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Major Infrastructure Programme Business Case / Achos Busnes y Rhaglen Rhwydwaith Mawr

Presenter: Andrew Carruthers

Major Infrastructure Programme Business Case November 2020

Appendix 1 - Business Continuity (Major Infrastructure) PBC



CYFARFOD BWRDD PRIFYSGOL IECHYD UNIVERSITY HEALTH BOARD MEETING

DYDDIAD Y CYFARFOD: DATE OF MEETING:	26 November 2020
TEITL YR ADRODDIAD: TITLE OF REPORT:	Major Infrastructure - Programme Business Case (PBC)
CYFARWYDDWR ARWEINIOL: LEAD DIRECTOR:	Andrew Carruthers, Director of Operations
SWYDDOG ADRODD: REPORTING OFFICER:	Rob Elliott, Director of Estates, Facilities and Capital Management

Pwrpas yr Adroddiad (dewiswch fel yn addas)

Purpose of the Report (select as appropriate)

Ar Gyfer Penderfyniad/For Decision

ADRODDIAD SCAA SBAR REPORT

Sefyllfa / Situation

The Hywel Dda University Health Board (HDdUHB) is currently managing a significant Estate Backlog.

The need to attract strategic investment into our Estate is the only way to fully manage many of the risks that we carry.

The development of A Healthier Mid and West Wales (AHMWW) process and the emergence of a clear direction for the future of our Estate has allowed the HDdUHB to develop a structured Programme Business Case (PBC), to target prioritised infrastructure investment to support this overall strategy. This Major Infrastructure PBC is attached at Appendix 1.

This approach will deliver an investment programme which will align with the wider HDdUHB strategic change within its Estate. This will be particularly relevant at Glangwili General Hospital (GGH) and Withybush General Hospital (WGH) where major repurposing is planned.

This paper sets out the core elements of the PBC and seeks approval for this document to be submitted to Welsh Government (WG) for consideration and endorsement. Following WG endorsement the HDdUHB will be able to draw down the necessary resources to support the technical work needed to develop a portfolio of more detailed Business Justification Cases (BJC) or Outline Business Cases (OBC) dependent on the specific capital value of individual investment plans.

Cefndir / Background

The allocation of sufficient discretionary capital to invest in the backlog of the Estate has been challenging for the HDdUHB given the limited funding available for all competing priorities i.e., Medical Equipment, Information Technology, Service Improvement etc. This results in many priorities for investment not being funded. The situation will continue until we are able to move away from an annual bidding type approach for Estate Investment, and work within a more strategic framework to manage this process. Until this is in place, we will be unable to make any real impact on the overall backlog within our Estate.

A strategic approach is, therefore, essential if we are to make progress in this area. This strategic approach is now supported by the PBC that has been developed. The progress of this PBC has previously been considered on a regular basis by the Capital, Estates and Information Management & Technology Sub-Committee (CEIMTSC) most recently on 5th June 2020. In addition, this PBC has been considered in detail at the People Planning and Performance Assurance Committee (PPPAC) on 29th October 2020.

The progression of this PBC has been developed in regular dialogue with WG. It was originally developed prior to the Health Board having clarity of the future direction of our HDdUHB in terms of Estate planning. As part of this regular dialogue with WG and in consideration of the emerging clarity with regards to the HDdUHB strategic direction, the HDdUHB was asked to reconsider the original draft PBC and to align the strategic plan with the future proposals set out by the AHMWW Programme. Following this direction by WG, a paper was presented to CEIMTSC to set out the approach to revising the PBC accordingly. The key elements of this modification were as follows:

- To fully consider how this PBC is progressed, to ensure we have full alignment with discussion with WG around the AHMWW programme.
- Place the future progression of this PBC within the programme delivery responsibilities of the AHMWW Team, as this needs to be considered as one strategic vision of the HDdUHB.
- To open dialogue with WG Capital Teams to ensure that they are appropriately briefed as to how the HDdUHB plan to progress this PBC.

This modified the approach significantly at both GGH and WGH. On these two sites, the investment plan proposed is solely on the basis of Business Continuity of Services in a safe environment until the repurposing plans for these sites is delivered.

On this basis, extensive work has been undertaken with Operational Teams to understand the key risks facing the Estate over this intervening period so that investment can be targeted at areas which could impact on the Business Continuity of our Clinical Functions.

Asesiad / Assessment

The PBC sets out the high level investment strategy for this plan. Subject to HDdUHB approval this document will be submitted to WG for their endorsement.

Following WG endorsement the HDdUHB will be in a position to draw down the necessary resources from WG to support the development of the individual BJC's/OBC's to progress with the delivery of this plan. This will include both internal HDdUHB resources and the appointment of specialist Supply Chain Partners.

Further discussion will be required, to consider how the HDdUHB delivers these major projects whilst ensuring they remain fully coordinated with future repurposing plans for our Estate.

The prioritised schedule of work over the initial 8 year implementation plan totals circa £118m for the whole of the acute estate. This brings the investment plan to the 2027/2028 Financial Year (FY).

For GGH and WGH, this concludes the investment plan and aligns broadly with current programming for the repurposing of these two sites. This investment is on the basis of ensuring safe Business Continuity of Clinical Services.

For Prince Philip Hospital (PPH) and Bronglais General Hospital (BGH) the investment plan continues beyond 2027/2028. With further investment of circa £128m required in this Estate to achieve Estate Code Condition B. (Defined as sound, operationally safe and exhibits only minor deterioration). Whilst the capital costs of this phase have been broadly estimated, the programme of fully delivering this has not yet been fully established.

The overall estimated investment requested by this PBC is £246m.

Note: Within the attached PBC, Appendix 2 on Page 97 is not included. This is due to the size of this file. If required, this Technical Appendix can be made available to Board Members.

Argymhelliad / Recommendation

The Board is asked to:

- Approve the submission of the Programme Business Case to Welsh Government, seeking the endorsement necessary to allow the HDdUHB to proceed.
- Note that further formal reports will be provided to the Board as this programme progresses.

Amcanion: (rhaid cwblhau)

Objectives: (must be completed)

Cyfeirnod Cofrestr Risg Datix a Sgôr Cyfredol: Datix Risk Register Reference and Score:	Directorate Level - Ref 1002 – Score 16
Safon(au) Gofal ac Iechyd: Health and Care Standard(s): Hyperlink to NHS Wales Health & Care Standards	2.1 Managing Risk and Promoting Health and Safety
Amcanion Strategol y BIP: UHB Strategic Objectives: Hyperlink to HDdUHB Strategic Objectives	4. Improve the productivity and quality of our services using the principles of prudent health care and the opportunities to innovate and work with partners.
Amcanion Llesiant BIP: UHB Well-being Objectives: Hyperlink to HDdUHB Well-being Objectives Annual Report 2018-2019	10. Not Applicable

Gwybodaeth Ychwanegol:

Further Information:

Ar sail tystiolaeth: Evidence Base:	Extensive site bases survey information and direct input from key operational estate staff
Rhestr Termiau: Glossary of Terms:	Contained in the body of the text
Partïon / Pwyllgorau â ymgynhorwyd ymlaen llaw y Cyfarfod Bwrdd Iechyd Prifysgol:	NA

Parties / Committees consulted prior to University Health Board:	
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Effaith: (rhaid cwblhau) Impact: (must be completed)	
Ariannol / Gwerth am Arian: Financial / Service:	Funding sought from Welsh Government
Ansawdd / Gofal Claf: Quality / Patient Care:	The planning of these important infrastructure works on site will involve full liaison with General Managers and Clinical Services in order to minimise disruption. There is however potential for temporary decanting to be required and localised interruption to infrastructure services which will need to be managed in conjunction with the hospital management team. The detailed business cases at subsequent stages will draw out the detail of this planning.
Gweithlu: Workforce:	Delivering a sustainable estate to support Clinical Functions
Risg: Risk:	Business Continuity Management
Cyfreithiol: Legal:	Risk of enforcement from external agencies
Enw Da: Reputational:	Potential reputational damage could be caused if infrastructure issues impact on delivery of patient services
Gyfrinachedd: Privacy:	NA
Cydraddoldeb: Equality:	NA

Hywel Dda University Health Board

Business Continuity (Major Infrastructure)

Programme Business Case

Version: Final

13 March 2020

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1.0 Introduction

This Programme Business Case (PBC) has been developed to scope and identify the level of estates infrastructure works needed to sustain and improve (over the short, medium and long term) the four acute hospital sites: Glangwili, Prince Philip, Bronglais and Withybush owned and managed by Hywel Dda University Health Board. The need for estate infrastructure investment at these sites has been previously acknowledged as a priority in the All Wales Capital programme (along with the inclusion of some interim plan capital funding).

Whilst this business case is for estate infrastructure only, in parallel the Health Board have been reviewing their overarching clinical service strategy based on the need to sustain and modify health services for the future. The UHB's health and care strategy: *'Our Health and Care Strategy: A Healthier Mid and West Wales - Our future generations living well'* was approved by the Board in November 2018.

The strategy sets out for the first time a strategic vision for services that are *safe, sustainable, accessible and kind* for current and future generations across Hywel Dda. The strategy is based on the implementation of an integrated social model of health. It signals a shift from hospital-based care and treatment toward a focus on prevention and building the resilience of people and communities, and establishes a parity of esteem between physical health, mental health and learning disabilities across the age span.

The resultant clinical service changes from this review will be dealt with through a separate business case stream but it is acknowledged that there are significant dependencies between the two programmes and a need for the estates infrastructure programme of works to be responsive and adaptable to support any changes required by the health and care strategy.

Whilst the detail is yet to be developed it is clear that the clinical services provided at the Glangwili and Withybush hospitals is likely to change which will have a significant impact on the size and configuration of the estate.

The scope and programme of works at Glangwili and Withybush contained in this PBC therefore focuses only on short term, urgent works required to maintain the interim viability of the sites assuming that both sites will remain operational in their current form for the next 7-10 years. Whereas the focus on the Prince Phillip and Bronglais Hospital sites assumes that the majority of the existing clinical services delivered from these sites will need to be sustained over the longer term.

The Health Board wishes to engage with Welsh Government to discuss the findings and proposals in this PBC (within the context described above) to agree the way forward for business continuity and major estates infrastructure investment. This is on the basis that regardless of direction of travel in terms of service reconfiguration, in the short to medium term a minimum level of investment will be required to deal with those priority infrastructure issues needing urgent attention to ensure continuity of existing services ahead of any clinical service reconfiguration and in the longer term investment will be required to reconfigure and refurbish those facilities which will be remaining to bring this accommodation back to estate code condition B. Over the life of the programme the investment identified is £246.5m at current prices (BCIS PubSec Index Level of 250 (FP), effective at April 2019).

This PBC:

- Confirms the strategic context and fit of the proposed investment;
- Confirms the case for change and the need for investment;
- Recommends a preferred programme and a preferred way forward for further development of the investment proposal;
- Identifies the projects that will support the delivery of the programme, including proposed phasing;
- Seeks endorsement from Welsh Government to develop subsequent project-based strategic assessments and business cases.

The PBC follows the Better Business Case Investment Guidance, five case model structure, which is the approach prescribed by Welsh Government (WG) and HM Treasury best practice.

A glossary of terms used in this document is included as Appendix 1.

2.0 Executive Summary

This PBC provides a strategic framework for more detailed design and planning work to be completed through the development of Outline and Full Business Cases or where appropriate the Business Justification Case process for individual projects at the next stage. All future business cases developed to support this programme will take account of and be fully aligned with the requirements of A Healthier Mid and West Wales Strategy.

This Programme Business is organised around the five-case model as follows:

- Strategic Case: the strategic context for the change and justification for the changes;
- Economic Case: an appraisal of the options and identification of preferred approach;
- Commercial Case: a brief outline of the procurement approach;
- Financial Case: describes indicative capital costs, funding arrangements and affordability;
- Management Case: outline delivery approach for the programme.

2.1 Strategic Case

The strategic case outlines the strategic context within which this programme has been developed and demonstrates that the programme has been informed by and will address the identified drivers for change.

2.1.1 The Strategic Context

The Health Board estate covers circa 52 hectares across the three counties. In 2018/19 the total gross internal floor area of the premises was 187,977m², of which circa 148,000m² is attributable to the four acute hospital sites.

Properties owned and leased by the Health Board range from 19th Century to modern day buildings in varying degrees of functionality, condition and performance. 36% of the estate is over 50 years old.

The age profile has implications on backlog maintenance but also in the ability to deliver healthcare in premises which achieve current Health Building Note (HBN) standards across the entire estate. A wide range of clinical functions are non-compliant when compared to current HBN standards and impact on both service delivery and patient experience. There are key issues with developing these areas to meeting current standards for example the UHB may need to reduce bed capacity in order to meet the standards for patient and ancillary facilities within ward areas.

While major investment has been undertaken in service improvements this, however, has not impacted significantly on the estate backlog performance. The latest reported position is included in Table 1.

Estates and Infrastructure Backlog 2018/19	
Category	Acute Sites £m
High Risk Backlog	0
Significant Risk Backlog	40.37
Moderate Risk Backlog	11.85
Low Risk Backlog	7.46
Total	59.68

Table 1: Estates and Infrastructure Backlog 2018/19¹

The strategic drivers underpinning this Infrastructure Programme Business Case (PBC) reflect those articulated in the Health Boards Strategy.

- Supporting the clinical services transformation programme, planning priorities and strategic objectives;
- Ensuring the estate is functionally suitable for purpose;
- Ensuring the estate is compliant with statutory requirements and latest estate standards and guidance where it is possible to do so;
- Ensuring the acute hospital estate is prioritised for clinical purposes and non-clinical functions moved off site when appropriate;
- Informing the overarching Estates Strategy which will be developed in alignment with the UHB service plans to ensure a sound and improving financial footing.

The investment aims from this PBC are to:

- Reduce the risk profile on Estate infrastructure;
- Maintain appropriate levels of patient safety and comfort;
- Extend the operating life of the hospitals;
- Support future service planning by ensuring the estate is fit for purpose and can deliver the necessary resilience and capacity to support clinical service requirements;
- Reduce the risks relating to outstanding backlog maintenance requirements;
- Identify and deliver a cost effective and value for money solution, programme timetable and budget.

¹ Categorisations of Estates and Infrastructure Backlog Maintenance are currently being reviewed by NHS Wales Shared Services Partnership Specialist Estates Service (NWSSP-SES)

2.1.2 The Case for Change

Whilst substantial funding has been allocated to capital developments on all four hospital sites over recent years, the value of the Health Boards recurring discretionary capital allocation has made it extremely difficult for the organisation to earmark sufficient level of funding to resolve risks relating to the following:

- Infrastructure and statutory backlog;
- Replacement of medical equipment including major imaging equipment;
- Standardisation of medical equipment across sites to enable cross site working;
- Rolling ward refurbishment programme to deal with statutory and infrastructure backlog;
- Significant upgrades of IT infrastructure.

The resulting impact has been:

- Fire Enforcement Notices raised by Mid and West Wales Fire and Rescue Authority;
- Service interruptions and risks to clinical service and business continuity;
- Health and safety concerns;
- Poor patient and staff environment resulting from overcrowded and cramped conditions in some areas along with aging building fabric and systems on most sites;
- Sub optimal patient experience and complaints;
- Poor staff retention.

To inform and support this business case a detailed analysis of the status of the Health Boards estate at the four acute hospital sites has been undertaken by an external technical advisory team.

This analysis has involved:

- Review of Health Board estates data including the existing backlog maintenance schedules;
- Site visits;
- Meetings with estates and site services staff at each hospital to identify priorities;
- High level estates appraisal to verify existing assessments;
- Review of the extensive information and previous studies undertaken by members of the WPS technical team.

The technical advisory team have identified a detailed portfolio of works necessary to minimise risks to business continuity associated with estates infrastructure, improve statutory compliance and where appropriate improve standards to the patient and staff environment.

As a result of the likely availability of capital funding and projected time required to deliver all schemes on a phased basis, a priority programme of projects has been developed. Prioritisation has been on the basis of those projects which present the highest risk on all four sites and also achieve maximum benefit for Glangwili and Withybush Hospitals in the short term. The remaining schemes at Prince Phillip and Bronglais will then be scheduled over the longer term.

For these early projects, further appraisal will take place within the next stage business cases to determine the detailed scope of works to be delivered on the following basis:

- The minimum scope required to address high priority backlog maintenance issues;
- The intermediate scope required to address high priority backlog maintenance issues combined with limited benefits to the patient environment;
- The comprehensive (maximum) scope required to address all backlog maintenance issues and comprehensive upgrades to the patient environment to create a long-term sustainable estate.

2.2 Economic Case

The economic case identifies the preferred programme that optimises value for money. The critical success factors are:

Generic Critical Success Factor	Broad Description	Proposal Specific Critical Success Factors
Strategic fit and business needs	How well the option meets the agreed investment objectives, related business needs and service requirements, and integrates with other strategies, programmes and projects.	<p>Reduces the risk profile on Estate infrastructure</p> <p>Extends the operating life of the hospitals</p> <p>Supports future service planning by ensuring sufficient infrastructure of systems resilience and capacity for future service modelling</p> <p>Reduction in essential backlog maintenance requirements</p> <p>The solution delivers appropriate levels of patient safety and comfort</p>
Potential value for money	How well the option optimises value for money (i.e. the optimal mix of potential benefits, costs and risks).	The identified solution is cost effective and offers value for money for the Health Board and the individual site
Potential achievability	How well the option is likely to be delivered given the organisations ability to respond to the changes required and matches the level of available skills required for successful delivery.	<p>The organisation can support the level of service interruption</p> <p>The organisation has the capacity to successfully manage the delivery programme</p>

Generic Critical Success Factor	Broad Description	Proposal Specific Critical Success Factors
Potential affordability	How well the option can be met from likely available funding and matches other funding constraints.	Likelihood of proposals being acceptable to Welsh Government
Supplier capacity and capability	How well the option matches the ability of potential suppliers to deliver the required services and is likely to result in a sustainable arrangement that optimises value for money.	Potential for projects to be packaged in a way which is both manageable and attractive to the market

Table 2: Critical Success Factors

2.2.1 Potential Programme Options

The technical analysis of the existing estate has assessed the physical condition of the estate and compliance with mandatory fire safety requirements and statutory safety legislation. This has enabled condition rankings and the potential to bring all assets to a minimum condition 'B' to be assessed with validation by stakeholders at workshops. This was supported with review of environmental audits in conjunction with service managers and clinical staff.

The extent of work required varies across the sites but in all projects are identified in two categories:

- Category 1: stand-alone infrastructure projects. These are projects that can be completed independently although it may be beneficial to coordinate with other projects. These include: Services Infrastructure e.g. replacement chillers, lift replacement. Building and site infrastructure e.g. roof replacement, facade refurbishment.
- Category 2: Phased refurbishment to include wards and other areas both clinical and non-clinical. These are projects that will require the area to be vacated to enable refurbishment to take place. Although the level of refurbishment in each area could vary to enable the work to be undertaken in a cost-efficient manner whilst minimising disruption all works in the area should be undertaken in a single operation, this would include service and building works.

The scope of refurbishment for each area will be defined as part of each detailed project definition and will be impacted by the availability of capital. Notwithstanding, the above a preferred scope and approach has been identified for each building zone identified (See Appendix 2, Page 6 for further information) and this has been used to inform the programme and cost plans specifically for Prince Phillip and Bronglais Hospitals. The scope definitions are summarised in the following table.

Description	Specification	Residual Risks
Do minimum Significant risk backlog maintenance completed. Cosmetic Refurbishment	All significant backlog maintenance works undertaken. Cosmetic refurbishment to include: Ceiling repair as required Flooring replacement to include making good of screeds Redecoration throughout No MEP refurbishment	Medium and low risk backlog maintenance works are not completed Functional and statutory compliance remains as original Although the appearance would be improved the underlying fabric remains in current condition Significant risk of 'scope creep' as services requiring replacement are difficult to access. Significant risks within the department are identified as domestic pipework, nurse call, heating and ventilation. All are difficult to replace without major disruption.
Significant, Medium and Low risk backlog maintenance completed. Internal refurbishment	All identified backlog maintenance works undertaken. Internal refurbishment to include: No internal reconfiguration, make good only Replacement door sets and joinery, Replacement ceilings, Replacement fixtures and fittings, Replacement sanitary ware and IPS, Replacement flooring to include making good of screeds MEP in room fittings, faceplates and outlets. Luminaires and grills. All MEP back to service Distribution risers serving the space.	Functional and statutory compliance remains as original The removal of ceilings will improve access for replacement of services but as not all systems will be replaced risks remain. This could lead to 'scope creep' during construction. Any new services will have to pass through existing walls and internal fabric.
Comprehensive refurbishment (back to structure)	All identified backlog maintenance works undertaken. Complete internal refurbishment – complete strip out and fabric replacement back to structure. Limited internal reconfiguration where clear benefits are identified e.g. provision of additional sanitary provision. For MEP as above plus modifications/additions to suit any new provisions.	Functional and statutory compliance are improved but full compliance cannot be achieved due to the limits of the existing floor plates. Opportunity to review and check underlying structure and complete asbestos removal.

Table 3: Scope Definition

The assessment of service scope is as follows:

Need Identified	Do Nothing	Do Minimum	Intermediate	Maximum
Infrastructure Plan	No improvements considered	Improvements based on essential replacement of obsolete plant, equipment and bringing compliance issues to a satisfactory extent whilst improving building facades. No improvement or refurbishment work proposed.	Improvements based on wholesale replacement of obsolete plant and equipment together with bringing compliance issues and patient environment levels to a satisfactory extent. Extensive improvements to building condition both internally and externally. Intermediate proposals do not propose any service reconfiguration or expansion of existing services.	Improvements and reconfiguration of all areas and infrastructure. Opportunities for redevelopment of existing services and sites
Conclusion:	Discounted	Possible	Preferred	Discounted

Table 4:Service Scope Analysis

The assessment of implementation options is as follows:

Option	Summary	Conclusion
Single Development (inclusive of all four acute sites)	All issues identified as requiring improvement to be implemented in a single development/plan of work.	Discounted as a number of solutions are identified as interdependent on each other and additionally the level of disruption to a live site is considered too great. Not considered to offer flexibility in delivery
Single Development (per each acute site)	All issues identified as requiring improvement to be implemented as a single development/plan of work but limited to each hospital site but interdependencies incorporated.	Possible as this approach enables each site to deliver solutions concurrent with each other and offers flexibility in delivery.
Phased Development (managed site by site)	Individual projects/packages of work comprising the preferred way forward per this PBC will be developed in a phased pattern. Where developments can occur in parallel, they will do so.	Preferred as projects identified are interdependent on each other and therefore a phased approach allows for development to occur which minimises site and patient disruption.

Table 5: Implementation Options Analysis

The assessment of funding options is as follows:

Option	Summary	Conclusion
Welsh Government Capital Funding	Funded through Welsh Government capital funding	Preferred
Charitable Funding	Funded through charitable funding / fundraising	Discounted
Private Finance	Solely funded through private finance schemes	Discounted
Public Private Partnership Funding Model	Under this option the Programme would be funded through a Public Private Partnership (PPP) Funding Model which would require both Welsh Government Model capital funding through the Non-Profit Distributing funding model	Discounted

Table 6: Funding Options Analysis

2.2.2 Preferred Way Forward

The analysis in Table 6 above identified that an intermediate level of refurbishment delivered on a phased basis site by site and funded through Welsh Government Capital Funding would be the preferred way forward at Prince Phillip and Bronglais Hospitals. However, following the finalisation of the UHBs health and care strategy, for the Glangwili and Wthybush sites the focus will be on 'do minimum' and on those priority projects required to ensure business continuity for the next 7 – 10 years only.

2.3 Commercial Case

The detailed consideration of the commercial case will take place at the individual detailed Business Case stages with the Programme Board providing direction and support as required.

The preferred funding option for all of the above investments is via Welsh Government Funding as public funding is considered the only viable option for the series of investments anticipated to be required, initially over a five / six year period. Whilst the investments identified in this business case are considered imperative to meet required standards and sustain service provision during this initial timeframe, the overall programme of work to deliver the requirements in their entirety is significantly longer in duration.

2.3.1 Procurement Strategy

The proposed procurement strategy will be considered through the scrutiny process of this programme business case.

The agreed procurement strategy will be informed by the requirements of the next phases of the detailed business case process as projects may be progressed and delivered individually, in packages with multiple projects or, potentially, through a single programme of work delivered by one procurement route and contract per site.

It is possible therefore that individual schemes may have slightly different procurement solutions potentially determined by the complexity of scheme and professional support requirements for the design solutions. Consideration will also be given to the suitability of the National Health Service Building for Wales framework(s) (NHSBfW) as a procurement route for this work.

It is considered that the nature of the proposed works and the investment duration does not allow an adequate period in which a commercial partner could receive appropriate return on any private or partnership-based investment.

The chosen procurement method for each scheme will ensure that appropriate value for money is provided and ensure compliance with Health Board procedures and procurement requirements.

2.3.2 Personnel Implications and Required Services

The internal and external resource implications for each project or work package will be reviewed on an ongoing basis and identified in the relevant business case.

2.3.3 Proposed Charging Mechanisms

At the completion of the projects there will be no ongoing service arrangements provided by the Procurement partner and therefore no recurring charges associated with project.

2.3.4 Potential for Risk Transfer

The general principle is that risks should be passed to “the party best able to manage them”, subject to value for money (VFM). As there is no firm or finalised procurement strategy at present this is yet to be agreed. Once agreed the contractual arrangements will address the ability to transfer risk.

2.3.5 Accountancy Treatment

All projects will be on the balance sheet of the Health Board.

2.4 Financial Case

2.4.1 Indicative Capital Costs

Given the scale of the programme, the approach has been to consider costing for the

- The 'Do Maximum' option (i.e. all works to bring sites to a Condition B category standard of finish inclusive of addressing all M&E systems); and
- The 'Do Minimum' option (those essential schemes at risks of failure and identified as priority for years one to five).

The total cost of the investment for the whole programme of work, based upon the 'Do Maximum' option for Prince Phillip and Bronglais and 'Do minimum' at Glangwili and Wthybush Hospitals is estimated at £246.5m (including VAT). This will deal with all risks at Prince Phillip and Bronglais and bring these estates up to Estate Code Condition B.

An investment of £118.4m (including VAT) is forecast to be required for the 'Do Minimum' scope of works at all four hospitals. This would not deal with all risks at PPH and BGH and not bring these estates up to Estatecode Condition B.

Appendix 3 contains a detailed cost report in relation to the Programme Business Case. An indicative cash flow for the capital expenditure for all sites for the 'Do Minimum' programme is included in the following table. A further £128.1m is required to complete the works at Prince Phillip and Bronglais Hospitals beyond Year 9 to complete the 'Do Maximum' programme of works. Further cashflow information will be provided at this point of for the remaining years of the programme.

	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	Total	Do Max
	Year 1 £'000s	Year 2 £'000s	Year 3 £'000s	Year 4 £'000s	Year 5 £'000s	Year 6 £'000s	Year 7 £'000s	Year 8 £'000s	Do Minimum £'000s	Year 9+ £'000s
Works Cost	-	6,155.7	21,559.1	17,816.2	8,728.2	4,841.3	124.7	30.5	59,255.7	76,299.3
Fees (approximate)	1,920.6	4,587.6	1,566.6	1,500.9	1,432.6	250.4	-	-	11,258.7	14,499.3
Non Works	555.5	14,704.1	475.1	463.9	512.7	174.6	-	-	16,885.9	4,129.1
Planning Contingency	371.4	3,817.1	3,540.1	2,967.2	1,601.0	790.1	18.7	4.6	13,110.2	14,239.8
VAT	185.4	4,935.4	5,114.9	4,249.5	2,168.4	1,161.1	28.7	7.0	17,850.4	18,935.6
Totals in Year	3,032.9	34,199.9	32,255.8	26,997.7	14,442.9	7,217.5	172.1	42.1	118,360.9	128,103.1
Cumulative Total	3,032.9	37,232.8	69,488.6	96,486.3	110,929.2	118,146.7	118,318.8	118,360.9	-	246,464.0

Table 7: Indicative cash flow for capital expenditure 'Do Minimum' Option Years 1 to 8 plus 'Do Maximum' post Year 8

Works identified for the 'Do Minimum' option fall broadly into a six year construction window, however, the tail end of whole block refurbishments force the cash flow on beyond this. Retention releases also pass into an additional year beyond 6 years.

2.4.2 Capital Cost Assumptions

The following assumptions have been used to develop the capital costs for this PBC:

- Capital costs – reported at BCIS PubSec Index Level of 250 (FP), effective at April 2019;
- Location factor – 0.97 as per current guidance from NHS Wales Shared Services Partnership;
- Non-Works Costs based on estimated costs for 'other' capital costs associated with delivering the work programme including 24 bed decant ward and theatre suite where necessary at PPH and BGH;
- Professional fees are included on the basis any investment undertaken in the estate would be procured through Welsh Government All Wales Capital Projects using the 3rd generation of the Designed for Life Framework;
- Planning contingency of 15% of combined works, fees and non-works costs;
- VAT at 20% for all works of the planning process, with the exception of professional fees. No allowance has been made for VAT recovery at this stage of the project. Advice on VAT recovery will however be taken for individual projects at the appropriate time to inform the costs contained within the business case;
- The internal project management costs associated with the development of this programme business case have been included in the professional fees. Ongoing project management costs will be attributable to the individual projects and included in the business cases as necessary;
- Optimism Bias – excluded from all costs as per current Welsh Government guidelines;
- Equipment costs – no allowance as excluded from scope.

2.4.3 Revenue Implications

For the purposes of this business case it has been assumed that there will be no additional revenue costs, with the exception of capital charges associated with the delivery of the programme. It is assumed that capital charges will be funded by Welsh Government.

It is anticipated that some projects may incur an element of non-recurrent revenue costs due to temporary double running of services, extended clinical hours working or decant requirements to ensure business continuity during construction phases.

Any implications will be mitigated wherever possible and the Health Board will capitalise any residual costs on the basis that they are directly attributable to the capital scheme. This will be dealt with on

a project by project basis when the detailed requirements for each project have been scoped and the relevant business cases developed.

A number of projects within the programme are expected to deliver quantifiable benefits in terms of energy efficiency and therefore should deliver revenue savings at some stage in the programme. Again, this will be identified on a project by project basis in individual business cases. For this PBC a list of those projects anticipated to deliver savings is included in the Infrastructure Technical Report (Appendix 2). Value and timing of the potential savings will be quantified in the next stage business cases.

