maintenance
Backlog Maintenance	High	£170m. Our 1/3/21 PBC states it is reasonable to assume this figure has doubled since 2018, but this is a conservative figure given time and the assumption that UHW's backlog is at this level.
HBN Compliance uplift to ward areas (and decant)	High	Estimate. DN. This would reduce bed numbers given UHW's finite footprint. See Appendix 1 for an illustration.
Net Zero	High	Estimate
Mortuary re-provision to meet standards and capacity requirements	Low	Estimate
Fabric refurbishment	Medium	Estimate
IT transformation	High	Estimate. PBC estimated transformation to be £74m - £177m

These represent a non-exhaustive list of our highest priorities to the meeting of statutory obligations, upgrading critical areas to the latest HBN standards and increasing capacity to cope with existing throughput issues and new services. A major refurbishment and build on the basis of the above would take many years to carry out and complex logistics. Furthermore, they would see a reduction in bed numbers given the need to increase space per bed and a finite footprint – this is clearly not acceptable. See Appendix 1 for an illustration.

It can be reasonably estimated that the above schemes would present a c£700m cost and result in a smaller facility than we have today, with a bed capacity unable to meet our future requirements. This

would not be value for money. The PBC set out high-level bed capacity modelling taking our current baseline, population projections, and reductions in bed requirements associated with transformed pathways of care for both emergency and planned care.

In March 2021, Cardiff and Vale UHB submitted a Programme Business Case called Shaping Our Future Hospitals (SOFH) to Welsh Government. This was a service led business case which set out an ambitious, policy compliant prevention based clinical service model. Allied to this service model, modern digital infrastructure needs to be deployed and in turn housed in modern and flexible infrastructure. C&V have not predetermined any outcome to what SOFH might look like and there are clearly a range of options, but for the purposes of understanding the potential size and scale, an exercise was undertaken to estimate the size and cost of a replacement and refurbishment of UHW and UHL respectively. C&V would like to rapidly progress a Strategic Outline Case (SOC) to undertake a full options appraisal on the service as well as the infrastructure options to determine the next 50 years in our history.

In conclusion:

*CVUHB is delivering clinical services in spite of, and not with the help of its estate. A significant proportion of the estate at UHW is no longer fit for purpose, with an extremely high risk of catastrophic failure, and non-compliance with statutory requirements. This is not a sustainable medium to long-term model.*

*CVUHB is extremely limited in its ability to respond to large-scale changes in service delivery or implement technological advancements.*

## Must-Do Schemes

The table below provides a summary of the critical service/estate issues that will need to be addressed over the next 5 – 10 years and will be part of the Do Nothing Option as we develop the SOC for the Shaping Our Future Hospitals Programme.

<b>Scheme</b>	<b>Estimate of High/Med/Low Cost Impact: L = £0 – 10m M = £11 – 100m H = £101m+</b>	<b>Assumptions</b>
Haematology/BMT, Theatres, Major Trauma, Advanced Cell Therapies, AOS and Velindre@UHW acute care and research	High	Estimated at £120m in 1/2020, inflation factor would need to be applied to this.
Emergency Department	Medium	Substantial redevelopment required to provide fit for purpose environment for adult and paediatric emergencies and full compliance with MTC standards.
HBN uplift to Critical Care	Medium	Estimate
Replacement of key mechanical and engineering plant, windows, lift replacement and heating	Medium	Over and above routine backlog maintenance
Backlog Maintenance	High	£170m. Our 1/3/21 PBC states it is reasonable to assume this figure has doubled since 2018, but this is a conservative figure given time and the assumption that UHW's backlog is at this level.
HBN Compliance uplift to ward areas (and decant)	High	Estimate. DN. This would reduce bed numbers given UHW's finite footprint.
Net Zero	High	Estimate
Mortuary re-provision to meet standards and capacity requirements	Low	Estimate
Refurbishment	Medium	Estimate
IT transformation	High	Estimate. PBC estimated transformation to be £74m - £177m

The areas highlighted in the table above represent the most pressing estates issues at UHW which impact on our ability to deliver services safely without disruption, meet required standards and response to new and changing service implications. At present, our estate is preventing us from providing all of the services WHSSC would like to commission from us for the South Wales population

and we are not able to substantially increase clinical trials that require access to critical care services. None of the areas listed in the table above are new and have all been the subject of discussion with Welsh Government colleagues. It is anticipated that more detailed and up-to-date condition surveys required for the next stage of the business case process would identify other risks not currently known.

Below provides more detail on the areas summarised in the table.

- A PBC for Academic Avenue was submitted in January 2020 with a cost of £131m. This proposal was rejected by Welsh Government due to the impending UHW2 business cases. The business case addressed a number of the most pressing service issues relating to estate: re-provision of the BMT facilities which are inadequate and do not meet regulatory requirements, providing a poor environment for patients experiencing long inpatient stays whilst undergoing treatment. The development also provided the capacity to provide a dedicated area for CAR-T treatments, enabling us to keep pace over the next 5 years with the rapid expansion of NICE approved treatments WHSSC will be looking to commission, to enable us to continue to undertake research keeping us at the forefront of this developing field and enabling our patients to access the very latest treatments. The facility was also planned to provide the theatre expansion required to provide MTC and dedicated vascular hybrid theatre and to enable the refurbishment of our existing theatres. There is a significant risk of failure of plant within our theatres, which operate a near full capacity. Without progress on UHW2, the requirements contained within the business case become more urgent, and a firm plan to address the inadequate BMT facilities is required and will be expected by the regulators.
- Our critical care department is undersized for demand, cannot be expanded easily, is an open ward without air-conditioning, and does not have the space around beds for vital machinery. During the pandemic our staff have worked in the most challenging of environments, and the lack of single isolation rooms has meant that staff have had to wear full COVID PPE in all areas because the inability to adequately separate COVID positive patients. The area is cluttered with machinery, some of which is becoming obsolete.
- The Emergency Department at UHW is one of the busiest in the UK with over 140,000 attendances per annum. The department is fragmented, claustrophobic with no natural light in the majority of the area making it a difficult environment in which to work. The patient flow through the department is impacted negatively by our inability to properly size each of the areas to reflect demand.
- Our backlog maintenance challenge was summarised in our 2018 Estates strategy and will have increased since that was approved by the Board. Our maintenance programme focuses on areas of statutory compliance and is responsive rather than proactive. Our resources are extremely stretched and cannot deliver a proactive estates maintenance programme that addresses the backlog. The rate of deterioration of our estate out-strips our capacity to keep on top of the issues, hence the reactive nature of the service.
- Our wards are not fit for purpose as they have inadequate numbers of single rooms, do not provide adequate bed space and are not HBN compliant, lack dignity for our patients and carry an infection risk. We have inadequate bathroom facilities, lack of space for storing equipment or enabling confidential or personal conversations to take place on the ward in an appropriate environment. There is also limited space to support early rehabilitation on the wards prior to a patient's move to a dedicated rehabilitation area. Uplifting to the latest HBN standards within our footprint would be a major undertaking and reduce our overall bed numbers significantly.



