



NHS Wales Laundry Production Units Service Review

Programme Business Case

16 July 2020

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Glossary

Abbreviation	Description
BS EN 14065	<i>BS EN 14065: Textiles. Laundry processed textiles. Biocontamination control system</i> – Management system for assuring the microbiological quality of processed linen
CRB	Cash Releasing Benefit
CSF	Critical Success Factor
FBC	Full Business Case
LPU	Laundry Production Unit
NWSSP	NHS Wales Shared Service Partnership
OBC	Outline Business Case
QB	Quantifiable Benefit
Qual	Qualitative Benefit
'The review'	NHS Wales Laundry Production Units Service Review
SES	Specialist Estate Services
VFM	Value for Money
WG	Welsh Government

EXECUTIVE SUMMARY

Introduction

The purpose of the Programme Business Case (PBC) is to review the existing Laundry Production Units service in NHS Wales against best practice guidance, specifically *BS EN 14065 Textiles, Laundry Processed Textiles, Biocontamination Control System* (BS EN 14065), and determine the optimal solution for the delivery of the future service model.

The availability of clean, good quality and decontaminated linen is a fundamental requirement of high quality and safe patient care. There are currently five Laundry Production Units (LPUs) operated by individual Health Boards across NHS Wales. Between them they launder over 31 million items, including 4 million microfibre items, each year incurring operating costs of £9.8m; an average of £0.31 per item (£0.35 per item excluding microfibre).

The introduction of new European Standard BS EN 14065 in Wales 2016, which set out a system for assuring the microbiological quality of processed linen, combined with the need to provide a resilient, sustainable and affordable service, prompted NHS Wales Shared Services Partnership Committee to commission a review of the existing service.

The first stage of the review is in the format of a PBC, using the Five Case model approach as set out in Welsh Government's *Better Business Cases* guidance. A short summary of each of the five cases explored in this business case is provided below.

The Strategic Case

Stakeholder overview

The LPU Service Review (the review) is led by NHS Wales Shared Services Partnership Committee but affects a range of stakeholders; in particular, the workforce within the five existing LPUs and the Health Boards that manage them.

- **Llansamlet Laundry Service** (Swansea Bay University Health Board);
- **Llanfrechfa Grange 'Green Vale' Laundry Service** (Aneurin Bevan University Health Board).
- **Ysbyty Glan Clwyd Laundry Services** (Betsi Cadwaladr University Health Board);
- **Church Village Laundry Service** (Cwm Taf Morgannwg University Health Board); and
- **Glangwili General Hospital Laundry Service** (Hywel Dda University Health Board);

The review also affects all NHS Wales Health Boards and patients, since frontline services rely on a regular supply of clean, safe and decontaminated linen that represents value for money to provide sustainable clinical services.

Strategic context

As well as responding directly to the introduction of BS EN 14065 and related policies, the review supports the delivery of the business strategy and aims that are set out in the NHS Wales Planning Framework 2018/21, since its key priority of high quality underpinning all aspects of NHS Wales is central to the review.

This focus on quality and improvement supports NHS Wales in achieving the 'Quadruple Aim' of improved population health and experience, quality and accessibility, higher value and a sustainable workforce. It seeks to achieve this through considering local, regional and national needs and looking at ways in which we can work in collaborative and collective ways. This will ensure we can identify and deliver the necessary improvements to support Health Boards in

delivering frontline services that are safe, effective, patient-centred, timely, efficient and equitable. For the LPU service this means:

- Improving quality, safety and patient experience with the provision of a resilient service that is able to deliver a regular supply of high quality, decontaminated linen;
- Protecting and improving population health by reducing the risk of healthcare acquired infections and improving the health and wellbeing of the workforce with fit for purpose facilities and safe working practices;
- Ensuring that services are sustainable into the future by providing adequate capacity and contingency arrangements to meet current and future demand, addressing backlog maintenance issues, and providing optimal value for money;
- Improving governance and assurance with the introduction of a best practice assurance system; and
- Reducing the cost of care by through reducing variation, improving productivity, and making the best use of available resources.

In this way, the review aligns directly with *Prosperity for All*, prudent healthcare principles and the *Well-being of Future Generations (Wales) Act 2015*, as well as addressing a number of local drivers.

Furthermore, the *Parliamentary Review of Health and Social Care in Wales* suggests quicker progress could be made on achieving the Quadruple Aim in Wales through greater co-ordination at a national level and recommends revisiting and exploring the merits of consolidating specialist service hosting and governance arrangements at a national rather than local level.

There is a pressing need for the LPUs to address a number of urgent issues, for instance those outlined for North Wales in the North Wales Linen Services Review. In response, a *North Wales Linen Service Options Appraisal* was undertaken by Betsi Cadwaladr University Health Board in 2017. This recommends that the development of an off-site LPU is required at the earliest opportunity to mitigate the significant business continuity and health and safety risks posed by the poor condition of LPU facilities in North Wales and the urgent need to release space for clinical services on the Ysbyty Glan Clwyd site.

Case for Change

Continuing with business as usual is not an option if LPUs are to comply with BS EN 14065 and provide a high quality, safe and sustainable service that supports the delivery of clinical services across NHS Wales. Key stakeholders agreed five spending objectives that articulate what the future service model needs to achieve in order to do so.

Spending objectives

- **SO1:** To minimise risks to patients, staff and organisations by complying with the latest standards on decontamination of linen
- **SO2:** To provide effective support to clinical services by delivering the highest quality linen service
- **SO3:** To deliver an equitable service across NHS Wales and minimise variation between sites
- **SO4:** To provide the highest quality service that offers the best value for money in terms of cost per unit
- **SO5:** To provide appropriate level of capacity to meet changing demand and mitigate the risk of service failure

There are a number of problems with existing arrangements that prevent NHS Wales from addressing the business needs associated with these spending objectives. Predominately this is because of two key factors:

- The poor condition of existing facilities; and
- Limited collaboration to date between the five existing LPUs.

Impact of failing to address the poor condition of existing facilities

A condition survey and subsequent reviews has identified investment requirements of £18.3m over the next ten years to address issues with statutory compliance, physical condition, and function, space, quality, and environment. Continuing with business as usual in relation to facilities creates the following problems:

- Deficiencies in the physical estate prevent compliance with latest standards, in particular BS EN 14065, increasing the risk of healthcare acquired infections;
- Ageing equipment increases the risk of service failures resulting in additional costs and potentially impacting on the Health Boards' ability to deliver services; and
- Impact on the workforce of substandard working conditions.

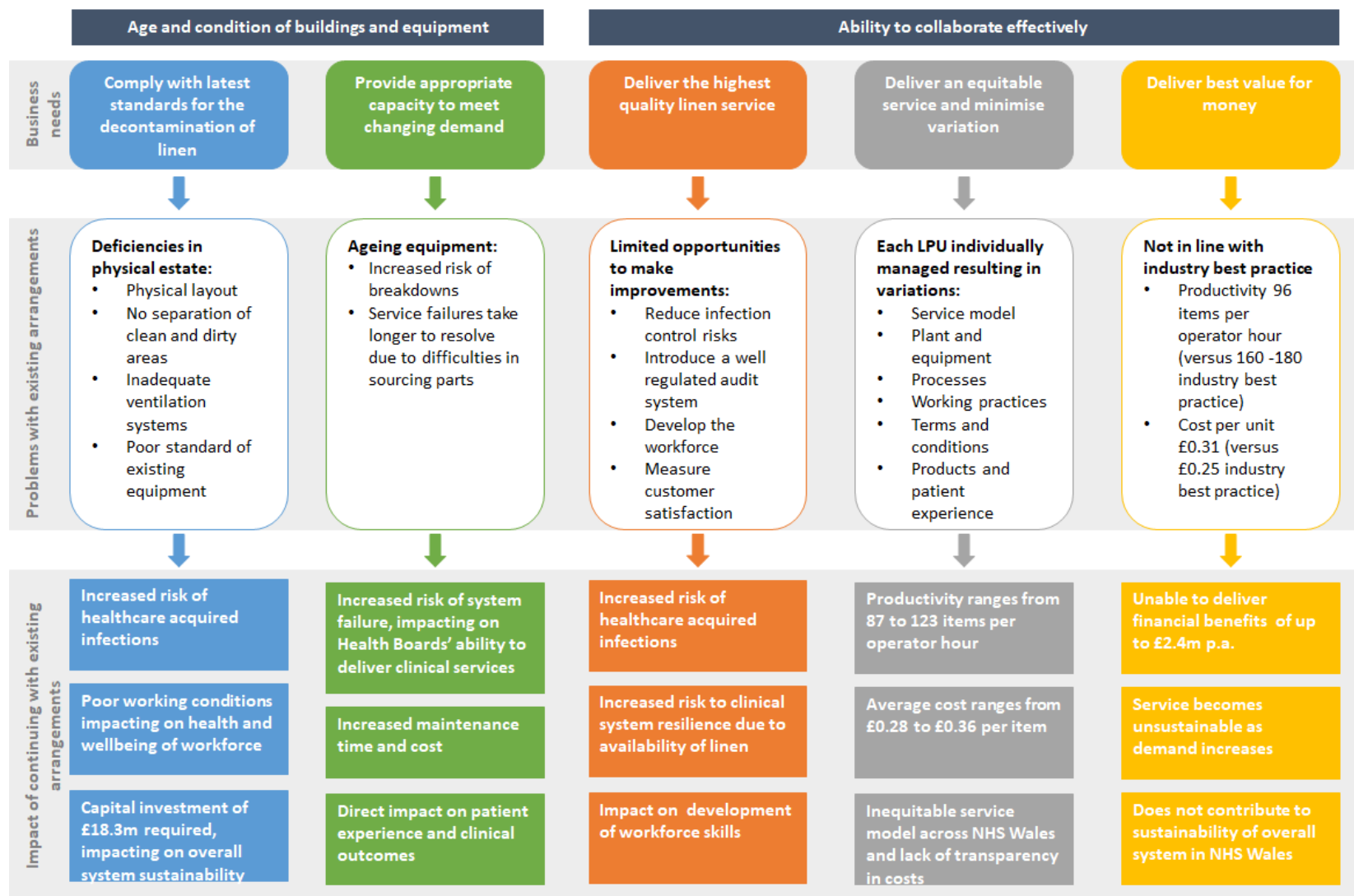
Impact of failing to collaborate effectively