2.4.4 Funding Arrangements

It has been assumed that the projects within this programme will be funded through Welsh Government infrastructure funding.

2.5 Management Case

2.5.1 Programme Management Arrangements

The Health Board has implemented the following governance structure for the programme:

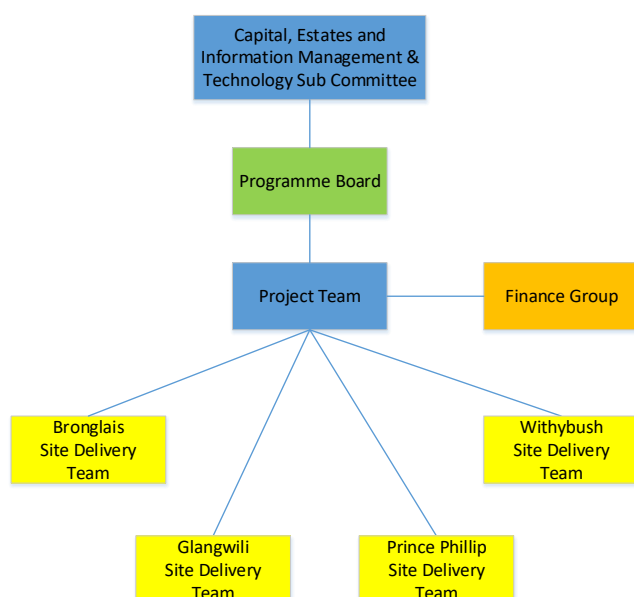


Figure 1: Programme Governance Structure

The Programme Management structure has been formally constituted and established in line with best practice (Managing Successful Programmes). The Programme Board is in place and will provide

strategic direction in order to develop capital investment proposals associated with this Programme Business Case.

The Director of Planning, Performance and Commissioning is the formal Programme Sponsor and the Director of Estates, Facilities and Capital Management is the Programme Director who will be responsible for the successful delivery of the programme.

The Programme Board reports to the Capital, Estates and Information & Technology Sub-committee on a regular basis. The Capital, Estates and Information & Technology Sub-Committee reports directly to the Health Board.

The governance structure for the delivery of this programme will be reviewed and aligned moving forward to reflect the governance arrangements adopted for A Healthier Mid and West Wales programme to ensure the outputs from both programmes are coordinated. Similarly the structure for delivery of estates infrastructure works will be reviewed over the life of the programme to ensure that it continues to be appropriate as the individual projects progress.

A Project Team and Project Management Office led by a Programme Manager has also been established to assist the Programme Director in delivery of this Business Case and the subsequent delivery of individual projects. The Project Team is supported by four separate site delivery teams whose roles are to develop the design strategies and scope of work for the individual hospital sites. A Finance Support Team has also been set up whose purpose is to develop a deliverable financial strategy to underpin the emerging strategy. This team will support the Project Team and is accountable to the Project Board.

For all investment schemes, individual projects / work streams will be established within the boundaries of the Programme in line with accepted practice. Each project will have a designated project manager who will be responsible for delivery of the project outputs.

2.5.2 Specialist Advisors

A team of specialist advisors have been appointed by the Health Board to undertake the technical review of the estate and support the delivery of this programme business case. Additional advisors will be appointed to support the individual projects as appropriate.

2.5.3 Stakeholder Engagement

A series of meetings and workshops have been held with key Health Board teams between December 2017 and June 2018 and again in November 2019 to determine and prioritise the projects included in this Programme.

2.5.4 Programme Milestones

Whilst the pace and time span for the overall programme will depend on the availability of capital funds and local project resources it is critical that progress is made against implementing the infrastructure improvements to ensure business continuity and sustainability of the estate.

At the next stage of the business case process, HDUHB will expedite the detailed exploration of the preferred way forward for the various components of the programme through the development of appropriate scoping strategies and business cases for approval. An indicative programme for delivery of the proposed projects/work packages has been included in this business case on a site by site basis.

The key programme milestones are:

- April 2020 – Submit PBC to Welsh Government;
- May 2020– Agree procurement strategy;
- July 2020 – Welsh Government endorsement of PBC and progression to next stage business cases;
- August 2020 – Appoint professional and contractor teams;
- September 2020 – Commencement of next stage business cases and approvals;
- March 2021 – Priority works commence on site.

This Programme Business Case includes those projects considered to be of highest priority and which can be delivered in a five to six year period (2020/21 to 2025/26):

- Those elements of the infrastructure which present a real risk of failure and risk to business continuity if work is not completed imminently;
- Advance works to external building fabric which need to be completed ahead of any internal works;
- The commencement of a rolling programme of internal refurbishment works with the most dilapidated areas being dealt with first.

These are detailed in Appendix 4.

2.5.5 Programme Assurance

Following endorsement of the proposals, a formal Programme will be established in line with MSP principles and will be subject to review to give assurance that adequate scrutiny has taken place prior to the next stage of development. Individual projects within the programme will also be subject to internal or external quality assurance as appropriate.

Projects will be delivered using the PRINCE2 methodology with the project team supported by individual site teams overseeing delivery and reporting into the Programme Board.

A refresh of this PBC is proposed either annually or at stages to be agreed, to maintain focus on progress and to retain sufficient flexibility within service planning approaches to respond to changing demand or individual opportunities as they arise.

2.5.6 Risk Management

Risk management will be an ongoing project control measure that encourages all participants to be proactive in identifying areas of concern and potential risk that can, when identified at an early enough stage, be managed to reduce/ eradicate the impact on the programme.

2.5.6.1 Risk Register

A risk register has been developed for this programme, to record and log details of any item or event which is considered by the programme board to put the objectives of the programme at risk.

The register is a live document and will be updated at regular intervals in Project Team and Project Board meetings as appropriate. The Project Manager will manage and retain ownership of the risk register throughout the programme.

2.5.6.2 Key Risks

A Risk Register has been developed to support this PBC which will be developed further for individual projects as these progress through the various business case processes. The key risks to the success of this Estates Infrastructure PBC and their mitigation measures are included in the following table:

Risk	Mitigation Measure
Uncertainty regarding Regional Plan and Vision of Healthier Mid and West Wales Strategy leading to potentially conflicting plans/affordability issues	Programme Board to provide regular updates and guide changes as they occur
Impact of AHMWW is unknown	Monitor consultation outcomes
Outcome of clinical services transformation leads to abortive infrastructure work	Early identification of AHMWW proposals
Fire strategy and fire stopping compliance works in relation to fire service improvement notices are underestimated	Early procurement of surveys and investigations to ensure business cases are robust.
Risk that appropriate project leadership and programme governance is not in place and that clear scope of the project is not defined.	Ensure leadership responsibilities are known by team members

Risk	Mitigation Measure
WG funding approval not made available for business case progression	Immediate engagement
Capital costs under estimated	Benchmark and monitor Create dedicated finance workstream and meeting forums.
Revenue costs under estimated.	Benchmark and monitor Create dedicated finance workstream and meeting forums.
WAG cannot fund Capital Requirements of the Programme Preferred Options	Early dialogue
WAG cannot meet the funding timetable for the Capital Programme (years 1-5)	Early dialogue once PBC submitted Develop contingency plans
Lack of funding prevents the most efficient procurement and grouping of projects.	Ensure procurement strategy is flexible and implementation programme can respond to availability of capital Develop contingency plans
Possible lack of engagement/ support from WAG	Senior input to Programme Board and representation in all aspects of programme structure Regular Board briefings Ad hoc meetings as required
Policy changes	
Late involvement of Contractor / SCP in business case work	Ensure timely appointment
Scope creep and overdesign	Ensure robust project management techniques and change control process in place
Construction activity impacts upon clinical services	Plan works in appropriate manner to accord with Employers restrictions

Table 8: Main Programme Risks

2.5.7 Benefits Realisation

A detailed Benefits Realisation Plan will be developed for each project within the programme to support business cases as these are submitted. These will form the basis of post project evaluation.

The Benefits identified for each project will align with the overarching benefits to be derived from the programme as detailed in the Strategic Context section of this PBC.

2.5.8 Post Project Evaluation

The Programme Board will ensure that post project evaluation of all projects within the programme will be undertaken in accordance with Welsh Government requirements, the details of which will be included in individual project business cases. However, post project evaluation will also be carried out for the programme in its entirety.

2.6 Conclusion

The Health Board has identified in this Programme Business Case a need for significant capital investment for estates infrastructure on the four acute hospital sites to eliminate risk to service delivery and to make much needed improvements to the patient and staff environment.

The Welsh Government have also acknowledged the need for estate infrastructure investment as a priority and some interim capital funding for this purpose has been included in the All Wales Capital Programme.

A detailed review of the existing estate at the four acute sites has been undertaken and the proposals in this business case identify the high priorities and investment needs over the short and long term to deliver:

- 'Do minimum' at all four sites;
- 'Do maximum' portfolio of projects at Prince Phillip and Bronglais Hospitals and 'Do Minimum' at Glangwili and Withybush Hospitals.

This business case has been developed in parallel with the Health Board's plans for clinical service reconfiguration.

The Health Board wish to engage with Welsh Government to discuss the findings and proposals in this PBC in the context of: *Our Health and Care Strategy: A Healthier Mid and West Wales*. This is with a view to agreeing the way forward for future estates infrastructure investment and obtaining Welsh Government endorsement to the development of relevant business cases for the projects within this programme to an agreed timescale. Over the life of the programme the capital investment requirement is £246.5m at current prices. (BCIS PubSec Index Level of 250 (FP), effective at April 2019).

3.0 Strategic Case

This case describes the context within which this programme has been developed and demonstrates that the programme has been informed by and will address the identified drivers for change. The focus of this programme is to address critical site infrastructure issues on the four acute hospital sites managed by Hywel Dda University Health Board.

3.1 Organisational Overview

Hywel Dda University Health Board (H DUHB) is the planner and provider of NHS healthcare services for people in Carmarthenshire, Ceredigion, Pembrokeshire and its bordering counties. The Health Board provides primary, community, in-hospital, mental health and learning disabilities services for around 384,000 people across a quarter of the landmass of Wales as illustrated in Figure 2. These are provided in partnership with three local authorities and public, private and third sector colleagues, including volunteers, through:

- Four main hospitals:
 - Bronglais General in Aberystwyth;
 - Glangwili General in Carmarthen;
 - Prince Philip in Llanelli;
 - Withybush General in Haverfordwest.
- Seven community hospitals:
 - Amman Valley and Llandovery in Carmarthenshire;
 - Tregaron, Aberaeron and Cardigan in Ceredigion;
 - Tenby and South Pembrokeshire Hospital Health and Social Care Resource Centre in Pembrokeshire.
- 48 general practices, 47 dental practices (including 3 orthodontic), 99 community pharmacies, 44 general ophthalmic practices (43 providing Eye Health Examination Wales and 34 low vision services), 17 domiciliary only providers and 11 health centres;
- Numerous locations providing mental health and learning disabilities services;
- Highly specialised and tertiary services commissioned by the Welsh Health Specialised Services Committee, a joint committee representing seven health boards across Wales.

During 2018/19 the Health Board employed 11,007 staff and provided services for 46,117 emergency admissions, 42060 surgical procedures, 43,813 day cases, 317,944 outpatients and 164,937 A&E attendances.



GIG
CYMRU
NHS
WALES

Bwrdd Iechyd Prifysgol
Hywel Dda
University Health Board



- 4 General Hospitals
- 14 Health Centres
- 8 Community Hospitals
- Comprehensive Mental Health Services
- Residences & Offices

Figure 2: Hywel Dda University Health Board Property Portfolio

This Business Case focuses on the redevelopment of facilities located on the four main hospital sites summarised in Table 9.

Location	Bed Numbers as at March 2019 excluding Day Case	Services Provided
Glangwili General Hospital (GGH), Carmarthen	392 beds	Emergency Unit, Adult Dependency / Intensive Treatment Unit, Clinical Decisions & Minor Injuries Units, OPD, X-Ray, MRI Unit, Main Theatres, Day Theatre & Delivery Theatres, Antenatal Clinic, Midwifery Led Unit, SCBU, Pathology & PHW, Coronary Care, Physiotherapy, Audiology, Pharmacy, Women & Children's Services, Mental Health Services – EMI, Child & Adolescent, Chemotherapy Day Unit, Renal & Cardio Respiratory, Mortuary, Post Graduate Centre, Endoscopy Unit, Surgical Assessment Unit, Laundry and Residential Accommodation.
Withybush General Hospital, (WGH), Haverford West	219 beds	Emergency Unit, Acute Medical Admissions Unit, OPD, X-Ray, MRI Unit, Midwifery Led Unit, Theatres, Day Theatre, Diabetic Care Centre, Pathology, Physiotherapy, Audiology, Oncology, Post Graduate Centre, Colposcopy Antenatal Unit and Residential Accommodation.
Bronglais General Hospital (BGH), Aberystwyth	138 beds	Emergency Unit, Minor Injuries Unit, OPD, X-Ray, Pharmacy, Antenatal, Physiotherapy, Audiology, Cardiac Monitoring Unit & Cardio Respiratory, Pathology, Endoscopy, Intensive Care Unit, Theatres, Oncology, Palliative Care and Residential Units.
Prince Philip Hospital (PPH), Llanelli	211 beds	Acute Medical Admissions Unit, Minor Injuries Unit, OPD, X-Ray, MRI Unit, Theatres, Day Theatre, Critical Care Unit, Asthma Clinic, Diabetic Care Centre, Pathology, Breast Care, Physiotherapy, Audiology, Oncology, Hospice, Mental Health Services, Post Graduate Centre, Endoscopy Unit and Residential Accommodation.

Table 9: Acute Hospital Sites and Services Provided

3.1.1 Summary of Financial Standing

During 2018/19 the Health Board have made substantial improvements in both financial performance and patient waiting times. The aim for 2019/20 is to deliver an agreed and improved financial position

alongside improvements to quality and patient experience. This interim financial plan reduces the UHB's deficit from £35.5m to £25m during the financial year.

3.1.2 Capital Investment

In recent years £122 million in major capital developments have been invested in the estate on HDUHB sites. The University Health Board currently has a schedule of over 40 All Wales capital schemes, which are at various stages of delivery. The priority of the University Health Board has been to focus capital investment solutions on improving NHS Outcomes Framework performance and flow related issues. Capital spend during 2018/19 totalled £30.9 million

Investments from Welsh Government central funding for the acute sites since 2016/17 have included:

- Work to refurbish existing Theatres together with the provision of a new Fire Evacuation Lift for Theatres/ICU at Bronglais General Hospital (full capital value £5.32m);
- Installation of replacement X-ray room at Prince Phillip Hospital (£1.1 million);
- Provision of additional patient bed capacity at Glangwili General Hospital and Bronglais General Hospital (630k);
- Investment in IT to improve a range of areas including Server Capacity, Backup, Storage and Network expansion projects (£2 million);
- Investment in Pharmacy services across the Health Board across a range of areas including the replacement of Pharmacy Robots at Glangwili and Prince Phillip Hospitals with an upgrade to the existing Robot at Withybush General Hospital, extension work to the air tube system on all four acute sites to link Pharmacy to key patient areas and the provision of 20 automated dispensing units at ward level across the acute sites (£1.7 million);
- Ward 9 and 10 refurbishment at Withybush General Hospital;
- Women's and Children's Phase 2 Project at Glangwili General Hospital;
- Front of House Project at Bronglais General Hospital.

Other planned / proposed acute hospital developments include:

- Re-provision of aseptic and radiotherapy services at Withybush Hospital;
- MRI Unit Bronglais General Hospital;
- MRI Scanner at Withybush General Hospital;
- Chemotherapy Day Unit at Bronglais General Hospital;
- Endoscopy and Day Unit at Prince Phillip Hospital;
- Interim solution for major trauma at Glangwili General Hospital;
- Capital projects required in support of *A Healthier Mid & West Wales programme*.

3.2 Strategic Context

The following sections identify the national, regional and local drivers which underpin the proposals within this programme business case.

3.2.1 National Context

3.2.1.1 NHS Wales Planning Framework 2018/21

The 2018/21 Planning Framework sets the tone and direction for the planning period with a focus on improving population health and an emphasis on prevention and early intervention, reducing health inequalities and working with wider partners to deliver the best possible services. The framework requires Health Boards to produce Integrated Medium Term Plans which demonstrate a truly integrated approach which *“links population need to quality, service models, capacity requirements, workforce development and capital and financial planning, all set within the context of a longer term clinical services strategy”*.

The 2018/21 Planning Framework emphasises that infrastructure is a key enabler for service development and delivery and requires Health Boards to include infrastructure and investment plans in their IMTPs. Health Boards must ensure that capital infrastructure investment plans are clearly prioritised and are aligned with service plans. Infrastructure plans should seek to drive out maximum efficiencies whilst demonstrating clear improvements in the patient quality and safety environment.

In considering the delivery of safe and sustainable services, it is expected that NHS organisations will have an Infrastructure Plan (to include both estate and asset management strategies), which will provide synergy and holistic fit with their other plans in particular the service strategy. The Infrastructure Plan should be forward looking and demonstrate how the asset base across all healthcare settings will be developed to facilitate service transformation and the delivery of high standards of care and demonstrating clear alignment with the principles of prudent care.

This PBC sets out the plan for HDUHB and acknowledges the need at the appropriate time to align these plans with the Health Board’s emerging clinical transformation strategy.

3.2.1.2 “Prosperity for All” the national strategy, September 2017

This national strategy is designed to drive collaboration and integration across the public sector and to put people at the heart of improved service delivery, developing on the key themes identified within ‘Taking Wales Forward’ (2016 – 2021).

3.2.1.3 Taking Wales Forward 2016 – 2021

The document sets out the Government's approach to developing a stronger economy and improving and reforming public services to build a united, connected and sustainable Wales. The commitment to the founding principles of the NHS are affirmed with a pledge to protect and improve the Welsh NHS and ensure it develops effectively to meet future needs.

3.2.1.4 Public Sector Decarbonisation (Wales): A Call for Evidence, July 2017

The aim of the call for evidence was to explore the most effective mechanisms for achieving the ambition for the Welsh Public Sector to be carbon neutral by 2030. The responses have indicated that whilst this is a challenging target and that specific legislation may be required to support delivery, with a phased approach. A focus on good practice has enabled improvements in key areas of sustainability within the Health Board and opportunities for further improvement through relevant infrastructure works are identified in this business case and will be quantified in the next stage business cases.

3.2.1.5 Wales Infrastructure Investment Plan for Growth and Jobs, 2012

The Wales Infrastructure Investment Plan for Growth and Jobs has set out the Welsh Government's strategic investment priorities and the key elements of the future approach to infrastructure investment. Seven strategic investment priorities were identified in the plan with one appertaining specifically to health:

'Delivering more efficient and economical public services – investing to deliver services more economically and efficiently, in particular supporting delivery of our vision for the NHS in Wales set out in Together for Health'.

The plan targets capital investment in health to support delivery of one or more of the following high-level service objectives, the last one of which is particularly relevant to this programme:

- Services which are accessible to patients and carers (providing the right services in the right places).
- Radical service redesign.
- Decentralisation of routine work/centralisation of complex work.
- New models in primary care and adaptation of existing primary care estate to do more locally.
- Investment in communication technology and diagnostic capability needed to enable new clinical models.
- To continuously improve and update the existing estate, address backlog maintenance, improve sustainability and maximise energy efficiency.

3.2.1.6 Wales Infrastructure Investment Plan (WIIP) – Midpoint Review, 2018

The mid-point review of the WIIP looks back at what has been achieved since 2012 and sets out WG plans for the remainder of the period covered by the Investment Plan.

The WIIP considers the future direction of infrastructure investment, in light of the wider economic, political and social changes including realising the full potential of the *Wellbeing of Future Generations (Wales) Act 2015* and *Prosperity for All*.

The Plan also demonstrates key strategic alignment with a number of other national policies and drivers including:

- The prudent healthcare principles which aim to ensure that healthcare services are safe, effective and efficient and achieve best outcomes;
- The five ways of working for public bodies in Wales, which support partnership working to address long-term challenges (namely: long term, prevention, integration, collaboration and involvement);
- The Plan for a Primary Care Service for Wales up to March 2018, which includes the key aim to improve the accessibility and sustainability of primary care services;
- Decarbonisation of Public Sector (Wales) A call for Evidence, July 2017, which requires the public sector organisations to contribute towards a process led by Welsh Government to meet decarbonisation targets;
- Prosperity for All, the National Strategy, Taking Wales Forward, September 2017, which calls for co-location and integration of public services to be at the heart of capital investment decisions.

3.2.2 Regional and Local Context

3.2.2.1 The Mid-Wales Health Care Collaborative (MWHC)

The Mid Wales Healthcare Collaborative (MWHC) was formally launched in March 2015 and comprises the four healthcare organisations that cover Mid Wales – Betsi Cadwaladr University Health Board, Hywel Dda University Health Board, Powys Teaching Health Board and the Welsh Ambulance Services NHS Health Board. The objectives of the MWHC are to implement the recommendations of the Mid Wales Healthcare Study, ensuring healthcare services in Mid Wales are effective for the population. Key elements are to:

- Deliver a single integrated change programme, with full public and professional participation, which addresses the delivery of social care, primary care and specialist care as an integrated continuum, provided as close to home as possible;
- Address prevention as well as treatment, and promote prudent healthcare;
- Deliver a regional plan for Mid Wales.

3.2.2.2 HDUHB Health and Care Strategy

In 2018, HDUHB published 'A Healthier Mid and West Wales: Our Future Generations living well' (AHMWW), the long term strategy for transforming health services and delivering quality care closer to home. The ethos of continuous engagement and co-production is at the heart of the transforming clinical services with the key objective being to co-design future care and services with our patients, staff, the public, key stakeholders and partners, in order to move beyond the traditional structure for NHS services by being truly able to address the needs of the population through earlier intervention, flexible and joined up approaches to care and preventing ill health in the first place.

The programme of transforming clinical services has aligned the work of the previous Clinical Services Strategy Group and Transformation Group into one strategic programme reaching across Hywel Dda University Health Board's healthcare system, and partner organisations with three main programmes of work for planned care, urgent & emergency care and community care, linking in existing work underway within mental health and women and children's services to ensure a whole system approach.

The work undertaken since June 2017 was presented to the University Health Board meeting in September 2018 and set out stages 1 (pre- consultation – formal engagement and options development) and stage 2 (formal consultation) of the consultation process.

The underlying ethos of AHMWW is that the programme should be clinically led and deliver a long-term strategic future for health and care. The focus is on keeping people healthy with a shift away from hospitals to care closer to home.

While hospitals will continue to be a key part of the health and care system, the wider whole system approach will involve the hospitals working much more closely in the community at one end, while forming stronger links to highly specialised services at the other.

The future hospital model will have a new hospital located in the south of the region which will be the main site within a network of hospitals that includes the existing hospital sites. These hospitals will be vibrant centres supporting the health and well-being of the communities they serve.

In the context of capital infrastructure planning the recommendations are summarised as follows:

- More investment will be made in the integration of social and health and well-being across the seven localities;
- A hospital model will be adopted and includes:
 - A new urgent and planned care hospital in the South of the Health Board area;
 - Acute hospital services retained and developed at Bronglais General Hospital;
 - Acute medicine retained at Prince Phillip General Hospital;

- A repurposed Glangwili General Hospital and Worthybush General Hospital offering a range of services to support a social model for health and well-being, designed with local people to meet their needs;
- The progression of a proposed new Planned and Urgent care hospital on a single site through the Business Case process;
- The development of a plan to redesign the remaining main hospital sites, working with local people to maximise the range of services and support available aligned to the proposed model, and a new planned and urgent care hospital;
- The development of a plan to maximise the use of technology as a key enabler to the delivery of the proposed model underpinned by the secure IT infrastructure with sufficient back-ups so that patient data is safe, timely and secure.

3.2.2.3 A Healthier Mid and West Wales Programme Business Case for Estates and Capital Planning Support (2019/20 – 2020/21)

The Health Board is developing a Programme Business Case (PBC) to set out the context and high-level need for the resources to support capital and estates planning for the delivery of the first stages of the Health and Care Strategy transformation programme. This will deliver the essential estates infrastructure of a new purpose built planned and urgent care hospital and the repurposing of the Glangwili and Worthybush hospitals.

The PBC will set out the Board commitment to delivering service change with clear measurable deliverables associated with the Transforming our Hospitals programme including the associated capital elements of re-purposing existing sites and taking into account any major capital developments for the interim period at existing hospital sites.

To support delivery of the Transformation agenda, a Strategic Enabling Group (SEG) for capital, estates and infrastructure will be established. This will focus on asset optimisation, ensuring that the estate is organised in a way to support the sustainable delivery of the new service model.

Capital Plan

The biggest strategic capital commitments in the coming years (for which detailed planning commenced in 2019/20), relate to the new build Urgent and Planned Care Centre, the repurposing of Glangwili and Worthybush Hospitals and supporting the Transforming Adult Mental Health and Learning Difficulties and Transforming the Community Health Strategies. To support the UHB's capital and infrastructure plans, the UHB is currently considering the resource capacity and capability requirements to deliver this complex, high value programme and discussions with Welsh Government will be held to address the scale of development and modernisation needed including the digital modernisation required. This will include the need for a Programme Business Case to be

developed to provide the evidence and confidence that major capital investment can help deliver the sustainable service model envisaged.

The Capital Investment Plan will prioritise both capital developments and backlog maintenance in line with the current prioritised position and strategic objectives and be informed by the current risks the organisation holds. A core focus of the capital plan is the delivery of essential quality and safety, business continuity schemes including replacements, issues of compliance and infrastructure maintenance.

Discretionary Capital Programme

The UHB receives an annual allocation of £7.421m which is allocated annually into the areas of highest investment needs. For these locally controlled funds, this is in the main targeted to support issues of quality and safety, and business continuity and is allocated over the following headings:

- Infrastructure and statutory backlog;
- Estates statutory compliance;
- Replacement of medical and other equipment;
- Essential maintenance of estates infrastructure;
- Standardisation of medical equipment and devices across sites to enable cross site working;
- Capital support posts and business case developments;
- Significant upgrades of IT infrastructure and keeping pace with IT replacements.

The UHB faces very significant backlog pressures in Information Management & Technology, estates maintenance and equipment replacement which means that not all risks can be mitigated and programmes of replacement over a longer timeline including this PBC are being developed and will need to be the subject of All Wales Capital support.

3.2.2.4 HDUHB ICT Strategy

Through the Welsh Governments e-Health Strategy there are a number of initiatives which are currently planned which will impact on the future of Health Board ICT. This is described through the patient's journey and where national products are available or planned to be available:

Healthcare Task	Description	National System
Patient requires referral into Health Board	A patient will typically attend their GP and may require referral to a specialist.	Welsh Patient Referral System (WPRS) will electronic send the referral from primary care to the Welsh Clinical Portal (WCP) for prioritisation and subsequent appointment booking on Welsh Patient Administration System (WPAS).

Healthcare Task	Description	National System
Patient arranges outpatient appointment	A patient will interact with the Health Board booking centre to receive their appointment at a convenient time using traditional telephone calls, a web portal, SMS or Web chat.	Welsh Patient Administration System (WPAS) combined with our local contact centre and communication systems.
Patient attends outpatient at a convenient Health Board site	They check-into a kiosk and update their demographics, phone number and language preference. They are given a patient pager which vibrates when it is time to visit the care professional. They can use the Health Board's mobile app or interactive touchscreens to find their way to their appointment location	Local systems.
Patient requires investigations	At clinic the patient requires a range of investigations	The clinician records the outcome of the consultation and requests Radiology and Pathology tests on the WCP which are electronically sent to the Radiology and Pathology systems.
Patient outcome	Following completion of test results the clinician is notified they are available on his smartphone records his findings using a dictation app on his smartphone that is electronically sent to his secretary for transcribing. Once the clinical has approved the letter it gets sent electronically to the GP and is stored against the clinical record.	Digital Dictation System Appear paging app. Communications to the GP is through the Medicines Transcription & Electronic Discharge System (MTeD). The GP can Skype the clinician to answer any queries or clarifications. The letter is stored in the Welsh Care Records Service (WCRS) a component of the WCP and a summary is available in the citizen's online portal.
Patient requires in-patient treatment	The patient using the Health Board app can choose the site to receive their treatment where the service is available. They use the app / Internet to read about their treatment and watching videos to answer any questions or fears.	The patient uses our app to find their way to the ward. Whilst an inpatient they use free Wi-Fi to keep in touch with friends and family and order food. They also use our app to provide feedback on their experience.
	An inpatient clinician uses smart devices to take electronic observations and assessments such as blood pressure and if the patient is at risk of falls etc. Risk scores are automatically calculated, and clinical staff are automatically alerted on their smart phones if a patient deteriorates.	Patient Flow & Electronic Observations will enable operations to have an overall view of all inpatients, where the blockages are in the system and increased efficiency of staff time managing beds. Potential integration with WCCIS to close the gap between inpatient and community care.
Patient requires care in the community	Community staff such as district nurses and health visitors use a smart device to access the Welsh Clinical Community Information System (WCCIS) when scheduling patient visits, recording visits and assessments, receiving alerts from secondary care and accessing clinical information.	Information from primary / secondary care is available in the WCCIS along with information from Social Service where integrated teams are operating.

Figure 3: ICT Strategy

3.3 Programme Investment Aims

Within the overall planning context, the Minister for Health & Social Services has agreed the following investment objectives for the NHS Infrastructure Investment Programme including capital and revenue funding delivery models. The investment proposal in this business case aligns to these objectives and specifically objectives 1 and 3:

1. Support the delivery of safe, sustainable and accessible services, and facilitate high standards of patient care;
2. Support changes to streamlining and transforming healthcare provision, with a focus on prevention and supported self-management, the provision of care closer to home, and the integration and coordination of service delivery with partners;
3. Promote the maximum efficient utilisation of assets and to improve asset condition and performance; and
4. Promote the use of innovation to improve the quality of care, to reduce costs and to deliver the necessary service change.

These objectives have been adopted by HDUHB and interpreted further from an estates perspective for the Estates Infrastructure programme as follows:

- Reduce the risk profile on Estate infrastructure;
- Maintain appropriate levels of patient safety and comfort;
- Extend the operating life of the hospitals;
- Support future service planning by ensuring sufficient infrastructure of systems resilience and capacity for future service modelling;
- Reduce essential backlog maintenance requirements;
- Identify and deliver a cost effective and value for money solution, programme timetable and budget.

