



University Hospital Wales - Facet Surveys

Executive Summary

Prepared for Cardiff & Vale UHB

December 2025



Purpose of This Report

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This Executive Summary presents the key findings from the 10-year estate condition, risk and lifecycle modelling for University Hospital Wales.

It has been prepared to:

- Provide a clear, evidence-based view of estate condition and risk
- Identify priority investment needs
- Support Welsh Government funding discussions
- Explain the consequences of continued under-investment compared to targeted intervention

The analysis draws directly from the validated Power BI estate model, using asset-level condition, risk, backlog and lifecycle cost data.

Functional suitability and space utilisation are outside the scope of this summary.



Estate Overview

University of Wales at a Glance

The University Hospital Wales site supports a wide range of acute, community, mental health and specialist services.

Much of this activity is delivered from ageing infrastructure, placing increasing pressure on asset condition, resilience and maintenance demand.

65

Total Facilities

£472 m

10 Years Renewals

£47 m

Annualised spend

£116.5 m

Total backlog
maintenance

***Year 1 Investments*

£94.9 m

Cost to Condition B





Model Structure

Estate data inputs and baseline assumptions

The estate model is built from validated, asset-level survey data and structured to allow consistent comparison across the estate.

It combines condition, cost, risk and lifecycle information within a single, coherent dataset that underpins all subsequent analysis.

Core data inputs include:

- Condition grades (A–Dx) for fabric and M&E and assets
- Asset replacement costs aligned to standardised cost libraries
- Remaining service life for each asset
- NHS priority categories (Mandatory, Essential, Desirable, Statutory)
- NHS 1–25 risk scoring inputs (likelihood and consequence)
- Gross internal floor area (m²) for benchmarking and normalisation

Baseline assumptions:

All costs are normalised to a common base year

- Data is aggregated at both building and site level
- Consistent classification and coding is applied across all assets
- Functional suitability and space utilisation are excluded from this model
- This structure provides a single, coherent dataset that underpins all subsequent analysis.





Modelling Approach

How data is converted into backlog, risk and investment need

Key modelling steps:

The model converts survey data into backlog, risk and investment need through a series of clear steps:

- **Backlog:** the cost to return assets in Condition C–Dx to Condition B
- **Lifecycle:** renewal costs profiled over 10 years based on remaining service life
- **Risk:** costs weighted using NHS 1–25 likelihood and consequence scoring
- **Priority:** works classified as Mandatory, Essential, Statutory or Desirable

This approach allows high-risk, high-cost assets to be identified and enables investment decisions to be prioritised on the basis of risk, cost and impact.

What this enables:

- Identification of high-risk, high-cost assets
- Comparison of alternative investment scenarios
- Clear visibility of how deferred investment escalates risk and cost
- Evidence-based prioritisation of capital and revenue spend

Outputs are presented through site-wide and facility-level dashboards to support decision-making.



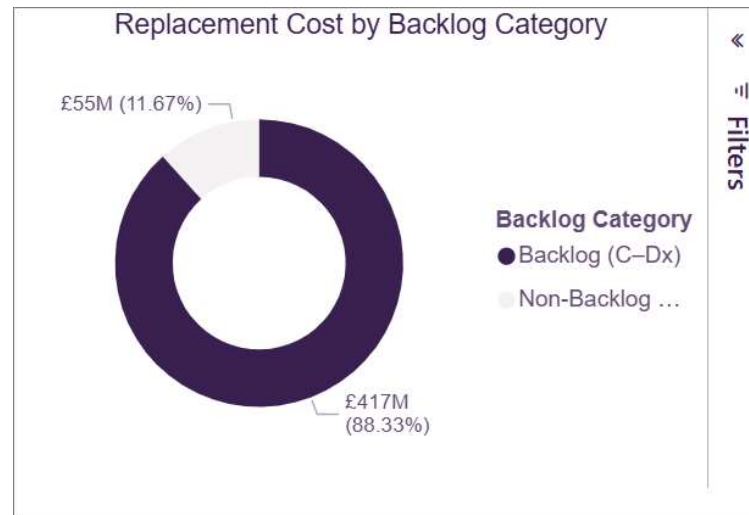


“88% of estate liability relates to backlog — driven primarily by widespread deterioration rather than isolated failures.”

Condition Distribution

Grade split

- Grade A / B: ~12% – Generally serviceable
- **Grade C: ~78% – Deterioration evident**
- Grade D / Dx: ~10% – Significant risk / failure



Escalating Risk from Deferred Investment

While part of the estate remains serviceable, most lifecycle liability sits within Grade C assets.