- It is not known how UHW in its current form could contribute to net zero ambitions in any significant way. Our PBC for SOFH estimated that for a new build facility, the additional cost for net zero infrastructure (insulation, plant, etc.) would be between £89m - £266m for UHW and UHL. Even with substantial investment it is likely that UHW would be unable to meet the carbon zero targets due to the age of the infrastructure.
- There are many areas of refurbishment required across UHW. For example, the concrete façade on UHW is crumbling causing a hazard from falling debris. A full structural survey is required to understand why this is happening. The installation of air-conditioning around the site, replacement of M&E would be a substantial undertaking. A significant number of clinical areas regularly experience floods caused by the age of our sewage and water plant, with raw sewage leaking into clinical areas.
- Much of the mechanical and engineering plant is in need of replacement and this is being done on a piecemeal basis when a catastrophic failure occurs or when an area is refurbished. This is often a costly and lengthy process because of the asbestos that is prevalent throughout the fabric of the building.
- Part of our PBC for SOFH were the costs of IT transformation. The costs of IT transformation should be driven by modern clinical models. A do nothing to UHW would still incur approximately the same cost to move to a fully digital organisation with all of the benefits of Wales' preventative agenda being delivered. Our PBC estimated a cost of £74m - £177m for this transformation.

### Growth of our population

A factor in the requirement to consider replacing UHW is that demand is greater than we can provide for and will get worse. Demographic growth between 2017 – 2027 is expected to increase by 10%. The increase in young and ageing population also results in pressure to design services that can address the consequent multi-morbidity and frailty of an older population, and to retain independent living at home (or in a homely setting) wherever possible.

Although the PBC does not determine any solution to the current end of life of UHW, the option not to re-provide UHW within Cardiff was not considered because it is essential to maintain acute services within the geography of Cardiff and the Vale of Glamorgan. Cardiff is the capital city of Wales, with the biggest urban conurbation in Wales which is growing at a faster rate than any other core city in the UK.

The impact of demographic growth include and will continue to include: too few theatres, too few critical care beds, too few general inpatient beds particularly for emergency and urgent care, felt most acutely in the old and young populations who have the greatest health need.

### Changing Clinical Practice

The prevalence of a range of chronic health conditions has increased markedly, placing unanticipated pressures on not just C&V but healthcare systems worldwide. Added to this is the impact of greatly improved detection and outcome measures for many cancers, with the result that for many patients, cancers are now chronic health conditions.

The patients we treat are today more sick, the treatments they receive more complex, often with multidisciplinary teams working together to treat patients (e.g. major trauma, complex surgery) requiring the use of more equipment such as imaging equipment combined in our theatres to enable precision surgery and increasing use of interventional radiology. Our lack of space has an impact on our ability to keep up with advances in medical and surgical treatments and techniques.

The estate does not have the required flexibility to respond to changes driven by new technology or changes in clinical service models: increasing number of interventional techniques require hybrid theatre capacity, which is not currently available. This will increase, and whilst there plans for developing a single hybrid theatre in the next year, it is known that this will be inadequate for future purposes and interventional techniques continue to develop at pace, offering patients access to new, more successful modes of service delivery – such as the introduction of thrompsectomies to significantly improve outcomes for stroke patients. Additional demand for theatre, bed and diagnostics capacity required through ongoing centralisation of specialist services is reliant on ongoing transfer of activity out of UHW into UHL. Although this provides a short-term solution, it is not a sustainable long-term model due to likely rapid technological advances. Lack of space and suitability of care environments at UHW is limiting our ability to participate fully in trials of novel treatments.

A few examples where demand for specialised services will increase follow

### Impact on Clinical Developments and Specialised Services

The issues highlighted in this report have a direct impact on current clinical services at UHW, affecting all patient and staff groups. Complex, highly specialised diagnostic and therapeutic specialties are particularly constrained by the inadequate size, inflexibility and configuration of clinical areas, deficiencies in IT and digital infrastructure. This is of particular relevance in relation to ongoing clinical developments at C&V as well as new, innovative and cutting-edge services that are being planned, or can be predicted, in the near future.

Evidence based advances in medical management, such as Chimeric Antigen Receptors Cell Therapy (CAR-T) cancer treatment, complex cardiology interventions for heart disease, complex surgery for gastro-oesophageal cancer, and the development of major trauma centres, are characterised by: (1) patients with complex and/or advanced disease, severe or multi-organ dysfunction, immunocompromised patients vulnerable to infection (2) a multidisciplinary team approach to diagnosis, decision making, treatment, rehabilitation and support (3) a regional, partnership approach dependent upon protected, integrated patient pathways (4) unique opportunities for world class research and innovation.

C&V UHB has the required clinical knowledge and expertise, the co-dependent specialties and established referral networks to develop and deliver these specialised clinical services for patients in Wales.

The infrastructure requirements for such developments include: appropriate size and configuration of ward areas facilitating close monitoring by clinical teams (including level 1 and 2 high care), new and complex medical equipment, appropriate facilities for communication and multidisciplinary team meetings, heavy reliance of diagnostics and IT (e.g. complex radiology imaging), close proximity and/or safe connectivity of interdependent clinical services including critical care.

### *Chimeric Antigen Receptors Cell Therapy (CAR-T)*

This highly complex and innovative type of immunotherapy is being commissioned in Wales, to be delivered by the Haematology (Bone Marrow Transplantation) team at UHW. The initial indications are limited to small numbers of patients with specific blood cancers but it is known that this will widen to include a wider range of patients and types of cancer. The requirements for CAR-T include:

- Single room, en-suite, Protected Environment (positive pressure ventilation) rooms
- Close involvement of renal, cardiology, neurology teams

- Provision for immediate input from critical care team and admission to ITU
- 24/7 availability of highly specialised diagnostics

We have the opportunity to establish ourselves as a significant player in this field, but our lack of single patient rooms alone is holding us back. We currently cannot meet the contractual numbers that WHSSC expect of us and the constraints are impacting on our ability to participate in research activity that could be open to us.

### *Upper Gastro-Intestinal Cancer Surgery*

Plans are under way for the expansion of UHW's established surgical programme for the treatment of cancers of the oesophagus and stomach. The requirements for this include:

- Regional MDT meetings with access to highly specialised diagnostic imaging
- Operating theatres with space for a large surgical team and complex equipment (e.g. image guidance / robotic instruments)
- Enhanced theatre recovery area and post anaesthetic care unit suitable for a complex case mix with close proximity/access to critical care

This development is being led through the partnership we have with Swansea Bay UHB.