3.4 Existing Arrangements

The Health Board estate covers circa 52 hectares across the three counties. Healthcare services are provided from 57 freehold and leasehold properties with a total gross internal floor area of 187,977m², of which circa 148,000m² is attributable to the four acute hospital sites. Average running cost for facilities management services across the estate for 2018/19 was £171/m².

3.4.1 Age Profile

Properties owned and leased by the Health Board range from 19th Century to modern day buildings in varying degrees of functionality, condition and performance. 36% of the estate is over 50 years old.

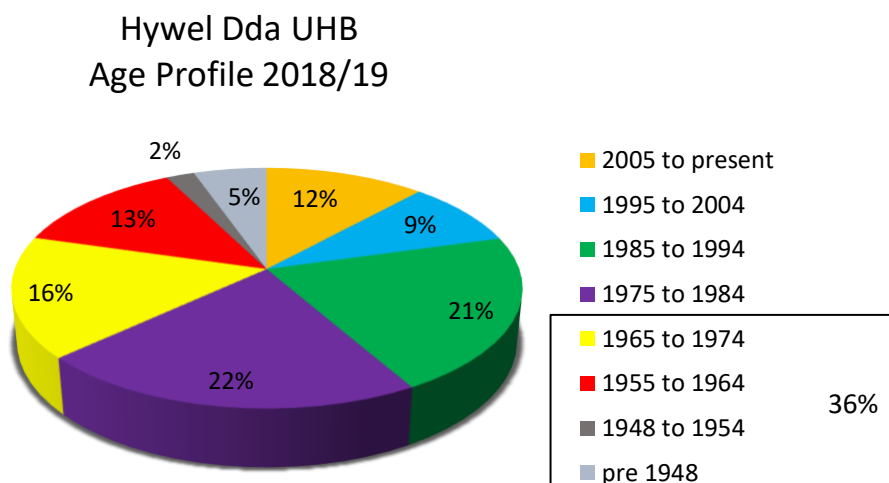


Figure 4: Hywel Dda UHB Estate Age Profile 2018/19

The age profile has implications on backlog maintenance but also in the ability to deliver healthcare in premises which achieve current Health Building Note (HBN) standards across the entire estate. A wide range of clinical functions are non-compliant when compared to current HBN standards and impact on both service delivery and patient experience. There are key issues with developing these areas to meeting current standards for example the UHB may need to reduce bed capacity in order to meet the standards for patient and ancillary facilities within ward areas. While major investment has been undertaken in service improvements this, however, has not impacted significantly on the estate backlog performance.

3.4.2 Backlog Maintenance

Total Backlog Maintenance value for the Health Board stands at circa £59.7 million (2018/19) of which circa £40 million is categorised as Significant Risk. The UHB approach to managing this backlog is well developed in terms of risk registers and prioritisation of highest risks for investment. Available funding has been targeted at areas of highest risk, however, this has been insufficient to significantly reduce the Estate backlog.

HDUHB has continued to invest in its estate with £30.9million invested in 2018/19. This investment has resulted in a increases in new development floor area but has had little impact on reducing backlog maintenance.

Estates and Infrastructure Backlog 2018/19		
Category	Total £m	%
High Risk Backlog	0	0%
Significant Risk Backlog	40.37	68%
Moderate Risk Backlog	11.85	20%
Low Risk Backlog	7.46	12%
Total	59.68	100%

Table 10: Costs to eradicate total Estates and Infrastructure Backlog (Whole Health Board by risk category)

Table 11 provides details on the operational costs of the hard facilities management services and key performance indicators for the whole Health Board as at 31 March 2019.

Hywel Dda UHB - Estates Performance Indicators 2018/19					
Hard FM	Maintenance	Energy	Water	Waste	Non Domestic Rates
Total Cost	£4,673,424.00	£4,675,012.00	£874,158.00	£642,525.00	£2,320,677.64
£/Occupied Floor Area m ² (186,293)	£25.09	£25.09	£4.69	£3.45	£12.46
£/Occupied Beds (1,070)	£4,367.69	£4,369.17	£816.97	£600.49	£2,168.86

Table 11: Estates Performance Indicators (Whole Health Board)

A detailed description of the estates profile for each hospital is provided in the following sections.

3.4.3 Glangwili General Hospital (GGH)

3.4.3.1 Site Overview

The majority of buildings on the Glangwili General Hospital site were constructed in the 1950/60s. The core acute services including all inpatient ward blocks, operating theatres, outpatients, radiology and pathology services are within buildings that are between 40 to 60 years old. A number of more recent developments have been constructed within the last 20 years.

Figure 5 indicates the age profile of the buildings on the Glangwili Hospital site.

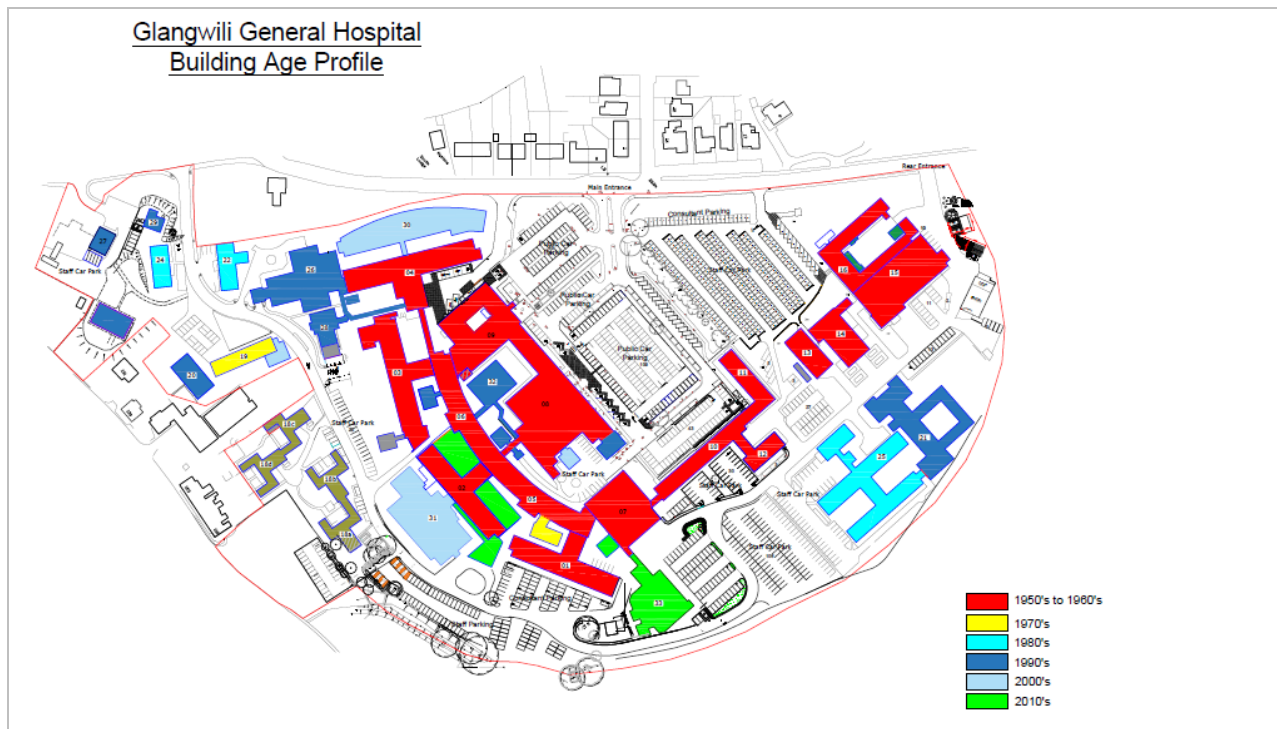


Figure 5: Glangwili Hospital Site - Age profile of the existing estate

The site has benefited from significant investment since 2009/10 with £24.63m capital (excluding equipment and ICT) spent to date. However, a significant backlog maintenance liability remains. For 2018/19 this was valued at £23.6 million. See Table 12.

Backlog Maintenance Costs by Risk Category per risk category for 2018/19				
High Risk Backlog Costs (£)	Significant Risk Backlog Costs (£)	Moderate Risk Backlog Costs (£)	Low Risk Backlog Costs (£)	Backlog Costs (£) Total
£0	£17,761,260	£3,562,821	£2,233,209	£23,557,290

Table 12: Glangwili Hospital Site - 2018/19 Backlog Maintenance Liability

Within recent years there has been an evident increase in activity and consequent utilisation of accommodation across the site. These factors have contributed to a range of current site constraints as follows:

- There is very little land development space to support future expansion opportunities on the site;

- There is high proportion of low density buildings across the site, which is due in part to the previous development strategy often linked to the availability of funding;
- Increased site activity has led to significant car parking pressures;
- The ratio of non-clinical to clinical accommodation has increased on site in recent years.

Figure 6 identifies the current condition of the existing estate. Those buildings coloured beige are the core clinical buildings, the majority of which are over 50 years old and category C in terms of condition. These buildings contain the main inpatient bed stock, imaging, theatres, outpatients, essential clinical and some non-clinical support services. The other buildings shown in blue are rated as condition category A/B

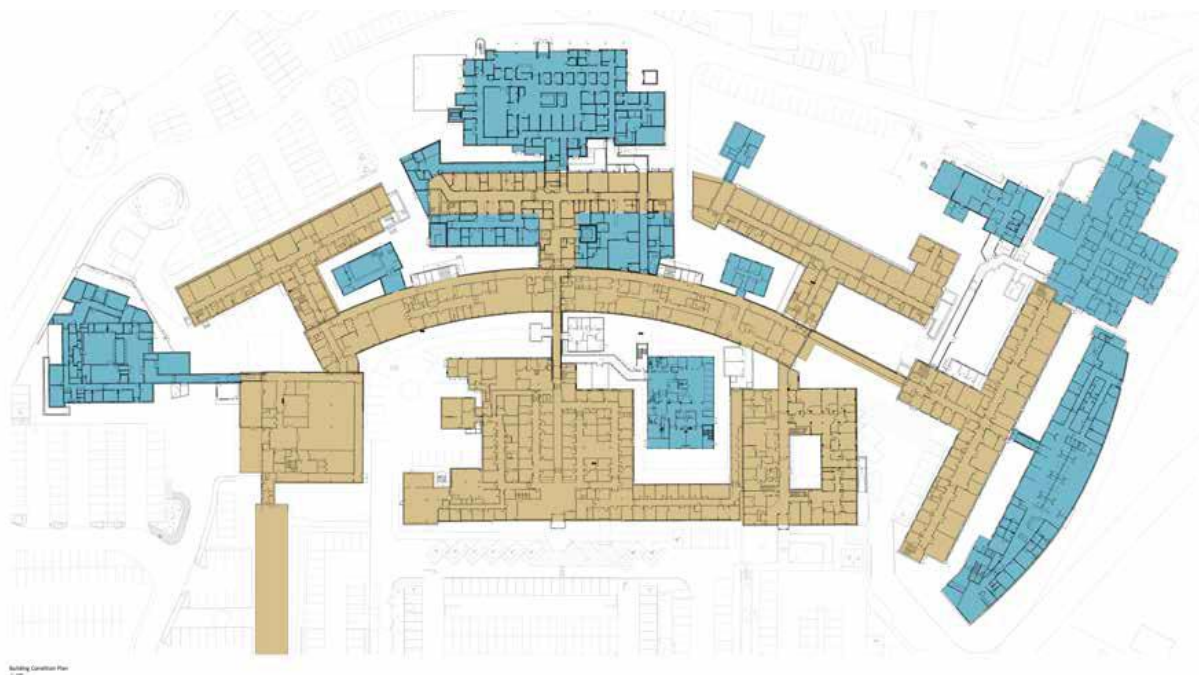


Figure 6: Glangwili Hospital Site - Condition of Existing Estate

3.4.4 Withybush General Hospital (WGH)

3.4.4.1 Site Overview

Withybush Hospital is located in Haverford West and has a gross floor area of 43,368m² providing 219 beds. The main hospital buildings were constructed in the 1970s and officially opened in 1979. A new Emergency and Urgent Care Centre was opened in 2010 and a new Renal Dialysis Unit opened in 2014. Figure 7 shows the age profile of the buildings on the Withybush Hospital site.

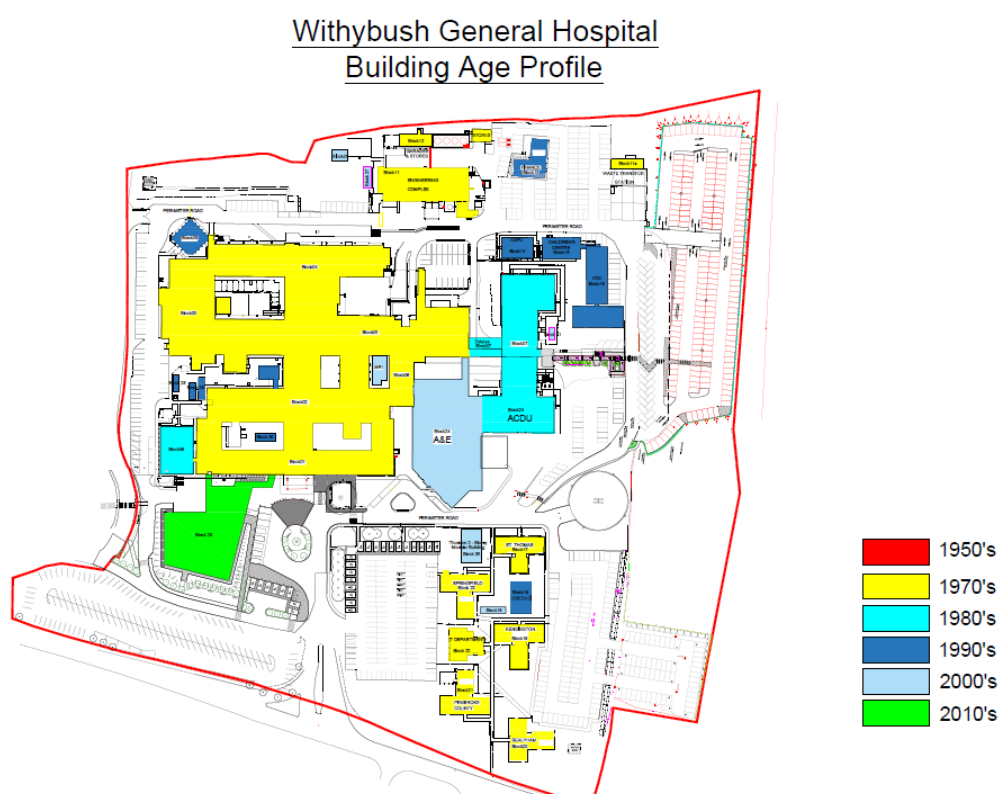


Figure 7: Withybush Hospital Site – Age Profile of the Existing Estate

There has been limited investment since the opening of the original building and most areas of the hospital now require comprehensive refurbishment. This process has commenced with refurbishment of the Pathology department and some ongoing ward refurbishments.

Table 13 identifies the Health Boards backlog maintenance liability for Withybush Hospital as at 31 March 2019.

Backlog Maintenance Costs by Risk Category per site per risk category for 2018/19				
High Risk Backlog Costs (£)	Significant Risk Backlog Costs (£)	Moderate Risk Backlog Costs (£)	Low Risk Backlog Costs (£)	Total Backlog Costs (£)
£0	£9,399,613	£2,061,638	£844,944	£12,306,195

Table 13: Withybush Hospital Site - 2018/19 Backlog Maintenance Liability

3.4.5 Bronglais General Hospital (BGH)

3.4.5.1 Site Overview

Bronglais General Hospital is located in Aberystwyth, mid-west Wales. The hospital has 138 beds and provides a comprehensive range of in-patient and outpatient facilities, mental health services together with a 24 hour Accident and Emergency department.

Built on a steeply sloping site near the National Library of Wales, BGH comprises a series of stepped linear accommodation blocks that follow the existing topography and result in a multi storey building with multiple entrances at different floor levels. The original hospital, built in the 1960's, comprised two connected blocks of accommodation: a five-storey high medical block on the lower part of the site, and a six-storey high surgical block on the upper part. The second floor (Level 2) of the medical block is the only floor that continues through into the surgical block, where it becomes the ground floor.

The site includes a number of peripheral buildings, which include domestic scale properties built in the 1900's, and purpose built residential accommodation blocks and a postgraduate centre that were built in the 1960's.

Figure 8 illustrates the age profile of the buildings on the Bronglais Hospital site.

Bronglais General Hospital Building Age Profile

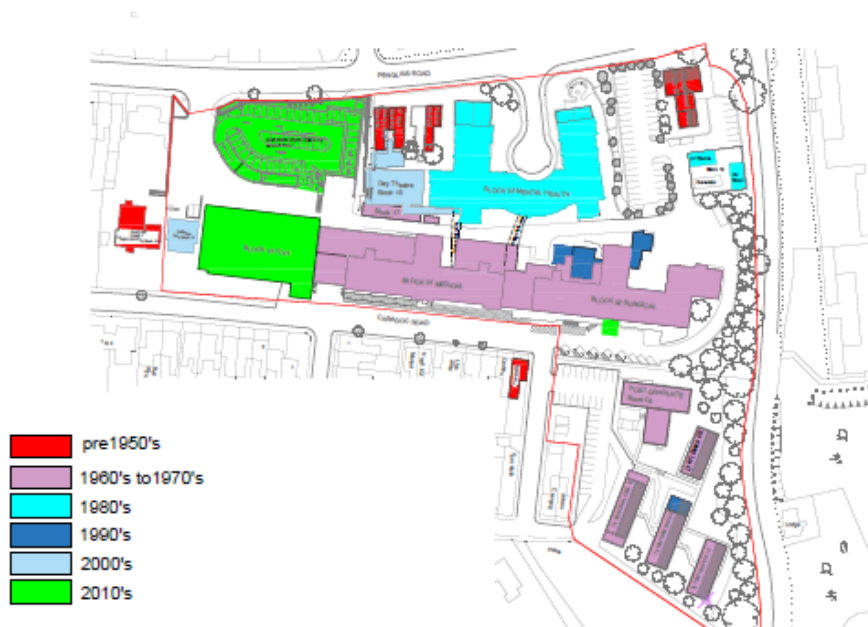


Figure 8: Bronglais Hospital Site – Age Profile of the Existing Estate

The main hospital buildings consist of three blocks, 1, 2 and 15. Blocks 1 and 2 were constructed in the 1960s with block 15 being a new Front of House scheme that opened in 2013. As part of the Front of House build several areas in the main hospital have benefited from significant investment and are in good condition. These include the accident and emergency unit, the day care surgical unit, the outpatient department, maternity services, pathology services, operating theatres and multi storey car park. The original 1960s buildings have also been partially refurbished internally.

Investment is still required in several areas to remove significant infrastructure risks. The following table identifies the backlog maintenance liability for the hospital as at 31 March 2019.

Backlog Maintenance Costs by Risk Category per risk category for 2018/19				
High Risk Backlog Costs (£)	Significant Risk Backlog Costs (£)	Moderate Risk Backlog Costs (£)	Low Risk Backlog Costs (£)	Total Backlog Costs (£)
£0	£3,823,923	£1,083,390	£1,728,461	£6,635,774

Table 14: Bronglais Hospital Site - 2018/19 Backlog Maintenance Liability

3.4.6 Prince Philip Hospital (PPH)

3.4.6.1 Site Overview

PPH is the newest acute site within the Health Board estate. The main hospital was developed predominantly in the late 1980's on the site of the former Bryn-Gwyn pit. A number of significant extensions were added in 2004 and 2008.

The hospital is an example of the Nucleus hospital design developed in the 1970's, and features low-rise cruciform blocks, with courtyards, linked by a long central corridor which allows the hospital to be easily extended. The building has a steel frame and in-situ concrete floors, facing brick works cavity external walls with flat metal cladding panels between first floor windows, and a concrete tiled pitched roof. Windows are generally aluminium framed with single glazing. The Service Centre has a deeper plan form and has a mansard appearance with large central flat roof.

There are several three storey residential blocks to the west of the main hospital buildings. Some of these have since been converted into office accommodation.

The main hospital was extended to the east in the early 2000's to create a new Elderly Mental Infirm (EMI) Unit, and a new Adult Mental Health Services Unit was built on land to the south of the main hospital soon afterwards. The EMI Unit is of similar construction and appearance to the main hospital but has a profiled metal sheet roof. The Adult Mental Health Services Unit has a steel frame, facing brick work cavity walls at ground floor level with composite insulated metal panel cladding above, and a curved profiled metal sheet roof.

A new Breast Care Unit was also developed in the early 2000's at the rear of the main entrance block and is of similar construction to the main hospital, except for two small extensions which have composite insulated metal panel cladding and flat roofs.

Figure 9 indicates the age profile of the buildings on the Prince Philip Hospital site.

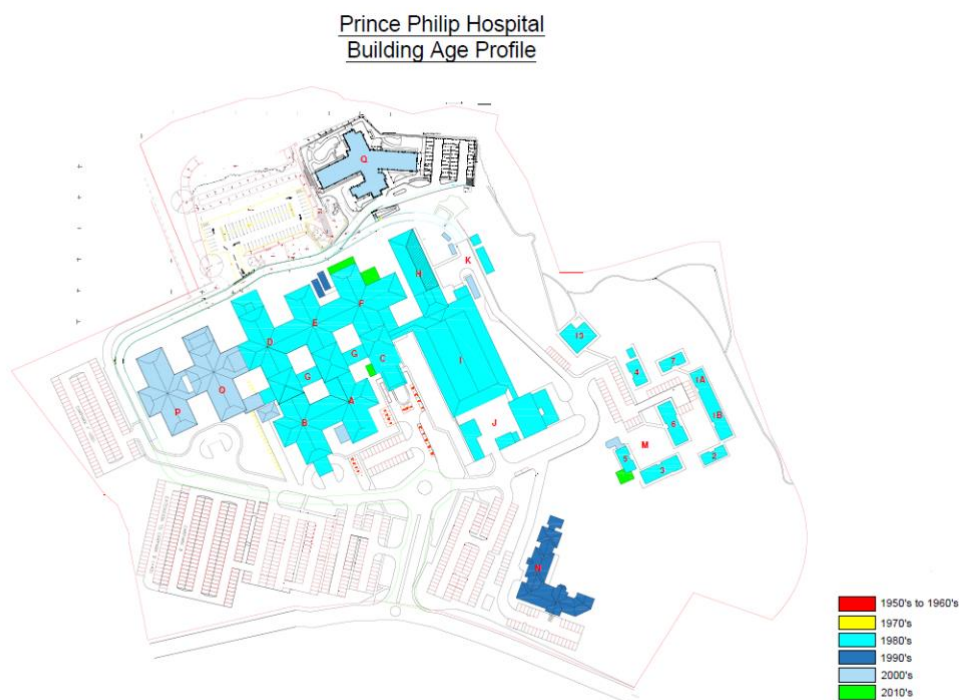


Figure 9: Prince Philip Hospital Site – Age Profile of the Existing Estate

The following table identifies the Backlog Maintenance Liability for the hospital as at 31 March 2019.

Backlog Maintenance Costs by Risk Category per site per risk category for 2018/19				
High Risk Backlog Costs (£)	Significant Risk Backlog Costs (£)	Moderate Risk Backlog Costs (£)	Low Risk Backlog Costs (£)	Total Backlog Costs (£)
£0	£4,106,026	£1,347,654	£546,141	£5,999,821

Table 15: Prince Philip Hospital Site 2018/19 Backlog Maintenance Liability

3.4.7 ICT Infrastructure

A baseline informatics report was completed in March 2018 which assessed the status of the current ICT infrastructure at each of the sites along with the technologies required to future proof and align with the clinical services strategy. The following table shows the backlog associated with the infrastructure with an indicative investment of £7.05M required.

Site	Wide Area Network	Local Area Network	Data Centre / Server Room	Server Infrastructure	Telecoms	Telecoms Rooms	Investment Required
Bronglais General Hospital							£1.68m
Glangwili General Hospital							£2.25m
Prince Philip Hospital							£1.03m
Withybush General Hospital							£2.09m

Table 16: RAG Assessment of ICT Infrastructure

3.5 Business Needs

The strategic drivers underpinning this Infrastructure Programme Business Case reflect those articulated in the Health Boards Annual Plan 2018/19.

- Supporting the Transforming Clinical Services Programme, Planning priorities and Strategic Objectives;
- Ensuring the estate is functionally suitable for purpose;
- Ensuring the estate is compliant with statutory requirements and latest estate standards and guidance where it is possible to do so;
- Ensuring acute hospital estate is prioritised for clinical purposes and non-clinical functions moved off site when appropriate;
- Informing the overarching Estates Strategy which will be developed in alignment with the UHB service plans to ensure a sound and improving financial footing.

3.6 The Case for Change

Whilst substantial funding has been allocated to capital developments on all four hospital sites over recent years. The value of the Health Boards recurring discretionary capital allocation has made it extremely difficult for the organisation to earmark sufficient level of funding to resolve high priorities relating to the following:

- Infrastructure and statutory backlog;
- Replacement of medical equipment including major imaging equipment;
- Standardisation of medical equipment across sites to enable cross site working;
- Rolling ward refurbishment programme to deal with statutory and infrastructure backlog;
- Significant upgrades of IT infrastructure.

The resulting impact has been:

- Service interruptions and risks to clinical service and business continuity;
- Health and safety concerns;
- Poor patient and staff environment resulting from overcrowded and cramped conditions in some areas along with aging building fabric and systems on most sites;
- Sub optimal patient experience and complaints;
- Poor staff retention.

Likewise engineering and infrastructure challenges to energy management mean that legislation and Welsh Government targets relating to carbon reduction and energy efficiency will be very difficult to achieve without significant investment.

Many vital, long term sustainable Energy and Carbon Management schemes for the hospital sites have not met spend to save criteria and opportunities should be taken where appropriate to incorporate these as part of the Infrastructure Project delivery plans. Examples include local heating control upgrades, double glazing, improved fabric insulation (facades, roof, walls) roof solar PV installations and efficient plant replacement.

A number of statutory compliance issues exist across the hospital sites including such things as lifts, aging nurse call systems, need for improvements to perimeter roads and pavements, legionella management including dead leg pipe work removal, emergency lighting upgrades, fire management including fire compartmentation and asbestos management and removal.

A number of challenges in relation to Residential Accommodation and the requirement to upgrade facilities exist across all sites but are most prevalent at Glangwili. These include:

- Availability and appropriate levels of accommodation;
- The existing Residential estate falls short of Welsh Governments (WG) minimum standards for Doctors Accommodation;
- Failure to obtain a third-party provider via the OJEU procurement process to invest in and manage accommodation stock;
- Significant backlog maintenance issues, together with a lack of investment to maintain quality standards;

- No long-term investment strategy to ensure that the residential stock is appropriately maintained, is fit for purpose and investment aligned to provide a sustainable model for maintaining and achieving required standards.

To inform and support this business case a detailed analysis of the status of the Health Boards estate at the four Acute Hospital sites has been undertaken by an external technical advisory team. This analysis has involved:

- Review of Health Board estates data including the existing backlog maintenance schedules;
- Site visits;
- Meetings with estates and site services staff at each hospital to identify priorities;
- High level estates appraisal to verify existing assessments;
- Review of the extensive information and previous studies undertaken by members of the WPS team.

The aim of this process was to identify the key operational risks and prioritise these for delivery (Priority Projects) and identify works required to achieve a sustainable estate (Strategic Projects).

The technical advisory team have identified a detailed portfolio of works necessary to minimise risks to business continuity associated with estates infrastructure, improve statutory compliance and where appropriate improve standards to the patient and staff environment. Where possible the technical advisory team have also identified any resultant opportunities for estates rationalisation, reconfiguration and efficiency.

The projects and process of prioritisation used in developing the options moving forward is explained in more detail in the Economic Case and Appendix 2 (Infrastructure Technical Report).

The following sections provide more detail on the specific issues and drivers for change at each of the four hospital sites.

3.6.1 Glangwili General Hospital (GGH)

The buildings constructed in the 1950/60s comprise inpatient wards, outpatient facilities and theatres configured in narrow floor plates, typically only 10.5m in depth. The existing accommodation is therefore not compliant with current space standards

Working areas in wards and other treatment areas are restricted creating potential risks with manual handling. In addition to the space allocations there are other areas where the layout does not meet current functional requirements. For example:

- There are limited sanitary provisions with very few en-suite facilities to patient bedrooms;
- The proportion of single rooms to multi bed bays does not meet current recommendations (50%);

These factors make it difficult to achieve adequate male and female separation and achieve prevention of infection standards.

- There are a number of small wards of 18 beds which do not support efficient staffing and operational management;
- There are limited support areas including treatment, nurse bases and storage spaces, resulting in lack of privacy for patients and congestion in corridors and misuse of dayrooms;
- Undersized circulation spaces create restrictions in the movement of beds;
- Shortcomings in space standards and facilities in departments, such as the Neonatal Unit, Delivery Suite, Pharmacy, Pathology and diagnostics departments, have been highlighted in recent reports by external bodies;
- Centralisation of some Health Board services to Glangwili Hospital has put further pressure on space;
- There are limited opportunities to release space to improve clinical and support accommodation and meet current spatial standards without creating additional floor space or reducing capacity.

The shape and physical constraints of the existing buildings also have a significant influence on travel distances and critical clinical adjacencies. Recent developments have relied on extending the hospital by infilling courtyards and consequently the options for creating new accommodation, in suitable locations, are reducing.

The above pressures have resulted in a range of space management pressures across the site in both clinical and non-clinical areas.

The quality of accommodation is significantly compromised in the older estate due to relative size of the clinical and support spaces compared to current guidance.

Although the basic requirements of privacy and dignity are achieved with bed bays operationally allocated to single sex use overall it is compromised due to a lack of sanitary provision. Sanitary spaces are accessed via the corridor which is generally shared by patients of both sexes, visitors and staff.

The majority of buildings on site and particularly those constructed in the 1950/60's requires comprehensive repair and refurbishment to the building fabric

The internal fabric throughout is aging and although cosmetic redecoration has been undertaken in some locations the underlying materials and systems are in poor condition.

In relation to Mechanical, Electrical and Plumbing systems many of the ward blocks date from the original build and have had only cosmetic upgrades of services at best. Infrastructure serving the ward blocks has been maintained, patched and repaired to keep services operational.