This reflects widespread deterioration across the estate rather than isolated failures and is the primary driver of backlog growth.

This position is the primary driver of backlog growth and presents an escalating operational and financial risk if not addressed through sustained investment.

Backlog Maintenance

Backlog Overview

The backlog reflects:

- Historic under-investment
- Ageing infrastructure
- Increasing compliance and resilience demands
- Without intervention, backlog will continue to grow at an accelerating rate rather than stabilising over time.

Note: Backlog = cost to return Condition C–Dx assets to Condition B.

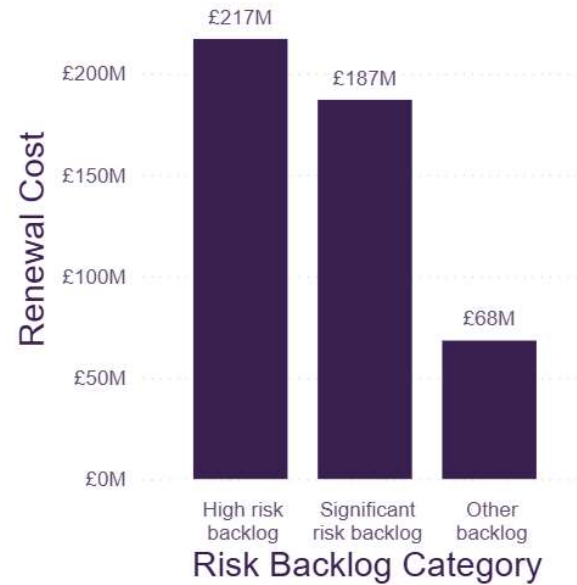
£417 m

Total Backlog

£402 m

High / Significant backlog

Renewal Cost by Risk Backlog Category



“National Benchmarking Confirms Severe Backlog Position”

Backlog - National Context

£2,086 v £662

Backlog per m² – UHW Vrs
NHS England Average

How UHW compares nationally

A comparison against the 2023–24 ERIC returns shows that **University Hospital Wales (UHW) is a clear national outlier.**

£2,086 per m² performs very poorly against NHS England average of £662 per m²

- Backlog at UHW is £2,086 per m², compared with an NHS England average of £662 per m² → More than three times the national benchmark
- When ranked against all NHS Trusts, UHW sits within the worst-performing cohort nationally on a backlog per m² basis.
- On a national league table, UHW ranks 6th worst out of 208 Trusts, placing it firmly at the extreme end of national performance.

Note: ERIC benchmarking is indicative and intended for high-level comparison only.

Trust Name
AIREDALE NHS FOUNDATION TRUST
IMPERIAL COLLEGE HEALTHCARE NHS TRUST
ESSEX PARTNERSHIP UNIVERSITY NHS FOUNDATION TRUST
BARTS HEALTH NHS TRUST
THE HILLINGDON HOSPITALS NHS FOUNDATION TRUST
UNIVERSITY HOSPITAL WALES
THE QUEEN ELIZABETH HOSPITAL KING'S LYNN NHS FOUNDATION TRUST
CLATTERBRIDGE CANCER CENTRE NHS FOUNDATION TRUST
UNIVERSITY COLLEGE LONDON HOSPITALS NHS FOUNDATION TRUST
LONDON NORTH WEST UNIVERSITY HEALTHCARE NHS TRUST
EPSOM AND ST HELIER UNIVERSITY HOSPITALS NHS TRUST
WEST HERTFORDSHIRE TEACHING HOSPITALS NHS TRUST
BOLTON NHS FOUNDATION TRUST



“Over one-third of total estate risk sits in just ten buildings.”

Risk Profile (NHS 1–25)

Top 10 Sites - Total Risk Exposure				
Site Name	Building Name	Total Risk Exposure (Avg x Count)	Sum of Renewal Cost	% of Total Risk
University Hospital Of Wales	10 - Ward block a	9794	£86,259,096	12.89%
University Hospital Of Wales	11 - Ward block b	8244	£64,678,100	10.85%
University Hospital Of Wales	18 - Tower Block 3	8140	£56,244,290	10.71%
University Hospital Of Wales	09b - Tower block 1b	8132	£18,151,853	10.70%
University Hospital Of Wales	09c - Tower Block 1c	7835	£27,763,093	10.31%
University Hospital Of Wales	12 - Ward block c	7687	£98,234,009	10.12%
University Hospital Of Wales	102 - Car Parks	6851	£9,917,505	9.02%
University Hospital Of Wales	05a - Dental hospital	6707	£35,054,180	8.83%
University Hospital Of Wales	08a - Tower block 2a	5872	£16,774,540	7.73%
University Hospital Of Wales	08b - Tower block 2b	5807	£20,966,785	7.64%

Filters

Drivers of Escalating Estate Risk

Risk is not evenly distributed across the estate. **Around 38% of total estate risk is concentrated within just ten buildings**, primarily critical clinical and ward facilities.