There is little evidence of collaboration between organisations to date. It is likely that this is at least partly a result of operating with locally managed LPUs. In common with the wider findings outlined in the Parliamentary Review, failure to collaborate effectively has limited progress in standardising the service and improving performance. As a consequence:

- There are limited opportunities to improve the quality of the service and develop the workforce under current working arrangements;
- Different ways of working have emerged, resulting in variations in the service model across NHS Wales including varying degrees of productivity and a range of costs to deliver laundry services;
- Health Boards across NHS Wales do not receive equitable value for money since organisations compete with one another, customers are allocated according to organisational rather than geographical arrangements, and there is little evidence of transparency in costing models;
- There are challenges in achieving best practice levels of productivity and cost per item, which is compounded by the limitations of ageing equipment and facilities, which prevents NHS Wales from driving out potential financial savings which market intelligence and benchmarking information suggests could be over £2.0m p.a.

A summary of these problems and the resulting impact is illustrated in the case for change diagram overleaf.

Case for change overview



The optimal solution for the future service model should address these business needs. In doing so it will achieve the spending objectives and deliver a range of outcomes and benefits. Stakeholders identified a range of benefits to consider in the development and assessment of options and these are outlined in the table below.

Main outcomes and benefits

Outcome	Benefit
Modern fit for purpose facilities	Improved system resilience due to reduced likelihood of plant failure
	Reduced maintenance time and costs
	Better working conditions improving health and wellbeing of workforce
Compliance with standards	Improved system resilience due to better decontamination of linen
	Reduced risk of healthcare acquired infections
	Skilled and sustainable workforce
Improved productivity	Better able to respond to changing demand
	Reduced operating costs
Improved utilisation of assets	Estate released to reduce overheads or provide space for the delivery of core clinical services
Review of management arrangements	Centralised management arrangements will release Health Boards to focus on core business
	Centralised management arrangements will enable more effective collaboration leading to improved standardisation
	Centralised management arrangements will enable the delivery of all other benefits

In addition, the optimal solution should minimise risks as much as possible. Stakeholders identified a range of risks to consider in the development and assessment of options and these are outlined in the table below.

Main risks

Risk category	Risk
Resilience	Increased frequency of system failures due to equipment breakdown
	Increased duration of system failures due to scarcity of parts
	Insufficient back up capacity available in the event of an elongated system failure
	Risk of linen shortage at HB level due to logistical failures
Capacity and demand	Demand increases at a higher level than anticipated
	Service unable to respond to short term fluctuations in demand
Workforce	Workforce unable to adapt new ways of working
	Loss of experience, knowledge and skills
	Unable to redeploy staff appropriately
	Impact on workforce of redeployment leading to reduced morale
	Impact on local economy of reduced local employment
Operational	Failure to meet required levels of quality
	Failure to meet local requirements due to loss of HB ownership

Risk category	Risk
	Failure to deal with logistical challenges of Welsh geography (North and South deliveries)
Reputational and policy	Failure to secure support of all HBs
	Failure to identify and address the impact on local economies
Implementation	Failure to ensure business continuity, impacting on clinical services
	Failure to collaborate leading to slower pace in delivery of benefits
Funding and finance	Failure to secure adequate capital funding
	Implementation costs higher than estimated
	Recurring revenue costs are underestimated

The Economic Case

Developing and assessing the long list of options

Stakeholders built on the options framework outlined in the Welsh Government business case guidance to identify and filter a broad range of options. This was expanded to include specific dimensions that stakeholders determined were relevant to this project.

Option framework dimensions

1. **Scope:** What is included in the potential coverage of the project
2. **Solution:** How the preferred scope will be delivered
3. **Service delivery:** Who will deliver the preferred scope and solution
4. **Configuration of units:** An additional dimension included to consider the optimal number of LPUs required to deliver future services.
5. **Management arrangements:** An additional dimension included to consider optimal management arrangements required to deliver future services.

Options for implementation and funding were not assessed as were considered to be dependent on the final options.

Stakeholders identified options within each of these dimensions and each option was assessed in turn in relation to:

- Advantages and disadvantages of the option;
- How well the option meets the agreed spending objectives for the project; and
- How well the option meets the critical success factors outlined below.

Critical success factors

- Strategic fit
- Value for money
- Potential achievability
- Supply side capacity and capability
- Potential affordability

Based on the assessment, stakeholders agreed which options should be carried forward to the shortlist to explore further and discounted any options that were not considered to be feasible. The results of the appraisal of the long list is provided in the table below.

Results of long list appraisal

1. Scope				
Do Nothing	Intermediate options			Do maximum
1A Continue to deliver current scope of services	1B Deliver core services only	1C Deliver core and desirable services		1D Deliver core, desirable and optional services
Carry forward	Discount	Discount		Discount
For purposes of economic appraisal. Explore at FBC	Immaterial difference to current arrangements	Immaterial difference to current arrangements		Immaterial difference to current arrangements

2. Service Solution					
Do Nothing	Intermediate options				Do maximum
2A Continue to deliver from 5 existing units – no investment	2B Continue to deliver from 5 existing units – invest to comply with new standards	2C Deliver services from optimum configuration – existing units	2D Deliver services from optimum configuration – hybrid of existing and new units	2E Deliver services from optimum configuration – new units	2F Outsourcing / co-sourcing solution
Discount	Carry forward	Carry forward as single option			Discount
Would not comply with latest standards	Baseline Do Minimum option	Potential number of configurations considered in category 4 of the options framework (below)			Not feasible (see 3C & 3D)

3. Service Delivery				
Do Nothing	Intermediate options			Do maximum
3A Services continue to be delivered by current providers	3B Services delivered by other NHS Wales providers	3C Services delivered by other public sector providers		3D Services delivered by external private providers
Carry forward as single option		Discount		Discount
Services continue to be delivered by NHS Wales workforce		Limited suitable providers available		Not aligned with WG strategic direction

4. Configuration of Units					
Do Nothing	Intermediate options				Do maximum
4A Continue to deliver from 5 units	4B Deliver from 4 units	4C Deliver from 3 units	4D Deliver from 2 units		4E Deliver from 1 central unit
Carry forward	Carry forward	Carry forward	Carry forward		Carry forward

Do Minimum option	Explore potential value for money	Explore potential value for money	Explore potential value for money		Explore potential value for money
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5. Management arrangements			
Do Nothing	Intermediate options		Do maximum
5A Continue with current configuration and local management	5B New configuration and local management arrangements		5C New configuration and centralised management arrangements
Discount	Discount		Carry forward
Do Nothing re configuration has already been discounted from solution option	Creates challenges in delivering equitable, standardised service across Wales		Offers best opportunity to deliver future service model in line with Parliamentary Review

Identifying the preferred way forward

Based on the results of the initial assessment of options, it is recommended that the following shortlist of options is taken forward to the economic appraisal to test value for money.

Shortlist of options

- **Option 1 – 5 LPUs:** Continue to deliver laundry services from 5 existing NHS Wales LPUs under centralised management arrangements
- **Option 2 – 4 LPUs:** Reconfigure to deliver laundry services from 4 NHS Wales LPUs under centralised management arrangements
- **Option 3 – 3 LPUs:** Reconfigure to deliver laundry services from 3 NHS Wales LPUs under centralised management arrangements
- **Option 4 – 2 LPUs:** Reconfigure to deliver laundry services from 2 NHS Wales LPUs under centralised management arrangements
- **Option 5 – 1 LPU:** Reconfigure to deliver laundry services from 1 central NHS Wales LPUs under centralised management arrangements

Developing the future operating model

All options are assumed to incorporate an optimum hybrid of existing and new facilities to provide appropriate capacity levels and comply with latest statutory guidance. The estates solution in each case is dependent on the configuration of the operating mode.