Much of the existing central plant dates back to the original build but has been well maintained and serviced over the life of the plant. Much of this however is in need of replacement.

Statutory Compliance – Fire

Fire compliance has been assessed against the current version of HTM 05-02 – Firecode – Guidance in support of functional provisions 2015 and it has been concluded that the current core clinical services blocks do not meet current standards with respect to fire safety. For example:

- Reference to drawings indicates that compartmentation is present but it is anticipated that some making good works would be required to ensure continuity;
- Fire doors are generally in poor condition, requiring replacement of seals, closers and ironmongery. Whole system replacement is needed to achieve certified performance;
- A number of staircases are accessed direct from inpatient accommodation with no lobbies;
- Staircases are undersized compared to current guidance for mattress evacuation purposes;
- Corridors are below the width recommended for escape.
- The configuration of the wards does not support progressive horizontal evacuation with insufficient space in adjacent wards for patients from other wards;
- There is evidence of waste being stored in corridors and rooms which would typically be classified as 'hazard rooms' in HTM 05-02 are not fire protected.

The extent and efficacy of fire protection to the structure is unknown and requires further detailed investigation. To this end the UHB have commissioned fire compartmentation surveys which are to be completed in March 2020.

A number of non-clinical buildings on the site are considered to be in particularly poor condition. These include:

- Residential and Administration Blocks 10 and 11 – internal and external repairs needed, poor configuration;
- Boiler House, Laundry and Estates Blocks 14,15 and 16 – internal and external fabric in very poor condition and major refurbishment is needed to ensure continuity of service;
- Residential Block 19 – external fabric repairs needed.

For further detail see Appendix 2.

A Healthier Mid and West Wales strategy which will guide the delivery of health and care through the next 20 years has defined an overview of what services will be delivered from Glangwili hospital in the future. This will result in a smaller estate than the current hospital creating the requirement for significant reconfiguration. The nature of the reconfiguration either refurbishment or new build is unknown at this stage. Notwithstanding the likelihood that the estate will be significantly redeveloped as part of the future scenario there is a requirement for the existing hospital to remain operational for the next 7-10 years.

A technical evaluation has therefore been undertaken to identify the work that is required as a minimum to ensure that the hospital estate can continue to operate with estates risks reduced to an acceptable level during the 7-10 year period. The works proposed are assessed against current risks, it should be recognised that the completion of the works will not eliminate the risks or bring the estate back to condition B.

Building – The prioritisation has rated the majority of the building fabric as high risk reflecting the fact that the core hospital buildings are over 60 years old and significantly beyond the anticipated design life.

The assessment has identified only the minimum works required to maintain the operation of the building in the short term primarily this includes the repair/ replacement of the roof coverings and localised cosmetic refurbishment to be aligned with other remedial works e.g. fire stopping, electrical works.

External Fabric – The external fabric of the building generally is aging and in poor condition resulting in poor thermal performance and limited mechanical failures including closing devices etc. Although in poor condition this is not immediately affecting the delivery of patient care and therefore no widespread works are proposed to the facade. There are a significant number of areas where the roof covering is failing with water ingress evident. This represents a significant risk to the delivery of patient care and therefore the replacement or repair of the roof covering is considered to be essential

Internal Fabric – No wide spread upgrade or refurbishment is proposed. It is anticipated that there will need to be ongoing cosmetic refurbishments to maintain the clinical facilities in a condition suitable for the provision of patient services. This includes:

- Refurbishment of individual bathrooms, WC and shower facilities.
- Light touch redecoration following services replacement or fire compartment works. This may include replacement ceiling tiles, painting, floor repairs.

Fire Protection Works - It has been identified that the fire protection within the estate is incomplete. To ensure that the appropriate fire safety protections are in place a comprehensive programme of

reinstatement will be required throughout the existing estate. The scope of these works are yet to be defined but based are expected to include:

- Installation of fire dampers;
- Reinstatement of fire stopping;
- Repairs or replacement of fire doors.

Mechanical and Electrical Services - Priority work elements have been assessed with a view to providing a 'Do Minimum' intervention to reduce risk to site operations and extend the life of the Glangwili Hospitals for the next 7- 10 years. The measures have been assessed in conjunction with the Estates teams for the site. The 'Do minimum' measures are proposed on the basis of maintaining the status quo in terms of service, capacity and compliance but extending life and reducing risk impact in terms of day to day hospital operations and safety over the 7-10 year period. Consequences and Likelihood of Failure scoring has been reassessed on the basis of the ' Do minimum ' measures proposed for each element with an overall scoring of 18 (significant and above) to demonstrate how the measures manage the estates risk downwards to an acceptable level.

'Do minimum' measures typically include:

- Plant refurbished in lieu of full upgrade and replacement;
- Replacement of active components only in system networks;
- Replacement of components which will become obsolete with required life period;
- Reducing extent of works to essential elements only;
- Allowance for replacement upon failure only;
- No works being undertaken where systems can be kept operational with planned and reactive maintenance;
- Elements to reduce excessive energy loss.

All proposed priority essential fire and safety works are retained.

A detailed programme for these works will need to be developed as part of the next business case application. To enable a cashflow projection to be developed it has been assumed that all of the high priority works should be completed within a three year period. It is anticipated that the hospital will remain operational for between 7-10 years in the current form, therefore works completed beyond three years would provide diminishing benefit for the expenditure.

A three year period is considered to balance the requirement for the works to be completed as soon as possible whilst maintaining clinical operations and minimising disruption.

It is anticipated that work will be prioritised according to risk but also that work would be organised to minimise disruption by aligning works in a particular area or to maximise value by aligning works of a similar type.

Consequential Improvements – The works proposed are considered short term or temporary in nature, on this basis it assumed that no consequential improvements would be undertaken.

Decant Provision – It is recognised that some of the proposed works would require construction activity to be undertaken within clinical areas creating temporary disruption. As the work is limited in scope it is not proposed to provide dedicated decant accommodation, it is assumed that any relocations would be temporary and short term in nature.

A full list of high priority projects is included in in Appendix 2.

3.6.2 Withybush General Hospital (WGH)

There are a number of ancillary buildings on the Withybush site many of these are in poor condition. In particular, there are a number of modular buildings that have reached the end of their life and urgently require replacement or demolition.

The main hospital buildings are poorly insulated and require comprehensive repair and refurbishment. The required works include upgrading and repairs to some windows, elements of the roof and external façade to prevent water ingress. The majority of the original windows have been replaced although a small number remain. These are single glazed, in very poor condition, contain asbestos panels and should be replaced.

The majority of the internal fabric and finishes date from the original construction and are therefore nearly 40 years old. Some cosmetic refurbishment and more comprehensive refurbishment has taken place in specific locations such as the delivery unit. Comprehensive refurbishment of all areas is now required.

The existing wards were designed with multi bed bays to accommodate 6 beds per bay. These bays are now used as 4 bed bays with the result that the space allocated to each bed is close to current standards. The overall configuration of the wards is generally effective however the provision of sanitary spaces is below what would be expected for modern healthcare standards. Those patient areas that have not had any investment since opening are in a poor state of repair. Two wards are currently vacant.

Infrastructure serving the ward blocks has been maintained and repaired but date from the original build.

Much of the existing central plant dates back to the original build but has been well maintained and serviced over the life of the plant, however much of this is in need of replacement.

The Healthier Mid and West Wales strategy to guide the delivery of health and care through the next 20 years has defined an overview of what services will be delivered from Worthybush hospital in the future. This will result in a smaller estate than the current hospital creating the requirement for significant reconfiguration. The nature of the reconfiguration either refurbishment or new build is unknown at this stage. Notwithstanding the likelihood that the estate will be significantly redeveloped as part of the future scenario there is a requirement for the existing hospital to remain fully operational for the next 7-10 years.

Following assessment, it has been concluded that the following work is required as a minimum to ensure that the hospital estate can continue to operate safely with minimal disruption during this period.

Building – It has been identified that a significant proportion of the building fabric is in poor condition leading to a number of risks and operational concerns, these include water ingress, poor patient comfort due to draughts and a poor interior environment.

External Fabric – The external fabric is formed by Pre Cast concrete cladding panels. The panels have been affected by weathering and this has resulted in rusting to the reinforcement leading to spalling of the concrete covering. The spalling has led to localised instances where lumps of concrete have fallen from the building with the risk of injury to patients, visitors and staff. There is evidence of leaking from the main hospital roof throughout. Some remedial work has been undertaken with the removal of velux rooflights and work to the valleys. It is proposed that further works are still required to minimise the risk of water ingress.

A further detailed technical study is required to establish the reason for the leaks but it is anticipated that works required would include the provision of larger gutters, larger GRP valley linings and removal of any remaining rooflights.

Internal Fabric – Although many of the existing departments are in poor cosmetic condition no wide spread upgrade or refurbishment is proposed as the majority of areas are still operational.

It is anticipated that there will need to be minor cosmetic refurbishments to maintain the clinical facilities in a condition suitable for the provision of patient services. This would include:

- Refurbishment of individual bathrooms, WC and shower facilities.
- Light touch redecoration following services replacement and fire compartment works. This may include replacement ceiling tiles, painting, floor repairs.
- Ongoing cosmetic refurbishment due to wear and tear.

Fire Protection Works and Fire Enforcement Notice – Following a visit from Mid and West Wales Fire and Rescue Authority (MWWFRA) in July 2019 the Health Board has been served with an enforcement notice for failure to comply with provisions of the Regulatory Reform (Fire Safety) Order 2005 because people were unsafe in case of fire. Further enforcement notices have also been received in relation to the residences and mental health ward.

In order to maintain the safety of staff, patients and visitors to the WGH site, the UHB must comply with the MWWFRA fire enforcement notices. Failure to adhere could result in prosecution and potential an enforced closure of buildings.

Outstanding items for action relate to compartmentation, fire resisting doors and fire damper systems. These items require substantial further investigation, planning of work and financial investment to remedy. The works required to reinstate fire protection and compartmentation measures will have a significant impact on the wider hospital with consequential works required to the building fabric including replacement ceilings, redecoration and door replacement. The works are detailed in a separate report within Appendix 2.

A separate Programme Business Case which details the specific requirements and the proposed approach to resolving the outstanding actions has been developed for submission to Welsh Government to secure the required capital funding.

Mechanical and Electrical Services – Priority work elements have been assessed with a view to providing a ‘Do Minimum’ intervention to reduce risk to site operations and extend the life of Withybush Hospital for the next 7- 10 years. The measures have been assessed in conjunction with the Estates teams for the site. The ‘Do minimum’ measures are proposed on the basis of maintaining the status quo in terms of service, capacity and compliance but extending life and reducing risk impact in terms of day to day hospital operations and safety over the 7-10 year period. Consequences and Likelihood of Failure scoring has been reassessed on the basis of the ‘ Do minimum ‘ measures proposed for each element with an overall scoring of 18 (significant and above) to demonstrate how the measures manage the estates risk downwards to an acceptable level.

Detailed assumptions and re assessed scoring are provided on the back up sheet for each of the measures where reduced scope is proposed

‘Do minimum’ measures typically include:

- Plant refurbished in lieu of full upgrade and replacement;
- Replacement of active components only in system networks;
- Replacement of components which will become obsolete with required life period;
- Reducing extent of works to essential elements only;

- Allowance for replacement upon failure only;
- No works being undertaken where systems can be kept operational with planned and reactive maintenance;
- Elements to reduce excessive energy loss.

All proposed priority essential health and safety works are retained.

A detailed programme for these works will need to be developed as part of the full business case application. To enable a cashflow projection to be developed it has been assumed that all of the high priority works should be completed within a three year period. It is anticipated that the hospital will remain operational for between 7-10 years in the current form, therefore works completed beyond three years would provide diminishing benefit for the expenditure.

A three year period is considered to balance the requirement for the works to be completed as soon as possible whilst maintaining clinical operations and minimising disruption.

It is anticipated that work will be prioritised according to risk but also that work would be organised to minimise disruption by aligning works in a particular area or to maximise value by aligning works of a similar type.

Consequential Improvements – The works proposed are considered short term or temporary in nature, on this basis it assumed that no consequential improvements would be undertaken.

Decant Provision – It is recognised that some of the proposed works would require construction activity to be undertaken within clinical areas creating temporary disruption. As the work is limited in scope it is not proposed to provide dedicated decant accommodation, it is assumed that any relocations would be temporary and short term in nature.

A full list of high priority projects is included in Appendix 2.

3.6.3 Bronglais General Hospital (BGH)

The majority of the clinical space in the hospital was designed and constructed in the 1960s. The accommodation is designed to the standards of the time and therefore the rooms are undersized compared to current standards with limited sanitary and support facilities. Offices and nurse base facilities are also often inadequate and do not provide good supervision of dependant patients.

Many of the individual wards are small, typically 11 or 12 beds, resulting in some clinical and support services inefficiencies.

The physical constraints of the existing site, structure and fabric have a significant influence on the spatial standards and functional relationships. The long, narrow, linear building form, many level

changes, and lack of connecting floors, make it difficult to achieve efficient departmental layouts, and co-locate linked services. Due to the form of the building principal circulation routes pass through the middle of some departments, causing disruption, affecting patient privacy, and security.

Departments such as diagnostic imaging have limited space to modernise and provide new facilities such as MRI Scanners. Unfortunately, the constrained site restricts new development, and there are limited opportunities to release space to improve clinical and support accommodation and meet current spatial standards.

There is limited parking available at the Hospital, and despite the recent construction of a new park and ride facility for staff, additional parking is still required.

The facade to the main ward blocks includes large areas of curtain walling. This is poorly insulated and does not provide any solar protection. As a result, patient areas are subject to cold draughts and overheating. The design and decor of the patient areas is dated although in reasonable decorative condition.

Limited works have been undertaken on the external building fabric, there is evidence of water ingress in a number of locations and the thermal performance of the facade is poor. There is evidence of mechanical failure of opening mechanisms on many windows and windows provide no solar shading and are poorly insulated.

The infrastructure serving the wards has been maintained and repaired but date from the original build.

Domestic hot water services have been modified locally to service refurbished wards and ward modification to suit the required sanitary ware layouts. Original main distribution pipework remains with some evidence of local repairs. The domestic water services require wholesale upgrade and replacement throughout the ward blocks.

Vertical drainage stacks and horizontal runs within the ward blocks remain from the original installation with modification and repair to suit specific issues or cosmetic refurbishments. Blockages remain an issue within the existing pipework installation and long term replacement throughout the ward blocks will be required

Many existing wards have the original heat emitters and single pipe distribution. Local modifications and repairs have been undertaken over the life of the installation to suit specific needs and modifications.

The pipework has been modified within the refurbished areas, however this does not include the main distribution risers which remain as the existing installation.

General ward areas are naturally ventilated and needs to be considered with any improvements to the façade.

Where required lighting has been generally replaced throughout the wards as part of the energy performance measures. The wider electrical infrastructure remains as per the original installation in areas which have not been fully refurbished and need renewal and upgrading to current standards

Small power installations remain generally as the original installations with cosmetic upgrades to face plates and outlets. Primary distribution and electrical boards remain as the original installation and require renewal/upgrading to current standards.

Much of the existing central plant dates back to the original build but has been well maintained and serviced over the life of the plant. The new build block has been provided with new dedicated plant and integrated with the existing systems where appropriate.

The energy centre houses low temperature hot water boilers. A new boiler plant has been installed to serve the new build block.

Pipework and radiators appear to be in good overall condition for their age as many areas date back to the original installation. However, non-refurbished areas will require pipework and radiator replacement

Original heat and water distribution are running through accessible floor void ducts in original main blocks. The refurbishment works have relocated these pipes through the local wards but risers and main distribution remain as original installations.

There is limited Zone Control for energy efficiency

Steam / DHW plate heat exchanger serving the Surgical Block is in poor condition and is currently operated manually due to a controls failure due to high ambient temperature within calorifier room.

The remainder of the site cooling is served by a series of direct expansion refrigeration units serving indoor fan coil units of air plant directly. They vary in size, age and condition.

Condensing unit serving ITU AHU and Audiology Booth are due for replacement and are supplied with R22 gas which is no longer available. Mortuary and Ultrasound Room condensing units are in poor condition and need replacement.

Chillers serving OPD, Medical Records and Day Theatre are nearing end of life and need replacing.

Above Ground Foul Drainage within the hospital is an issue and drain blockages are common. Vertical drainage stacks and horizontal runs require upgrade and replacement.

The hospital is served by a series of air handling units located strategically throughout the site. The condition and age of the plant varies. Some areas of the hospital such as Medical Block-Kitchens/FM areas, Surgical Block, Cardiac Ward, ITU, Endoscopy, HSDU and X Ray are served by older plant that will require upgrade and replacement.

The medical gas plant appears to be in good overall condition. However, there are issues around the resilience and compliance to current standards that would need to be addressed.

The nurse call system is from the original installation with local ward upgrades provided as part of minor fit out and remodelling works. The entire nurse call system would require upgrading and modernisation to comply with current expected standards and requirements.

There are a number of staircases without lobbies and many aspects of the fire protection systems are at the end of life. The extent and efficacy of fire protection to the structure is unknown and requires further detailed investigation.

Following assessment, it has been concluded that the following work is required to ensure that the hospital estate can continue to operate safely with minimal disruption.

High Priority Projects

The required works will have to be undertaken whilst maintaining the operation of the hospital, this will result in a phased approach with the programme carefully considered to minimise disruption to disruption to patients, staff and visitors.

Building - Notwithstanding the significant investment made at BGH Hospital in the last ten years there remains work to be completed including remedial works to the external envelope and the completion of the internal refurbishment programme. The work required to address these risks is categorised as two key project types;

- The replacement or refurbishment of the building envelope;
- The refurbishment of the internal areas.

External Fabric - Roof: The roof to block 2 has been replaced recently. The roof to block 1 and some of the low level areas now require replacement.

External façade - Remedial works are required to the external facade as described in the Physical Condition section in Appendix 2.

Internal Fabric - The internal areas that have not been fully refurbished as part of the ongoing improvement works now require major refurbishment. Due to the age of the fabric and services all

elements have been identified as being in need of replacement, the works are therefore defined as scope 3.

Mechanical and Electrical Services - The high priority mechanical and electrical services projects are described in the table included within Appendix 2.

Consequential Improvements - The extensive nature of the proposed refurbishment works will provide the opportunity for some amendments to the building layout. This could potentially address some of the operational issues highlighted as part of the functional suitability and health and safety assessment. It is noted however that the opportunities are limited due to the configuration of the existing footprint. In particular there is very limited potential for major reconfiguration to introduce additional single rooms, larger bed bays or ensuite sanitary facilities. There is the potential to increase door widths, provide additional shared sanitary facilities, provide dedicated treatment rooms and provide additional clinical washing facilities.

A detailed assessment and benefits analysis will be required during the development of specific proposals for each department.

Decant Provision - The area by area refurbishment will require the provision of decant space to enable clinical services to be maintained throughout the programme. Due to the restricted nature of the site it is not considered that space is available on the site for a decant ward. It has also been identified that due to capacity pressures no potential exists within the existing footprint to reduce the available services. Consideration may be required to provide the clinical services from an alternative location during construction works.

3.6.4 Prince Philip Hospital (PPH)

The hospital was designed and constructed in the 1980s and opened in 1990. The building is designed using the Nucleus concept first established in 1975 and the design meets the standards of the time. The nucleus ward layout however does not support 50% single rooms or provide adequate ensuite patient welfare facilities to comply with modern healthcare standards. Compliance with privacy and dignity standards in relation to single gender accommodation is not impossible but can sometimes be difficult to achieve due to the lack of sanitary facilities.

Working areas in wards and other treatment areas are restricted creating potential risks with manual handling.

Overall the building fabric is operationally sound, with minor repairs required but specific elements of the building, such as flat roofs are reaching the end of their serviceable life.

The internal fabric and finishes are generally in fair condition but showing signs of fatigue, with localised areas of impact damage. There are however areas of finishes including floors that are nearing the end of their useful life and should be replaced. This will require further investigation as certain areas of the flooring appear to have problems with the screed. Many internal areas, including the wards, haven't been refurbished since the 1980's and look 'tired' and need to be updated.

Due to the age of the estate a large proportion of the site engineering infrastructure assets are either approaching or have exceeded their intended life span.

Capital spend on this site since 2009/10 totals £15.4 million (excluding equipment and IM&T). In recent years there has been an evident increase in site activity and consequent utilisation of accommodation across the site for example: the closure of a Mynydd Mawr Community Hospital resulted in the relocation of a significant number of non-clinical staff into on-site residential accommodation. These changes have contributed to a range of current site constraints and pressures as follows:

- There are only small areas of development opportunities on site to support future expansion opportunities;
- There are current significant pressures on car parking on site. Options to increase the number of spaces has been developed but not approved.

Generally, the buildings are in a good state of repair although with the building approaching 30 years old there are some areas that require replacement or would benefit from updating.

The external building fabric appears to be in good condition with the exception of small localised areas. Specifically, there are a number of areas of metal roofing and rainwater goods that are showing signs of corrosion. Further investigation is required to assess if these materials require replacement or recoating. The Metal Cladding and Roofing Manufacturers Association advises a lifespan of 20-25 years for a typical metal roof.

Infrastructure serving the ward blocks has been maintained and repaired but date from the original build.

Domestic hot water services have been modified locally to service refurbished wards and ward modification to suit the required sanitary ware layouts. Main distribution pipework remains with some evidence of local repairs evident. The domestic water services would require wholesale upgrade and replacement throughout the ward blocks.

Vertical drainage stacks and horizontal runs within the ward blocks remain from the original installation with modification and repair over the years to suit specific issues or cosmetic

refurbishments. Blockages remain an issue within the existing pipework installation and long term replacement throughout the ward blocks would be required

Medical Gases within the wards have been well maintained but will require local renewal and upgrade to comply with current WHTM standards for resilience of supply.

Many existing wards have the original heat emitters and distribution pipework. Local modifications and repairs have been undertaken over the life of the installation to suit specific needs and modifications.

General ward areas are naturally ventilated and improvements to the façade will trap heat with the spaces and the window openings will need to be fully considered to maximise the ventilation and hence cooling effects within the hotter summer periods.

The majority of the templates are served by a dual duct system and use mixing boxes which have failed and require replacement. The system is inefficient in energy use.

Where necessary lighting has been replaced throughout the wards as part of the energy performance measures. These upgrades have identified local wiring issues during testing, however, remediation of these issues is only on a local level and where practical existing wiring has been retained and re-used. The wider electrical infrastructure remains as per the original installation and should be renewed and upgraded to current standards.

Small power installations remain generally as the original installations with cosmetic upgrades to face plates and outlets. Systems are tested and local wiring upgrades have been undertaken over the life of the installation but primary distribution and electrical boards remain as the original installation and should be renewed and upgraded to current standards.

The nurse call system is from the original installation with local ward upgrades provided as part of minor fit out and remodelling works. The entire nurse call system would require upgrading and modernisation to comply with current expected standards and requirements.

The hospital lifts are original and are approaching the end of their serviceable life.

Central plant age and condition will warrant replacement Boilers, Pumps, AHU's.

Heat supplied to the hospital is generated using a mix of sources. Combined heat and power (CHP), steam raising boilers and low temperature hot water boilers which are all natural gas fired. Dual fuel burners fitted to two of the boilers provide resilience should the primary gas main fail. The heat capacity available from the existing plant within the energy centre for new developments at Prince Philip Hospital is limited. Any future strategic development of the site will have an impact on the

existing boiler capacity and site wide infrastructure. The current arrangement does not allow for any significant future development without major increase in boiler capacity and pipework modifications.

Various DX split systems have been installed in specific areas to meet the requirements of specific needs. These installations have been undertaken of many years and are of various size and condition. Most systems will require replacement over the next few years.

Vertical drainage stacks and horizontal runs require upgrade and replacement as most pipework dates back to the original installation. Blockage remain an issue within the existing pipework installation and long-term replacement throughout would be required.

Much of the Ventilation plant is aged and in need of replacement. Some systems have been replaced within the last 10 years, however, distribution ductwork was retained. AHUs to the main block are original and in very poor condition.

The metered water supply distributes to provide mains water and a cold water feed to the cold water storage tanks located at high level above the energy centre.

The tank cold water feed distributes throughout the hospital with pressure limited by the height of the tanks. Although well maintained the cold water storage tanks are awkward to access. Practical low level replacement tanks together with a boosted supply could be considered if there is sufficient space available.

Electrical Mains compliance with WHTM 06 for resilience and single generator capacity requires addressing. The mains LV panel is original and whilst circuit breakers have been replaced, it has limited spare ways for future development.

Sub mains distribution remains from the original installation and local distribution boards and sub mains are aged and require upgrade and replacement

The nurse call system is from the original installation with local ward upgrades provided as part of minor fit out and remodelling works. The entire nurse call system would require upgrading and modernisation to comply with current expected standards and requirements.

In relation to Fire the configuration of existing buildings does not comply with modern guidance for example:

- A number of staircases are accessed direct from inpatient accommodation with no lobbies;
- Staircases are undersized compared to current guidance for mattress evacuation purposes;
- Corridors are below the width recommended for escape.

The configuration of the wards does not support progressive horizontal evacuation with insufficient space in adjacent wards for patients from other wards. The extent and efficacy of fire protection to the structure is unknown and requires further detailed investigation.

Following assessment, it has been concluded that the following work is required to ensure that the hospital estate can continue to operate safely with minimal disruption.

High Priority Projects

The required works will have to be undertaken whilst maintaining the operation of the hospital, this will result in a phased approach with the programme carefully considered to minimise disruption to disruption to patients, staff and visitors.

Building - Notwithstanding the significant investment made at PPH Hospital in the last ten years there remains work to be completed including remedial works to the external envelope and the completion of the internal refurbishment programme. The work required to address these risks is categorised as two key project types;

- The replacement or refurbishment of the building envelope;
- The refurbishment of the internal areas.

External Fabric - Works to the external fabric are not considered high priority but there are a number of remedial works to reduce the risk of further degradation. These include:

- Replacement rainwater goods with larger sized system to eliminate overspill;
- Re-coating of the metal cladding and roofing;
- Replacement PPC aluminium windows with a double glazed system.

Internal Fabric - The internal areas are in reasonable condition but in need of modernisation. The key driver will be the requirement to replace a number of department wide M & E services e.g. ventilation distribution. This work will be disruptive and therefore will need to be undertaken in parallel with general refurbishment works. The work will require the removal of the ceilings in some areas and possibly the creation of new BWIC holes etc. For this reason the assumption is that the works required will be scope 2.

Mechanical and Electrical Services - The high priority mechanical and electrical services projects are described in the table included within Appendix 2.

Consequential Improvements - The proposed refurbishment strategy, scope 2 would replace all internal finishes but not reconfigure walls and layouts. The current layouts do not meet current standards but it is not possible to achieve beneficial improvements to space standards, sanitary

provision etc. without a significant loss of bed capacity. The existing footprint is also very restrictive, the space currently occupied by 28 beds is half the current recommendation for 24 beds.

A detailed assessment and benefits analysis will be required during the development of specific proposals for each department.

Decant Provision - The area by area refurbishment will require the provision of decant space to enable clinical services to be maintained throughout the programme. The hospital manager has advised that there is no spare capacity within the existing estate with dayrooms and treatment rooms used to admit patients during peak times. A suitable decant facility will therefore need to be provided, it is assumed that this will be equivalent to a temporary 24 bed ward and independent Theatre with associated accommodation

3.7 Potential Scope and Service Requirements

The scope of the programme business case is to identify the programme of works required so that all buildings meet condition B as defined by the Estate Code (Sound, operationally safe and exhibits only minor deterioration).

In identifying the potential projects to be included in this PBC, the technical advisory team with the Health Board have organised the projects into three main categories which consider scope at three levels these include:

- The minimum scope required to address priority backlog maintenance issues;
- The intermediate scope required to address priority backlog maintenance issues combined with limited benefits to the patient environment;
- The comprehensive (maximum) scope required to address all backlog maintenance issues and comprehensive upgrades to the patient environment to create a long-term sustainable estate.

3.8 Dependencies, Constraints and Opportunities

3.8.1 Dependencies

This PBC will support the major infrastructure plan and ward refurbishment programme. However, there are also other ongoing or planned key projects which will need to be considered alongside those works identified in this business case to ensure that where possible programming is integrated to avoid unnecessary disruption and or duplication of work. Specific projects include:

- Analysis of accommodation in Carmarthenshire with a view to relocating non-clinical accommodation on the GGH site to alleviate space pressures and provide capacity for future developments;
- Women and Children's Phase II;
- Bronglais District General Hospital – Front of House scheme, recently completed;
- Ward 3 and 8 minor refurbishments and 10 and 9 refurbishments at Withybush Hospital;
- MRI Unit at Bronglais Hospital;
- IM&T backlog and developments, Health Board wide.

HDUHB has an ongoing programme of maintenance and minor capital investment work through their discretionary programme which will also be reviewed and considered alongside this PBC.

This programme will also pay cognisance to the evolving work of the Health Board's Healthier Mid and West Wales Strategy and the Health Board will review infrastructure plans with the Welsh Government as necessary over the life of the programme to ensure the necessary alignment.

3.8.2 Constraints

There are a number of constraints to the delivery of the programme requiring management:

- Complexity of the programme and the capacity required to deliver it in terms of technical leadership, clinical interface and "project support";
- Challenges presented in coordinating this programme with the clinical service reconfiguration planned with A Healthier Mid and West Wales strategy;
- Availability of capital;
- A need to minimise disruption to services during the building phases on the existing sites;
- A need to upgrade and replace infrastructure services within anticipated levels of resources, in a timely manner and without the need for significant revenue investment.

4.0 Economic Case

The purpose of the economic case is to identify the preferred programme that optimises value for money. Having determined the strategic context for the investment proposal and established a robust case for change, this part of the economic case:

- Identifies critical success factors;
- Identifies and assesses the programme options (or trade-offs) for delivering service needs;
- Identifies a preferred way forward based on the preferred programme.

4.1 Critical Success Factors

The four critical success factors of Achievability, Affordability, Strategic Fit / Business Needs and Value for Money have been agreed. These are supported by a number of investment drivers which have been determined to reflect the business needs and support the option appraisal process.