### *Major Trauma Centre (MTC)*

Building upon the success of the opening of the South Wales MTC service at UHW, it is accepted that there is a plan for a phase 2 development - a bespoke dedicated MTC unit, conforming to national standards - is required, including:

- Safe and efficient access and transport arrangements for (multiple) patients with multiple injuries
- Hybrid operating theatres
- Appropriate sized and equipped neuro-trauma intensive care "zone" with close proximity to a Polytrauma Ward/acute rehabilitation unit

### *Complex Cardiac Interventions*

Interventional (catheter based) cardiology procedures to treat complex coronary disease (including the regional 24/7 heart attack and cardiac arrest service), heart valve conditions, arrhythmia and life threatening pulmonary embolism, are already established by the tertiary cardiac service at UHW. In order to respond to the predicted and planned increase in indications and numbers of patients that would benefit from treatments such as Transcatheter Aortic Valve Implantation (TAVI), Percutaneous Mitral Valve Repair (PMVR), Atrial Fibrillation Ablation, Pulmonary Embolism thrombectomy, we will need to plan for:

- Regional MDT meetings with access to highly specialised diagnostic imaging
- Protected regional emergency/urgent/elective cardiac pathways
- Sufficient number of high specification cardiac intervention rooms (catheter labs, including specialised diagnostic imaging with CT/3D echocardiography/fluoroscopy "fusion" capability)
- High care cardiology ward areas with enhanced cardiac monitoring, cardio-respiratory support

## Functional Suitability

Our current facilities are no longer suitable for modern healthcare. A number of urgent improvements were packed together in a Programme Business Case for 'Academic Avenue' in early 2020. This business case was submitted and rejected by Welsh Government due to the impending proposals around UHW replacement. This business case addressed the immediate requirements of haematology/BMT, major trauma, theatres and advanced cell therapy services. A number of the issues associated with these areas are highlighted in this section along with other pressing issues.

### Overview

- **CVUHB is severely limited in its hospital-based surge capacity and appropriate clinical adjacencies, which has been exposed by the COVID-19 outbreak.** The existing layouts do not allow for adequate segregation for infection control/isolation. Lack of physical expansion space has led to CVUHB having to rely on rapidly constructing surge facilities to accommodate the influx of COVID19 patients.
- **Patient and staff environment requires significant improvement to support recovery and healing:** we recognise that it is currently unable to provide patients or staff the experience they deserve.

Most of the estate is dated and tired, lacking in clinical adjacencies required to deliver the new models of care. Large open wards on both sites are not conducive to maintaining patient privacy and dignity. The configuration of much of the patient accommodation is not appropriate for people with dementia or cognitive impairments, an issue which is rapidly expanding in the local population. Lack of space to get people out of hospital beds and allow them to move has been highlighted by staff as a limiting factor when it comes to post-operative recovery.

The issues extend far beyond design, and to original construction methods and materials that do not reflect modern methods of construction. Due to a high maintenance backlog, approach to maintenance is often reactionary rather than proactive/preventative, resulting in numerous service interruptions because of floods, leakage, draining issues, breakdowns and others.

- **Parts of existing estate do not comply with statutory requirements and create challenges in maintaining adequate patient safety:** some of CVUHB's infrastructure is subject to improvement instructions following inspection from a range of bodies, which necessitates urgent improvement in order to retain necessary accreditation to provide services.

This includes JACIE requirements for urgent improvement of the Blood and Marrow Transplant Unit, as well as the BNMS requirements of the UHW Radio-Pharmacy Unit.

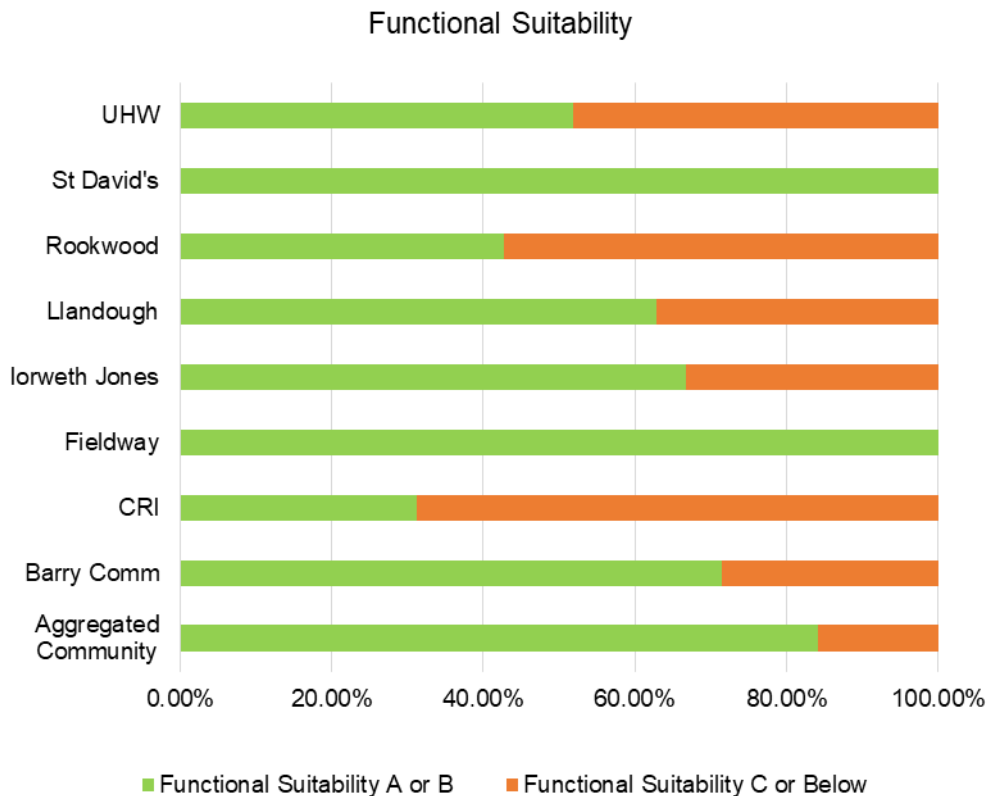
The majority of wards at UHW and UHL do not fully comply with HBN space requirements and the lack of single rooms and the poor fabric of the buildings contribute to the risk of spread of infection. This has been seen during the COVID19 pandemic where the design and condition of ward environments has contributed to hospital acquired COVID19 infection.

### Functional Suitability Detail

The estate has been surveyed to assess how much of it remains functionally suitable to provide required services. Each space within a building is categorised as follows:

- A very satisfactory, no change needed;
- B satisfactory, minor change needed;
- C not satisfactory, major change needed;
- D unacceptable in its present condition;

- X supplementary rating added to C or D to indicate that nothing but a total rebuild or relocation will suffice (that is, improvements are either impractical or too expensive to be tenable)



In an Estates and Facilities Data Report dated 18/12/20, overall the UHB is reporting an area equivalent to **42.8%** of their total **occupied space** as being **functionally unsuitable**. This compares with Betsi Cadwaladr University LHB, a HB with a similar floor area, reporting 15.3% of their space to be functionally unsuitable and Swansea Bay University LHB at 10.1%<sup>1</sup>.

Without taking proactive action to address the quality of the existing estate, in particular estate at UHW and UHL, the risk of estate failure that may result in patient harm will continue to increase exponentially. The Health Board is responding to an increasing number of estates failures that impact patient experience and business continuity, including electrical and heating failures, sewerage and water floods and plant failure in our theatres. Some of these failures that are being managed on a day to day basis follow.