Therefore, an evaluation was undertaken based on technical reviews and a series of stakeholder workshops to determine

- The most suitable existing LPUs for delivery of the future operating model; and
- In the event of there being insufficient suitable existing LPUs to deliver the future operating model, the most suitable location for replacement facilities.

An initial evaluation of the shortlisted options considered the whole life costs, benefits and risks of each. As a result of this, Option 3 (Deliver laundry services from 3 LPUs under

centralised management arrangements) was identified as the option most likely to offer best value for money. This model was endorsed by Shared Services Partnership Committee in November 2018 as the preferred way forward.

Therefore, a site selection process was undertaken based on the preferred way forward – i.e. to identify the most suitable sites to deliver laundry services from 3 LPUs in NHS Wales – with the results adapted accordingly for the alternative options when the detailed economic appraisal was prepared.

The assessment of existing LPUs was undertaken by considering a range of selection criteria and critical success factors, backed up by analysis and evidence. This found that:

- In North Wales, the current Glan Clwyd LPU is not suitable for development and proposed that a replacement LPU should be developed as close as is reasonably practical to the existing Glan Clwyd site.
- In South East Wales, Church Village LPU is not suitable for development given the scale of change required and limited ability to expand.
- Green Vale LPU is suitable for development and should be upgraded to accommodate all South East Wales volumes.
- Neither LPU in South West Wales is suitable for development given the scale of change required and limited ability to expand.
- A replacement LPU to accommodate South West Wales volumes should be developed and, based on transport analysis, it was concluded that this should most likely be at a location within a reasonable proximity on the west side of Swansea LPU.
- Further work needs to be completed during the OBC stage of individual projects to identify suitable sites in the North and South West Wales for the new LPUs.

Preparing the economic appraisal

For the purpose of preparing the PBC, indicative assumptions have been used based on technical reviews of existing and potential future LPUs to estimate capital requirements and most likely workforce and non-pay costs. These are intended to provide comparison between the options and determine value for money. More detailed cost assumptions will be considered as part of the individual project business cases.

The indicative costs, benefits, and risks have been incorporated into a discounted cash flow for each of the options. Given the scale of the project, the discounted cash flow has been prepared over a 30-year period, using a discount rate of 3.5% in line with the requirements of HM Treasury. The assumptions are outlined in detail in Section 8.

Results of options appraisal

	Option 1 5 LPU's	Option 2 4 LPU's	Option 3 3 LPU's	Option 4 2 LPU's	Option 5 1 LPU
Capital requirements	£18.9m	£22.3m	£25.4m	£23.9m	£21.4m
Average cost per item	31.1p	28.1p	24.2p	24.2p	23.6p
Annual cash releasing benefits	-	£1.2m	£2.4m	£2.4m	£2.6m
Benefit Cost Ratio	0.00%	5.72%	13.33%	12.66%	13.40%
Expected risk value over 30 years	£28.6m	£27.5m	£29.8m	£40.3m	£46.1m
Discounted Net Present Cost (NPC) over 30 years	£241.7m	£230.3m	£216.2m	£227.4m	£229.4m
Rank – NPC	5	4	1	2	3

Identifying the preferred option

The results of the options appraisal suggest that the options should be ranked in relation to the value for money each offers, as well as the balance between economies of scale versus balance of risk, as outlined in the table below.

Ranking of options

Rank	Option	Overview	Recommendation
1	Option 3 (3 LPU's)	Results in the lowest overall NPC (total value of costs, benefits, and risks over a 30-year period). It delivers the second highest level of financial benefits by reducing costs to 24.2p per item (£2.4m p.a.) while offering a medium level of risk and minimal disruption. This is because it involves developing two new facilities and increasing the capacity of one of the existing units to improve productivity, quality and working conditions. At the same time, it offers a high level of system resilience since having three LPU's located across Wales allows for robust contingency arrangements, provides a relatively low risk of equipment failure and minimal logistics risks.	Carry forward as the preferred option and develop individual project business cases for the investment required in each of the 3 LPU's
2	Option 4 (2 LPU's)	Reduced investment requirements, but only ranks second lowest in relation to NPC, because it delivers fewer benefits because of the increased transport requirements and results in an increased resilience risks since the new site in North Wales would be unable to provide enough capacity to provide contingency for the single site in South Wales.	Discount
3	Option 5 (1 LPU)	Despite providing the greatest opportunity for maximising benefits with the lowest overall investment, this ranks third in relation to NPC, because the risks of moving to a single site solution are so significant and involve a high level of disruption. Provides opportunities to improve productivity to such an extent it will reduce the cost to 23.6p per item (£2.6m p.a.) in line with industry best practice. However, operating from a single site increases logistics risks and allows for limited contingency arrangements. This reduces the likelihood of achieving financial benefits.	Discount

Rank	Option	Overview	Recommendation
4	Option 2 (4 LPU's)	Although has limited investment requirements, it ranks fourth in relation to NPC, because it offers fewer benefits due to limited opportunities to improve productivity and does not sufficiently mitigate the failure risks associated with continuing with older buildings and equipment. Although it begins to mitigate system resilience risks associated with ageing equipment, introducing two new facility and continuing to operate from two existing facilities offers minimal opportunities to improve productivity and quality and so does not deliver sufficient benefits.	Discount
5	Option 1 (Business as Usual – 5 LPU's)	Not a feasible option since it results in the highest NPC overall, delivering no benefits and presenting the highest risk, while still requiring significant levels of investment. This is because continuing to operate in existing facilities limits opportunities to improve productivity and quality while not addressing the system resilience risks associated with ageing equipment.	Discount

Conclusion

Following a robust options appraisal process that considered a range of factors it is clear that continuing with existing arrangements is not a feasible option since although investment of £18.9m will ensure the service is compliant with latest standards and eradicate backlog maintenance; it will deliver no benefits and continues to present significant risks.

While the alternative options all offer opportunities for reducing the cost per laundry item processed from 31.1p per item to between 23.6p and 28.1p, this results in varying degrees of risk depending on the level of retained ageing building and equipment and resilience factors, as well as varying degrees of environmental impact.

Option 3 (Delivering laundry services from 3 LPU's) provides the best value for money by investing £25.4m to

- Develop a new LPU in North Wales, in reasonable proximity to the existing facility at Glan Clwyd, with the capacity to process North Wales volumes, improve productivity and comply with statutory requirements.
- Develop a new LPU in South West Wales, in reasonable proximity to the west of the existing facility at Llansamlet, with the capacity to process all South West Wales volumes, improve productivity and comply with statutory requirements.
- Invest in the existing Green Vale LPU to provide capacity to process all South East Wales volumes, improve productivity and comply with statutory requirements.

This will result in

- Reduction in processing costs to 24.2p per item which will deliver cash releasing benefits of £2.4m p.a.
- Improved resilience risk, with reduced risk of plant and equipment failures and business continuity arrangements shared between three facilities.
- Reduced carbon impact since the benefits of the new and improved facilities more than offset the increased carbon emissions associated with the additional transport requirements.

The Commercial Case

Commercial arrangements

Delivering the preferred option to provide future services from three LPUs will require the following key steps to be undertaken at OBC stage. These are outlined below.

- **Key outputs and activities:** Determine the key outputs and activities required to deliver the three proposed LPUs - new builds in North and South West Wales, and upgrade of existing Green Vale site in South East Wales. This is likely to include refurbishment activities to address issues raised in the condition survey and the design, build, and equipping of expanded and new facilities where required to provide appropriate capacity and achieve productivity targets;
- **Procurement strategy:** Identify the appropriate procurement strategy to deliver the key outputs and activities; and
- **Commercial arrangements:** Outline potential commercial and contractual arrangements.

The Financial Case

Financial analysis

Delivering the preferred option to provide future services from three LPUs under centralised management arrangements is estimated to have the financial impacts described below.

Specific capital requirements for the delivery of the preferred option will be determined as part of each of the individual project business cases. However, indicative costs have been estimated based on the likely capital requirements to

- Development of a new LPU in North Wales;
- Development of a new LPU in South West Wales; and
- Investment in the existing Green Vale LPU in South East Wales to increase capacity and improve productivity.

Costs have been estimated based on

- Land acquisition for new sites.
- Floor space requirements for new sites at an average cost per m2 to construct a standard factory unit.
- Equipment requirements for each of the three sites.
- Programme implementation costs including professional fees and programme team.

Based on these assumptions, it is estimated that the preferred option will require capital investment of £25.4m.

However, it should be noted that these are indicative costs and more detailed costings will need to be determined for each of LPUs at project business case stage with consideration for

- Development of new build or acquire leasehold premises;
- Availability of land or premises for development;
- Detailed design of the LPUs; and
- Impact of Covid-19 on costs and timescales related to the introduction of Covid Safe working practices within both the LPUs and the construction industry.