Targeted, risk-led investment in this group would deliver a disproportionate reduction in overall estate risk.



C, CX, D, DX – CONDITION CODES

COST PROFILE

YEAR 1

Row Labels	Sum of Renewal Cost
Alarms and Detection	£29,200
Boilers and Calorifiers	£1,102,300
Drainage and Water Mains	£237,250
Electrical System	£7,117,592
External Fabric	£618,613
Fire Safety	£4,507,036
Fixed Elec Plant and Equipment	£13,433,889
Fuel Storage and Distribution	£32,850,000
Grounds & Gardens	£315,164
Health & Safety	£14,229,179
Heating System	£87,600
Hot & Cold Water Systems	£459,900
Internal Fabric	£465,516
Internal Fixtures & Fittings	£25,545
Lifts and Hoists	£2,757,434
Lighting	£1,751,974
Roof	£102,746
Structure	£31,603
Telecomms	£18,250
Ventilation System	£36,414,225
Grand Total	£116,555,016

YEAR 1 & 2 COMBINED

Row Labels	Sum of Renewal Cost
Alarms and Detection	£29,200
Boilers and Calorifiers	£1,102,300
Drainage and Water Mains	£248,121
Electrical System	£7,117,592
External Fabric	£3,578,249
Fire Safety	£4,507,036
Fixed Elec Plant and Equipment	£13,433,889
Fuel Storage and Distribution	£32,850,000
Grounds & Gardens	£363,070
Health & Safety	£14,229,179
Heating System	£87,600
Hot & Cold Water Systems	£459,900
Internal Fabric	£533,027
Internal Fixtures & Fittings	£169,247
Lifts and Hoists	£2,757,434
Lighting	£1,751,974
Roof	£10,857,971
Structure	£3,920,919
Telecomms	£18,250
Ventilation System	£36,414,225
Grand Total	£134,429,184





What Investment Buys You

Translating investment into measurable risk reduction

Targeted, risk-led investment delivers far greater benefit than spreading funding evenly across the estate.

Focused intervention enables:

- **Meaningful risk reduction** – addressing a small number of high-risk facilities removes a disproportionately large share of total estate risk
- **Protection of core clinical services** – prioritising Mandatory and Essential works reduces immediate safety, statutory and operational exposure
- **Better value for money** – early intervention avoids escalation into reactive maintenance, emergency replacement and unplanned disruption
- **Greater certainty over future investment** – tackling front-loaded lifecycle demand stabilises longer-term funding requirements

“Over 85% of the 10-year £472m renewal requirement is driven by Mandatory and Essential works, demonstrating that the estate’s investment need is primarily to sustain safe clinical operation and prevent escalation into statutory non-compliance, rather than discretionary improvement.”

Priority Categorisation

10-Year Priority Spend Profile

Investment requirements over the 10-year period are categorised in line with NHS priority definitions:

Mandatory: £336.6m (71.3%)

Works essential to maintain safe and continuous clinical operation, where failure would result in service disruption or unacceptable operational risk.

Essential: £49.0m (10.4%)

Works required to prevent further deterioration and escalating risk, protecting asset integrity and avoiding higher future costs.