With a 50 year old asset, without line of sight to major refurbishment or replacement within the next decade and taking a 10 – 30 year view, significant work would need to be undertaken to replace end of life and obsolete fabric and services.

At the time of construction UHW and UHL were compliant with the HBN standards of the time. This section provides several examples where we fall short of modern standards which in turn creates clinical risk.

### Ward Size

#### Health Building Note 04-01 Adult In-Patient Facilities 2008 - Ward Sizes

<sup>1</sup> Source: [Supplementary Estates and Facilities Data Report 2019/20](http://howis.wales.nhs.uk/sites3/page.cfm?orgid=254&pid=10844) available from: <http://howis.wales.nhs.uk/sites3/page.cfm?orgid=254&pid=10844>.

We are currently unable to achieve HBN 04-01 compliance due to the limited footprint of our building/wards. See Appendix 1 for a size comparison and how bringing a 38 bed up to HBN standard would reduce bed numbers by 50%. Given the ongoing pressures and expected population growth, C&V will not be able to safely close 50% of its bed capacity to meet the current standards without causing serious detrimental implications to patients.

For several years HIW have raised concerns about environmental and maintenance issues on UHW & UHL sites. These issues disrupt patient care, prevent patients being able fulfil their abilities and often pose risks to staff and patients. Here is a recent example from an inspection:

**Ward T4 (Neuro High Care) September 2020:** *"We noted that there had been a number of water leaks on the ward, which have been a longstanding issue despite repair works having taken place. This resulted in the bed capacity on the ward being temporarily reduced."*

Very few single bed rooms exist - this significantly limit our ability to safely isolate patients for the purposes of infection control and dignity, among other reasons.

During the last inspection of rooms within the wards of UHW, the following were found to be in breach of HBN standards:

- 16 in poor condition
- 67 average condition

Note: This includes: dirty utility, Staff WC, visitor WC, treatment room, interview rooms, breakout spaces for patients and staff. E.g. of conditions that classify a room/ suite as poorly to HTM / HBN:

- Fabric faults,
- noise levels,
- set up of theatre (prep/scrub)

*"Even with the door closed, I could hear conversations taking place in the adjoining bedrooms as well as in the circulation corridor. Staff conversations, footsteps, movement of equipment and trolleys could all be clearly heard throughout the day and night shifts.*

*Private, sensitive conversations could be heard as well as noise from patients who might be agitated (in the case of some elderly patients with dementia) or suffering as a result of their condition. The sound of alarms from nurse-call systems and medical equipment provided an almost constant background noise. At its worst, I could hear the continuous sound of an IV infusion pump alarm from one neighbouring room and the sound of a TV playing at high volume (presumably due to hearing issues) from the other."*

Patient testimony

Open wards have a negative effect on our patients. For example, sleep deprivation has a deleterious effect. Sleep deprivation reduces immune response to illness and alters recovery outcomes.

The UHB's annual Health & Care Standards audit involves providing patients with questionnaires for completion. We received 1078 patient responses during our most recent audit. 33% of patients tell us that they 'never' or only 'sometimes' get enough rest and sleep. Difficulties sleeping are more likely to occur at the UHW/UHL site because of environmental and maintenance issues.

Our wards often do not have the space or facilities to care for patient's experiencing a cognitive impairment. Patients displaying aggressive behaviour or experiencing disorientation are nursed in the same bays as other patients. Consequently, nights can be a disruptive any noisy time on wards.

### *Clinical Risk:*

The lack of (1) ward space, (2) single rooms and (3) clinical rooms has the following impact:

#### **Quality, safety and patient experience:**

- Reduced patient dignity and privacy particularly at end of life as we have limited single rooms
- Reduced opportunity for rehabilitation, mobilisation, therapies due to lack of space
- Reduced provision and access for appropriate safety and monitoring equipment given the lack of space around beds
- No breakout areas for patients, staff and carers impacting on welfare
- Insufficient areas for patient/family interviews, difficult conversations, privacy
- Basic, shared WC facilities
- Poor ventilation and insulation; excessively cold conditions during winter months and hot in the summer months

#### **Clinical staff, working conditions:**

- Overcrowding in clinical admin/office areas is common
- Inappropriate areas for clinical communication, handovers, board rounds, compromising clinical

*“The University Hospital of Wales provides specialist care for Wales’ sickest patients. It is vital that rehabilitation starts early to support people to maximise their recovery. Attempting to participate in rehabilitation while on a busy ward can be very distracting. These spaces are always very busy and used by all ward staff, domestic staff and visitors. This can prevent patients from maximising their therapy sessions and is a very public environment to participate in rehabilitation following a life changing event.*

*Some patients require up to 4 staff and specialist equipment to mobilise, which is extremely difficult in a ward corridor that is approximately 2 metres wide and houses all the necessary ward equipment. Patients feel very vulnerable in these spaces when trying to adjust to their new appearance or come to terms with their condition. Patients have to deal with their rehab successes and failures while on public display.*

*Patients would benefit from rehabilitation areas that are quiet, motivating, patient-centred and have space for essential rehabilitation equipment, they range from areas of low stimulation for brain injured patients, spaces for patients on bed rest to experience rehabilitation in a stimulating environment, outdoor areas and areas for comprehensive functional assessments to maximise their participation and overall outcome.”*

**AHP Lead for Major Trauma**

- communication, data protection and privacy
- Re-utilisation of available spaces for equipment storage
- Limited and unreliable access to digital networks and systems as our buildings weren’t designed for modern communications infrastructure such as Wi-Fi.
- Ageing, unreliable lifts resulting in reduced availability for patients and staff. This matter is particularly acute in our maternity area where the three lifts continually break down and have affected mothers in labour.
- The inability to control temperatures adequately in our clinical areas resulting in unacceptable hot or cold environments. With more volatile weather anticipated with more extreme conditions as a result of climate change, this situation is expected to worsen significantly. During the recent heatwave, areas within the hospital were recording temperatures nearing 40 degrees and portable fans were required to make the environments tolerable for staff and patients. We do not have enough space to enable patients to be moved to other areas in such circumstances. During the winter we have to provide additional blankets for patients.