Generic Critical Success Factor	Broad Description	Proposal Specific Critical Success Factors
Strategic fit and business needs	How well the option meets the agreed investment objectives, related business needs and service requirements, and integrates with other strategies, programmes and projects.	<p>Reduces the risk profile on Estate infrastructure</p> <p>Extends the operating life of the hospitals</p> <p>Supports future service planning by ensuring sufficient infrastructure of systems resilience and capacity for future service modelling</p> <p>Reduction in essential backlog maintenance requirements</p> <p>The solution delivers appropriate levels of patient safety and comfort</p>
Potential value for money	How well the option optimises value for money (i.e. the optimal mix of potential benefits, costs and risks).	The identified solution is cost effective and offers value for money for the Health Board and the individual site
Potential achievability	How well the option is likely to be delivered given the organisations ability to respond to the changes required and matches the level of available skills required for successful delivery.	<p>The organisation can support the level of service interruption</p> <p>The organisation has the capacity to successfully manage the delivery programme</p>
Potential affordability	How well the option can be met from likely available funding and matches other funding constraints.	Likelihood of proposals being acceptable to Welsh Government

Generic Critical Success Factor	Broad Description	Proposal Specific Critical Success Factors
Supplier capacity and capability	How well the option matches the ability of potential suppliers to deliver the required services and is likely to result in a sustainable arrangement that optimises value for money.	Potential for projects to be packaged in a way which is both manageable and attractive to the market

Table 17: Critical Success Factors and Investment Drivers

4.2 Project Identification

The technical analysis of the existing estate has assessed the physical condition of the estate and compliance with mandatory fire safety requirements and statutory safety legislation. This has enabled condition rankings and the potential to bring all assets to a minimum condition 'B' to be assessed. It should be noted however that condition B is not achievable in some of the existing stock due to the constraints of the existing buildings and infrastructure.

Following on from this analysis the technical team were able to identify the work and projects needed to achieve the required estates condition. These projects have been categorized into three distinct areas as follows:

- Service infrastructure projects e.g. lifts, chillers etc.;
- Site and building infrastructure projects e.g. roof replacement, façade refurbishment;
- Phased refurbishment – zone by zone refurbishment of clinical and support areas e.g. wards, non-clinical and ancillary buildings.

A detailed list of projects on a site by site basis is included as part of the Infrastructure Technical Report (Appendix 2).

4.3 Prioritisation of Infrastructure Works

The approach taken to prioritisation from a technical perspective is that the repairs to the main infrastructure and building fabric components should take place ahead of any internal refurbishments e.g. roofs, site plant and lifts to ensure building and site integrity ahead of internal works.

In line with Welsh Health Estates recommendations (NHS risk-based approach for managing backlog maintenance) all elements have been prioritised utilising the standard methodology of assigning consequence and likelihood scores. Consideration has also been given to potential compliance or performance aspects including legislation; health and safety, capacity issues and future proofing.

Consideration was also given to prioritisation of individual building blocks and systems within the blocks.

SCORE RANGE		RISK RANKING	
1-6		LOW	
7-10		MODERATE	
11-16		SIGNIFICANT	
17-25		HIGH	

Rating		PROBABILITY OF FAILURE				
Failure descriptors		1	2	3	4	5
		RARE	UNLIKELY	POSSIBLE	LIKELY	CERTAIN
		None or minimal remedial action required and/or new/recent upgrade. Estimated time to failure may be circa > 10 yrs	Normal wear and tear. Sound, operationally safe and exhibits only minor deterioration. Estimated time to failure may be circa < 10 yrs	Reasonable physical damage/deterioration. Reassignment of life may be acceptable based on technical tests or residual robustness. Estimated time to failure may be circa < five yrs	Major physical damage/deterioration. Failure apparent/assessed as imminent or unacceptable built environment. Not appropriate to reassign life. Estimated time to failure may be circa < one yr	Failure occurred. Unacceptable built environment. Not appropriate to reassign life. Estimated time to failure may be circa < six months

POTENTIAL CONSEQUENCES	SEVERITY		Health & safety	Environment	Business	Operational/ building/ engineering element	Fire/statutory	Fire/statutory	Fire/statutory	Fire/statutory	Fire/statutory
	Rating	Descriptor									
	1	INSIGNIFICANT	No injury/breach of guidance/procedures	No or minimal impact breach of guidance/procedures	Unlikely cause of complaint. Litigation remote. Minimal reputation loss/limited awareness within organisation.	Minimal or no impact. Minimal or no disruption.	Complies with mandatory fire safety requirements and statutory safety legislation.	Complies with mandatory fire safety requirements and statutory safety legislation with minor deviations of a non-serious nature	Known contravention of one or more requirements – which falls short of "B".	Dangerously below "B"	Dangerously below "B"
	2	MINOR	Minor injury/ill health (first aid or self-treatment). Breach of legal requirement.	Breach of legal requirement.	Possible complaint. Litigation unlikely. Loss of reputation (widespread internal awareness).	Localised impact. Disruption to normal services.	2	4	6	8	10
	3	MODERATE	Moderate injury/ill health statutory obligations. Improvement notice issued.	Single breach of legal requirement. Improvement notice issued.	Possible complaint. Possible litigation. Loss of reputation. National paper reporting.	Moderate impact. Moderate disruption to normal services.	3	6	9	12	15
	4	MAJOR	Major/significant injury or long-term incapacity/disability. Prohibition notice issued.	Multiple breach of legal requirement. Prohibition notice issued.	Litigation expected. Loss of reputation. National reporting.	Major/significant impact. Severe disruption to normal services.	4	8	12	16	20
	5	CATASTROPHIC	Fatality and/or permanent incapacity/disability. Prosecution.	Multiple breach of legal requirement. Prosecution.	Litigation certain. National adverse publicity.	Critical impact. Service closure.	5	10	15	20	25

Figure 10: Risk Prioritisation Matrix

This initial technical assessment of both buildings and site MEP systems was validated with estates and operational stakeholders at workshops during May 2018 and risk assessment scorings adjusted as necessary. To further support overall programme prioritisation, ward environment audits and were also reviewed in conjunction with service managers and clinical staff.

The detail of this analysis is included in the Infrastructure Technical Report in Appendix 2.

As a result of the availability of capital funding and time required to deliver on a phased basis it is estimated it would take 15 to 20 years to complete all projects identified dependant on the options taken forward. Consequently, the technical team with the Health Board have prioritised these on the basis of those projects which present the most significant risk and those which can be delivered in the first five to six years 2020/21 to 2025/26, that is the time span that the operational teams can be expected to tolerate sustained capital works.

The estates analysis at each site has identified a list of issues that need to be addressed. Consideration has been given to the works that are required to address the issues identified. The extent of work required varies across the sites but in all projects are identified in two categories:

- Category 1: stand-alone infrastructure projects. These are projects that can be completed independently although it may be beneficial to coordinate with other projects. These include: Services Infrastructure e.g. replacement chillers, lift replacement; Building and site infrastructure e.g. roof replacement, facade refurbishment.
- Category 2: Phased refurbishment to include wards and other areas both clinical and non-clinical. These are projects that will require the area to be vacated to enable refurbishment to take place. Although the level of refurbishment in each area could vary to enable the work to be undertaken in a cost-efficient manner whilst minimising disruption all works in the area should be undertaken in a single operation, this would include service and building works.

The scope of refurbishment for each area will be defined as part of each detailed project definition and will be impacted by the availability of capital. Notwithstanding, the above a preferred scope and approach has been identified for each zone and this has been used to inform the programme and cost plan. An overview of the scope definitions has been provided as part of the Infrastructure Technical Report in Appendix 2. In summary these are as follows:

Scope Definitions			
	Description	Specification	Residual Risks
1	Do minimum Significant risk backlog maintenance completed. Cosmetic Refurbishment	All significant backlog maintenance works undertaken. Cosmetic refurbishment to include: Ceiling repair as required Flooring replacement to include making good of screeds Redecoration throughout No MEP refurbishment	Medium and low risk backlog maintenance works are not completed Functional and statutory compliance remains as original Although the appearance would be improved the underlying fabric remains in current condition Significant risk of 'scope creep' as services requiring replacement are difficult to access. Significant risks within the department are identified as domestic pipework, nurse call, heating and ventilation. All are difficult to replace without major disruption.
2	Significant, Medium and Low risk backlog maintenance completed. Internal refurbishment	All identified backlog maintenance works undertaken. Internal refurbishment to include: No internal reconfiguration, making good only. Replacement door sets and joinery, Replacement ceilings, Replacement fixtures and fittings, Replacement sanitary ware and IPS, Replacement flooring to include making good of screeds	Functional and statutory compliance remains as original The removal of ceilings will improve access for replacement of services but as not all systems will be replaced risks remain. This could lead to 'scope creep' during construction. Any new services will have to pass through existing walls and internal fabric.

Scope Definitions			
	Description	Specification	Residual Risks
		MEP in room fittings, faceplates and outlets. Luminaires and grills. All MEP back to service Distribution risers serving the space.	
3	Comprehensive refurbishment (back to structure)	All identified backlog maintenance works undertaken. Complete internal refurbishment – complete strip out and fabric replacement back to structure. Limited internal reconfiguration where clear benefits are identified e.g. provision of additional sanitary provision. For MEP as above plus modifications/additions to suit any new provisions.	Functional and statutory compliance are improved but full compliance cannot be achieved due to the limits of the existing floor plates. Opportunity to review and check underlying structure and complete asbestos removal.

Table 18: Scope Definitions

4.4 Long List Development and Option Appraisal

A sub-group of the Programme Board, including representatives with a broad range of service views, used an options framework approach to identify a long list of options for meeting the Investment Objectives and the Critical Success Factors of this programme. The options framework is an effective approach for identifying and assessing a broad range of available options. It does so by systematically working through the available choices for what, how, who, when and funding sources. In completing this process, some options are discounted, others are carried forward, and some provide the recommended approach, which is to provide the preferred way forward. The long list of options is developed across a number of different dimensions namely:

- Service scope;
- Estate solutions;
- Service delivery;
- Implementation strategies;
- Funding methods.

These are translated into the following flow diagram to reflect the option development process.

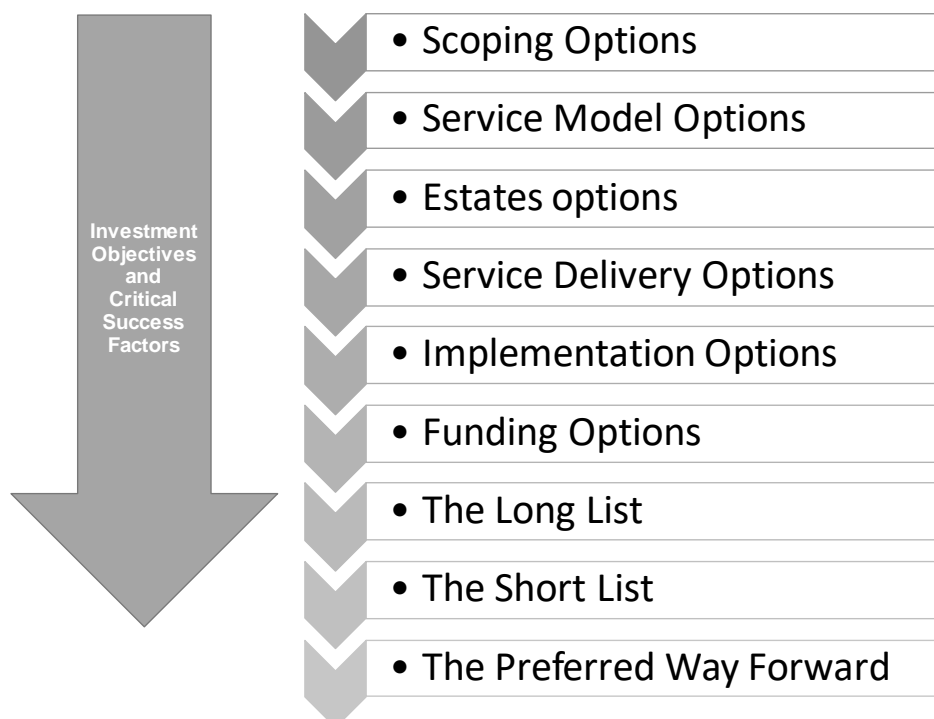


Figure 11: Options Framework

The following tables summarise the types of options that need to be considered within this PBC, at this stage in the process and relates them to the list of issues that have been identified as requiring improvement as part of the estates infrastructure and refurbishment requirements to enable clinical services to be delivered from the existing four main acute sites for the next 20 – 25 years.

Service Scope

Need Identified	Do Nothing	Do Minimum	Intermediate	Maximum
Infrastructure Plan	No improvements considered	Improvements based on essential replacement of obsolete plant, equipment and bringing compliance issues to a satisfactory extent whilst improving building facades. No improvement or refurbishment work proposed.	Improvements based on wholesale replacement of obsolete plant and equipment together with bringing compliance issues and patient environment levels to a satisfactory extent. Extensive improvements to building condition both internally and externally. Intermediate proposals do not propose any service reconfiguration or expansion of existing services.	Improvements and reconfiguration of all areas and infrastructure. Opportunities for redevelopment of existing services and sites
Conclusion:	Discounted	Possible	Preferred	Discounted

Table 19: Service Scope Analysis

Implementation Options

Option	Summary	Conclusion
Single Development (inclusive of all four acute sites)	All issues identified as requiring improvement to be implemented in a single development/plan of work.	Discounted as a number of solutions are identified as interdependent on each other and additionally the level of disruption to a live site is considered too great. Not considered to offer flexibility in delivery
Single Development (per each acute site)	All issues identified as requiring improvement to be implemented as a single development/plan of work but limited to each hospital site but interdependencies incorporated.	Possible as this approach enables each site to deliver solutions concurrent with each other and offers flexibility in delivery.
Phased Development (managed site by site)	Individual projects/packages of work comprising the preferred way forward per this PBC will be developed in a phased pattern. Where developments can occur in parallel, they will do so.	Preferred as projects identified are interdependent on each other and therefore a phased approach allows for development to occur which minimises site and patient disruption.

Table 20: Implementation Options Analysis

Funding Options

Option	Summary	Conclusion
Welsh Government Capital Funding	Funded through Welsh Government capital funding	Preferred
Charitable Funding	Funded through charitable funding / fundraising	Discounted
Private Finance	Solely funded through private finance schemes	Discounted
Public Private Partnership Funding Model	Under this option the Programme would be funded through a Public Private Partnership (PPP) Funding Model which would require both Welsh Government Model capital funding through the Non Profit Distributing funding model	Discounted

Table 21: Funding Options Analysis

4.5 Preferred Way Forward

The analysis in Section 4.4 identified that an intermediate level of refurbishment delivered on a phased basis site by site and funding through Welsh Government Capital Funding would be the preferred way forward for the Prince Phillip and Bronglais Hospital sites. However, following the finalisation of the UHBs health and care strategy, for the Glangwili and Withybush sites, the focus will be on 'do minimum' and on those priority projects required to ensure business continuity for the next 7 to 10 years.

5.0 Commercial Case

5.1 Commercial Arrangements

The detailed consideration of the commercial case will take place at the individual Business Case stage with the commercial arrangement forming a key part of the business case for each individual or group of projects. The Programme Board will provide direction and support as required and the Programme Director will ensure that there is consistency across identified projects and that specialist expertise is available to support local implementation.

The preferred funding option for all of the above investments is via Welsh Government Funding as public funding is considered the only viable option for a series of investments that are anticipated to be required initially over a five-year period. Whilst the investments identified in this Business Case are considered imperative to meet required standards and sustain service provision during this time, the overall programme of work to deliver these in their entirety is significantly longer in duration.

5.2 Procurement Strategy

The proposed procurement strategy will be considered through the scrutiny process of this programme business case.

The agreed procurement strategy will be informed by the requirements of the next phases of the detailed business case process as projects may be progressed and delivered individually, in packages with multiple projects or, potentially, through a single programme of work delivered by one procurement route and contract per site.

Consideration will be given to the suitability of the National Health Service Building for Wales framework(s) (NHSBfW) for this work. It is possible that individual schemes may have slightly different procurement solutions which will be dependent on the complexity of scheme and professional support requirements for the design solutions.

The chosen procurement method for each scheme will ensure that appropriate value for money is provided and ensure compliance with Health Board procedures and procurement requirements.

In determining the scope for individual projects future maintenance and access strategies which comply with CDM requirements for the sites will need to be achieved to ensure safe operational working. This may in some circumstances impact the scope and cost of works.

There will be a requirement for early validation of the cost assumptions and intended project content for detailed works at each stage of the programme to provide reassurance and robustness in terms

of each individual scheme element and for the overall cost and delivery of the timescales within the overarching programme.

5.3 Personnel Implications and Required Services

The internal project management arrangements and requirements for specialist advice to support the design, procurement and delivery of the projects within the programme will be reviewed on an ongoing basis to ensure that adequate resources are available to deliver projects to the quality, cost and timelines required. The resource implications for each project or work package will be identified in the relevant business case.

5.4 Proposed Charging Mechanisms

At the completion of the projects there will be no ongoing service arrangements provided by the Procurement partner and therefore no recurring charges associated with project.

5.5 Potential for Risk Transfer

The general principle is that risks should be passed to “the party best able to manage them”, subject to value for money (VFM). As there is no firm or finalised procurement strategy at present this is yet to be agreed. Once agreed the contractual arrangements will address the ability to transfer risk.

5.6 Accountancy Treatment

All projects will be on the balance sheet of the Health Board.

6.0 Financial Case

6.1 Indicative Capital Costs

Given the scale of the programme estimated capital costs are provided for two scenarios for Prince Phillip and Bronglais Hospitals has been to consider costing as follows:

- The 'Do Maximum' option (i.e. all works to bring sites to a Condition B category standard of finish inclusive of addressing all M&E systems); and
- The 'Do Minimum' option (those essential schemes at risks of failure and identified as priority for a five to seven year timeframe).

The costing for Glangwili and Withybush Hospitals has been based on a "Do Minimum" option only, that is undertaking essential and urgent works to sustain current services for the next 7 – 10 years.

The total cost of the investment for the whole programme of work, based upon the emerging preferred option "Do Maximum" for Prince Phillip and Bronglais Hospitals but the 'Do minimum' option at Glangwili and Withybush Hospitals is estimated at £246.5m (including VAT). See Table 22.

Summary Costs	PPH £'s	BGH £'s	GGH £'s	WGH £'s
Departmental and On Cost	57,002,000	46,682,000	22,644,000	13,422,000
Provisional location adjustment	(1,711,000)	(1,401,000)	(680,000)	(403,000)
Works Cost	55,291,000	45,281,000	21,964,000	13,019,000
Fees	10,506,000	8,604,000	4,174,000	2,474,000
Non-works Costs	9,546,000	8,916,000	1,493,000	1,060,000
Equipment Costs	-	-	-	-
Planning Contingency	11,302,000	9,420,000	4,145,000	2,483,000
VAT	15,228,000	12,724,000	5,521,000	3,313,000
Forecast Project Outturn Cost	101,873,000	84,945,000	37,297,000	22,349,000
GFA	17,870m ²	14,988m ²	33,976m ²	21,844m ²
Works Cost - £/m ²	£3,094/m ²	£3,021/m ²	£646/m ²	£596/m ²
Short-term proportion of Total Estate Upgrade Costs	52.70%	90.80%	44.16%	14.27%
Combined Outturn Total for all four sites = £246,464,000				

Table 22: Capital Costs 'Do Maximum'

An investment of £118.4m (including VAT) is forecast to be required for the 'Do Minimum' scope of works for all four hospitals. See Table 23.

Summary Costs	PPH £'s	BGH £'s	GGH £'s	WGH £'s
Departmental and On Cost	10,001,000	15,023,000	22,644,000	13,422,000
Provisional location adjustment	(301,000)	(451,000)	(680,000)	(403,000)
Works Cost	9,700,000	14,572,000	21,964,000	13,019,000
Fees	1,844,000	2,769,000	4,174,000	2,474,000
Non- works Costs	7,138,000	7,197,000	1,493,000	1,060,000
Equipment Costs	-	-	-	-
Planning Contingency	2,803,000	3,681,000	4,145,000	2,483,000
VAT	3,929,000	5,090,000	5,521,000	3,313,000
Forecast Project Outturn Cost	25,414,000	33,309,000	37,297,000	22,349,000
GFA	17,870m ²	14,988m ²	33,976m ²	21,844m ²
Works Cost - £/m ²	£543/m ²	£972/m ²	£646/m ²	£596/m ²
Short-term Proportion of Total Estates Upgrade Costs	13.15%	35.61%	44.16%	14.27%
Combined Outturn Total for all four sites = £118,369,000				

Table 23: Capital Costs 'Do Minimum'

Appendix 3 contains a detailed cost report.

An indicative cash flow for the capital expenditure for 'Do Minimum' on all sites is included in Table 24. A further £128.1m is required to complete the works at Prince Phillip and Bronglais Hospitals beyond Year 9 to complete the 'Do Maximum' programme of works. Further cashflow information will be provided at this point of for the remaining years of the programme.

	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	Total	Do Max
	Year 1 £'000s	Year 2 £'000s	Year 3 £'000s	Year 4 £'000s	Year 5 £'000s	Year 6 £'000s	Year 7 £'000s	Year 8 £'000s	Do Minimum £'000s	Year 9+ £'000s
Works Cost	-	6,155.7	21,559.1	17,816.2	8,728.2	4,841.3	124.7	30.5	59,255.7	76,299.3
Fees (approximate)	1,920.6	4,587.6	1,566.6	1,500.9	1,432.6	250.4	-	-	11,258.7	14,499.3
Non Works	555.5	14,704.1	475.1	463.9	512.7	174.6	-	-	16,885.9	4,129.1
Planning Contingency	371.4	3,817.1	3,540.1	2,967.2	1,601.0	790.1	18.7	4.6	13,110.2	14,239.8
VAT	185.4	4,935.4	5,114.9	4,249.5	2,168.4	1,161.1	28.7	7.0	17,850.4	18,935.6
Totals in Year	3,032.9	34,199.9	32,255.8	26,997.7	14,442.9	7,217.5	172.1	42.1	118,360.9	128,103.1
Cumulative Total	3,032.9	37,232.8	69,488.6	96,486.3	110,929.2	118,146.7	118,318.8	118,360.9	-	246,464.0

Table 24: Indicative cash flow for capital expenditure 'Do Minimum' Option Years 1 to 8 plus 'Do Maximum' post Year 8

6.1.1 Capital Cost Assumptions

The following assumptions have been made in developing the capital costs for this PBC:

- Capital costs – reported at BCIS PubSec Index Level of 250 (FP), effective at April 2019;
- Location factor – 0.97 as per current guidance from NHS Wales Shared Services Partnership;
- Non-Works Costs – based on estimated costs for 'other' capital costs associated with delivering the programme of work including decant facilities (ward and theatre suite) where needed on the Bronglais and Prince Phillip sites;
- Professional fees are included on the basis any investment undertaken in the estate would be procured through Welsh Government All Wales Capital Projects using the 3rd generation of the Designed for Life Framework;
- Given the current project is being considered at PBC stage and no detailed design has yet been commissioned for any of the hospital sites, a planning contingency of 15% of the combined Works, Fees and Non-Works costs has been factored into the forecast of estimated order of capital costs. Should the PBC be approved, a detailed risk analysis will need to be undertaken at then next business case stage;
- VAT at 20% for all works of the planning process, with the exception of professional fees which are zero rated. No allowance has been made for VAT recovery at this stage of the project. Advice on VAT recovery will however be taken for individual projects at the appropriate time to inform the costs contained within the business case;
- The internal project management costs associated with the development of this programme business case have been included in the professional fees. Ongoing project management costs will be attributable to the individual projects and included in the business cases as necessary.
- Optimism Bias – excluded from all costs as per current Welsh Government guidelines;

- Equipment costs – no allowance as equipment is excluded from scope.

6.2 Revenue Implications and Affordability

For the purposes of this business case it has been assumed that there will be no additional recurrent pay and non-pay costs, with the exception of capital charges attributable to the delivery of the programme. The Health Board's assumption is that capital charges including increased depreciation and any impairment charges on completion will be funded by Welsh Government.

It is anticipated that some projects may incur an element of non-recurrent revenue costs due to temporary double running of services, extended clinical hours working or decant requirements to ensure business continuity during construction phases.

Examples include:

- The need to deliver services simultaneously in existing and new locations for a short / temporary period to allow continuity of service and service transition;
- Taking theatres and other clinical areas out for refurbishment may result in extended hours working at enhanced rates in other locations in the Health Board to maintain capacity;

However, any implications will be mitigated wherever possible and the Health Board will capitalise any residual costs on the basis that they are directly attributable to the capital scheme. This will be dealt with on a project by project basis when the detailed requirements for each project have been scoped and the relevant business cases developed.

A number of projects within the programme are expected to deliver quantifiable benefits in terms of energy efficiency and reduced maintenance and therefore should deliver revenue savings at some stage in the programme. The specific projects are identified on the works schedule matrices in Appendix 2.

These generally fall into 3 categories:

- Replacement of ageing / obsolete plant and equipment where there will be savings in terms of ongoing reactive maintenance and repair, and a reduction in running costs due to replacement with more efficient equipment and controls; for example: replacement of air handling units, chillers, lifts etc.;
- Provision of new equipment required to improve safety and resilience to failure, to comply with modern standards i.e. second generators, capacity upgrades, Uninterruptible Power Supplies (UPS) & Isolated Power Supplies (IPS) for theatres, redundant medical gas plant, upgrade of ICT infrastructure and server rooms. These items will attract new maintenance costs but will reduce operational risks;

- The introduction of new energy efficiency building fabric and renewable opportunities such as photovoltaics. These measures will reduce energy costs and carbon emissions and will not introduce a maintenance burden.

Estimates and programming of these revenue implications will be quantified at the next stage as the ensuing business cases are developed.

6.3 Funding Arrangements

It has been assumed that the projects within this programme will be funded through Welsh Government infrastructure funding.

7.0 Management Case

This section demonstrates the approach that HDUHB will take to support the delivery of the programme in accordance with best practice.

The programme management arrangements acknowledge the scale of the overall programme and the associated funding required. The proposed approach allows for progress to be made against the identified key priority areas but also allows sufficient flexibility to respond to circumstances that may change over time.

7.1 Programme Management Arrangements

The Health Board has implemented the following governance structure for the programme:

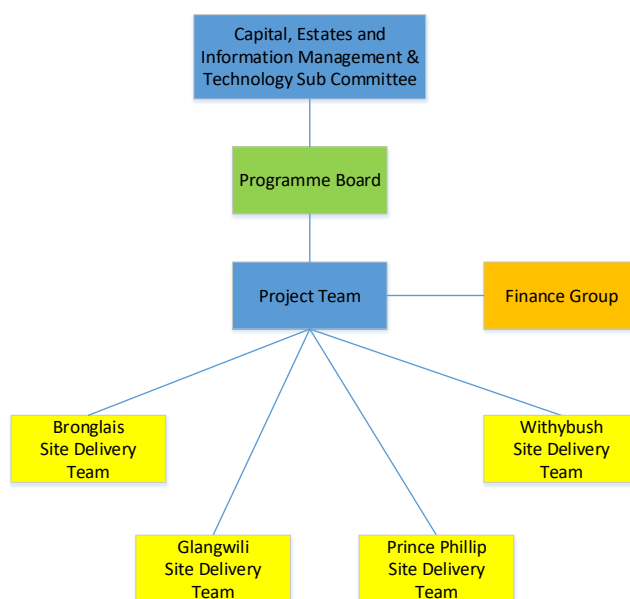


Figure 12: Programme Governance Structure

The Director of Planning, Performance and Commissioning is the formal Programme Sponsor and will ensure that the programme meets its overall objectives and delivers its expected benefits. The Director of Estates, Facilities and Capital Management is the Programme Director who will be responsible for the successful delivery of the programme.

The Programme management structure has been formally constituted and established in line with best practice (Managing Successful Programmes). The Programme Board is in place and will provide strategic direction in order to develop capital investment proposals associated with this Programme Business Case.

The Programme Board chaired by the Programme Director is responsible for:

- Developing programme / project plan for completion at key stages in capital investment process and monitor on a monthly or as required basis;
- Provide strategic leadership and direction to the Project Team;
- Approve project plan for completion of key stages and monitor on behalf of HDUHB;
- Provide a challenge mechanism for the project;
- Receive project reports and outputs ensuring sufficient detail is provided;
- Progress strategic specific issues and manage the associated work programmes;
- Support the development of technical briefs and outline design in conjunction with the site planning teams;
- Develop robust capital costs for the PBC;
- Ensure that there are adequate project management arrangements in place for the estate infrastructure plans across the sites;
- Brief WG on a regular basis to ensure good communication and understanding of project;
- Support and guide the development of the technical documentation for the PBC to gain the support of the site management teams and approval of the Health Board.

The Programme Board reports to the Capital, Estates and Information & Technology Sub-committee on a regular basis. The Capital, Estates and Information & Technology Sub-Committee reports directly to the Health Board.

The governance structure for the delivery of this programme will be reviewed and aligned moving forward to reflect the governance arrangements adopted for A Healthier Mid and West Wales programme to ensure the outputs from both programmes are coordinated. Similarly the structure for delivery of estates infrastructure works will be reviewed over the life of the programme to ensure that it continues to be appropriate as the individual projects progress.

A Project Team and Project Management Office led by a Programme Manager has also been established to assist the Programme Director in delivery of this Business Case and the subsequent delivery of individual projects.

- Implementation of project plan activities on a daily basis;
- Provide an operational and technical lead for the site groups;
- Communicate with the site operational managers and master planning team;
- Develop and monitor project planning, phasing and sequencing programme;
- Ensure suitable project management arrangements are in place;
- Implement project systems and controls e.g. risk, change management;
- Issue regular progress reports to the Programme Board;

- Participate in internal and external audit processes.

The Project Team is supported by four separate site delivery teams whose roles are to develop the design strategies and scope of work for the individual hospital sites. A Finance Support Team has also been set up whose purpose is to develop a deliverable financial strategy to underpin the emerging strategy. This team will support the Project Team and is accountable to the Project Board.

For all investment schemes, individual projects / work streams will be established within the boundaries of the Programme in line with accepted practice. Each project will have a designated project manager who will be responsible for delivery of the project outputs.

7.1.1 Specialist Advisors

The following team of specialist advisors has been appointed by the Health Board to undertake the technical review of the estate and support the delivery of this programme business case. Additional advisors will be appointed to support the individual projects as appropriate.