It is estimated that implementing the preferred option will reduce overall recurring revenue costs by around £2.4m p.a. (21.0% saving), resulting in an average cost per item of £0.242.

Under current arrangements each of the Health Boards incurs LPU costs at different average cost per item. Further work is required to determine how future costs and financial benefits should be allocated to each of the Health Boards on an equitable basis.

Contingency arrangements should also be determined, in particular with consideration for the £9.7m of impending backlog maintenance which may pose a risk during the planning and implementation period, of which although only limited amounts are considered to present a high or significant risk, 84% is considered to be a moderate risk.

The Management Case

Management arrangements

A detailed project plan will be developed as part of the OBCs incorporating the strategy, framework and plans for successful delivery of the preferred option. This will include management arrangements, change management plans, benefits realisation and risk management arrangements and plans for post-project evaluation.

A high-level plan with **indicative** timescales is provided below.

Implementation plan

OBC Procurement	90 days	0%	Mon 01/06/20	Sat 29/08/20
▲ South West Wales NEW BUILD	1320 days	0%	Tue 24/11/20	Fri 05/07/24
OBC, design + completion	270 days	0%	Tue 24/11/20	Fri 20/08/21
OBC approvals	120 days	0%	Sat 21/08/21	Sat 18/12/21
FBC Procurement	90 days	0%	Sat 21/08/21	Thu 18/11/21
FBC, design	180 days	0%	Sun 19/12/21	Thu 16/06/22
FBC approvals	120 days	0%	Fri 17/06/22	Fri 14/10/22
Mobilisation	90 days	0%	Fri 17/06/22	Wed 14/09/22
Construction	540 days	0%	Sat 15/10/22	Sat 06/04/24
Implement	90 days	0%	Sun 07/04/24	Fri 05/07/24
▲ South East Wales REFURB	1140 days	0%	Tue 24/11/20	Sun 07/01/24
OBC, design + completion	270 days	0%	Tue 24/11/20	Fri 20/08/21
OBC approvals	120 days	0%	Sat 21/08/21	Sat 18/12/21
FBC Procurement	90 days	0%	Sat 21/08/21	Thu 18/11/21
FBC, design	180 days	0%	Sun 19/12/21	Thu 16/06/22
FBC approvals	120 days	0%	Fri 17/06/22	Fri 14/10/22
Mobilisation	90 days	0%	Fri 17/06/22	Wed 14/09/22
Construction	360 days	0%	Sat 15/10/22	Mon 09/10/23
Implement	90 days	0%	Tue 10/10/23	Sun 07/01/24
▲ North Wales NEW BUILD	1320 days	0%	Tue 24/11/20	Fri 05/07/24
OBC, design + completion	270 days	0%	Tue 24/11/20	Fri 20/08/21
OBC approvals	120 days	0%	Sat 21/08/21	Sat 18/12/21
FBC Procurement	90 days	0%	Sat 21/08/21	Thu 18/11/21
FBC, design	180 days	0%	Sun 19/12/21	Thu 16/06/22
FBC approvals	120 days	0%	Fri 17/06/22	Fri 14/10/22
Mobilisation	90 days	0%	Fri 17/06/22	Wed 14/09/22
Construction	540 days	0%	Sat 15/10/22	Sat 06/04/24
Implement	90 days	0%	Sun 07/04/24	Fri 05/07/24
GLANGWILLI DECOMMISSION	90 days	0%	Sat 06/07/24	Thu 03/10/24
CHURCH VILLAGE DECOMMISSION	90 days	0%	Sat 06/07/24	Thu 03/10/24
LLANSAMLET DECOMMISSION	90 days	0%	Sat 06/07/24	Thu 03/10/24

Recommendation

Based on the results of the options appraisal, it is recommended that the preferred option is taken forward into the respective OBCs to be explored in further detail.

The preferred option includes:

- Reconfiguring from five to three LPUs and locating them according to the results of a comprehensive site selection process detailed in this document.
- Investing in the replacement, upgrading, and extending of the three facilities to meet current standards and provide appropriate levels of resilience and sufficient capacity to meet demand.
- Standardisation of the service model, delivering productivity improvements to between 160-180 items per operator hour resulting from the re-engineering of plant production flows and the procurement of plant and equipment with greater throughput per hour.
- Creation of a centralised management function, through the transferring of services to Shared Services, in order to improve collaboration and ensure delivery of benefits, while releasing NHS Wales Health Boards to focus on core functions and providing a potential model which may be considered for other operational support services.

1 INTRODUCTION

1.1 Purpose

1.1.1 The purpose of the Programme Business Case (PBC) is to review existing Laundry Production Units in NHS Wales against best practice guidance, specifically *BS EN 14065 Textiles, Laundry Processed Textiles, Biocontamination Control System*, and determine the optimal solution for the delivery of the future service model.

1.1.2 This introductory section of the PBC provides an overview of:

- The context of the proposed investment;
- The governance arrangements for the project;
- Stakeholder workshops; and
- The structure and the content of the PBC.

1.2 Context of proposed investment

1.2.1 Laundry services are currently delivered to NHS Wales from five Laundry Production Units (LPUs), operated by individual Health Boards as follows:

- Ysbyty Glan Clwyd Laundry Services: Betsi Cadwaladr University Health Board;
- Glangwili General Hospital Laundry Service: Hywel Dda University Health Board;
- Llansamlet Laundry Service: Swansea Bay University Health Board;
- Church Village (old East Glamorgan Hospital) Laundry Service: Cwm Taf Morgannwg University Health Board;
- Llanfrehfa Grange 'Green Vale' Laundry Service: Aneurin Bevan University Health Board.

1.2.2 By the nature of their business, industrial or large scale laundry services are revenue and capital intensive and require significant labour resources combined with high levels of maintenance to ensure the reliable provision of clean and safe linen. This is particularly true where laundering services are provided to hospitals; laundry may be very heavily soiled or infected with pathogens and accordingly will require more intensive and careful laundering than used-laundry typically produced by hotels, for example.

1.2.3 The availability of clean, good quality and decontaminated linen within NHS Wales is a fundamental requirement of high quality patient care which directly contributes to a safe and comfortable setting in which patients can receive treatment and recuperate. A low quality, unreliable laundry service contributes to a poor patient experience which undoubtedly taints perceptions of other aspects of NHS services. Linen shortages also negatively impact on the availability of beds in hospitals and may cause procedures to be postponed. Ensuring a regular supply of clean, safe, decontaminated linen is clearly fundamental to the successful functioning of NHS Wales services.

1.2.4 The LPUs currently process over 31.4 million items including over 3.8 million microfibre items each year, with operating costs of £9.8m p.a. based on 2018/19 actual outturn. Providing clean linen to patients and other service users costs on average £0.31 per item, including microfibre, processed by the LPUs. Clearly such

significant expenditure on an important service warrants careful management from both a strategic and operational perspective.

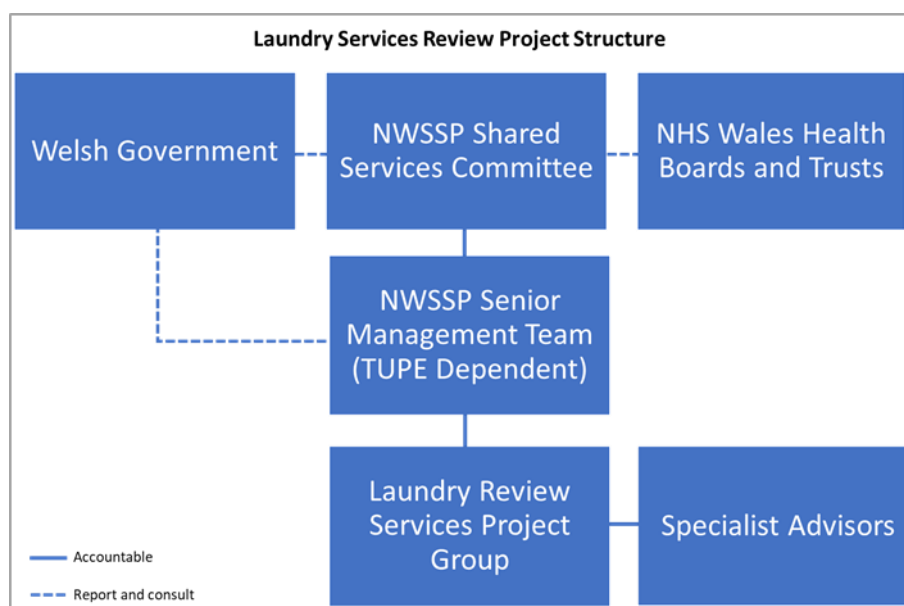
- 1.2.5 In 2016, a new British and European standard, BS EN 14065 Textiles, Laundry Processed Textiles, Biocontamination Control System (BS EN 14065) was introduced to provide management systems for the microbiological quality of laundry. Subsequently, Welsh Health Technical Memorandum 01-04 (WHTM01-4) was published to provide NHS Wales organisations with guidance on all aspects of the decontamination of linen for health and social care settings in line with BS EN 14065.
- 1.2.6 The publication of new standards prompted a series of site visits to Laundry Production Units by Special Estate Services (SES) which identified areas of non-compliance against recently published Best Practice Guidance. Key issues were identified including concerns related to
- System resilience risks;
 - Growing demand;
 - Hygiene and infection control;
 - Increasing costs; and
 - Working conditions.
- 1.2.7 Following the site visits, SES recommended to the Welsh Government that machinery at the highest risk be replaced as a short-term measure to increase the reliability of the service. Ministers approved emergency capital funding of £1 million to address the most immediate concerns.
- 1.2.8 As a result of this, the Shared Services Partnership Committee approved the development of an NHS Wales LPU Service Review project at its meeting on 17 May 2016 to review the existing NHS Wales LPUs against best practice guidance.
- 1.2.9 Following this initial work, in April 2019 the Shared Services Partnership Committee approved to develop the work in the following stages:
- Stage 1 – Programme Business Case;
 - Stage 2 – Outline Business Cases for individual projects
 - Stage 3 – FBCs or BJC's
- 1.2.10 The review specifically considers the implications of achieving best practice in respect of:
- Providing a skilled, sustainable workforce;
 - Developing fit-for-purpose facilities;
 - Delivering a sustainable and affordable service;
 - Providing effective support to clinical and non-clinical services; and
 - Independent versus collaborative management arrangements.
- 1.2.11 This document sets out the Programme Business Case (PBC) which:
- Explores the case for change in terms of the gap between existing arrangements and current standards;
 - Sets out the robust option appraisal undertaken to identify a preferred option in terms of a future model of service that will address the gap and deliver optimum public value for money;