### Infection Prevention & Control, Health Care Acquired Infections:

- Lack of isolation facilities
- Poor ventilation increasing risk of airborne infections
- Poor plumbing and water safety
- Overcrowding and cluttered areas
- Lack of single rooms with en-suite facilities
- Structurally poor ward environment resulting in pathogen colonisation (these issues were identified during an infection outbreak in areas housing immunocompromised patients, despite the best efforts of ward and cleaning staff)

*“The estate of the hospital needs to be fit for purpose and safe, to protect patients from acquiring healthcare associated infection. Lack of isolation facilities, poor ventilation and water safety, overcrowding and cluttered areas all contribute to nosocomial transmission of all manner of infections. As we aspire to improving the wellness of our population, we need to be able to provide assurance that prevention of infections and associated harms (to both patient health and wider cost-efficiency impacts) are front and centre in planning.”*

Consultant Microbiologist, Public Health Wales

### Inability to provide (Level 1 and 2) High Care areas in medical and surgical specialty wards:

- Insufficient configurable bed space for additional equipment required for medical and surgical high care areas
- No Aerosol Generating Procedure safe areas for Cardiology and Respiratory High Care areas, limiting availability of Non-Invasive Ventilation facilities
- Reduced capacity for Intensive Care “step down” units
- Limited capacity to develop non-ITU High Care areas e.g. Hyper Acute Stroke Unit
- Lack of Level 1 / 2 High Care for Resp, Gastro, Med Specialties, Stroke (HASU)

### Outpatient Clinics and Day Case / Ambulatory Care clinical areas

- Unsafe space for patients, staff and storage in medical clinic areas. A specialist clinic would involve seeing the patient and testing the patient in situ. The medical technology has outgrown our footprint. These areas are inflexible to adaption in general.
- Insufficient space and facilities for appropriate Ambulatory Day Care areas, limiting capacity and safety of new therapies e.g. immunotherapy (new drugs for treatment of MS and rheumatoid arthritis which require infusion of drugs over several hours – we expect more drugs to come on board and thus demand will increase)
- Need for conversion to efficient virtual clinic areas (digital and communications infrastructure, administrative support areas etc.)

### Emergency Unit

- Basement location with no natural lighting, limited space and poor ventilation. This has a detrimental impact on staff wellbeing in particular. Staff facilities are based in tunnels which are currently extremely hot with no windows.
- Only one negative pressure room.
- Limited space with obligatory walk through areas which prevent clinical segregation and zoning to prevent infections for example. Suitable facilities not present to care of mental health patients exacerbating their condition increasing the risk of injury, assault or serious incident to themselves, staff and other patients.



- Relative rooms not fit for purpose, offering little or no comfort to bereaved families.

The lack of basic space is critical. HIW noted in March 2020: *"we saw items stored in the main corridors and throughout the unit environments, due to inadequate storage areas... this presents a trip hazard"*

*"Both the Assessment Unit and Emergency Unit is a "not fit for purpose" build. We have been coming to work in an environment that has no windows, therefore no natural light. On top of that, we have the poor air quality from the poor ventilation system. I have no doubt, of the affect that this has not only on the poor patient experience, but also on the staff wellbeing. It is an unattractive and oppressive department to work in, then this in turn leads to us trying to address the issues that fall out as a result of this, e.g. sickness, low morale, poor staff retention.*

*This is just scraping the surface of what this poor environment it is and the effects of that. I know all staff would look forward to working in a department that would be fit for purpose."*

Lead Nurse – Emergency and Acute Medicine, University Hospital Wales

## Theatres

### Health Building Note 26 – Facilities for Surgical Procedures

Since the buildings construction, the use of IT and communications in an operating department has increased dramatically, with the biggest changes occurring over the last 10 years.

Some of the new technology now used across C&V includes:

- Voice-activated control of equipment and room environment,
- Robotic surgery,
- Electronic patients records/smart cards,
- CCTV for training and world-wide consultation.

The main implication of these developments is the need for significantly more space than previously recommended in operating theatres and anesthetic rooms.

As well as the need for greater space, flexibility is key to accommodating the technology. Unfortunately, the restriction in our current footprint and lack of flexibility within the Theatres cannot accommodate the HBN requirements. Examples are given below.

Activity Space	Area m <sup>2</sup> HBN 26	Typical UHW theatre Size	Compliant / Not Compliant
Operating Theatre	55	42	Not compliant
Anesthetic Room	19	18	Not compliant
Scrub	11	11	Compliant
Prep Room	12-20	10	Not compliant
Sluice	12	10	Not compliant

The Air Handling Units (AHU) currently in use were not designed to produce the 25 Air Changes required under the current HTM's.

We follow the HTM guidance that theatres should achieve no less than 75% of the design air change rate. This figure is difficult to maintain because the air plant was not designed to produce the rate of changes required at current standards and often requires re-balance to ensure compliance.

Over recent years the Health Board has experienced significant challenges with its theatre estate. In particular episodes of 'black' and 'white' particles being found in the main theatres leading to lengthy periods of theatre closure and remedial environmental work to temporarily resolve the issue the problems in main theatres are believed to result from the ageing plant in theatres 0-11 (12 theatres), which has not been replaced since the original opening of the hospital almost 50 years ago. As a consequence, the underlying issues in main theatres remain and a further occurrence of the "black/white particles" episode is entirely likely. Such an event could have a devastating impact on main theatre activity - which is predominantly emergency, cancer or tertiary (i.e. cardiac, thoracic, renal and neurosurgery) services. Major refurbishment or replacement of theatres 0 – 11 in the Main Theatres suite is therefore long overdue and of critical importance from both a service and infrastructure perspective.

Over the next five years the Health Board anticipates it will need a comprehensive refurbishment/replacement programme of UHW Main theatres, alongside the permanent replacement of the two Orthopaedic theatres at UHL. At present there are only 3 vacant sessions (half-day) per week in UHW Main and 7 sessions in SSSU, although these will be utilised in our recovery plan post COVID. Furthermore, the Health Board is expecting to place additional demands on the theatre estate during this period including the establishment of a Major Trauma Centre, vascular centralisation and an increase in local demand associated with population growth and potential regional flow changes for surgical demand.

UHW currently does not have a hybrid theatre, surgery is undertaken within existing theatres, and radiology review is either undertaken with the aid of an image intensifier equipment or, at a later stage, via angiography. Both options provide sub-optimal technological support for some of the complex arterial surgical procedures. All surgery is currently undertaken in theatre facilities across both UHW and UHL, with major and complex vascular surgery undertaken at UHW. The space, adjacencies and quality of existing accommodation does not deliver to the level of expectations of recent clinical developments requiring either transfer of patients or equipment. There is currently no dedicated combined theatre and imaging suite, patients are required to attend the main theatres or the imaging department reducing efficiencies and to the detriment of patient experience and safety. A separate business case has been submitted to WG to enable the provision of the hybrid and MT theatre through the development of a small extension (in the same area as the Academic Avenue proposal). We know that with clinical practice advancing, we will need more hybrid theatres in the future and our existing theatres cannot accommodate this due the ceiling height needed for the equipment.

#### *Associated Clinical Risk*

The clinical risk associated with the current theatre infrastructure includes:

- Inadequate digital infrastructure and space for equipment (e.g. image guidance / robotic instruments) and staff needed for complex / innovative surgery (with implications for regional surgical pathways). This compromises what can be achieved.
- Poor ventilation and regular air conditioning failures creates infection risk

- Theatre recovery area that is too small for increasing caseload and complex case mix results in a loss of theatre activity, not being able to undertake the number of cases that we would like
- Layout constraints prevent zoning i.e. restricted opportunities for Protected Elective Surgical Unit theatres.
- Overcrowded and demoralising environment for staff results in challenging recruitment and retention in the theatre environment.
- Constrained layout, lack of interchangeable/flexible design, such that specialised operating theatres can only be provided in specific areas.