Advisor	Responsibility
Mace	Programme Management
WSP	Lead Advisor, Civils and Structural Design Consultants
Stride Treglown	Architect
Hoare Lea	Mechanical and Electrical Engineering Design Consultants
Lee Wakemans Management	Quantity Surveyors/Cost Advisors
Strategic Healthcare Planning	Business Case Authors

Table 25: Specialist Advisors

7.2 Stakeholder Engagement

A series of meetings and workshops have been held with key Health Board teams between December 2017 and June 2018 with a further review in November 2019 to determine and prioritise the projects included in this Programme. These are detailed in the Infrastructure Technical Report (Appendix 2).

7.3 Programme Milestones

Whilst the pace and time span for the overall programme will depend on the availability of capital funds and local project resources it is critical that progress is made against implementing the infrastructure improvements to ensure business continuity and sustainability of the estate.

At the next stage in the business case process, HDUHB will expedite the detailed exploration of the preferred way forward for the various components of the programme through the development of appropriate scoping strategies and business cases for approval. An indicative programme for delivery of the proposed projects/work packages for all hospitals has been included in this business case. The Director of Estates, Facilities and Capital Management as Programme Director will ensure that the business cases are developed in accordance with the agreed programme.

The key programme milestones are:

- April 2020 – Submit PBC to Welsh Government;
- May 2020– Agree procurement strategy;
- July 2020 – Welsh Government endorsement of PBC and progression to next stage business cases;
- August 2020 – Appoint professional and contractor teams;
- September 2020 – Commencement of next stage business cases and approvals;
- March 2021 – Priority works commence on site.

7.3.1 Priority Areas

This Programme Business Case includes those projects considered to be of highest priority and needed to ensure business continuity in the short to medium term (7–10 years) for Glangwili and Withybush Hospitals and those which can be delivered in a five to six year period (2020/21 to 2025/26) for Prince Phillip and Bronglais Hospitals which also takes in consideration the following:

- Those elements of the infrastructure which present a real risk of failure and risk to business continuity if work is not completed imminently;
- Advance works to external building fabric which need to be completed ahead of any internal works;
- The commencement of a rolling programme of internal refurbishment works with the most dilapidated areas being dealt with first.

Projects for the four hospitals have been grouped into a series of packages and the individual project sequencing programmes are included at Appendix 4.

It is anticipated that the high priority works identified for Glangwili and Withybush Hospitals will be completed within a three year window from approval of funding.

It is assumed that each works element will require individual business cases (BJCs or OBC and FBC). There will be flexibility within the programme if business cases within the individual packages

can be combined. This will be explored in more detail with Welsh Government through the review and approval process for this PBC.

The identified priority packages of work for all four hospitals with estimated completion dates are indicated in the tables below:

Package	Project Element	Estimated Completion
Bronglais General Hospital		
1	Lifts upgrade and replacement	Year Three – Q4
2	Mains LV switchgear panel upgrade LV submains and panel upgrades Second generator (resilience)	Year Three – Q1 Year Five – Q4 Year Two – Q3
3	Mortuary water supply Cat 5 separation Chiller replacement AHU and extract fan upgrades and renewal Central HWS PHE replacement	Year Two – Q1 Year Two – Q3 Year Three – Q3 Year Two – Q1
4	ICT Main server room upgrade works DX systems upgrade & replacement	Year Two – Q4 Year Two – Q2
5	Medical Block 1 Roof Replacement Refurbishment of area 1 Refurbishment of area 2 Refurbishment of area 3 Refurbishment of area 4	Year Two – Q3 Year Three – Q1 Year Four – Q1 Year Five – Q1 Year Six – Q1

Table 26: Infrastructure project sequencing programme – BGH

Package	Project Element	Estimated Completion
Glangwili Hospital		
M&E Works	Lifts, ventilation, power, lighting, medical gases, heating, domestic pipework, cooling, nurse call and drainage	Year One – Q3 to Year Four – Q1
1	All clinical areas Advanced works Phase 1 Fire stopping: compartment walls primary escape routes Phase 2 Fire stopping: – sub-compartment walls and hazard rooms within departments Emergency lighting and fire alarms	Year One – Q4 Year Two – Q4 Year Four – Q4 Year Four – Q4
2 & 6	Building 9 - Rainwater goods, facias, Curtain Walling Building 7 – Curtain walling Building 5 – Curtain walling and roof	Year Two – Q1 Year Two – Q3 Year Two – Q3
3	Building 10 – Sofits, roof (link to building 12), windows, rainwater goods	Year Two – Q2
4	Building 8 – Roof, roof lights, rainwater goods, Windows	Year Two – Q2 Year Two – Q3
5	Building 7 – Roof, concrete frame, windows Curtain walling	Year Two – Q3 Year Two – Q4

Package	Project Element	Estimated Completion
Glangwili Hospital		
7	Building 4 – Curtain walling, windows Roof	Year Two – Q3 Year Two – Q4
8	Building 3 – Roof, windows Facias	Year Two – Q4 Year Two – Q3
9	North and West Elevation – Windows	Year Two – Q3
10	All areas - Roof, windows South elevation - Rainwater goods, doors	Year Three – Q1 Year Three – Q1

Table 27: Infrastructure project sequencing programme – GGH

Package	Project Element	Estimated Completion
Prince Phillip Hospital		
1	Vertical drainage	Year Three – Q2
2	UPS for Theatres Theatre and Day Theatre light replacement	Year Two – Q1 Year One – Q4
3	Boiler Plant Replacement AHU upgrade and renewal Mains Water storage replacement Steam load levellers replacement	Year Two – Q2 Year Three – Q4 Year Two – Q2 Year One – Q4
4	Second generator (resilience) LV switch panel upgrade HV switchgear upgrade ICT Mains Comms room upgrade	Year Three – Q1 Year Three – Q3 Year Three – Q3 Year Three – Q2
5	Lift replacement Roof repairs and replacement rainwater goods	Year Four – Q2 Year Two – Q1
6	Identify decant space Refurbishment of area 1 (Ward 1) Refurbishment of area 2 (Ward 3) Refurbishment of area 3 (Ward 4) Refurbishment of area 4 (Ward 5) Refurbishment of area 5 (Ward 6)	Year Two – Q3 Year Three – Q2 Year Four – Q1 Year Four – Q4 Year Five – Q3 Year Six – Q2

Table 28: Infrastructure project sequencing programme – PPH

Package	Project Element	Estimated Completion
Withybush General Hospital		
M&E Works	Lifts, cooling, ICT, domestic water services, ventilation, nurse call, heating, power, lighting, medical gases	Year One – Q4 to Year Three – Q4
1	All clinical areas Advanced works Phase 1 Fire stopping: compartment walls primary escape routes Phase 2 Fire stopping – sub-compartment walls and hazard rooms within departments Emergency lighting and fire alarms	Year One – Q4 Year Two – Q4 Year Four – Q4 Year Four – Q4
2	Main Building - Concrete wall panels (all areas)	Year Three – Q2

Package	Project Element	Estimated Completion
Withybush General Hospital		
3	Block 1 OPD – Flat roof Block 5, over T3 & 4	Year Two – Q2 Year Two – Q4
4	Main Hospital – pitched roof - gutters, valleys, rooflights	Year Two – Q4

Table 29: Infrastructure project sequencing programme – WGH

7.4 Programme Assurance

At the next stage, a formal Programme will be established in line with MSP principles and will be subject to review to give assurance that adequate scrutiny has taken place prior to the next stage of development. Individual projects within the programme will also be subject to internal or external quality assurance as appropriate.

Projects will be delivered using the PRINCE2 methodology with the project team supported by individual site teams overseeing delivery and reporting into the Programme Board.

A refresh of this PBC is proposed either annually or at stages to be agreed, to maintain focus on progress and to retain sufficient flexibility within service planning approaches to respond to changing demand or individual opportunities as they arise.

7.5 Risk Management

7.5.1 Introduction

There are a number of objectives from the implementation of a robust risk management process. The key objectives are as follows:

- Secure predictability: by analysing the risks, greater insight can be gained in to the likelihood of successfully delivering the project within budget, on programme and to the required quality;
- Manage the risk exposure proactively: a clear understanding of the threats and opportunities will ensure that robust mitigation strategies can be put in place and opportunities are realised. This significantly reduces the chance of failure through a constant reassessment of the project's risk profile;
- Define mitigation strategies: provide clear mitigation strategies and action plans which are to be addressed by the appropriate owners;
- Ensure opportunities are both identified and realised;
- Address contingency management: ensure that the contingency of both client and contractor allowances are managed, providing adequate cover for identified risks. If the opportunity arises to release contingency back in to working capital this should be addressed in line with the requirements of the project.

Risk management helps with matters of cost control and with overall project delivery by assessing potential problems and formulating mitigation measures through the implementation of a structural approach so that:

- Potential risks to a project are identified;
- Management action plans are drafted as a response to the risks;
- Contingencies can be allocated to reflect identified risks;
- An audit trail is produced for the decisions taken;
- There is increased team understanding of the project and of the implications of certain courses of action;
- Risk events are responded to more swiftly and effectively.

Risk management will be an ongoing project control measure that encourages all participants to be proactive in identifying areas of concern and potential risk that can, when identified at an early enough stage, be managed to reduce/ eradicate the impact on the programme.

7.5.2 Risk Register

The risk register is a management tool that logs potential risks to the programme, primarily driven by health and safety, cost, programmes delays or any other risks that may be relevant to its successful completion.

A risk register has been developed by the Project Board for this programme, to record and log details of any item or event which is considered by the project team to put the objectives of the programme at risk (See Appendix 5). This will be developed further and in more detail for individual projects as these progress through the various business case processes.

The register is a live document and will be updated at regular intervals in Project Team and Project Board meetings as appropriate. The Project Manager will manage and retain ownership of the risk register throughout the programme.

The risk register will be updated by both adding newly identified risks and reallocating risk funds where activities no longer pose risk.

7.5.3 Key Risks

The key risks to the success of this Estates Infrastructure PBC (risk score 12 and above) are identified in the following table:

Risk	Mitigation Measure
Uncertainty regarding Regional Plan and for clinical service transformation leading to potentially conflicting plans/affordability issues	Programme Board to provide regular updates and guide changes as they occur
Impact of AHMWW unknown	Monitor consultation outcomes
Outcome of Transforming Clinical Services leads to abortive infrastructure work	Early identification of AHMWW proposals
Fire strategy and fire stopping compliance works in relation to fire service improvement notices are underestimated	Early procurement of surveys and investigations to ensure business cases are robust.
Risk that appropriate project leadership and programme governance is not in place and that clear scope of the project is not defined.	Ensure leadership responsibilities are known by team members
WG funding approval not made available for business case progression	Immediate engagement
Capital costs under-estimated	Benchmark and monitor Create dedicated finance workstream and meeting forums.
Revenue costs under-estimated.	Benchmark and monitor Create dedicated finance workstream and meeting forums.
WAG cannot fund Capital Requirements of the Programme Preferred Options	Early dialogue
WAG cannot meet the funding timetable for the Capital Programme (years 1-5)	Early dialogue once PBC submitted Develop contingency plans
Lack of funding prevents the most efficient procurement and grouping of projects.	Ensure procurement strategy is flexible and implementation programme can respond to availability of capital Develop contingency plans
Possible lack of engagement/ support from WAG	Senor input to Programme Board and representation in all aspects of programme structure Regular Board briefings Ad hoc meetings as required
Policy changes	
Late involvement of Contractor / SCP in business case work	Ensure timely appointment
Scope creep and overdesign	Ensure robust project management techniques and change control process in place
Construction activity impacts upon clinical services	Plan works in appropriate manner to accord with Employers restrictions

Table 30: Main Risks

7.6 Benefits Realisation

A detailed Benefits Realisation Plan will be developed for each project within the programme to support business cases as these are submitted. These will form the basis of post project evaluation.

The Benefits identified for each project will align with the overarching benefits to be derived from the programme as detailed in Section 3.3 and 4.1.

7.7 Post Project Evaluation

The Programme Board will ensure that post project evaluation of all projects within the programme will be undertaken in accordance with Welsh Government requirements, the details of which will be included in individual project business cases. However, post project evaluation will also be carried out for the programme in its entirety.

7.7.1 Outline arrangements for Post Project Evaluation

A Post Project Evaluation (PPE) incorporates the Project Evaluation Review (PER) and the Post Implementation Review (PIR). The Post Project Evaluation will be undertaken 6 months after the commissioning of individual projects.

7.7.1.1 Post Implementation Review (PIR)

The PIR will assess whether the benefits that the project set out to achieve have been realised and this will be timed appropriately according to the benefits being assessed. This will be done by review of the benefits realisation register and a comparison of the benefits achieved against a baseline measurement for both individual projects/work packages and the entire programme.

7.7.1.2 Project Evaluation Reviews (PERs)

The purpose of the PER is to improve project appraisal at all stages from preparation of the business case through to the design, management and implementation of the scheme and will be timed for 6 months following the commissioning of individual infrastructure projects and work packages and at the end of the five year programme.

8.0 Conclusion

The Health Board has identified in this Programme Business Case a need for significant capital investment for estates infrastructure on the four acute hospital sites to eliminate risk to service delivery and to make much needed improvements to the patient and staff environment.

Welsh Government have acknowledged the need for estate infrastructure investment as a priority and some interim capital funding for this purpose has been included in the All Wales Capital Programme.

A detailed review of the existing estate at the four acute sites has been undertaken and the proposals in this business case identify the high priorities and investment needs over the short and long term to deliver:

- 'Do minimum' at all four sites;
- 'Do maximum' portfolio of projects at Prince Phillip and Bronglais Hospitals and 'Do Minimum' at Glangwili and Withybush Hospitals.

This business case has been developed in parallel with the Health Board's plans for clinical service reconfiguration.

The Health Board wish to engage with Welsh Government to discuss the findings and proposals in this PBC in the context of: *Our Health and Care Strategy: A Healthier Mid and West Wales*. This is with a view to agreeing the way forward for future estates infrastructure investment and obtaining Welsh Government endorsement to the development of relevant business cases for the projects within this programme to an agreed timescale. Over the life of the programme the capital investment requirement is £246.5m at current prices. (BCIS PubSec Index Level of 250 (FP), effective at April 2019).

Appendices

Appendix 1: Glossary

Acronym	Description
AHMWW	A Healthier Mid and West Wales Strategy
BGH	Bronglais General Hospital
BJC	Business Justification Case
CSF	Critical Success Factor
FBC	Full Business Case
GGH	Glangwili General Hospital
HBN	Health Building Note
HDUHB	Hywel Dda University Health Board
ICU	Intensive Care Unit
IMTP	Integrated Medium Term Plan
M&E	Mechanical and Electrical
MWWFRA	Mid and West Wales Fire and Rescue Authority
MWHC	Mid-Wales Health Care Collaborative
MSP	Managing Successful Programmes
NHS	National Health Service
NHSBfW	NHS Building for Wales framework
NWSSP-SES	NHS Wales Shared Services Partnership - Specialist Estates Service
OBC	Outline Business Case
PBC	Programme Business Case
PPH	Prince Philip Hospital
PPP	Public Private Partnership
UHB	University Health Board
VFM	Value for Money
WGH	Withybush General Hospital
WG	Welsh Government
WIIP	Wales Infrastructure Investment Plan

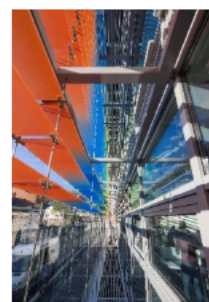
Appendix 2: Infrastructure Technical Report – See Separate Document

Appendix 3: Cost Report



GIG
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WALES

Bwrdd Iechyd Prifysgol
Hywel Dda
University Health Board



Hywel Dda University Health Board Estates Masterplanning Programme Business Case: Cost Report

Updated PBC [Index 250]

19th February 2020

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Appendix B – Programme Scope of Works

Appendix C – Cashflow Profile for 'Do-Minimum' Option

1. Executive Summary

Lee Wakemans has been appointed by Hywel Dda University Local Health Board (HDUHB) to assist in providing the estimated capital costs in support of its Estates Masterplan Programme Business Case (PBC).

The appointed design consultants have undertaken an extensive desktop review coupled with a brief site inspection at each of the four hospital sites under consideration within this PBC. Their reports identify significant deterioration in the estate with substantial and immediate investment being required at Prince Philip and Bronglais General Hospitals to bring them back to condition 'B' defined category standards and/or to avoid failure of the critical engineering systems. Their reports also define the critical works required at Glangwili and Withybush General Hospitals to avoid failure of the estates in the relatively short term.

The PBC considers two estimated capital cost scenarios with regards to addressing the condition of each of the four hospital sites. The first, considers 'Do-Maximum' whilst the latter considers what can be achieved in the relatively short term of circa. five years, akin to a 'Do-Minimum' option but addresses the most urgent works including undertaking works covering the vital mechanical and electrical engineering systems. In both cost scenarios, both Glangwili and Withybush General Hospitals are considered as a constant in that only the necessary short-term works are considered.

The estimated capital cost of 'Do-Maximum' is being identified as a large total quantum of circa. £246.5m. Whilst 'Do-Minimum' addressing those most urgent issues, estimates a total quantum of circa. £118.4m broadly over a five to seven-year term works programme. This, however, doesn't address the long-term needs and requirements for the Health Board.

2. Information Received

The following information, produced by the appointed design consultants, has been used in the preparation of estimated capital costs.

Stride Treglown Architects

- Preliminary Site Appraisals Technical Report dated June 2018
- Glangwilli General Hospital 'Prioritisation Matrix (GGH)
- Prince Philip General Hospital Prioritisation Matrix (PPH)
- Bronglais General Hospital Prioritisation Matrix (BGH)
- Withybush General Hospital Prioritisation Matrix (WGH)
- Drawings: Refer to Appendix A – Consultant Drawing Schedule

Hoare Lea Consulting Engineers

- Hywel Dda - Estate Masterplanning - Sustainability Overview, Revision A dated 24th April 2018
- Hywel Dda - Estate Masterplanning - Preliminary Low/Zero Carbon Technology Appraisal, Revision B dated 13th June 2018
- Hywel Dda - Estate Masterplanning - MEP Priority List
- Hywel Dda - Estate Masterplanning - Top MEP Projects Scope & Costing - Rev B, issued 28th June 2018

Opus Consulting Engineers

- Glangwilli General Hospital - Structural & Civil Condition Report
- Prince Philip General Hospital - Structural & Civil Condition Report
- Bronglais General Hospital - Structural & Civil Condition Report
- Withybush General Hospital - Structural & Civil Condition Report
- Drawings: Refer to Appendix A – Consultant Drawing Schedule

3. Basis of Estimated Costs

Assumptions & Clarifications

The estimated capital costs have been calculated using the following publications, information and guidance

- How to Cost a Hospital, NHS Estates - Second Edition 2005
- Capital Investment Manual - Business Case Guidance, First Edition 1994
- Healthcare Capital Investment - Supplement to Quarterly Briefing Volume 12 No 1 2002/2003
- HBN Revised Schedules of Accommodation, dated February 2002
- Welsh Health Estates Notification - WHEN 10/14, dated 27th July 2010
- Department of Health - Exemplar Cost Plans
- NHS Quarterly Briefing – BCIS
- Approximate estimating and provisional allowances

General Cost Methodology

The basis of the costing methodology adopted in this report is split into two due to the scope of works being at variance dependent on the particular hospital site under consideration.

Prince Philip & Bronglais General Hospitals:

The general approach to establishing the quantum of capital costs was to establish the cost of a new build facility on a like-for-like basis as a product of the functional content and the associated departmental cost allowance. The effects of WHEN 10/14 are also accounted for in this calculation.

With a new build cost having been established, this was then abated considering the degree(s) of refurbishment as defined by the design consultants through the 'Prioritisation Matrices'. The abatement factor itself is defined by the relevant building elements taken from historical NHS Exemplar Cost Plans.

Further allowances for On-Cost and 'abnormals' were later combined with the abated department cost allowance to arrive at an appropriate cost allowance to undertake the necessary upgrade to condition 'B' defined category standards, this being the focus of this study.

Given, at a practical level, whole building blocks cannot be taken out of action/service, an allowance has been made which takes account of undertaking the works on a floor-by-floor basis. The cost impact has been considered and this is reflected in the estimated capital costs reported herein.

Glangwili & Withybush General Hospitals:

Given the scope is identified within schedules of outline urgent work requirements without any defined scope requirements (e.g. drawings, specifications, etc.) the order of estimate has been derived using gross floor area allowances and/or broad quantification / approximate estimating

principles. This has enabled a broad estimate, or 'order of quantum of capital' costs to be established.

Given, at a practical level, whole building blocks cannot be taken out of action/service, allowances have been made to take account of undertaking the works in an isolated manner or potentially out of working hours. The actual implementation, phasing and delivery of works will be subject to a detailed analysis at the next stage of project development should capital funding be secured.

The following assumptions should be read in conjunction with the estimated capital costs:

- Capital costs are reported at BCIS PubSec Index Level of 250 (FP), effective at April 2019. This is the Index effective at the time of the PBC submission with which any calculation for escalation should be taken.
- No allowance(s) have been made for equipment as the brief excludes this from our analysis given the PBC is solely concerned with bringing the existing estate back to a condition 'B' category status.
- The effective index for Location Factor is 0.97 as per the current guidance from NHS Wales Shared Services Partnership - Specialist Estate Services at the time of publication of this PBC.
- Professional fees are included on the basis any investment undertaken in the estate would be procured through Welsh Government All Wales Capital Projects using the 3rd generation of its Designed for Life Framework
- Costs associated with Non-Works Costs are based on estimated costs for 'Other' capital costs associated with delivering the programme of work, which includes decanting facilities comprising a 24 bed ward and a theatre suite at each hospital site.
- Given the current project is being considered at PBC stage and no detailed design has yet been commissioned for any of the hospital sites, a planning contingency of 15% of the combined Works, Fees and Non-Works costs has been factored into the forecast of estimated capital costs. Should the PBC be approved, a detailed risk analysis will be undertaken at the Outline Business Case stage.
- VAT has been applied at the rate of 20.0% to all cost components with the exception of professional fees which are currently classified as 'Zero Rated' under the Contracted-Out Services (COS) guidance provided by HMRC. Given the project is at PBC stage, no consideration or estimate has been considered of the potential for recoverable VAT. This should be considered at the next stage of any decision to progress the Estate Masterplanning business case.

Exclusions

No allowances have been made for the following items:

- Optimism Bias is excluded from all costs referred within the PBC submission as per current Welsh Government guidelines.
- Equipment costs are excluded as the focus of the PBC is on the estate and engineering systems. Thus, equipment is specifically excluded.

Sustainability

The opportunity to incorporate sustainability and/or low/zero carbon technologies has been considered as outlined in Hoare Lea Consulting Engineers report. Such measures have been factored into the estimated capital costs when it's demonstrable commercially as viable to do so when considering the cost of bringing the whole of each hospital estate up to a Condition 'B' Category standard.

Where indicated in Stride Treglown Architects Prioritisation Matrix, the building envelope fabric is improved. This will have a direct benefit to the wider sustainability rating of the estate.

4. Estimated Capital Costs

The basis of the costing methodology adopted in this report is split into two due to the scope of works being at variance dependent on the particular hospital site under consideration.

Prince Philip & Bronglais General Hospitals:

Estimated capital costs are provided for two scenarios:

Do-Maximum:

Undertake all necessary works to bring the estates of Prince Philip and Bronglais General Hospitals completely back to a Condition 'B' category standard of finish inclusive of addressing all mechanical and electrical engineering systems. This should be considered as the 'Do-Maximum' the scope of which is defined in Appendix B.

Do-Minimum:

Undertake 'essential' works at the estates of Prince Philip and Bronglais General Hospitals rectifying those areas which are considered certain and/or highly likely to fail within a c. five to seven-year timeframe. Again, the works would address returning those identified areas completely back to a Condition 'B' category standard of finish inclusive of addressing associated mechanical and electrical engineering systems scoring a priority index between 23 and 40. This should be considered as the 'Do-Minimum' the scope of which is defined in Appendix B.

Glangwili & Withybush General Hospitals:

Estimated order of capital costs are provided for the undertaking of essential and urgent works at both Withybush and Glangwili General Hospitals in accordance with the scope identified by the design consultants (the scope of which is defined in Appendix B). The sole aim is a short-term correction or fix which would enable both sites to maintain operations for the next 5 to 7 years only. The works are not intended to improve either estate in any other way (e.g. compliance with current HBNs/HTM's, improved spatial standards, etc.). The rectification works consider engineering infrastructure and building fabric which is considered highly likely to fail within the identified timeframe only. It also assumes that where possible, partial replacement of plant and/or equipment is considered rather than wholesale replacements as directed by the client.

The following tables provide the summary of the total estimated capital costs associated with each of the scenarios reported above.

Hywel Dda University Local Health Board
Estates Masterplanning PBC

Scenario: Do-Maximum

BCIS PubSec Index 250

Summary Costs		PPH		BGH		GGH		WGH
Departmental & On-Cost	£	57,002,000	£	46,682,000	£	22,644,000	£	13,422,000
Provisional location adjustment	-£	1,711,000	-£	1,401,000	-£	680,000	-£	403,000
Works Cost	£	55,291,000	£	45,281,000	£	21,964,000	£	13,019,000
Fees	£	10,506,000	£	8,604,000	£	4,174,000	£	2,474,000
Non-works Costs	£	9,546,000	£	8,916,000	£	1,493,000	£	1,060,000
Equipment Costs	£	-	£	-	£	-	£	-
Planning Contingency	£	11,302,000	£	9,420,000	£	4,145,000	£	2,483,000
VAT	£	15,228,000	£	12,724,000	£	5,521,000	£	3,313,000
Forecast Project Outturn Cost		£101,873,000		£ 84,945,000		£ 37,297,000		£ 22,349,000
GFA		17,870 m2		14,988 m2		33,976 m2		21,844 m2
Works Cost - £/m2		£3,094/m2		£3,021/m2		£646/m2		£596/m2
Short-term Proportion of Total Estate Upgrade Costs		52.70%		90.80%		44.16%		14.27%
Combined Outturn Total for All Four Sites							£	246,464,000

Hywel Dda University Local Health Board
Estates Masterplanning PBC

Scenario: Do-Minimum

BCIS PubSec Index 250

Summary Costs		PPH		BGH		GGH		WGH
Departmental & On-Cost	£	10,001,000	£	15,023,000	£	22,644,000	£	13,422,000
Provisional location adjustment	-£	301,000	-£	451,000	-£	680,000	-£	403,000
Works Cost	£	9,700,000	£	14,572,000	£	21,964,000	£	13,019,000
Fees	£	1,844,000	£	2,769,000	£	4,174,000	£	2,474,000
Non-works Costs	£	7,138,000	£	7,197,000	£	1,493,000	£	1,060,000
Equipment Costs	£	-	£	-	£	-	£	-
Planning Contingency	£	2,803,000	£	3,681,000	£	4,145,000	£	2,483,000
VAT	£	3,929,000	£	5,090,000	£	5,521,000	£	3,313,000
Forecast Project Outturn Cost	£	25,414,000	£	33,309,000	£	37,297,000	£	22,349,000
GFA		17,870 m2		14,988 m2		33,976 m2		21,844 m2
Works Cost - £/m2		£543/m2		£972/m2		£646/m2		£596/m2
Short-term Proportion of Total Estate Upgrade Costs		13.15%		35.61%		44.16%		14.27%
Combined Outturn Total for All Four Sites							£	118,369,000

5. Risk Register

The estimated capital costs are provided in response and in support of the Programme Business Case which is a high-level assessment of the order of costs to deliver the defined scope of works. Given the current work stage, development of a detailed quantified risk assessment has not been prepared. This will be a subject matter which is considered in greater detail should the PBC progress to the next stage in the business case life-cycle.