- Assesses alternative procurement routes available to deliver the preferred option;
- Determines the overall capital and revenue requirements and assesses affordability; and
- Sets out the project management arrangements to deliver the final solution.

1.3 Project governance

- 1.3.1** The Shared Services Partnership Committee is the project sponsor and oversees the work.
- 1.3.2** The Shared Services Partnership Committee is comprised of the chief officers of each Health Board and NHS Trust in Wales (or their nominated representative), the Director of the Shared Services, together with a chair who is to be appointed by the Committee in accordance with the Shared Services Partnership Committee Standing Orders. This is to ensure that the views of all NHS organisations are taken into account when making decisions in respect of shared services activities.
- 1.3.3** As part of the governance arrangements, committee members:
- Receive regular progress reports from the Senior Responsible Owner;
 - Represent the views of their respective organisations and act as a conduit through which local issues can be identified to the project team;
 - Disseminate any relevant information to local forums and/or key individuals within their organisations; and
 - Where necessary, promote the project outcomes locally or nationally.
- 1.3.4** An NHS Wales LPU Service Review Project Group was established to drive forward stage 1 of the project which:
- Is chaired by the Senior Responsible Owner;
 - Involves the Project Director and representatives from all NHS Wales' organisations and the Welsh Government laundry and decontamination and infection prevention leads and staff side, and will support the Senior Responsible Owner to help ensure the project meets its objectives and delivers the projected benefits; and
 - Oversees the appointment and management of external consultants to undertake the review.
- 1.3.5** Key roles within the Group include:
- Senior Responsible Owner;
 - Project Director;
 - Project Manager.
- 1.3.6** The Project Director provides monthly reports to the Senior Responsible Owner, who briefs the Review Project Group.
- 1.3.7** Governance arrangements are outlined in the diagram below.

Figure 1-1 Governance arrangements



1.4 Stakeholder workshops

1.4.1 A series of stakeholder workshops were undertaken to assess key objectives, analyse findings and identify and appraise options. An overview of the workshops is provided in the table in the table below and a copy of the outputs is provided in Appendix A1.

Figure 1-2 Stakeholder Workshops

Workshop	Attendees	Purpose	Date
Workshop 1: Case for change	Stakeholder Group	Validated outcome of site assessments and data collection. Agreed SMART spending objectives. Determined business needs. Established project scope. Identified benefits, risks, constraints and dependencies.	1 March 17
Workshop 2: Identifying and assessing the options	Stakeholder Group	Agreed critical success factors. Identified long list of options using options framework. Assess long list against critical success factors and spending objectives. Determined shortlist of options including preferred way forward.	23 March 17
Workshop 3: Benefits and Risks of Options	Stakeholder Group	Refined the options by considering potential configurations of the future model. Assessed the advantages and disadvantages of each. Undertook preliminary benefits appraisal.	3 May 17
Workshop 4: Economic Appraisal Review	Independent Panel (Health	Validated the work undertaken to date and the initial assumptions and outputs used in the economic appraisal.	7 Sep 17

	Board Exec Directors)		
Workshop 5: Risk assessment	Stakeholder Group	Validated risks and quantified them using a multi-point probability approach.	6 Sep 18
Workshop 6: Management arrangements	Stakeholder Group	Identified and assessed the options for management arrangements of the future service model.	2 Oct 18
Workshop 7: Management arrangements	Stakeholder Group	Identified and assessed the options for management arrangements of the future service model.	03 Jan 19
Workshop 8: Site Selection	Stakeholder Group	Agreed the site selection process and methodology for developing and agreeing the optimal operating model.	25 Nov 19
Workshop 9: Site Selection	Stakeholder Group	Agreed site selection criteria required to compete the site selection process, leading to an assessment against agreed selection criteria.	09 Jan 20
Workshop 10: Site Selection	Stakeholder Group	Completed site selection process through regional workshops (North, South East and South West Wales) to confirm the preferred option.	5,6 Feb 20

1.5 Structure and content of PBC

1.5.1 This Programme Business Case (PBC) follows the Five Case Model in line with Welsh Government best practice guidance as set out in Better Business Cases: Guide to Developing the Programme Business Case. The structure of the PBC is outlined in the table below.

Figure 1-3 Structure of the Programme Business Case

Case	Section	Purpose	
Strategic Case	2	Strategic Context	Provides an overview of current services and explains how the project is strategically placed to contribute to the delivery of organisational goals.
	3	Case for Change	Establishes the case for change by outlining the spending objectives, existing arrangements and business needs.
	4	Potential Scope	Identifies the potential scope of the project in terms of the operational capabilities and service changes required to satisfy the identified business needs.
	5	Benefits and Risks	Identifies the benefits, risks, constraints and dependencies for the project.
Economic Case	6	Options Identification	Explores the preferred way forward by agreeing critical success factors (CSFs), determining the long list of options, and undertaking a SWOT analysis to identify a shortlist of options.

Case	Section	Purpose	
	7	Site selection	Outlines the process undertaken to determine the future operating model
	8	Economic Appraisal	Appraises the economic costs, benefits and risks for the shortlisted options.
	9	Preferred Option	Identifies the preferred option by reviewing the outputs of the economic appraisal, as well as consideration for the benefits and risks of each of the three shortlisted options to determine which option offers the best value for money.
Commercial Case	10	Commercial Arrangements	Outlines the procurement strategy and the contractual arrangements for development of the deal that is required to deliver the preferred solution for the project.
Financial Case	11	Financial Appraisal	Sets out the forecast financial implications of the preferred option.
Management Case	12	Management Arrangements	Sets out the arrangements put in place to manage the project to successful delivery.

STRATEGIC CASE

2 STRATEGIC CONTEXT

2.1 Introduction

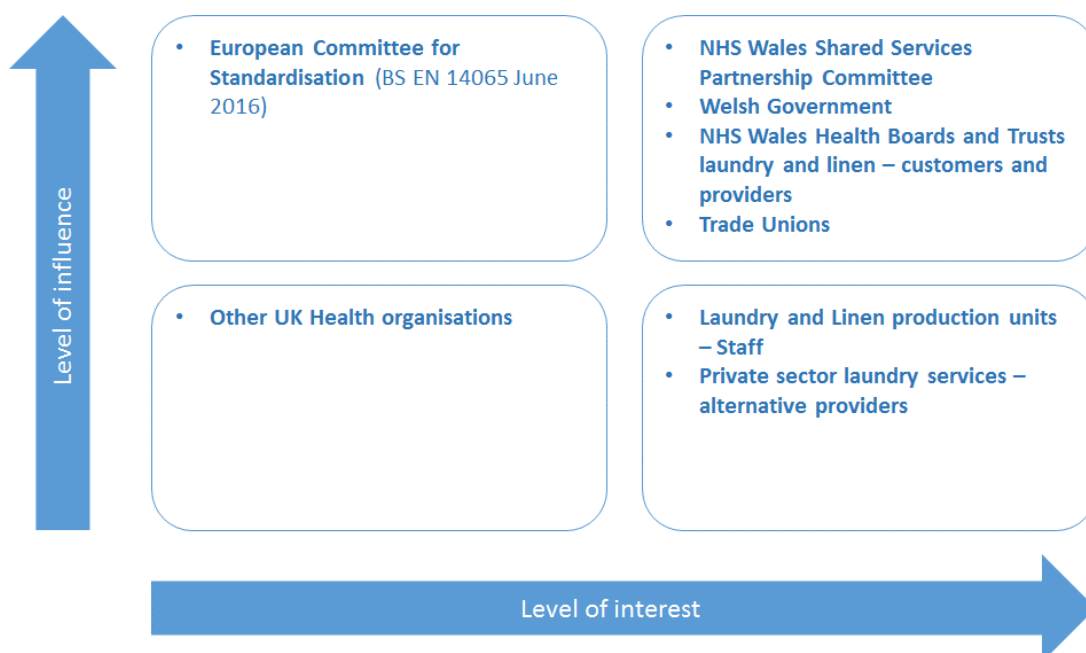
2.1.1 This section of the PBC outlines the strategic context for the NHS Wales Laundry Production Units Services Review by providing an overview of stakeholders and explaining how the review is strategically placed to assess the delivery of organisational goals by:

- Providing a stakeholder overview;
- Describing the latest relevant guidance driving the review;
- Outlining how the project is essential to achieving the overall business strategies and aims of NHS Wales; and
- Describing how the project aligns with other relevant strategies.