## ITU

### Health Building Note 04-02 Critical Care Units

The infrastructure issues with Critical Care are many and fundamental. There is not the required space for demand nor the space for clinical equipment or basic M&E.

#### *Clinical Space*

Critical Care capacity does not meet demand. In 2015, modelling suggested 50 beds were needed by 2020. Using that benchmark plus standard demand growth of 4% per year (Faculty of Intensive Care Medicine) this means around 70 Critical Care beds will be needed in 2030. The current footprint has 36 beds with a typical bed-space being around 18m<sup>2</sup>. HBN 04-02 (Critical Care) requires 26m<sup>2</sup> to reduce cross infection and fit the equipment required for modern Critical Care. With an increase in bed space size of over 40% and capacity by nearly 100% would require a footprint of around 3 times the current ICU or 2 complete floors of the UHW tower block, displacing other services.

100% single rooms would also add another space premium.

#### Critical Care / Level 1 relationships

Ideally Critical Care would have logical links with the following high care areas (at least):

- ED
- Theatres
- Radiology inc IR
- PACU
- Cath lab
- Coronary Care
- Respiratory Support Unit / NIV Unit
- High Consequence Infectious Diseases Unit.
- Haematology / Velindre at UHW Unit
- Polytrauma Unit
- Medical Assessment Unit

The current network of these units is labyrinthine, providing barriers to escalation.

#### Mass Casualties scenario

As an MTC, C&V is required to double its level 3 Critical Care Capacity at short notice. In other Health Boards, this is achieved by doubling up patients in the full size 26m<sup>2</sup> bed spaces of modern Critical Care Units, as is the case at the Grange University Hospital. Also ED does not have space for this volume (1 AGP resus room in ED). Significant distance from ED to theatres / IR.

### High Consequence Infectious Disease Unit

This is important. It is not possible to provide Critical Care in the recently built HCID for more than a few hours during the stabilisation of a deteriorating patient. The patient then needs to be transferred to a Critical Care Unit. Cardiff ICU has only 1 single room with source protective air flow and needs more. This is poorly placed in the middle of other Critical Care areas. The route from the HCID to Critical Care is through the main public corridor to public lifts, and then along further public corridors into the Critical Care Unit, then passing other open Critical Care beds. It would be very challenging to transfer a high risk patient (e.g. viral haemorrhagic fever) down this route, which ideally should be short and protected, away from the public.

### AGP

The whole route of AGP patients into the hospital is flawed (scattered, undersized areas, ED, Heulwen, 7<sup>th</sup> floor, Crit Care, COVID theatres). Providing separate routes in a tower block that is 13 times as long as it is wide is not currently possible

Waste should also not share the same routes as patients and staff, it should have separate routes but the building does not support this. UHW1 corridors are full of big bins.

### Radiology

Long route from Critical Care to CT scan. 4-5 trips per day with 1 doctors and 1-2 nurses. This is very labour intensive. Staffing could be more efficient with colocation.

### Efficiency

An ICU stretching the whole of the tower block would effectively become 6 interlinked ICUs. As distance increases between them, there is a need to provide a pharmacy per pod, an equipment store per pod etc. making 6 of each support room because of the length. Increased staff are required to stock them. In a more logical building perhaps 2 or 3 support rooms could support the whole unit (e.g. with 'Jack and Jill' entrances to 2 areas).

### Ventilation

ICU is very hot in the summer and very cold in the winter. There is no current ventilation systems in the existing ITU and there isn't the required space to install the system. If the required space was available then ITU would need to be relocated to another area while the work was undertaken, and we do not currently have a suitable area where ITU patients could safely be relocated to and cared for. HBN standards recommend that a ventilation system should include:

- mechanical cooling system that can
- provide a range of temperatures
- is adjustable by staff

Staff would then have the ability to establish and accommodate the unusually high heat gains that occur from continuous use of life saving medical equipment.

### Fire and evacuation:

Both ends of the tower block are dead ends with one way in and out. Mitigations are sprinklers and by carrying patients down the stairs if exits blocked if patient moves beyond horizontal evacuation are required.

### Other

- Lack of hand hygiene facilities (recommendation: 1 per bed) across the hospital
- Ageing bedside pendants (gas supply, electrical supply)
- Inadequate IT networking and WIFI networking to facilitate Clinical Information System

### Haematology/BMT

A case for change to improve our haematology/BMT facilities following concerns highlighted by a JACIE inspection in 2013 regarding the poor infrastructure in which Haematology and BMT were performed in. No improvements were made as a result of this and after a further JACIE inspection in 2019 there was concern reported that no progress had been made in six years. Although outcomes delivered were of a high quality, inspectors were scathing about the conditions they were performed in particularly due to infection risk.

The current Haematology service fails to meet national and international standards for the care of patients with Haematological malignancies due to a severe lack of space, no specialised isolation facilities, inability to clean outdated facilities to modern infection control standards and no area to triage patients before they mix with other immunocompromised patients. There is evidence of 3 bacterial outbreaks within the haematology patients that are likely to be, at least in part, due to the poor facilities that the service operates within.

Requirements for Haematology/BMT were contained in our Academic Avenue Programme Business Case of January 2020.

### Major Trauma

Major trauma is defined as a life-threatening or potentially life-changing injury. Injuries can occur to a single part of the body or at multiple sites and the best treatment requires a coordinated response from the accident site to hospital care and then rehabilitation.

International experience has shown that this is best provided by a coordinated network of hospitals that work together to allow the patient to receive treatment in the most appropriate facility in a safe and timely fashion. The system should be designed to save life and prevent avoidable disability, returning patients to their families, work and education.

As a result of the option appraisal carried out by the South Wales Health Collaborative in June 2015 the University Hospital of Wales has been designated as the Major Trauma Centre as part of this designation there is a requirement for a polytrauma inpatient ward which does not currently exist at UHW.

The aim of the service is to provide care to major trauma patients, from the point of injury to rehabilitation. A trauma triage tool will be used to identify patients with major trauma. Patients will be triaged to the major trauma centre directly or through a secondary transfer protocol. The major trauma centre will have a policy of automatic acceptance for patients requiring major trauma centre care from within the network. Hospitals within the major trauma network will work together ensuring patients have seamless access to care and transfer back to their local hospital when medically fit.

The on-going care and reconstruction section of the South Wales Service Model for Major Trauma sets out the requirements for:

- A dedicated major trauma theatre;
- A defined ward for polytrauma patients;
- A ward environment

None of which exist yet in full yet. Requirements for our status as a Major Trauma Centre were contained in our Academic Avenue Programme Business Case of January 2020.

### Advanced Cell Therapy Services

Cancer specific Adoptive T-Cell therapy (ACT), one type of advanced therapy, is a form of cellular therapy that harnesses the power of the patient's immune system to direct tumour specific T-cells to kill cancer cells.

There is now a mandated requirement within the NHS for leukaemia and lymphoma patients to be offered advanced cellular therapies within NICE guidelines. There is an expected significant expansion within this area of drug development predicted for the next few years.