6. Quality Check & Distribution

Document	Revision	Prepared By	Checked By	Date
Estates Masterplanning Programme Business Case: Cost Report – Updated PBC	1	MH	DD	19/02/20

Issued to	Organisation	No of Copies	Transmission	Date
Simon Boundy	Stride Treglown	1	Electronic	19/02/20
Steve James	WSP / Opus	1	Electronic	19/02/20
Scott Matthews	Mace	1	Electronic	19/02/20
Carolyn Robinson	Strategic Healthcare Planning	1	Electronic	19/02/20

Appendix A:

Consultant Drawing Schedule

The following drawings have been used to prepare this report:

Hospital	Drawing Number	Rev	Drawing Title	Consultant Designer
BGH	151562-STL-BR-00-DR-A-ZZZZ-10001	P10	Bronglais Site Master Plan	Stride Treglown
BGH	151562-STL-BR-ZZ-DR-A-ZZZZ-12005	P10	Building Code Plans (1 of 2)	Stride Treglown
BGH	151562-STL-BR-ZZ-DR-A-ZZZZ-12006	P2	Building Code Plans (2 of 2)	Stride Treglown
BGH	151562-STL-BR-00-DR-A-ZZZZ-12012	P10	Building Condition Plan (2 of 2)	Stride Treglown
BGH	151562-STL-BR-00-DR-A-ZZZZ-12011	P10	Building Condition Plan (1 of 2)	Stride Treglown
BGH	151562-STL-XX-ZZ-DR-A-XXXX-12000	P2	Departmental Boundaries (1 of 2)	Stride Treglown
BGH	151562-STL-XX-ZZ-DR-A-XXXX-12001	P2	Departmental Boundaries (2 of 2)	Stride Treglown
BGH	V-C8458.61	04-R0	Bronglais Hospital - Key Site Plan - Existing Documents	OPUS
BGH	N/a		Bronglais Façade Scope of Works	
BGH	N/a		Bronglais General Hospital Site Plan	NHS
BGH	V-C8458.61	04-R0	Bronglais Hospital Key Site Plan - Existing Documents	OPUS
BGH	V-C8458.61	04-R0	Bronglais Hospital Key Site Plan - Existing Documents	OPUS
PPH	V-C8458.61	01-R0	Prince Philip Hospital - Key Site Plan - Existing Documents	OPUS
PPH	151562-STL-PPH-00-DR-A-ZZZZ-12013	P10	Ground Floor Building Code Plan	Stride Treglown
PPH	151562-STL-PPH-02-DR-A-ZZZZ-12015	P10	Second Floor Building Code Plan	Stride Treglown
PPH	151562-STL-PPH-B1-DR-A-ZZZZ-12012	P10	Lower Ground Floor Building Code Plan	Stride Treglown
PPH	151562-STL-PPH-01-DR-A-ZZZZ-12014	P10	First Floor Building Code Plan	Stride Treglown

Estimated Cost Report

Estate Masterplanning PBC

PPH	151562-STL-00-00-DR-A-ZZZZ-12013	P1	Ground Floor Building Code Plan	Stride Treglown
PPH	151562-STL-00-01-DR-A-ZZZZ-12014	P1	First Floor Building Code Plan	Stride Treglown
PPH	151562-STL-00-B1-DR-A-ZZZZ-12012	P1	Lower Ground Floor Building Code Plan	Stride Treglown
WGH	V-C8458.61	02-R0	Withybush Hospital - Key Site Plan - Existing Documents	OPUS
WGH	151562-STL-WGH-00-DR-A-ZZZZ-10002	P10	Wight - Site Master Plan - 1 to 1000	Stride Treglown
WGH	151562-STL-WGH-01-DR-A-ZZZZ-12014	P10	First Floor Building Code Plan	Stride Treglown
WGH	151562-STL-WGH-1-DR-A-ZZZZ-12012	P10	Lower Ground Floor Building Code Plan	Stride Treglown
WGH	151562-STL-WGH-02-DR-A-ZZZZ-12015	P10	Second Floor Building Code Plan	Stride Treglown
WGH	151562-STL-00-00-DR-A-ZZZZ-12011	P10	Building Condition Plan	Stride Treglown
WGH	151562-STL-WGH-00-DR-A-ZZZZ-12013	P10	Ground Floor Building Code Plan	Stride Treglown
WGH	151562-STL-00-00-DR-A-ZZZZ-12013	-	Ground Floor Building Code Plan	Stride Treglown
WGH	151562-STL-00-02-DR-A-ZZZZ-12015	-	Second Floor Building Code Plan	Stride Treglown
WGH	151562-STL-00-01-DR-A-ZZZZ-12014	-	First Floor Building Code Plan	Stride Treglown
WGH	V-C8458.61	-	Withybush Hospital	OPUS
GGH	V-C8458.61	03-R0	Glangwilli Hospital - Key Site Plan - Existing Documents	OPUS
GGH	151562-STL-00-00-DR-A-ZZZZ-12017	P1	Ground Floor Building Code Plan	Stride Treglown
GGH	151562-STL-00-02-DR-A-ZZZZ-12019	P1	Second Floor Building Code Plan	Stride Treglown
GGH	151562-STL-00-01-DR-A-ZZZZ-12018	P1	First Floor Building Code Plan	Stride Treglown
GGH	151562-STL-GGH-00-DR-A-ZZZZ-10002	P10	WGGH Site Master Plan 1 to 1000	Stride Treglown

Estimated Cost Report

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GGH	151562-STL-GGH-00-DR-A-ZZZZ-12011	P10	Building Condition Plan	Stride Treglown
GGH	151562-STL-GGH-ZZ-DR-A-ZZZZ-12018	P10	First, Second & Third Floor Building Code Plan	Stride Treglown
GGH	151562-STL-GGH-00-DR-A-ZZZZ-12017	P10	Ground Floor Building Code Plan	Stride Treglown
GGH	N/a	-	Site Plan	NHS
GGH	151562-STL-GGH-00-DR-A-ZZZZ-12011	P10	Building Condition Plan	Stride Treglown
GGH	151562-STL-GGH-00-DR-A-ZZZZ-12017	P10	Ground Floor Building Code Plan	Stride Treglown
GGH	151562-STL-GGH-ZZ-DR-A-ZZZZ-12018	P10	First, Second & Third Floor Building Code Plan	Stride Treglown
GGH	V-C8458.61	03-R1	Glangwilli Hospital - Key Site Plan - Existing Documents	OPUS

Appendix B:

Programme Scope of Works

The following schedule defines the essential works deemed required within the scope of works for each hospital site relative to the 'Do-Maximum' and 'Do-Minimum' scenarios for Prince Philip and Bronglais General Hospitals only. This is the scope of works which is costed and reported herein at Section 4.0 Estimated Capital Costs for these two sites.

	Do Maximum	Do Minimum
Prince Philip Hospital (PPH)		
Vertical drainage	✓	✗
UPS for Theatres	✓	✓
Boiler Plant Replacement	✓	✓
AHU upgrade /renewal	✓	✓
Mains Water storage replacement	✓	✗
Theatre and Day Theatre light replacement	✓	✗
Steam load levellers replacement	✓	✗
Second generator for resilience		
LV switchpanel upgrade	✓	✗
HV switchgear upgrade	✓	✗
ICT Mains Comms room upgrade	✓	✗
Lift replacement	✓	✗
Roof repairs and replacement rainwater goods	✓	✗
Identify decant space	✓	✓
Refurbish area 1 - Ward 1 - PPH-D-G	✓	✓
Refurbish area 2 - Ward 3 - half of PPH-D-F	✓	✓
Refurbish area 3 - Ward 4 - half of PPH-D-F	✓	✓
Refurbish area 4 - Ward 5 - half of PPH-E-F	✓	✓
Refurbish area 5 - Ward 6 - half of PPH-E-F	✓	✓
	✓	✓
Bronglais General Hospital (BGH)		
Lifts-upgrade and replacement	✓	✓
Main LV switchgear panel upgrade	✓	✗
LV submains and panel upgrades	✓	✗
Mortuary water supply Cat 5 separation	✓	✗
Chiller replacement	✓	✗
AHU and Extract fan upgrades and renewal	✓	✗
Second generator for resilience	✓	✗
Central HWS PHE replacement	✓	✗
ICT Main server room upgrade works	✓	✗
DX systems upgrade & replacement	✓	✗

Medical Block 1 Roof Replacement	✓	✓
Refurbishment of area 1 - B-01-4A & 4B	✓	✓
Refurbishment of area 2 - B-02-6A & 6B	✓	✓
Refurbishment of area 3 - B-01-3A & 3B	✓	✓
Refurbishment of area 4 - B-02-5	✓	✓

The scope of works for both Glangwili and Withybush General Hospitals is considered through a much narrower lens given the focus of the PBC and are the same irrespective either the 'Do-Minimum' and 'Do-Maximum' options analysis. Under each of the hospital sites the scope of works is defined in the following documents and tables detailed below:

Stride Treglown Architects

- Glangwilli General Hospital 'Prioritisation Matrix (GGH)
- Withybush General Hospital Prioritisation Matrix (WGH)

Hoare Lea Consulting Engineers

- Hywel Dda - Estate Masterplanning - MEP Priority List

The following matrices should also be considered:

Glangwili General Hospital	Building ID	Element	Location	Description	Scope of improvement works to extend life 7-10 years	Consequence of Failure survey (1-5)	Likelihood of Failure (1-5)	Total
	10	Roof	All areas	The primary roof is pitched with a metal profile covering. A flat felt roof is situated above the link to Building 11. No problems apparent.	Inspect condition of roof when gutter repairs are undertaken.	3	3	9
	10	Roof	Link to Building 12	Flat asphalt roof in poor condition. Split asphalt and vegetation growing through roof covering.	Replace roof deck and covering.	3	5	15
	10	Rainwater goods	All areas	Metal gutters are blocked with vegetation.	Remove all vegetation growth, clear out gutters and allow to line with liquid liner.	3	4	12
	10	Rainwater goods	All areas	Painted cast iron downpipes and hoppers. General rust staining and 2nr hoppers above the rear elevation are leaking.	Redecorate all downpipes. Restore the leaking hoppers in the first instance.	2	5	10
	10	Walls	Upper floors	Decorated cement render. Generally satisfactory notwithstanding a horizontal crack above a ground floor window on the front elevation and a vertical crack in the side elevation.	Cut out cracked render and inspect condition of lintel behind horizontal crack to determine the cause. Undertake render/masonry repairs in the first instance.	2	3	6
	10	Walls	Ground floor	Coursed rubble stone. Generally satisfactory notwithstanding a spalled window sill (lack of overhang) and a stepped crack in a doorway.	Replace stone sill to mitigate risk of internal damp ingress and renew cracked pointing (approx. 2m2).	2	4	8
	10	Soffits	Front entrance	Cracked and blown cement soffit above doorway.	Renew cracked and loose cement to prevent potential injury to users of the building.	4	4	16
	10	Windows	All areas	Single glazed metal casements - life expired. Poor thermal and weatherproof performance, reports of faulty opening/closing mechanisms and isolated areas of perished window putty and peeling paint decoration.	Replace all windows and redecorate timber sub frames.	3	5	15
	10	Windows	Ground floor front elevation under link to Building 11.	Rotten timber sub frame under ground floor windows.	Undertake splice repairs and decorate.	2	5	10
	10	Curtain walling	Link to Building 7	Profound peeling of paint decoration on blank panels, fascias and curtain frame.	Redecorate to improve weather protection	2	3	6
	10	Doors	All areas	Timber doors with areas of poor paint decoration. Localised decay to bottom of front store room.	Undertake epoxy resin repairs to localised decay and redecorate.	2	5	10
	7	Roof	All areas	Metal profiled roof in very poor condition. Water staining along northern and western soffits. One corner is leaking and large holes are present in the soffits above north, east and south elevations with water dripping from holes.	Inspect roof. Allow to undertake cut edge corrosion treatment and replace severely decayed panels. Line metal gutters on completion.	4	5	20
	7	Roof	All areas	Rust staining under joints in periphery capping.	Treat corrosion and seal joints with mastic.	2	3	6

Glangwili General Hospital	Building ID	Element	Location	Description	Scope of improvement works to extend life 7-10 years	Consequence of Failure survey (1-5)	Likelihood of Failure (1-5)	Total
	7	Roof	Flat roof under the principal high level roof.	Single ply membrane appears satisfactory from our limited inspection.	No work required.	1	2	2
	7	Rain water goods.	Front elevation	PVC guttering under roof soffit in fair condition.	No work required.	1	2	2
	7	Soffits	East elevation	Painted concrete soffit contains cracking in northern corner.	Cut out crack, allow to clean and treat reinforcement with corrosion inhibitor and repair with epoxy mortar.	3	3	9
	7	Curtain walling	All areas	Peeling paint decoration along blank panels and frame. The bottom sill has rusted along the north elevation.	Replace sill and redecorate curtain walling.	3	5	15
	7	Concrete frame	East elevation	2nr areas of spalled and cracked concrete under high level windows.	Cut out cracks and remove loose material. Allow to clean and treat reinforcement with corrosion inhibitor and repair with epoxy mortar.	3	4	12
	7	Windows	All areas	Single glazed metal frame windows. Poor paint decoration. Windows likely to have surpassed their serviceable design life. Poor thermal performance.	Overhaul windows and redecorate window frames.	3	4	12
	7	Doors	North elevation	Decayed timber entrance doors to store room.	Replace double-leaf doors.	2	5	10
	5	Roof	All areas	A series of metal profile pitched roofs with a weathered appearance and algae growth visible. Corrosion is likely to be present given age of building.	Inspect roof. Plan cut edge corrosion treatment and localised panel replacements where sever corrosion is present.	3	3	9
	5	Rainwater goods	North and south elevation	Localised staining along north and south elevations indicates leaking boxed gutters.	Allow to undertake cut edge corrosion treatment to the boxed gutters, and replace sections of soffit panels.	2	4	8
	5	Curtain walling	South elevation and stair cores	Peeling paint decoration generally along metal frame with areas of rust staining. Peeling paint on blank panels on stair cores.	Redecorate and treat all corroded areas.	3	5	15
	5	Walls	South elevation	Cavity brickwork contains perished pointing and a vertical crack between GF and FF windows on the projection.	Rake out and renew approx. 25m2 of perished pointing (access equipment required). Replace approximately 10nr cracked bricks.	2	4	8
	5	Walls	South elevation	Composite cladding panels are generally good.	No action required.	1	2	2
	5	Windows	All areas	Single glazed metal frame pivot windows in front of secondary glazing. Windows likely to have surpassed their serviceable design life.	Overhaul where required as part of the planned maintenance programme.	3	3	9
	8	Roof	Eastern projection.	Metal profiled roof above modern eastern projection contains rust staining under capping joints.	Treat corroded area and seal joints with mastic.	2	3	6

Glangwili General Hospital	Building ID	Element	Location	Description	Scope of improvement works to extend life 7-10 years	Consequence of Failure survey (1-5)	Likelihood of Failure (1-5)	Total
	8	Roof	Pitched roofs	Metal framed pitched roofs are heavily weathered but no clear sign of corrosion.	Requires closer inspection and a clean down.	3	4	12
	8	Roof	Central area	Flat roof with a felt or single ply covering. Not visible from ground level. Drips from roof periphery above rendered eastern projection indicates ponding or blocked rainwater outlets. Staining on fascia boards above main entrance suggests a similar problem.	Inspect roof and running outlets. Budget to renew falls by introducing tapered insulation and re-felt.	4	4	16
	8	Rainwater goods	All areas	Poor decoration along the overhanging metal boxed gutters.	Clear out gutters and redecorate.	2	3	6
	8	Rainwater goods	Front/north elevation	Vegetation growing above entrance to outpatient department.	Clean out guttering.	4	3	12
	8	Curtain walling	All areas	Profound peeling paint decoration along curtain walling frame leaving metal structure exposed with the exception of the modern eastern projection with a PPC aluminium curtain wall.	Redecorate to improve weather protection.	3	3	9
	8	Curtain walling	Main entrance	PPC aluminium frame structure with single glazing. Satisfactory.	No work required.	1	1	1
	8	Fascias	East elevation	Decayed timber fascia board.	Replace fascia board and decorate.	2	5	10
	8	Fascias	Front/north and west elevation	Stained PVC fascia boards and partially detached fascia on west elevation.	Clean down all fascias and refix loose board on west elevation.	3	3	9
	8	Concrete frame	Front/north elevation	Regular horizontal cracking in vertical columns along front elevation. Cracks are typically 1-2mm wide	Allow to undertake epoxy mortar repairs and redecorate. Continue to monitor.	4	1	4
	8	Windows	All areas	Single glazed metal frame pivot windows. Windows are likely to have surpassed their serviceable design life. Decoration needs renewing along front elevation including window sills.	Overhaul where required as part of planned maintenance programme. Redecorate previously decorated joinery.	3	4	12
	8	Rooflights	Central area	Two georgian wire glass rooflights are cracked and silicone repairs have been undertaken as a temporary measure.	Replace roof lights.	3	4	12
	8	Walls	East elevation	Acrylic rendered masonry walls contain underlying cracks and small impact damage to a corner at low level.	Monitor wall and undertake reactive render repairs.	2	3	6
	8	Walls	Front/north elevation	Rendered walls with broken bellcast detail at regular intervals along the single storey sections.	Undertake localised render repairs.	2	4	8
	9	Rainwater goods	Front/north elevation	Pitched roof with metal profile sheets. Broken soffits and water damage at eastern corner. Rainwater dripping through broken soffits and from trims along lower edge of fascia panels.	Inspect and repair section of gutter. Replace damaged soffits.	5	4	20
	9	Soffits	All areas	Isolated chips in metal coating similar to other buildings.	Plan long term redecoration.	3	2	6

Glangwili General Hospital	Building ID	Element	Location	Description	Scope of improvement works to extend life 7-10 years	Consequence of Failure survey (1-5)	Likelihood of Failure (1-5)	Total
	9	Fascias	West elevation	Metal profile fascia panels. The roof eaves have been removed (approx. 1.0m) presumably by the building contractor who is constructing a neighbouring extension.	It is assumed the building contractor will reinstate the eave detail.	4	4	16
	9	Curtain walling	East elevation	Peeling paint along blank panels and metal curtain frame.	Redecorate.	2	3	6
	9	Curtain walling	West elevation	2nr missing blank panels. Presumably the panels have been removed by the building contractor working adjacent to the elevation.	It is assumed the building contractor will reinstate the missing panels.	4	4	16
	9	Windows	All areas	Single glazed metal framed windows. Windows are likely to have surpassed their serviceable design life. Decoration is general reasonable.	Overhaul where required as part of the planned maintenance programme.	3	3	9
	32	Roof	All areas	V-Rib standing seam roof with a weathered appearance and worn coating. Isolated areas of rust staining on sides of upstands.	Overcoat the roof panels and replace rusted fixings.	3	3	9
	32	Walls	All areas	Composite wall panels are satisfactory.	No work required.	1	2	2
	6	Fascias	North elevation	Water staining and algae growth along trim under fascia board. The water staining encroaches onto certain soffit panels.	Inspect gutters and line if necessary. Replace damaged soffit boards.	3	3	9
	6	Curtain walling	All areas	Profound peeling paint decoration exposing metal structure.	Redecorate.	3	3	9
	6	Walls	South elevation	Cavity brickwork generally stained and isolated areas of open joints. Vertical crack under a GF window.	Repoint approximately 20m2 of brickwork and replace cracked bricks (access equipment required).	2	4	8
	6	Walls	South elevation	Small area of composite panels - satisfactory condition.	No action required.	1	2	2
	6	Windows	All areas	Single glazed metal framed windows in front of secondary glazing. Windows are likely to have surpassed their serviceable design life.	Overhaul where required as part of the planned maintenance programme.	3	3	9
	2	Roof	All areas	Metal profiled roof with water staining along soffit at northern corner.	Inspect condition of gutters and allow for liquid lining.	3	3	9
	2	Rainwater goods	All areas	PVC downpipes generally satisfactory.	No action required.	1	2	2
	2	Walls	All areas	Cavity brickwork with areas of algae growth.	No action required.	2	2	4
	2	Concrete frame	South elevation	Concrete frame in reasonable condition.	No action required.	4	1	4

Glangwili General Hospital	Building ID	Element	Location	Description	Scope of improvement works to extend life 7-10 years	Consequence of Failure survey (1-5)	Likelihood of Failure (1-5)	Total
	2	Windows	North and west elevation	Metal framed pivot windows with single glazing. General peeling paint decoration and windows are likely to have surpassed their serviceable design life.	Redecorate window frames. Overhaul windows if required as part of the planned maintenance programme.	3	4	12
	2	Curtain walling	Stair core	Poor paint decoration along metal frame.	Redecorate.	3	3	9
	2	Curtain walling	South elevation	PVC double glazed windows - good condition.	No action required.	3	2	6
	4	Roof	North and west elevations	Water staining along all soffits and missing soffit panels above western elevation	Plan cut edge corrosion treatment to gutters and line with liquid liner. Replace approx 5m of soffit panels. Inspect roof panels and budget for for isolated replacements.	4	4	16
	4	Fascias	All areas	Weathered metal fascia panels.	No action required but keep under review.	3	2	6
	4	Walls	All areas	Cavity brickwork is generally satisfactory.	No action required.	2	1	2
	4	Concrete frame	West elevation	Concrete frame is generally satisfactory.	No action required.	4	1	4
	4	Windows	East and north elevation	Metal framed single glazed windows with peeling paint decoration. Windows are likely to have surpassed their serviceable design life.	Redecorate and overhaul if necessary as part of the planned maintenance programme.	3	4	12
	4	Curtain walling	East and north elevation	Metal framed curtain walling with single glazing. Poor decoration.	Redecorate.	2	3	6
	4	Curtain walling	West elevation	PVC curtain wall with double glazed windows in good condition.	No action required.	3	2	6
	3	Roof	All areas	Pitched roof with metal profile panels. Largely hidden from ground level.	Inspect condition of roof. Budget for cut edge corrosion treatment.	4	3	12
	3	Fascias	North and south elevation	Isolated areas of rust staining along metal trim on underside of fascia panels.	Inspect condition of roof.	4	3	12
	3	Concrete frame	South elevation	Concrete frame is generally satisfactory.	No action required.	4	1	4
	3	Walls	All areas	Cavity brickwork generally satisfactory notwithstanding algae growth descending the north elevations and 1nr area of dripping rainwater.	Inspect roof and gutters for water escape prior to any cut edge corrosion treatment/ replacement panels.	2	2	4
	3	Curtain walling	South elevation	PVC curtain wall with double glazed windows in good condition.	No action required.	3	2	6
	3	Windows	All areas excluding south elevation	Metal framed windows with single glazing. Poor paint decoration and windows are likely to have surpassed their serviceable design life. 3nr timber sills suffering from decay.	Replace timber window sills, redecorate frames and overhaul windows as part of the planned maintenance programme.	3	4	12

Glangwili General Hospital	Building ID	Element	Location	Description	Scope of improvement works to extend life 7-10 years	Consequence of Failure survey (1-5)	Likelihood of Failure (1-5)	Total
	1	Roof	All areas	Pitched roof with metal profile panels. Largely hidden from ground level. No indication of an active problem.	Inspect condition of roof.	4	3	12
	1	Rainwater goods	North elevation	Secondary boxed gutter installed under original and PVC downpipes - lightly stained above western wing.	Keep performance under review.	2	3	6
	1	Rainwater goods	South elevation	Soffit staining in western corner. Leaking gutter half way along elevation and above doors at eastern end.	Allow to undertake cut edge corrosion treatment and line gutter.	3	5	15
	1	Rainwater goods	All areas	PVC downpipes are satisfactory.	No action required.	1	2	2
	1	Concrete frame	South elevation	Areas of damaged concrete between floor levels.	Undertake epoxy mortar repairs and allow to clean and treat reinforcement with corrosion inhibitor.	5	2	10
	1	Walls	All areas	Cavity brickwork in satisfactory condition.	No action required.	2	1	2
	1	Walls	South elevation	Open vertical joint between western brick pier and elevation.	Check the vertical plane to understand if the pier needs tying to the concrete frame. Remove cracked and loose mortar and renew joint.	3	5	15
	1	Walls	South elevation	Vertical expansion joint with peeling mastic.	Renew mastic.	2	5	10
	1	Windows	All areas	Primarily metal framed windows with single glazing - general peeling paint decoration and windows likely to have surpassed their serviceable design life. Shrunk mastic around a window in the north elevation (eastern wing).	Redecorate windows and renew shrunk mastic. Overhaul windows as part of the planned maintenance programme.	3	4	12
	1	Windows	East elevation	Timber window sills with worn decoration.	Redecorate sills.	2	3	6
	1	Curtain walling	South elevation	UPVC curtain wall with double glazing in good condition with the exception of 2nr windows with shrunk mastic joints.	Renew shrunk mastic.	3	3	9
	1	Curtain walling	Stair core	Metal framed curtain walling with single glazing. Poor paint decoration.	Redecorate.	2	3	6
	1	Doors	South elevation	UPVC doors with duct tape applied over joints.	Overhaul door and replace draught seals.	3	4	16
	All clinical	Firestopping	Phase 1 reinstatement: Significant areas of the existing fire compartment walls are incomplete with fire stopping and dampers missing.	Compartment walls on primary escape routes	Comprehensive reinstatement of fire stopping to all compartment walls on primary escape routes.	3	5	15
	All clinical	Firestopping	Phase 2 reinstatement: Significant areas of the existing fire compartment walls are incomplete with fire stopping and dampers missing.	Sub compartment walls and hazard rooms within departments	Comprehensive reinstatement of fire stopping to all fire compartment walls in departments and to hazard rooms	3	5	15

Glangwili General Hospital	Building ID	Element	Location	Description	Scope of improvement works to extend life 7-10 years	Consequence of Failure survey (1-5)	Likelihood of Failure (1-5)	Total
				Firecode Works				

WWGH	Site	System	Description	Location	Scope of improvement to extend life 7-10 years	Consequence of Failure survey (1-5)	Likelihood of Failure (1-5)	Total
				HOARE LEA ORIGINAL NOTES IN 1ST STUDY	HOARE LEA SUPPLEMENTARY NOTES FOR SHORT TERM WORKS			
1	WWGH	Lifts	Upgrade & Replacement	Original Blocks	Modernisation in same shafts only. No capacity uplifts. Lifts Ward block 3, 4RH,4LH,Nurses Home,Ward Block 2, Path Lab	4	5	20
2	WWGH	Ventilation	AHU Upgrade & Renewal	Original Blocks	AHU refurbishment and replacement of parts only. Not new with full HTM compliance.Refrurbishment 9 Units plus controls	4	5	20
3	WWGH	Ventilation	Extract Fans Upgrade & Renewal	Original Blocks	14 No for refurbishment. No duty upgrades included	4	5	20
4	WWGH	Ventilation	AHU Controls	Original Blocks	inc above	4	5	20
5	WWGH	Power	Theatre UPS/IPS	HB project ongoing	Include for installation to Preseli Theatre only. Other Theatres completed	5	4	20
6	WWGH	ICT	Mains Comms Upgrade & backbone (inc Aircon/Ups/BMS Alarms& bacbone cabling	All Areas	No works . Maintenance and esential works only	5	4	20
7	WWGH	Medical Gasses	Plant replacement	Vacuum plant & Medical Air systems	Replace vacuum plant in Block 7	4	4	16
8	WWGH	Domestic Pipework Services	Control of Legionellae	All Areas - reconfigured with renewal	Allow for additional commissioning valves and valve replacement to improve intervention only	4	4	16
9	WWGH	HV/LV	Second generator and increased standby capacity	Energy Centre	No second generator . Allowance for additional load shedding control and plug and play panel connection for mobile generator	4	4	16
10	WWGH	HV/LV	Submains panels	Basement & Risers	Allowance for essential local works only over period .	4	4	16
11	WWGH	Power	Distribution to Laundry	Laundry	Required. Replace submains to Laundry	4	4	16
12	WWGH	Nurse Call	System replacement required	All Areas - original blocks	Required . Standalone retrofit. All Block 1, 2 (bar GF),3 & 4	4	4	16
13	WWGH	Heating	Central plant boiler replacement	Energy Centre Central plant	Replace burners to 3 steam boilers. Replace main boiler control panel	4	4	16
14	WWGH	Lighting	Theatre lighting Upgrade	Theatres	Required for Theatres 1-5, Day Theatre and Preseli	4	4	16
15	WWGH	Heating	Controls & Zoning upgrade Valves & Field devices	Floor distribution (Original Blocks)	Installation of zone control valves only.Patient comfort issues and enrgy saving	4	4	16
16	WWGH	Ventilation	Ductwork distribution Upgrade & Renewal	Floor distribution (Original Blocks)	No works. Maintain cleaning programme	4	3	12
17	WWGH	ICT	Local Hub Upgrade (inc local hub, departmental cabling and outlets)	All Areas	No works. Maintenance and essential local works only	4	4	16
18	WWGH	Cooling	Chiller upgrade and replacement	Central core Block	One chiller only. Other has been replaced	4	4	16
19	WWGH	Drainage	Vertical Stack replacement	All Areas (Original Blocks) - excluding basement ongoing	Allow for essential local replacements only over the period. 25%	4	4	16
20	WWGH	Drainage	Horizontal Pipework replacement	All Areas (Original Blocks) - excluding basement ongoing	Complete remaining horizontal drainage replacement in the basement	4	4	16
21	WWGH	Medical Gasses	Main distribution pipework renewal	Risers & distribution (Original Blocks)	Allow for replacement valves and worst case sections only	4	3	12
22	WWGH	Heating	CHP Plant replacement	Energy Centre Central plant	HUHB to assess payback over period	3	5	15
23	WWGH	Lighting	Emergency Lighting Upgrade	All Areas - original blocks	Required. Part of fire improvements. Installation of LED system as standalone works	4	3	12
24	WWGH	Domestic Pipework Services	Main distribution pipework renewal	Floor distribution (Original Blocks)	Allow for replacement valves and worst case sections only	4	3	12
25	WWGH	Power	Electrical infrastructure and wiring renewal	All Areas - original blocks	Allow for essential works to Block 8 and residences . No works to other blocks. Maintenance and essential local works only.	4	3	12
26	WWGH	Fire Alarm	Fire alarm system replacement/renewal	All Areas - original blocks (3400 heads)	Required. Main panels and wiring to be retained	4	3	12
27	WWGH	Medical Gasses	Entanox cylinders and manifold	Capacity review and HTM issue - Bed Head services	No Works	2	3	6
28	WWGH	Heating	Pump replacement	Energy Centre Central plant	Required	4	3	12
29	WWGH	Heating	Steam Mains	Riser distribution and valves	Required	4	3	12
30	WWGH	Heating	Steam Distribution to Laundry	Laundry	Required	4	3	12
31	WWGH	Medical Gasses	Ward distribution pipework upgrade	Floor distribution (Original Blocks)	Allow to replace valve panels and outlets only	3	3	9
32	WWGH	Ventilation	Fire Damper monitoring provision	All Areas	Required in works. Fire improvement measure	3	3	9

33	WWGH	Power	Replacement Distribution Boards	All Areas - original blocks	Allow for replacement of obsolete Distribution boards and Fuseboards with MCB type	4	2	8
34	WWGH	Lighting	Electrical infrastructure and wiring renewal	All Areas - original blocks	No works. Maintenance and essential local works only	4	3	12
35	WWGH	Security	Upgrade & Renewal	All Areas - original blocks	Ability to lock down. To be reviewed with Phil Lloyd	3	3	9
36	WWGH	Domestic Pipework Services	Main distribution pipework renewal	Risers distribution (Original Blocks)	Replace valves and insulation only	3	3	9
37	WWGH	Medical Gasses	Additional VIE Plant & Ring Main Upgrade	HTM Compliance Issue	Replace and increase capacity of bottle manifold	3	2	6
38	WWGH	Heating	Riser distribution pipework replacement	Risers & Floor distribution (Original Blocks)	Replace valves and insulation only	4	3	12
39	WWGH	Domestic Pipework Services	Block 4 Asbestos Pipe	1962 installation	Required	3	2	6
40	WWGH	Lighting	External Lighting	Site	Replacement heads only	2	4	8
41	WWGH	Lightning Protection	Upgrade & Replacement	All Areas - original blocks	No works. Maintenance and essential local works only	4	2	8
42	WWGH	HV/LV	WHTM-06 resilience improvements	Distribution system	No works.	4	2	8
43	WWGH	Heating	Ward distribution pipework upgrade	Floor distribution (Original Blocks)	No works. Maintenance and essential local works only	3	3	9
44	WWGH	Heating	Heat Emitter Replacement	Floor distribution (Original Blocks)	Allow for covers to existing radiators as part of Heating controls and zoning upgrade works above	3	3	9
45	WWGH	Heating	Central plant HWS PHE replacement	Energy Centre & Distributed system	Required. 2 No Boilerhouse. 2 No Block 4	4	2	8
46	WWGH	Lighting	Lighting Upgrade	Llys Myddfai, Ty Arthur	4 bungalows plus emergency lighting	2	3	6
47	WWGH	Domestic Pipework Services	Central plant HWS PHE replacement	Energy Centre & Distributed system	As above	2	2	4
48	WWGH	Domestic Pipework Services	Water Main Capacity	2 incoming supplies but no interconnection / ring main	No works	3	1	3
49	WWGH	Domestic Pipework Services	Water Storage	Recently renewed - Capacity issue with Laundry	No works	2	1	2
50	WWGH	Domestic Pipework Services	Fire Mains & Hydrants	original installation	Replace final section	3	1	3
51	WWGH	Cooling	DX systems upgrade and replacement	Rationalise and consolidate	Replace Preseli Theatre plus 20% allowance for replacement of local units over period.	3	2	6
52	WWGH	Domestic Pipework Services	Gas Fired Water Heater replacement	Block 19	Works completed	2	2	4
53	WWGH	HV/LV	Heating required in Switch rooms, LV & HV rooms	Plantrooms	Required	2	3	6