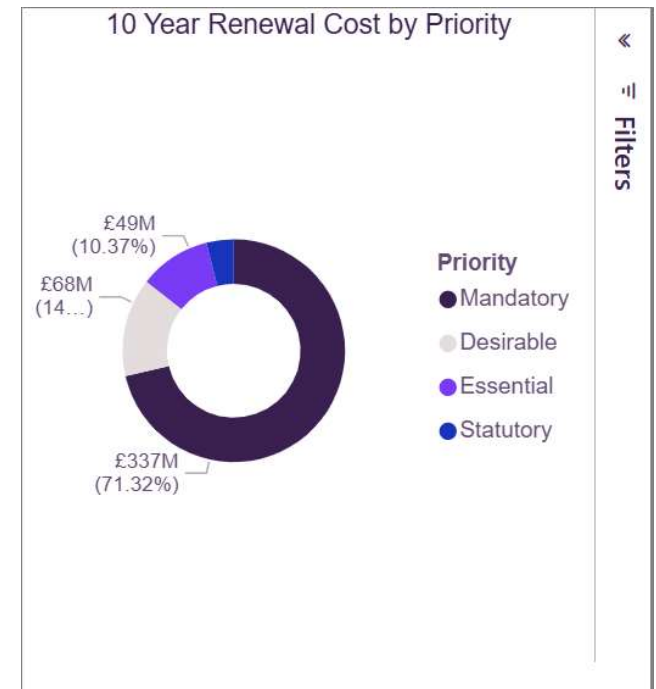
Desirable: £67.7m (14.3%)

Longer-term lifecycle and optimisation works that support estate performance but do not present immediate safety or operational risk.

Statutory: £18.7m (4.0%)

Works required to meet existing legal or regulatory obligations, including life safety, fire safety and statutory compliance.

Priority categories defined in line with NHS Estates guidance.



“A limited number of high-cost, high-risk facilities drive the majority of the estate’s long-term maintenance liability, reinforcing the need for **prioritised, risk-led capital investment**.

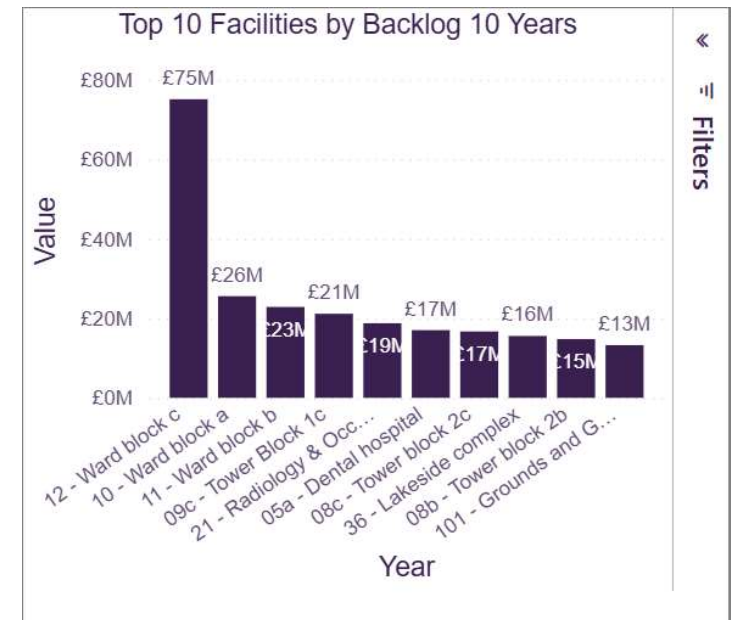
Facility-Level Cost Concentration

Backlog Cost Concentration

Backlog maintenance cost is highly concentrated within a small number of facilities rather than spread evenly across the estate.

The top ten facilities alone account for around £245m — more than half of the total 10-year renewal requirement.

This creates a clear opportunity to target investment where it will have the greatest impact on risk and service resilience.



Backlog maintenance costs are disproportionately concentrated within the top 10 facilities, accounting for over half of the total 10-year renewal requirement.