Only JACIE accredited facilities will be able to deliver advanced cellular therapies to patients. The only JACIE accredited service within Wales currently resides within Cardiff and Vale UHB within the haematology directorate.

Given the political will to bring advanced Cellular Therapies to Wales within a research capacity and the present requirement to deliver CAR-T therapy for NHS patients, Cardiff and Vale UHB will need to develop capacity to deliver these services within haematology in a safe and timely manner without reducing capacity for delivery of other haematological cancer therapies.

Requirements for ACT Services were contained in our Academic Avenue Programme Business Case of January 2020.

### Further Areas Where UHW Falls Short of Standards

This section highlights some areas of UHW which is not compliant with standards. For more detail, refer to Appendix 2.

- **AHU (Air changes – plant layout):**
  - HEALTH TECHNICAL MEMORANDUM 03-01:2007 PART A Specialist ventilation for healthcare premises, Part A: Design, installation , validation and verification
  - HEALTH TECHNICAL MEMORANDUM 03-01:2007 PART B Specialist ventilation for healthcare premises, Part B: Operational management and performance verification.
- **Backup systems:**
  - Health Building Note 00-07:2006 Resilience planning for the healthcare estate: Welsh edition
- **Building Regulations:**
  - Government website
- **Compliant space (plant rooms):**
  - Health Building Note 00-01:2017 General design guidance for healthcare buildings
- **Consultation rooms:**
  - Health Building Note 12 Out-patients Department
- **DDA:**

- Health Building Note 12 Out-patients Department
- **Dual circuit (med gas):**
  - Health Technical Memoranda 02-01:2006 Part A - Medical gas pipeline systems, Part A - Design, installation, validation and verification
  - Health Technical Memoranda 02-01:2006 Part B - Medical gas pipeline systems, Part B - Operational management
- **Emergency lighting:**
  - HTM06 – 01 & BS5266 Pt 1. Health Building Note Lighting and colour for hospital design R&D Report B(01)02:2004
- **Lack of zoning:**
  - Health Building Note 00-01:2017 General design guidance for healthcare buildings Part 6 Evidence-based design ideas for a therapeutic environment
- **Limited single occupancy rooms/ En Suites:**
  - Health Building Note 04-01 Adult in-patient facilities 2008 Ward sizes.
- **Refuse (waste):**
  - Health Technical Memorandum 07-01:2013 - Safe management of healthcare waste.
- **Storage (cluttered areas):**
  - HEALTH TECHNICAL MEMORANDUM 62 Building Component Series Demountable storage system 2005 also HEALTH TECHNICAL MEMORANDUM 63 Building Component Series Fitted storage system 2005.

## Decaying Fabric and Mechanics

The Capital & Estates team maintain, and where possible, improve the infrastructure of the hospitals. Our colleagues take great pride in their work. While the majority of the work is currently sufficient, there is a limit to what can be done due to materials coming to the end of their natural life, difficulties accessing service areas, and significant disruption to patient care. This section provides examples of complex issues that are becoming increasingly common and will require tackling head on if UHW is to be used beyond the next 10 years.

## Backlog Maintenance

As of 2018, the backlog associated with assets which were regulated to statutory or mandatory direction, is estimated at approximately £163m to date. The breakdown based on the surveys that have already been undertaken, as well as backlog by site, is set out below:

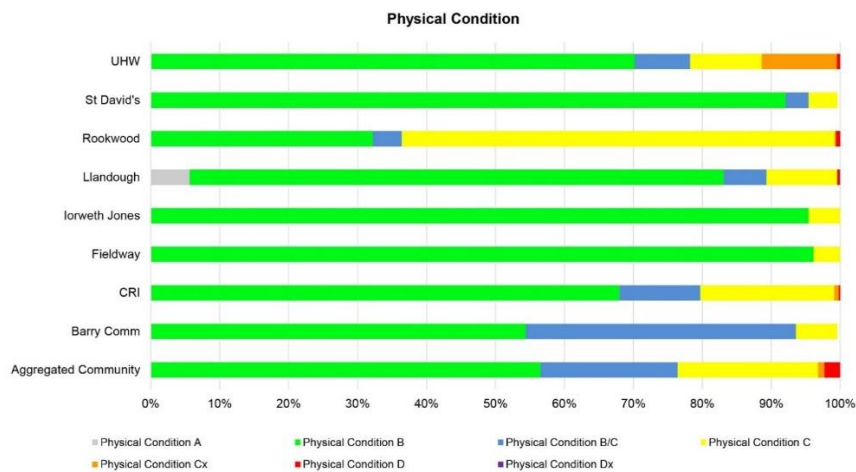
Organisation / Hospital Name	Cost to eradicate High Risk Backlog	Cost to eradicate Significant Risk Backlog	Cost to eradicate Moderate Risk Backlog	Cost to eradicate Low Risk Backlog	Total Backlog	Risk Adjusted Backlog Cost	Cost to achieve Physical Condition B	Percentage of total occupied floor area in physical condition C plus D	Cost to achieve Statutory Health and Safety Compliance Standard B	Cost to achieve Fire Safety Compliance Standard B	Percentage of patient occupied floor area not in Statutory Health and Safety compliance	Percentage of patient occupied floor area not in Statutory Fire Safety compliance
	(£)	(£)	(£)	(£)	(£)	(£)	(£)	(%)	(£)	(£)	(%)	(%)
<b>CARDIFF &amp; VALE UNIVERSITY LHB</b>												
UNIVERSITY HOSPITAL OF WALES	30,456,262	68,011,406	27,848,363	2,533,961	128,849,992	74,362,824	113,434,152	19	14,601,636	814,205	13	9
CARDIFF ROYAL INFIRMARY	1,213,316	1,219,266	95,474	39,306	2,567,362	1,883,103	1,549,889	18	944,954	72,521	34	36
LLANDOUGH HOSPITAL	326,544	20,144,687	3,568,309	1,807,194	25,846,734	16,758,817	25,325,856	10	321,379	199,499	2	5
BARRY HOSPITAL	0	34,876	57,695	56,300	148,871	21,292	98,676	25	23,117	27,079	43	39
ST DAVIDS HOSPITAL	0	59,137	98,341	62,991	220,469	52,598	169,612	17	27,212	23,645	26	18
FIELDWAY PHARMACY AND CLINICAL ENGINEERING	0	8,859	0	20,999	29,858	5,340	23,782	6	4,426	1,651	26	25
AGGREGATED SITES CVU	845,677	4,592,389	721,033	167,971	6,327,070	4,236,233	5,635,627	16	452,100	239,359	45	49
<b>Health Board Totals / Averages</b>	<b>32,841,799.0</b>	<b>94,070,620.0</b>	<b>32,389,215.0</b>	<b>4,688,722.0</b>	<b>163,990,356</b>	<b>97,320,207.0</b>	<b>146,237,594.0</b>			<b>16,374,824.0</b>	<b>1,377,959.0</b>	

From the breakdown above, it is evident that the vast majority of total maintenance backlog is associated with assets located at UHW and UHL.