WithyBush	System	Description	Location	Scope of improvement works to extend life 7-10 years	Consequence of Failure survey (1-5)	Likelihood of Failure (1-5)	Total
	Concrete Wall Panels	External Cladding panels - evidence of spalling	External walls - main building	Required. Risk to visitors, staff and patients from falling debris. Risk of water ingress. Localised repair to concrete panels. Sealant replaced in 1998 with typical 20 year life expectancy, to be replaced.	5	4	20
	Flat roof	Flat roof areas leaking with water ingress to clinical areas	Block 1 - over OPD	Required. Recover existing flat roof to block 1	3	5	15
	Flat roof	Flat roof areas leaking with water ingress to clinical areas	Block 5 over theatres 3 and 4	Required. Recover existing flat roof to block 5 - infill between two pitched roofs	3	5	15
	Pitched roof - gutters	Pitched roof - water ingress throughout. Gutters undersized.	All areas above the main hospital	Replace existing gutters with larger version	3	5	15
	Pitched roof - valleys	Pitched roof - water ingress throughout.	All areas above the main hospital	Replace the existing pitched valley gutter with larger GRP gutter	3	5	15
	Pitched roof - rooflights	Pitched roof - water ingress throughout.	All areas above the main hospital	Remove existing rooflights - make good the opening with tiles to match the existing	3	5	15
	Firestopping	Phase 1 reinstatement: Significant areas of the existing fire compartment walls are incomplete with fire stopping and dampers missing.	Compartment walls on primary escape routes	Comprehensive reinstatement of fire stopping to all compartment walls on primary escape routes.	3	5	15
	Firestopping	Phase 2 reinstatement: Significant areas of the existing fire compartment walls are incomplete with fire stopping and dampers missing.	Sub compartment walls and hazard rooms within departments	Comprehensive reinstatement of fire stopping to all fire compartment walls in departments and to hazard rooms	3	5	15

WithyBush	Site	System	Description	Location	Scope of improvement works to extend life 7-10 years	Consequence of Failure survey (1-5)	Likelihood of Failure (1-5)	Total
	WGH	Cooling	Chiller replacement	Central plant	Required .Remains high risk ITU/HDU central and Pharmacy in courtyard. No chillers for replacement	5	4	20
	WGH	Cooling	Pump replacement	Central plant	Associated pumps and valves for above to be replaced	5	4	20
	WGH	Lifts	Upgrade & Replacement	All Areas	Modernisation only within same shafts. HTM deviation on size and capacity. Bed lift, Passenger lifts 2,3,4,5	4	5	20
	WGH	ICT	Mains Comms Upgrade & backbone (inc Aircon/Ups/BMS Alarms& bacbone cabling)	All Areas	No works. Maintenance and essential works only.	5	4	20
	WGH	Domestic Water Services	Main water storage replacement	Energy Centre Central plant	No works. Maintenance and essential repairs only.	4	4	16
	WGH	Domestic Water Services	Mortuary/Pathology Caloifier & water supply system replacement	Energy Centre Central plant	No works. Allow for replacement with point of Use waters in Mortuary if required in 7-10year period.	3	5	15
	WGH	Ventilation	Fire Damper monitoring provision	All Areas	Required in works. Fire improvement measure	4	4	16
	WGH	Nurse Call	System replacement required	All Areas	Required . Standalone retrofit in 2 wards 7,8. Also Outpatients clinic, therapies and day surgery	4	4	16
	WGH	Heating	Controls & Zoning upgrade	All Areas	Installation of zone control valves only. Patient comfort issues and energy saving.	4	4	16
	WGH	Ventilation	AHU Upgrade & Renewal	Central plant	AHU refurbishment and replacement of parts only. Not new with full HTM compliance. Endoscopy,Theatres 3&4. Day surgery, ITU,HSDU , Theatre recovery units require complete replacement.	4	3	12
	WGH	HV/LV	Submains upgrade required	All Areas	Submains cabling retained. Obsolete fuseboards feeding local DBs to be replaced.	5	3	15

WithyBush	Site	System	Description	Location	Scope of improvement works to extend life 7-10 years	Consequence of Failure survey (1-5)	Likelihood of Failure (1-5)	Total
	WGH	HV/LV	Primary distribution and electrical boards	All Areas	Main and submain switchboards to remain	5	3	15
	WGH	HV/LV	Second auto generator for resilience	Energy Centre Central plant	Second 800KVA to be completely overhauled but to remain as manual backup. No upgrade of system for latest HTM compliance. Main 1850 KVA requires overhaul. Main container corrosion to be treated and corroded attenuator sections to be replaced	5	3	15
	WGH	Domestic Water Services	Control of Legionellae	All Areas	Allow for additional commissioning valves and valve replacement to improve intervention only.	4	3	12
	WGH	Heating	Heat Emitter Replacement	All Areas	Allow for covers to existing radiators as part of Heating controls and zoning upgared as above.	3	4	12
	WGH	Ventilation	Extract Fans Upgrade & Renewal	Central plant	2 No centralised Dirty Extracts to be refurbished and replacement parts & inverter controls only. Not full replacement.	3	3	9
	WGH	Lighting	Emergancy Lighting upgrade/replacement	All Areas	Required. Part of Fire improvements. Installation of LED system.	4	3	12
	WGH	Medical Gasses	Main distribution pipework renewal	All Areas	Distribution pipework to remain. Allow for some valve replacement only.	3	3	9
	WGH	Medical Gasses	Ward distribution pipework upgrade	All Areas	As above	3	3	9
	WGH	Cooling	DX systems upgrade and replacement	All Areas	Allow for partial replacement only. 40% over 10 years	3	4	12
	WGH	Heating	Central plant boiler replacement	Energy Centre Central plant	Allow for 2 boilers to be replaced only to improve resilience & reduce risk of site heat capacity failure. Also 2 No compensated heating pumps.	4	3	12
	WGH	Heating	Flue Stack	Energy Centre Central plant	Structural and corrosions repairs. Replace all fixing bolts	3	4	12

WithyBush	Site	System	Description	Location	Scope of improvement works to extend life 7-10 years	Consequence of Failure survey (1-5)	Likelihood of Failure (1-5)	Total
	WGH	Domestic Water Services	Fire Main only 3/4 done	External Site	Replace final section to ensure fire test pressures met.	2	2	4
	WGH	Medical Gasses	Bottled gasses Nitrus and Ent	Central plant	Replace manifolds	3	2	6
	WGH	Heating	Pump replacement	Energy Centre Central plant	Change primary pumps. Worn and obsolete	3	3	9
	WGH	Fire Alarm	Fire alarm system replacement/renewal Residences and Head Replacement	All Areas	Obselete parts of sysem to be repaced. Allow 70% areas for detector head replcement.	3	3	9
	WGH	Domestic Water Services	Central plant calorifier replacement	Energy Centre Central plant	Include for replacement of Heat Exchangers only	3	3	9
	WGH	Heating	Riser distribution pipework replacement	All Areas	Allow to re insulate main distribution pipework only	3	3	9
	WGH	Drainage	General replacement/renewal	All Areas	Problems in Physiotherapy area. Allow for general repairs only	3	3	9
	WGH	Heating	Oil Tanks - Compliance issue replacement & Upgrade	Energy Centre Central plant	Required. Replace and down grade system. Environmental risk	2	2	4
	WGH	Heating	Oil pipework from tanks to boiler house	Energy Centre Central plant	Required. Replace and down grade system. Environmental risk	2	3	6
	WGH	Security	Upgrade & Renewal	All Areas	Ability to lock down. To be reviewed with Phil Lloyd	2	2	4

WithyBush	Site	System	Description	Location	Scope of improvement works to extend life 7-10 years	Consequence of Failure survey (1-5)	Likelihood of Failure (1-5)	Total
	WGH	Lighting	Theatre lighting upgrade	Theatre 3 and DS2	Required NEW			
	WGH	Steam	Hotwells	Condensate systems	Required NEW			
	WGH	Gas	Instructure	Existing supply to kitchen	Replace with link to external NEW			
	WGH	Pneumatic tube system	Instructure	Replace	Replace with link to external NEW			

Appendix C:

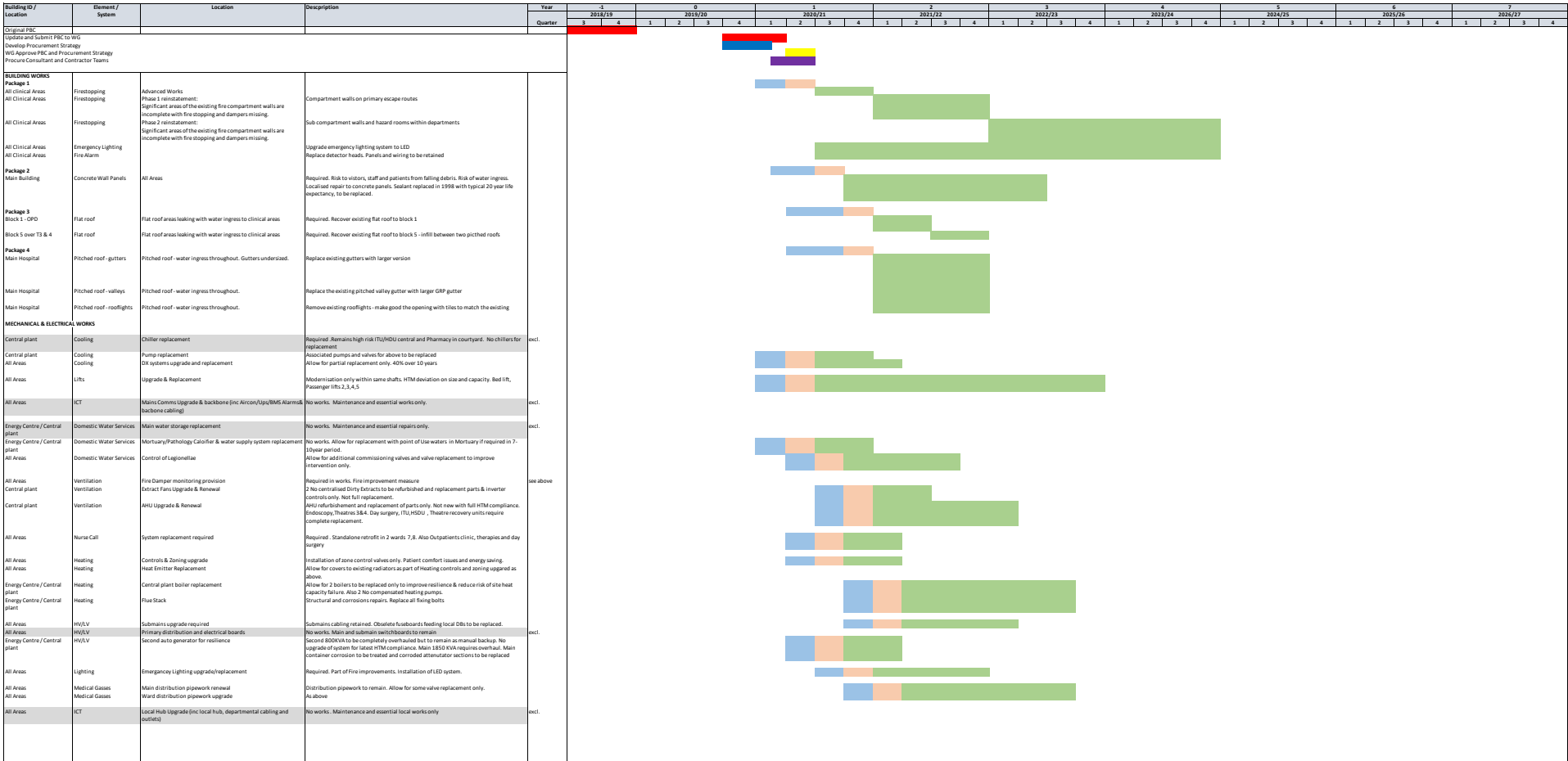
Cashflow Profile for 'Do-Minimum' Option

Indicative cashflow in consideration of a programme of works which delivers the 'Do-Minimum' scope of works

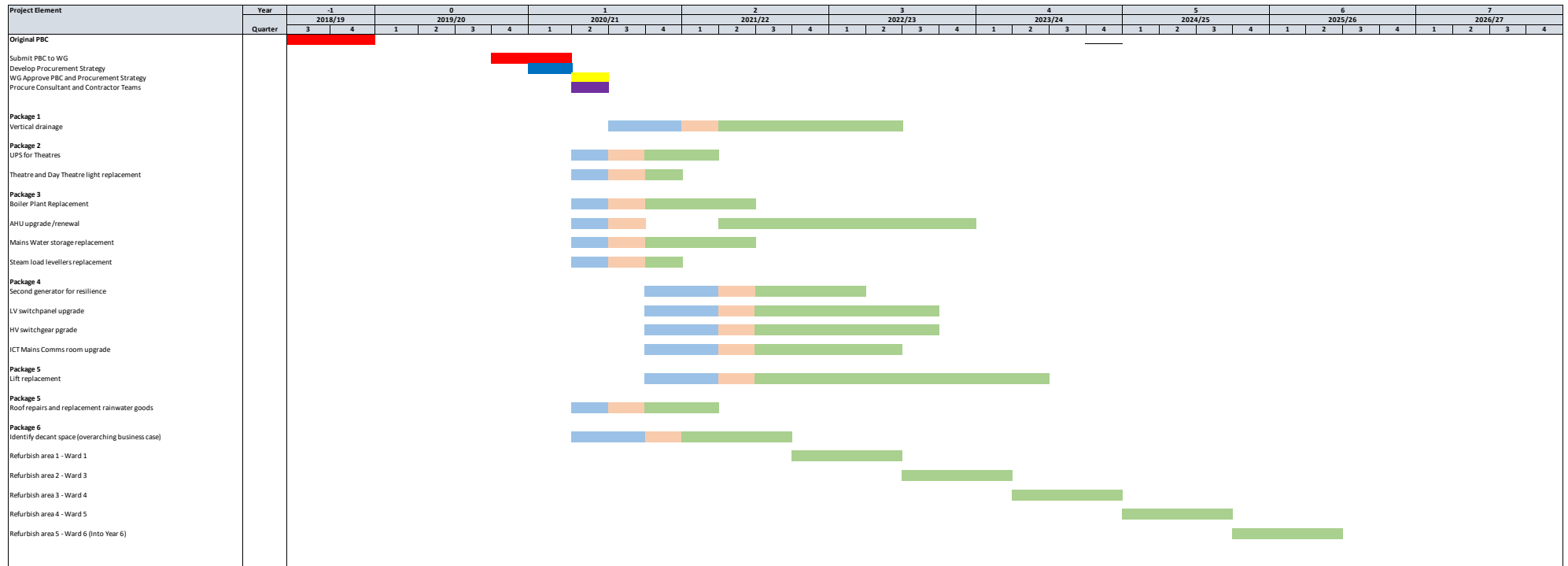
Year	1	2	3	4	5	6	7	8	Totals
Works Costs:	£ -	£ 6,155,700	£ 21,559,100	£ 17,816,200	£ 8,728,200	£ 4,841,300	£ 124,700	£ 30,500	£ 59,255,700
Fees (approximate):	£ 1,920,600	£ 4,587,600	£ 1,566,600	£ 1,500,900	£ 1,432,600	£ 250,400	£ -	£ -	£ 11,258,700
Non Works:	£ 555,500	£ 14,704,100	£ 475,100	£ 463,900	£ 512,700	£ 174,600	£ -	£ -	£ 16,885,900
Planning Contingency:	£ 371,400	£ 3,817,100	£ 3,540,100	£ 2,967,200	£ 1,601,000	£ 790,100	£ 18,700	£ 4,600	£ 13,110,200
VAT:	£ 185,400	£ 4,935,400	£ 5,114,900	£ 4,249,500	£ 2,168,400	£ 1,161,100	£ 28,700	£ 7,000	£ 17,850,400
Totals In Year	£ 3,032,900	£ 34,199,900	£ 32,255,800	£ 26,997,700	£ 14,442,900	£ 7,217,500	£ 172,100	£ 42,100	£ 118,360,900
Cumulative Total	£ 3,032,900	£ 37,232,800	£ 69,488,600	£ 96,486,300	£ 110,929,200	£ 118,146,700	£ 118,318,800	£ 118,360,900	£ -

Appendix 4: Project Sequencing Programme

System / Location	System / Location	Location	Description	Year	1		2		3		4		5		6		7		
					Quarter	2023/24	1	2	3	4	1	2	3	4	1	2	3	4	1

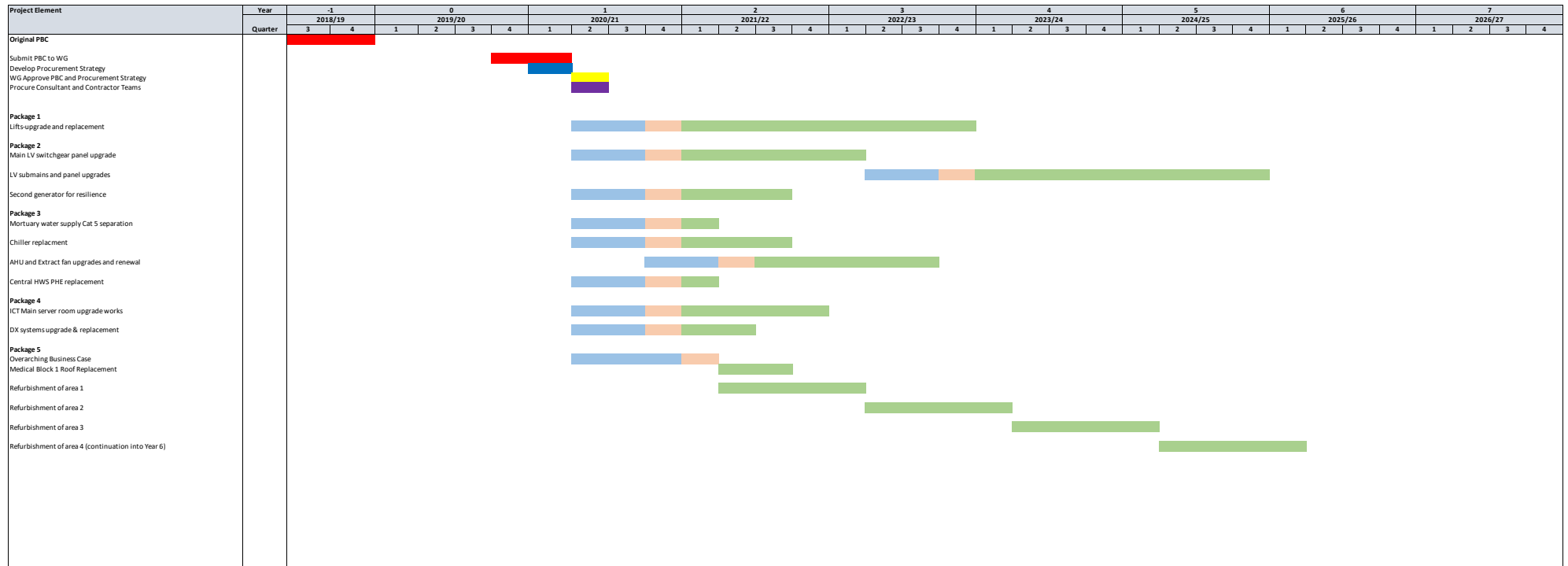


Notes:
Indicative programme developed to inform costing exercise
Assumes BIC for all work packages
To be read in conjunction with main report and schedules or prioritisation
Programme includes for work activities with risk rating of 12 or above. All other works excluded from programme.



Notes:
Indicative programme developed to inform costing exercise
Assumes BIC for all work packages

Note: refurbishment prioritisation is derived from the PPH ward audit undertaken in April 2016. All high risk areas have been prioritised.



Notes:
Indicative programme developed to inform costing exercise
Assumes BIC for all work packages

Note: refurbishment prioritisation is derived from the PPH ward audit undertaken in April 2016. All high risk areas have been prioritised.

Appendix 5: Risk Register

HDUHB Infrastructure Programme Risk Register

Version: Programme Business Case V.2

PL – Planning Risks
 AF – Affordability
 RE – Resource
 SH – Stakeholder
 POL – Political

Cons – Design and Construction
 Comm – Commercial
 Cont – Contract
 S – Site

Reviewed: February 2020

The Risk Register will include a description of all risks within the Infrastructure Programme, rated in terms of i) Proximity, ii) Likelihood and iii) Impact. These have been used to provide a risk score for each risk that will allow the required prioritisation, scrutiny and effective risk management. Each risk will have an identified lead individual. Mitigating action to be taken is also detailed here.

RISK ID & CATEGORY	DESCRIPTION OF RISK	TIMESCALE / PROXIMITY	LIKELIHOOD OF OCCURRING	EXPECTED IMPACT	RISK SCORE (a)x(b)x(c) max 27	RESPONSIBLE INDIVIDUAL / ORGANISATION	SUMMARY OF MITIGATION MEASURES
Key:		High 1-3 months=3	High=3	High=3	>12		
		Moderate 3-12 mnths=2	Moderate=2	Moderate=2	7-12		
		Low > 12 months=1	Low=1	Low=1	0-6		
PL01	Risk regarding delivering the PBC within the timescales and this risk is associated with the provision of further funding	1	2	3	6	HDUHB	Ensure programme is monitored
PL02	Population growth & demographic change assumptions could have underestimated future demand.	1	2	3	6	HDUHB	-Ensure that flexibility with regard to capacity is a key design principle. Assess impact of potential future patient flows
PL03	Uncertainty regarding Regional Plan and Vision of TCS leading to potentially conflicting plans/affordability issues	2	3	3	18	HDUHB	Programme Board to provide regular updates and guide changes as they occur

RISK ID & CATEGORY	DESCRIPTION OF RISK	TIMESCALE /PROXIMITY (a)	LIKELIHOOD OF OCCURRING (b)	EXPECTED IMPACT (c)	RISK SCORE (a)x(b) x(c) max 27	RESPONSIBLE INDIVIDUAL / ORGANISATION	SUMMARY OF MITIGATION MEASURES
PL04	Continued compliance with NHS national planning strategies	1	2	2	4	HDUHB	Ensure continued compliance with relevant planning guidance
PL05	Continued compliance with non NHS national planning strategies	1	2	2	4	HDUHB	Involve key stakeholders Use external expertise
PL06	Miscalculating the opportunities and impact and/or resource requirements of projects	2	2	2	8	HDUHB	Resource planning and regular reviews
PL07	Additional service need to be included but are not identified or omitted	2	2	2	8	HDUHB	Programme is not about service change so simply manage
PL08	Failure of IT capacity to deliver changes required to implement changes	2	2	1	4	HDUHB	Ensure development of an integrated IT strategy Allow flexibility in the design process to take account of any IT requirements
PL09	Risk that the Programme Governance Framework is not sufficient to deliver the Programme.	3	1	3	9	HDUHB	Benchmark against similar programmes/ Review regularly
PL10	Risk that appropriate project leadership and programme governance is not in place and that clear scope of the project is not defined.	3	2	2	12	HDUHB	Ensure leadership responsibilities are known by team members
PL11	WG funding approval not made available for business case progression	2	2	3	12	HDUHB	Immediate engagement
PL12	Impact or AHMWW unknown	2	3	3	18	HDUHB	Monitor consultation outcomes
PL13	Outcome of AHMWW leads to abortive infrastructure work	2	3	2	12	HDUHB	Early identification of proposals
PL14	Fire strategy and fire stopping compliance works in relation to fire service improvement notices are underestimated	2	3	3	18	HDUHB	Early procurement of surveys and investigations to ensure business cases are robust.
AF01	Capital costs under estimated	2	2	3	12	HDUHB	Benchmark and monitor

RISK ID & CATEGORY	DESCRIPTION OF RISK	TIMESCALE /PROXIMITY (a)	LIKELIHOOD OF OCCURRING (b)	EXPECTED IMPACT (c)	RISK SCORE (a)x(b) x(c) max 27	RESPONSIBLE INDIVIDUAL / ORGANISATION	SUMMARY OF MITIGATION MEASURES
							Create dedicated finance workstream and meeting forums.
AF02	Revenue costs under estimated.	2	2	3	12	HUHB	Benchmark and monitor Create dedicated finance workstream and meeting forums.
AF03	WAG cannot fund Capital Requirements of the Programme Preferred Options	2	3	2	12	HUHB	Early dialogue
AF04	WAG cannot meet the funding timetable for the Capital Programme (years 1-5)	2	3	2	12	HUHB	Early dialogue once PBC submitted Develop contingency plans
AF05	Lack of funding prevents the most efficient procurement and grouping of projects.	2	3	2	12	HUHB	Ensure procurement strategy is flexible and implementation programme can respond to availability of capital Develop contingency plans
AF06	Lack of funding prevents significant benefits to the patient environment (we are only able to do the infrastructure projects)	2	2	2	8	HUHB	Establish priorities and projects without links to refurbishments
RE01	Key project staff not funded and not in place	3	2	1	6	HUHB	Clear defined resource plan and formal sign off aligned with funding
RE02	Capability and capacity of project staff.	2	2	1	4	HUHB	Monitor and review performance and capacity regularly
RE03	Key project staff changes.	2	1	2	4	HUHB	Early identification of replacement staff and allow work shadowing
RE04	Availability of appropriate support/advice.	2	1	2	4	HUHB	Use effective procurement and selection processes.

RISK ID & CATEGORY	DESCRIPTION OF RISK	TIMESCALE /PROXIMITY (a)	LIKELIHOOD OF OCCURRING (b)	EXPECTED IMPACT (c)	RISK SCORE (a)x(b) x(c) max 27	RESPONSIBLE INDIVIDUAL / ORGANISATION	SUMMARY OF MITIGATION MEASURES
							Develop a comprehensive project plan to identify the requirements needed at each stage. Secure appropriate funding
RE05	Sufficient level and quality of clinical engagement.	2	2	2	8	HUHB	Establish lead roles for clinical staff Ensure that the project structure encompasses effective mechanisms for engaging and communicating with a wide range of clinical staff
RE06	Sufficient level and quality of operations (estates) engagement.	1	2	2	4	HUHB	Establish lead roles for operational staff Ensure that the project structure encompasses effective mechanisms for engaging and communicating with a operational staff
SH01	Possible lack of engagement/ support from WAG	3	2	2	12	HUHB	Senor input to Programme Board and representation in all aspects of programme structure Regular Board briefings Ad hoc meetings as required
SH02	Lack of engagement of Trust staff.	2	2	2	8	HUHB	Communication plan
SH03	Lack of public buy in.	1	2	2	4	HUHB	Regular and simple communication
POL01	Lack of political support - nationally.	2	2	2	8	HUHB	Identify key persons and maintain regular communication

RISK ID & CATEGORY	DESCRIPTION OF RISK	TIMESCALE /PROXIMITY (a)	LIKELIHOOD OF OCCURRING (b)	EXPECTED IMPACT (c)	RISK SCORE (a)x(b) x(c) max 27	RESPONSIBLE INDIVIDUAL / ORGANISATION	SUMMARY OF MITIGATION MEASURES
							Manage policy
POL02	Lack of political support – locally.	2	2	2	8	HUHB	Identify key persons and maintain regular communication Manage policy
POL03	Policy changes	3	2	2	12	HUHB	
POL04	Organisational structural changes.	2	2	2	8	HUHB	
Cons01	Selection of suitable technical consultant teams	2	2	2	8	HUHB	Use correct frameworks and companies with correct and known capabilities
Cons02	Late involvement of Contractor / SCP in business case work	2	2	3	12	HUHB	Ensure timely appointment
Cons03	Variation of different procurement routes	1	2	2	4	HUHB	Develop robust procurement strategy and ensure project management team is capable of managing varying contracts
Cons04	Inadequate information produced to support business cases	2	1	2	4	HUHB	Agree requirements and develop schedule of deliverables
Cons05	Health Board cannot engage suitably or adequately in business case work	2	2	2	8	HUHB	Identify key milestones and decision points within delivery programmes
Cons06	Scope creep and overdesign	2	2	3	12	HUHB	Ensure robust project management techniques and change control process in place
Cons07	Changes in design trends and/or regulations and guidance leads to increased costs	1	2	2	4	HUHB	Operate a value management design approach and Early Warning system

RISK ID & CATEGORY	DESCRIPTION OF RISK	TIMESCALE /PROXIMITY (a)	LIKELIHOOD OF OCCURRING (b)	EXPECTED IMPACT (c)	RISK SCORE (a)x(b) x(c) max 27	RESPONSIBLE INDIVIDUAL / ORGANISATION	SUMMARY OF MITIGATION MEASURES
Cons08	Although comprehensive refurbishment has been undertaken condition B cannot be achieved throughout.	1	3	1	3	HDUHB	
Comm01	Chosen procurement route proves ineffective	2	1	2	4	HDUHB	Monitor and review at key stages
Comm02	Acceptance of suitable level of risk by contractor / SCP	2	2	2	8	HDUHB	
Cont01	Managing differing forms of contract	1	1	1	1	HDUHB	
S01	Unable to implement decant strategy leading to delays/changes	2	2	2	8	HDUHB	Early creation of detailed decant strategy linked to implementation programme and ensure links and dependencies are incorporated
S01	Construction activity impacts upon clinical services	2	2	2	8	HDUHB	Plan works in appropriate manner to accord with Employers restrictions
S02	Delay on one site causes delay on other sites due to interdependencies	1	2	2	4	HDUHB	