“Severe Front-Loaded Renewal Replacement Indicates Estate in Very Poor Condition

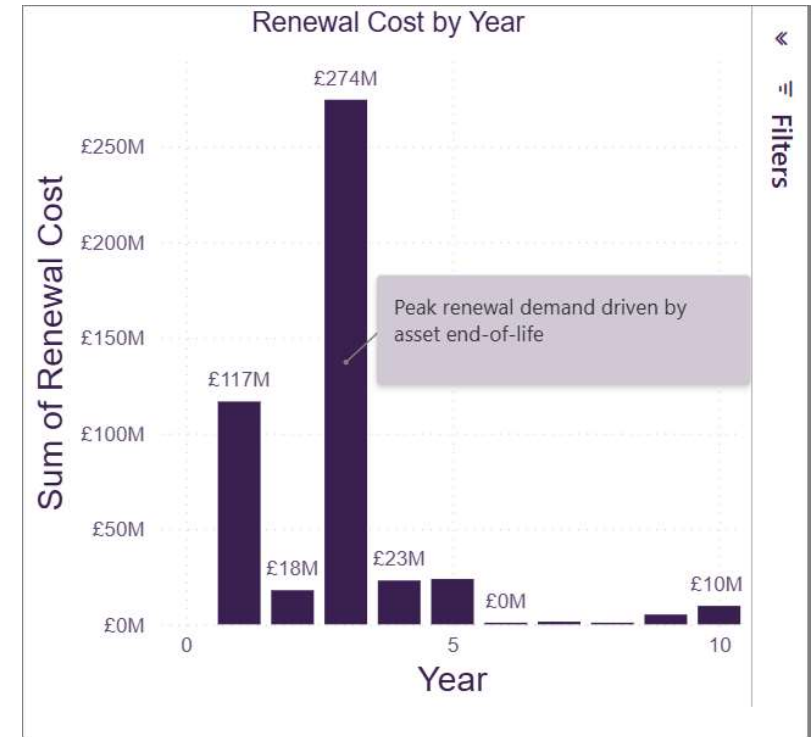
10-Year Renewal Profile

Lifecycle Demand Over Time

The 10-year lifecycle profile shows that renewal demand is heavily front-loaded, driven by ageing assets and historic construction cohorts reaching end of service life at the same time.

Over 70% of the total 10-year renewal requirement falls within the first three years, with a pronounced peak in Year 3. This is a timing issue arising from asset age, not a discretionary investment decision.

The apparent reduction in later years does not indicate reduced risk; rather, it highlights that failure to intervene early would result in asset failure, service disruption, or emergency replacement.



Renewal costs are heavily front-loaded, with the majority of lifecycle investment required in the early years of the programme.

Consequences of Under-Investment

What Happens If Investment Is Deferred

Without targeted intervention, the estate will experience:

- Escalating clinical and operational risk
- Increased statutory and safety exposure
- Greater reliance on reactive maintenance
- Poorer value for money and higher whole-life cost

These impacts affect both patient safety and the reliability of clinical services.



Conclusions & Recommendations

Strategic Implications for Investment

The 10-year condition, risk and lifecycle model demonstrates that:

1. Estate risk and cost are highly concentrated, not evenly distributed
2. Investment need is driven by Mandatory and Essential requirements
3. Renewal demand is front-loaded and unavoidable
4. Targeted investment will deliver disproportionate risk reduction






Recommendations next steps

- Prioritise funding toward highest-risk, highest-cost facilities
- Focus early investment on Mandatory and Essential works
- Use the model as a live decision-support tool for capital planning
- Deploy outputs to support Welsh Government funding discussions









Appendix 1 – Photo Schedule – Critical Asset End of Life



Item	System/Asset	Photo	Photo	Photo	Building/Location	Notes
1	HV Generator				Site	The asset is beyond its expected life expectancy, lack of spare parts will result in long and costly downtimes. The system and redundancy of the system does not comply with the latest WHTMs. Critical failure would result in closure of large sections of the hospital.
2	HV Load Control				Site	The asset is beyond its expected life expectancy, lack of spare parts will result in long and costly downtimes. The system and redundancy of the system does not comply with the latest WHTMs. Critical failure would result in closure of large sections of the hospital.
3	LV Generator				Site	The asset is beyond its expected life expectancy, lack of spare parts will result in long and costly downtimes. The system and redundancy of the system does not comply with the latest WHTMs. Critical failure would result in closure of large sections of the hospital.









Appendix 1 – Photo Schedule – Critical Asset End of Life



Item	System/Asset	Photo	Photo	Photo	Building/Location	Notes
4	LTHW Plant and Controls				Boiler House	Large sections of the asset is beyond its expected life expectancy, lack of spare parts will result in long and costly downtimes. Critical failure would result in closure of large sections of the hospital.
5	Main Steam Header and Valves				Boiler House	The asset is beyond its expected life expectancy, lack of spare parts will result in long and costly downtimes. Critical failure would result in closure of large sections of the hospital.
6	HV Intake distribution board				Main HV Switch room	The asset is beyond its expected life expectancy, lack of spare parts will result in long and costly downtimes. The system and redundancy of the system does not comply with the latest WHTMs. Critical failure would result in closure of large sections of the hospital.








Appendix 1 – Photo Schedule – Critical Asset End of Life





Item	System/Asset	Photo	Photo	Photo	Building/Location	Notes
7	Main LV distribution board				Boiler House	The asset is beyond its expected life expectancy, lack of spare parts will result in long and costly downtimes. The system and redundancy of the system does not comply with the latest WHTMs. Critical failure would result in closure of large sections of the hospital.
8	Electrical Infrastructure				Site	The asset is beyond its expected life expectancy, lack of spare parts will result in long and costly downtimes. The system and redundancy of the system does not comply with the latest WHTMs. Critical failure would result in closure of large sections of the hospital.
9	Pipework infrastructure				Site	The pipework infrastructure is largely the original, 1970s, installation and struggles to satisfy the hospitals requirements. Leaks and emergency remedial works effects large amount of the hospital.