## Physical Condition Classification

The UHB estate has been categorised according to the Estate code guidance A to D (X) as identified earlier in this section. The results show that generally, over 50% of the estate is classified at Condition B – sound, operationally safe and exhibits only minor deterioration:

## Physical condition



However, of the £163m of CVUHB's total estimated costs, just over £145m would be required to bring facilities into physical condition B.

More than 10% of the UHW site is in condition C or D indicating significant investment or replacement is needed. Areas rated as B/C, indicate assets deemed to be at imminent risk of falling below the acceptable standard.

We have a dedicated Capital Estates and Facilities team who great pride in maintaining our estate. Given the age of UHW, breakdowns are common however, and a flavour of the sorts of problems experienced are contained in the bullet points below and more comprehensively described along with photographs in Appendix 2. These provide a flavour of the issues tackled on a constant basis.

Examples of issues being felt on a day to day basis include:

- Rotting timber frames around windows resulting in insecure glass.
- Single glazed windows which are draughty in the winter and extensive excessive heat loss
- Crumbling concrete façade with falling masonry posing a potential danger to patients, staff and visitors.
- Ground water ingress into tunnels under UHW due to breaking down of 50 year old cast concrete.
- Asbestos is prevalent throughout UHW. Maintenance activity where asbestos is present is complex with: training required, support from asbestos management, additional PPE, potential restriction/evacuation of clinical areas in plant rooms, possibility of requiring specialist expertise from external licensed contractors, additional time to respond, additional cost and potential to not being able to undertake works.
- Mechanical components that are operating beyond recommended lifespans and which are obsolete, making the procurement of spare parts very difficult.
- Regular breakdowns in waste pipes brought on by age deterioration and corrosion.
- Regular breakdowns of hot water systems as a result of age/corrosion
- Issues delivering heat to patient areas due to deposits in pipework as a result of age impacting thermal efficiency.
- Obsolete plant
- Obsolete electrical systems
- Obsolete lifts



Several examples from our Clinical Diagnostics & Therapeutics team illustrate the ongoing disruption to operation that our ageing infrastructure causes:

#### *Mortuary*

The mortuary space in UHW is of significant concern. There are regularly leaks which impacts on the provision of care to our deceased patients. The current facility does not meet the standards set by the human tissue authority. The space available has been shown to be inadequate resulting in the purchasing of a number of temporary solutions to meet the demand put on the service.

#### *Laboratory medicine*

In a number of areas the structure of the building is such that there is regular water ingress, resulting in multiple service moves impacting on the turnaround times for the laboratory

#### *Medical Physics*

There have been multiple instances of sewage coming into the department taking significant clinical and office space out of commission for multiple months.

#### *Radiology*

There has been a prolonged issue with sewage coming into the new MRI suite, taking offices out of commission and putting at risk the safe use of the MRI machines

CT in the main department has experienced significant leakages on multiple occasions taking out of commission out CT scanner and creating working environments that are unacceptable for staff

We have insufficient space for the number of staff working within UHW radiology. There is a significant risk to expansion, particularly within the consultant radiologist group due to the fact that the provision of workspaces will be difficult. The temperature within the department regularly throughout the year (not just summer) exceeds what is reasonable and comfortable to work within

## Conclusion

The issues presented in this report tell a concerning story that the ageing infrastructure at UHW is severely impacting our ability to deliver the patient and staff experience that we would like now and into the near future given the growing population of South Wales and the increasing complexity of healthcare.

The options associated with replacing UHW need to be urgently considered. It is the view of C&V that we should agree with Welsh Government to produce a Strategic Outline Case for our infrastructure and consider all options of do nothing, do minimum, replace, relocate, etc based upon a detailed clinical model, fit for the middle of the 21<sup>st</sup> Century. Without rapid progress a number of very large capital schemes will need to be presented to Welsh Government to provide continuity of care and not take off the table the medium term need to ultimately replace a six decade old building.

## Appendix 1

### Ward Size and Consequence of Refurbishment

This section shows how the refurbishment of a typical ward to current HBN standards at UHW would reduce bed capacity by around 50%.

A current typical ward (North & South) at UHW contains the following for **38** beds:

Room function	Average (sqm)	Area	Quantity
Single-bed room	11		4
Ensuite Shower-room or WC	2		2
4 bed room (approx. 10sqm per bed)	40		4
9 bed room (approx. 9sqm per bed)	85		2
In-patient Ambulant WC	3.5		2
Accessible shower-room	5		4
In-patient assisted shower-room	12		2
Office	-		-
Touchdown/Nurse base	12		2
Treatment Room	17		2
Interview Room	-		-
Break out space / day room for patients	19		1
Ward pantry/kitchen	25		1
Medicine prep room (clean utility)	13		1
Dirty utility	10		2
Cleaner's Store	-		-
Staff Lockers	-		-
Staff WC	-		-
Visitors WC (accessible)	-		-
Clean supply room	9		1
Disposal Hold	6		1
Staff Rest Room	19		1
Ward Reception/Lobby	34		1



Schedule of Accommodation taken from WHBN 04-01:

Room function	Area (sqm)
Single-bed room	19
Ensuite Shower-room	4.5
Multi-bed Room (per bed space)	16
In-patient Ambulant WC	2
In-patient assisted shower-room	8
Office/Meeting Room	16
Touchdown/Nurse base – 1 per 4 beds	2
Treatment Room	16
Interview Room	8
Break out space / day room for patients	6
Ward pantry/kitchen	12
Medicine prep room (clean utility)	8
Dirty utility	12
Cleaner's Store	8
Staff Lockers	1.5

Staff WC	2
Visitors WC (accessible)	4.5
Clean supply room	0.34 per bed
Disposal Hold	0.25 per bed
Staff Rest Room	1.8
Ward Reception	5.5

Applying HBN 04-01 to the existing footprint approx. **19** beds can be accommodated:

Room function	Average Area (sqm)	Quantity	Compliant
Single-bed room	15	5	x
Ensuite Shower-room or WC (in single beds)	5	2	✓
2 bed room (approx. 15sqm per bed)	30	7	x
Ensuite Shower-room or WC (in 2-beds)	6	7	✓
In-patient Ambulant WC	6	2	✓
In-patient assisted shower-room	12	2	✓
Office	18	1	✓
Touchdown/Nurse base	12	2	✓
Treatment Room		-	x
Interview Room	-	-	x
Break out space / day room for patients			x
Ward pantry/kitchen	25	1	✓
Medicine prep room (clean utility)	15	1	✓
Dirty utility	10	2	✓
Cleaner's Store	-	-	x
Staff Lockers	-	-	x
Staff WC	-	-	x
Visitors WC (accessible)	-	-	x
Clean supply room (CSSD)	12	1	✓

Disposal Hold	6	1	✓
Staff Rest Room	19	1	✓
Ward Reception/Lobby	34	1	✓



## Appendix 2

Report from C&V Director of Capital & Estates

See separate attachment: 'CEF Infrastructure Report for Welsh Government – 20210805.doc'