2.2 Organisation overview

2.2.1 The diagram below shows the main stakeholders affected by the review in relation to the level of influence on and interest in the project.

Figure 2-1 Stakeholder map



2.2.2 The review is being led by NHS Wales Shared Service Partnership (NWSSP), an independent organisation owned by NHS Wales, supporting the statutory bodies of NHS Wales through the provision of a comprehensive range of high quality, customer focused support functions and services.

2.2.3 NWSSP supports NHS Wales by creating dedicated shared services with a primary focus on operating within best practice guidelines and with a customer care ethos centred on high quality service. It is led by a Managing Director and Senior Management Team accountable to the Shared Services Partnership Committee composed of NHS organisational representatives.

2.2.4 There are currently five Laundry Production Units (LPUs) managed by Local Health Boards that deliver services to NHS Wales. The table below lists the LPUs and

provides an overview of current management arrangements for and key customers of each.

Figure 2-2 Health Boards serviced by LPUs

Health Board	Laundry Production Unit	Delivering services to
Swansea Bay University Health Board	Llansamlet Laundry Service	<ul style="list-style-type: none"> Swansea Bay UHB Cardiff and Vale UHB Aneurin Bevan Ystradgynlais Hospital
Aneurin Bevan University Health Board	Llanfrehfa Grange 'Green Vale'	<ul style="list-style-type: none"> Aneurin Bevan UHB Cardiff and Vale UHB Powys Teaching Health Board Welsh Ambulance Services Trust Velindre NHS Trust
Betsi Cadwaladr University Health Board	Ysbyty Glan Clwyd	<ul style="list-style-type: none"> Betsi Cadwaladr UHB Welsh Ambulance Services Trust (local)
Cwm Taf Morgannwg University Health Board	Church Village	<ul style="list-style-type: none"> Cwm Taf Morgannwg UHB Vale Healthcare Welsh Ambulance Services Trust (local) External organisations
Hywel Dda University Health Board	Glangwili General Hospital Laundry	<ul style="list-style-type: none"> Hywel Dda UHB Welsh Ambulance Services Trust (local)

2.3 Best practice guidance (BS EN 14065)

2.3.1 The main strategic driver for the review is the recent launch of best practice guidance, specifically:

- *BS EN 14065 Textiles – Laundry Processed Textiles – Biocontamination Control System*, (BS EN 14065) which was introduced to provide management systems for the microbiological quality of laundry; and
- *Welsh Health Technical Memorandum 01-04 (WHTM01-4)* which was subsequently published to provide NHS Wales organisations with guidance on all aspects of the decontamination of linen for health and social care settings in line with BS EN 14065.

2.3.2 In particular, BS EN 14065 highlights the requirement for a management system to monitor microbiological quality when processing textiles to avoid microbiological contamination. The Welsh Government has expressed that it is essential that these standards are adopted both in the commercial setting and within the NHS to maintain the highest possible standards.

2.3.3 The new guidance supports the notion of an improvement in decontamination protocol and overall production quality. WHTM 01-04 proposes a progressive increase in quality through the implementation of various decontamination policies.

2.4 NHS Wales business strategy and aims

2.4.1 The NHS Wales Planning Framework 2018/21 sets high quality as a key priority which underpins all aspects of services, settings and contacts with the NHS in Wales.

It states the need for health organisations to focus on the populations for which they are responsible, with an emphasis on prevention and early intervention, reducing health inequalities and working with wider partners to deliver the best possible services for citizens in Wales.

- 2.4.2 The review of LPUs aligns with the need for organisations to ensure that ‘robust system-wide quality assurance arrangements are in place, coupled with clear quality improvement programmes to drive continuous improvement’. It will achieve this by focusing on developing the collective capacity and capability for improvement across the service.
- 2.4.3 The review’s focus on quality and improvement aims to supports NHS Wales in achieving the ‘Quadruple Aim’ of improved population health and wellbeing, quality and accessible care, higher value, and sustainable workforce.
- 2.4.4 The review aims to achieve this through considering local, regional and national needs and looking at ways in which we can work in collaborative and collective ways to achieve the improvements required to support the Health Boards to deliver frontline services that are safe, effective, patient-centred, timely, efficient and equitable.
- 2.4.5 The review embraces the principles of prudent healthcare that are set out in Prudent Healthcare: Securing Health and Well-being for Future Generations to address the challenges faced by rising costs and increasing demand, get greater value for healthcare systems for patients by delivering healthcare that fits the needs and circumstances of patients and avoids wasteful care.

Figure 2-3 The four principles of prudent healthcare



- 2.4.6 Specifically for the LPU service, this means reducing variation and costs, while providing a safe and high quality service with the appropriate capacity to meet changing demand, which will allow clinical teams to provide the right care in the right place at the right time, as well as reducing the risk of hospital acquired infections.
- 2.4.7 In addition, the review aligns with the Well-being of Future Generations (Wales) Act 2015 that sets out a range of overarching well-being goals and sustainable development principles to ensure that all public bodies act in a manner that the needs of the future generations are not compromised by the needs of the present.

Figure 2-4 Overview of Well-being goals



2.4.8 Specifically for the LPU service, this means contributing to improving the social, economic, environmental and cultural well-being of Wales by helping to contribute to the creation of:

- A prosperous Wales by supporting the economy through the development of a skilled and sustainable workforce and investing in services and facilities in a way that provides optimum public value;
- A resilient Wales by providing a sustainable service with the capacity to meet the current and future needs of the population;
- A healthier Wales by reducing the risk of healthcare acquired infections, enabling Health Boards to deliver high quality and safe clinical services, and improving the health and wellbeing of the workforce;
- A more equal Wales by supporting Health Boards to improve access to services in the right place at the right time and investing in the workforce to provide appropriate training and development; and
- A globally responsible Wales that aims to minimise environmental impact.

2.4.9 In addition to this, the review supports Prosperity for All the recently published national strategy seeking to deliver Welsh Government's key priorities. The main aim

of this is to drive integration and collaboration across the Welsh public sector, putting people at the heart of improved service delivery.

- 2.4.10 Specifically for the LPU service, this means contributing to the following key themes in the Programme for Government as set out in the table below.

Figure 2-5 Alignment with Programme for Government key themes

Key themes	The Review will support this by:
Prosperous and secure	<ul style="list-style-type: none"> Enabling the workforce to fulfil their ambitions and enhance their wellbeing through secure and sustainable employment by delivering best value for money and contributing to the sustainability of the system.
Healthy and active	<ul style="list-style-type: none"> Providing better working conditions that will improve the health and wellbeing of the workforce. Reducing the risk of healthcare acquired infections.
Ambitious and learning	<ul style="list-style-type: none"> Contributing to a prosperous Wales by developing the workforce to create highly skilled and adaptable people.
United and connected	<ul style="list-style-type: none"> Supporting the overall economy by providing best value for public money.

- 2.4.11 The review aligns with all of the priority areas of the strategy, specifically in terms of developing skills which will improve individuals' employability.

2.5 Other strategic drivers

- 2.5.1 There are various other strategic drivers and policies relevant to this project. The table below outlines the alignment between these strategies and the NHS Wales LPU Service Review.

Figure 2-6 Alignment with other relevant strategic drivers

Key driver	The review will support this by:
Infection control	<ul style="list-style-type: none"> Adhering to Infection Prevention and Control Policy; Welsh Healthcare Association Infection Programme 2015 (WHAIP), which describes: <ul style="list-style-type: none"> The preventative measures to avoid cross-contamination; The importance of maintaining a controlled environment; The importance of isolating contamination; A controlled ventilation system throughout high risk areas of microbacterial spread; and Helping to align practice, monitoring, quality improvement and scrutiny. Creating and maintaining an environment with a low cross-contamination risk (i.e. separation between clean and dirty areas, controlled ventilation throughout facilities).
Standardisation/ reduction in variation	<ul style="list-style-type: none"> Standardising all laundry production services in alignment with Best Practice Guidance Framework (WHTM 01 – 04). Working in a uniform manner, as a team, to achieve maximum efficiency. Reducing inappropriate variation using an evidence based approach to achieve standardisation of service.