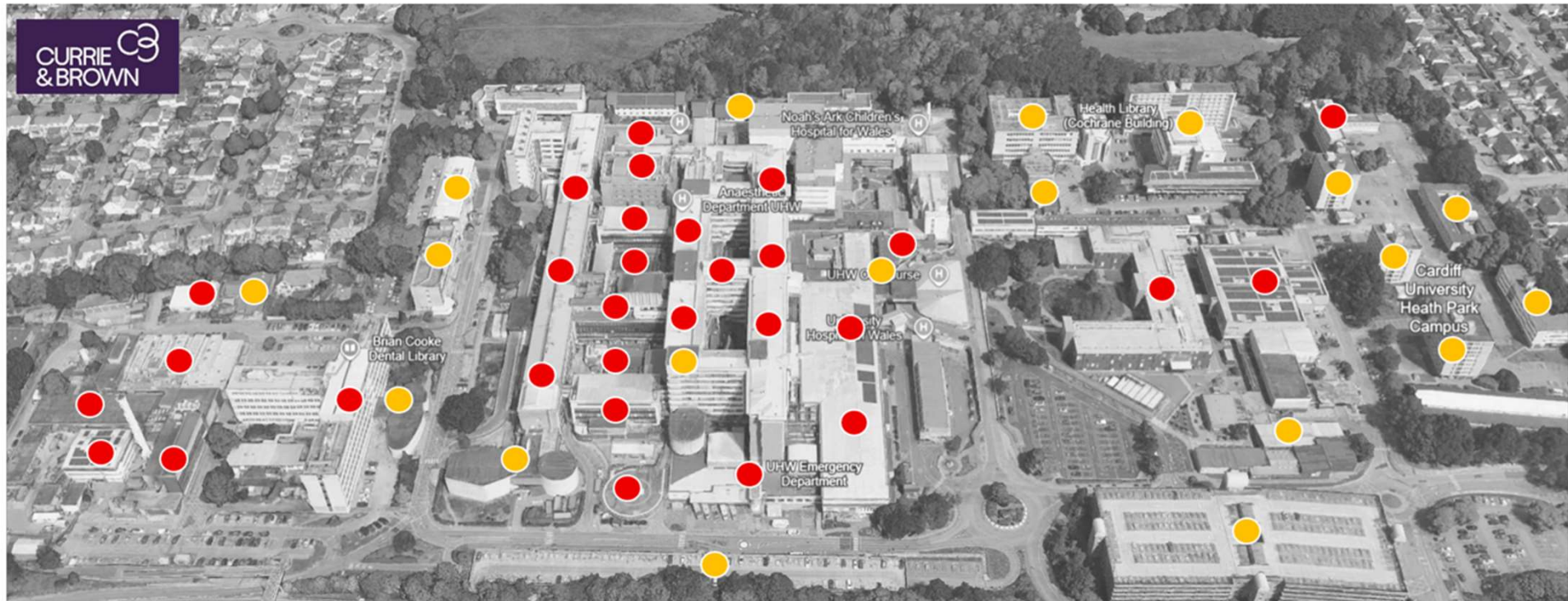
Appendix 1 – Photo Schedule – Critical Asset End of Life



Item	System/Asset	Photo	Photo	Photo	Building/Location	Notes
10	Ventilation System				Site	The asset is beyond its expected life expectancy, lack of spare parts will result in long and costly downtimes. There are areas of the hospital where air changes do not meet WHITMs.
11	Drainage				Site	The drainage infrastructure is largely the original, 1970s, installation and struggles to satisfy the hospital's requirements. Leaks and remedial works affect a large amount of the hospital.
12	Lifts				Site	The majority of these assets are beyond their expected life expectancy, lack of spare parts will result in long and costly downtimes. This causes major disruption to day to day running and use of the hospital.

Appendix 2 – Heat Map - NHS Risk Banding by Building

-  NHS RISK BAND – EXTREME
-  NHS RISK BAND – VERY HIGH



This report provides a clear, evidence-based platform to support informed decisions on capital prioritisation, risk management and long-term estate planning.