Key driver	The review will support this by:
Sustainability in development	<ul style="list-style-type: none"> Reviewing and developing a laundry model which is both cost efficient and sustainable for the local and national services. Meeting the Health Board's duties to the sustainability and development principles.
Enhanced communication	<ul style="list-style-type: none"> Communication between LPUs to build on NHS Wales overall developmental goals. Building on the foundations of pre-existing relationships.
Parliamentary Review of Health and Social Care in Wales	<ul style="list-style-type: none"> The Review found that progress on achieving the Quadruple Aim in Wales has been slow and that quicker progress will require a 'stronger central guiding hand' (quoting the view of the Organisation for Economic Co-Operation and Development). It concludes that some significant necessary national assets such as specialised services, commissioning and NWIS could be hosted at national rather than local level in support of the above. "Meaningful progress will require...a wider and more creative combination of national support; incentives; benchmarking (both nationally and internationally); regulation; accountability and transparency." "There needs to be more coordination at national level...with greater focus of time and consolidated technical expertise at national level than is currently the case." "Specialist service hosting and governance arrangements need to be revisited, and the merits of consolidating these in one national location – the national executive of NHS Wales – assessed, looking at the bundle of operational and commissioning functions that need a different national home/system such as NWIS, NHS Wales Shared Services Partnership (NWSSP), specialised services and EASC." A move to centralised management arrangements is in line with the recommendations of the Parliamentary Review.
Prosperity for All: A Low Carbon Wales	<ul style="list-style-type: none"> The Plan sets out the Welsh Government's approach to cut emissions and increase efficiency in a way that maximises wider benefits for Wales, ensuring a fairer and healthier society. It identifies the need for public sector to take a proactive approach to considering and implementing opportunities to reduce emissions from their transport activities. "To help deliver emissions savings as we move towards a low carbon economy, we are now considering carbon impact when allocating capital funding. We are ensuring all new health and education buildings funded through Welsh Government capital are designed and built to maximise energy efficiency."

2.6 Centralised management arrangements

2.6.1 Currently, LPU services are managed by individual Health Boards. However, the recommendations outlined within the Parliamentary Review and learning from other shared services initiatives suggest options for centralising management

arrangements should be explored in relation to the future service model to ensure the full benefits can be realised in a timely manner.

2.6.2 Centralised management is one of six forms of shared service model identified in relevant literature, the others being collaboration, corporate consolidation, lead provider arrangements, strategic partnerships/joint ventures, and outsourcing (European Services Strategy Unit, May 2007).

2.6.3 There are a range of findings that state there are 'clear financial benefits' to shared services (Public Policy institute for Wales, Sept 2017) derived from economies of scale, increased standardisation, increased reliability, removal of duplication, increased collaboration and embedding good practice or dealing with bad practice. There are various case studies that report savings from shared service transformations (e.g. IES, July 2010).

2.6.4 However, it should also be considered that some findings are more cautious and have found benefits have been overstated (e.g. National Audit Office, May 2016). One research paper on shared services in local government by the University of Oxford (July 2017) claims that statistically there is no evidence that organisations that have pursued shared services spend proportionately any less on the shared functions than those who have not moved to a shared service model. Another paper (Public Policy institute for Wales, Sept 2017) highlights the potential risks of escalating costs when moving to shared services due to:

- Replacing existing practices that are deeply embedded.
- Transaction costs might be increased as time and resources are required to document existing costs and best means of replacement.
- Service quality can be reduced and decisions can take longer across collaborating organisations, which can lead to greater costs over time.
- Collaboration can lead to some functions being duplicated, and costs multiplied.
- The time and resources spent on sharing services can mean that other ways of reducing costs can be lost or ignored.

2.6.5 A summary of the key learning for successful implementation of shared service models is provided in the table below.

Figure 2-7 Key learning for shared service models

Key learning from the literature on successful implementation of shared service models:	
1. Take a long term view	
a.	Avoid short term focus on efficiency and savings
b.	Must be good operational and service reasons as well as financial
2. Effective leadership and governance	
a.	Appoint a Senior Responsible Owner
b.	Hold the programme and suppliers to account
c.	Manage the tensions between customers, programme and suppliers
3. Effective communication and involvement	
a.	Build trust through early and continued involvement of staff, trade unions and other stakeholders
4. Good planning and design	
a.	Rigorous evaluation of options and development of an integrated business case – so constituent parts are clear on their role in delivering the benefits
b.	Be clear on how standardised processes will be implemented
5. Effective programme management	
a.	Identify, manage and respond to risks
6. Timing	
a.	Seize the opportunity at the right time
b.	Go at the right pace to take people with you

2.7 Benchmarking information

- 2.7.1 Productivity and best practice in the form of units per hour and costs per item have been considered within the development of this case. These have been used to develop and baseline the potential opportunities together with providing a target reference point for either the re-provision or redevelopment of the laundry production units within Wales.
- 2.7.2 The privately-operated laundry production unit referenced is achieving a throughput of 180 items per hour whilst the best in class NHS operated unit identified achieves 160 units per hour. This case therefore tests the re-provision through any purpose-built unit should be baselined against 180 units per hour whilst any redeveloped sites achieving 160 units per hour. In respect of the cost per item, the research has identified a cost of £0.25 per item should be utilised as the reference point for both the re-provision and redevelopment of the production units.

2.8 North Wales Linen Service Options Appraisal

- 2.8.1 Of particular relevance to this business case is the North Wales review of its laundry production service that was undertaken by Betsi Cadwaladr University Health Board during 2017 in parallel with this review.
- 2.8.2 The North Wales situation shares many of the drivers for change that are outlined above. In addition, the poor condition of the existing LPU facilities in North Wales and the pressing need to release space on the Ysbyty Glan Clwyd site is significantly increasing business continuity and health and safety risks for Betsi Cadwaladr University Health Board. There is therefore an urgent need to take immediate action.
- 2.8.3 Having considered a range of options, the North Wales Linen Service Options Appraisal recommends that a new off-site LPU is developed to allow Betsi Cadwaladr University Health Board to mitigate these risks and realise the benefits of compliance with latest best practice standards at the earliest opportunity.

2.9 Conclusion

- 2.9.1 The NHS Wales Laundry Production Units Service Review is required to respond to the changing strategic context and key policy drivers in Wales; in particular the introduction of new decontamination best practice guidance.
- 2.9.2 To align with key strategic drivers, future services must deliver:
- Compliance with BS EN 14065;
 - A continual supply of clean, good quality and decontaminated linen within NHS Wales, providing a safe and comfortable patient setting as well as reducing the risk of healthcare acquired infections;
 - A high quality, resilient and sustainable healthcare service which is not hindered by a lack of linen resources and therefore the availability of beds;
 - Laundry Production Units which are set in a controlled clean environment that is hygienic and safe for the workforce;
 - An efficient service that delivers best value for money;
 - A reduction in carbon emissions relating to laundry production and transport;
 - Centralised management arrangements that will enable effective collaboration and provide opportunities to deliver a consistent standard approach across Wales;

- Minimal disruption to the workforce and services; and
- Align with Health Technical Memoranda (HTMs).

3 CASE FOR CHANGE

3.1 Introduction

3.1.1 This section of the PBC establishes the case for change that is driving the NHS Wales Laundry Production Units Services Review providing a clear understanding of:

- The spending objectives (what the project is seeking to achieve);
- Existing arrangements (what is currently happening); and
- Business needs (what is required to close the gap between existing arrangements and where they need to be in the future).

3.2 Spending objectives

3.2.1 Spending objectives describe what a project is seeking to achieve and provide a basis for post-project evaluation.

3.2.2 Stakeholders at Workshop 1 built on the work outlined in the PID, identifying key priorities for the project and developing five spending objectives that respond to them. The spending objectives were refined at subsequent workshops and were validated by the independent panel.

3.2.3 The final spending objectives, mapped to the key priorities they address, are provided in the table below.

Figure 3-1 Spending objectives

Ref	Spending objective	Key priorities
SO1	To minimise risks to patients, staff and organisations by complying with the latest standards on decontamination of linen	<ul style="list-style-type: none">• Compliance• Reduction in risk• Fit for purpose facilities
SO2	To provide effective support to clinical services by delivering the highest quality linen service	<ul style="list-style-type: none">• Customer satisfaction• Quality
SO3	To deliver an equitable service across NHS Wales and minimise variation between sites	<ul style="list-style-type: none">• Equity• Standardisation
SO4	To provide the highest quality service that offers the best value for money in terms of cost per unit	<ul style="list-style-type: none">• Affordable service• Best value for money
SO5	To provide appropriate level of capacity to meet changing demand and mitigate the risk of service failure	<ul style="list-style-type: none">• Sustainability (costs, environment, continuity)• Meet changing demand• Resilience

3.3 Existing arrangements

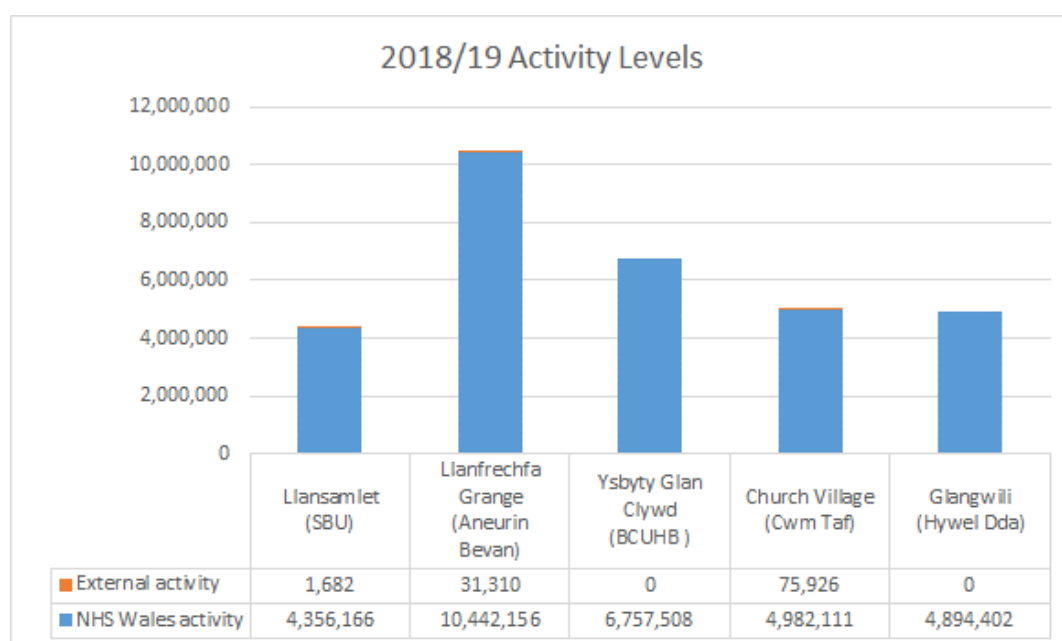
3.3.1 There are currently five Laundry Production Units (LPUs) within NHS Wales, managed by individual Health Boards.

Figure 3-2 Current LPUs

NHS Wales Health Board	Laundry Production Unit
Swansea Bay University Health Board	Llansamlet Laundry Service
Aneurin Bevan University Health Board	Llanfrechfa Grange 'Green Vale'
Betsi Cadwaladr University Health Board	Ysbyty Glan Clwyd
Cwm Taf Morgannwg University Health Board	Church Village
Hywel Dda University Health Board	Glangwili General Hospital Laundry

3.3.2 Between them, the five LPUs process over 31.4 million items including over 3.8 million microfibre items each year, of which the majority (99.65%) is for NHS Wales Health Boards, with a small amount (0.35%) processed for external customers. The table below shows activity levels at each LPU for 2018/19 including microfibre items.

Figure 3-3 Current activity levels 2018/19



3.3.3 The LPUs predominately provide services across Wales to all NHS organisations including acute hospitals, community hospitals, specialist run units such as mental health facilities and the Welsh Ambulance service.

3.3.4 Each LPU operates with its own service model which is largely dependent on its plant and equipment and the individual needs of its customers. However, in the main it involves processes for washing and finishing of linen such as bedding, towels, and theatre scrubs, as well as the collection and delivery of items to and from distribution points on designated days and times.

3.3.5 The range of services provided to customers differs slightly between LPUs:

- **Distribution points:** Most LPUs collect from and deliver to the 'front door' of hospitals, beyond which hospital staff such as porters manage the distribution to ward level. However, there are some cases within the current service model of LPUs delivering directly to ward level.

- **Microfibre items:** Arrangements for washing microfibre mops and cloths vary across NHS Wales, with some sites sending the items to LPUs to be processed and some sites washing them locally.
- **Specialist services:** Some LPUs provide specialist services locally which includes patients' personal clothing, sewing room services, dry cleaning and private ironing services, wheelchair maintenance, and distribution of non-linen related goods within the laundry vehicles.

3.3.6 The main differences in the service model by LPU are shown in the table below.

Figure 3-4 Services provided by the LPUs

	Llansamlet (SBU)	Llanfrechfa Grange (Aneurin Bevan)	Ysbyty Glan Clywd (BCUHB)	Church Village (Cwm Taf Morgannwg)	Glangwili (Hywel Dda)
Items processed for other LHBs (% of total activity)	1.4%	44.0%	19.8%	26.9%	0.0%
Items processed for non NHS organisations (% of total activity)	0.0%	0.0%	0.0%	1.4%	0.0%
Microfibre items processed (% of total activity)	5.5%	13.9%	26.3%	0.0%	7.9%
Sewing room	Y	N	Y	Y	Y
Dry cleaning	Y	N	N	N	N
Other services provided	N/A	N/A	Wheelchair maintenance	Private ironing	Delivery of large and urgent items

3.3.7 The LPUs operate from old buildings using ageing equipment and have had minimal investment in recent years. Some of the issues with the current state of buildings and infrastructure include:

The condition of washers and dryers, which require intensive maintenance due to their age. This is currently provided locally by dedicated teams who are supported by specialist maintenance service contracts.
Building layout causing inefficiencies, for example restricted roof height and the capacity of monorail system.
Limited space to install additional equipment required for improvement.
Inability to meet demand during breakdowns.
Limited potential for automation in ageing equipment.
Inefficient use of utilities, for example one of the LPUs has a boiler which is 47 years old.
Lack of access to gas and high pressure steam in some LPUs required for efficient laundry production.

Limited parking for staff and delivery vehicles.

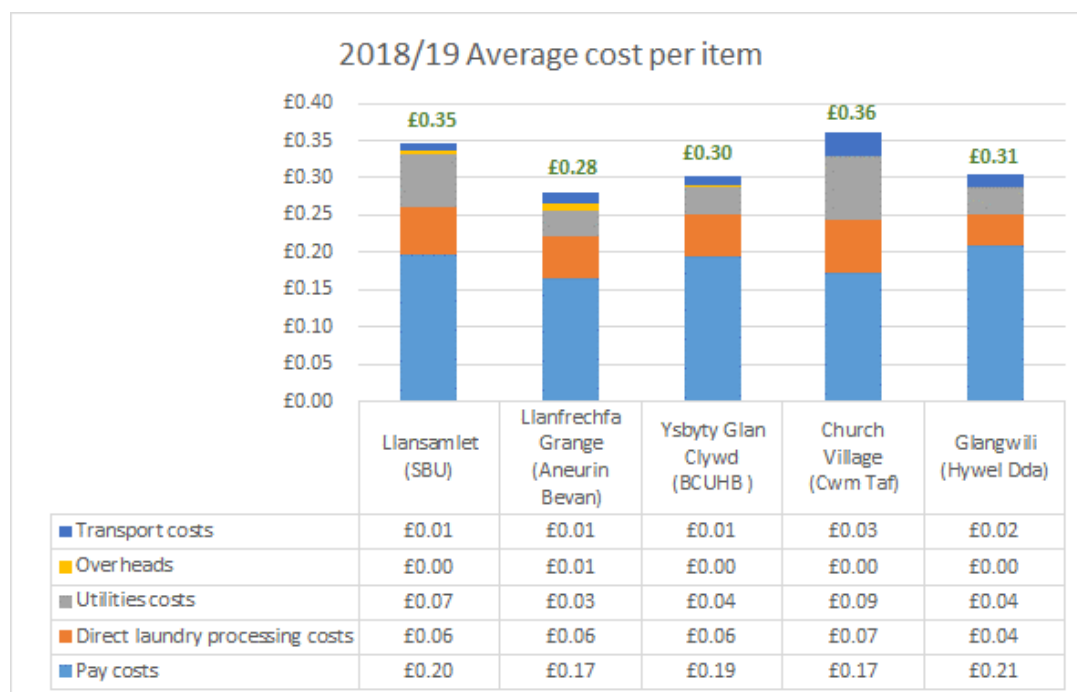
- 3.3.8 Based on the data available from laundry and finance leads at the time of writing this report, current operating costs are £9.8m p.a. to run the five LPUs based on actual expenditure incurred in 2018/19.

Figure 3-5 Annual recurring revenue costs 2018/19 (£'000)

	Llansamlet (SBU)	Llanfrecfha Grange (Aneurin Bevan)	Ysbyty Glan Clywd (BCUHB)	Church Village (Cwm Taf)	Glangwili (Hywel Dda)	Total
Pay costs	858	1,723	1,311	857	1,026	5,775
Non pay costs	647	1,192	737	943	471	3,989
Total	1,505	2,915	2,048	1,801	1,497	9,765

- 3.3.9 This equates to £0.31 per item overall, including microfibre items, although averages range from £0.28 to £0.36 across the five LPU. The average costs for each LPU are shown in the chart below.

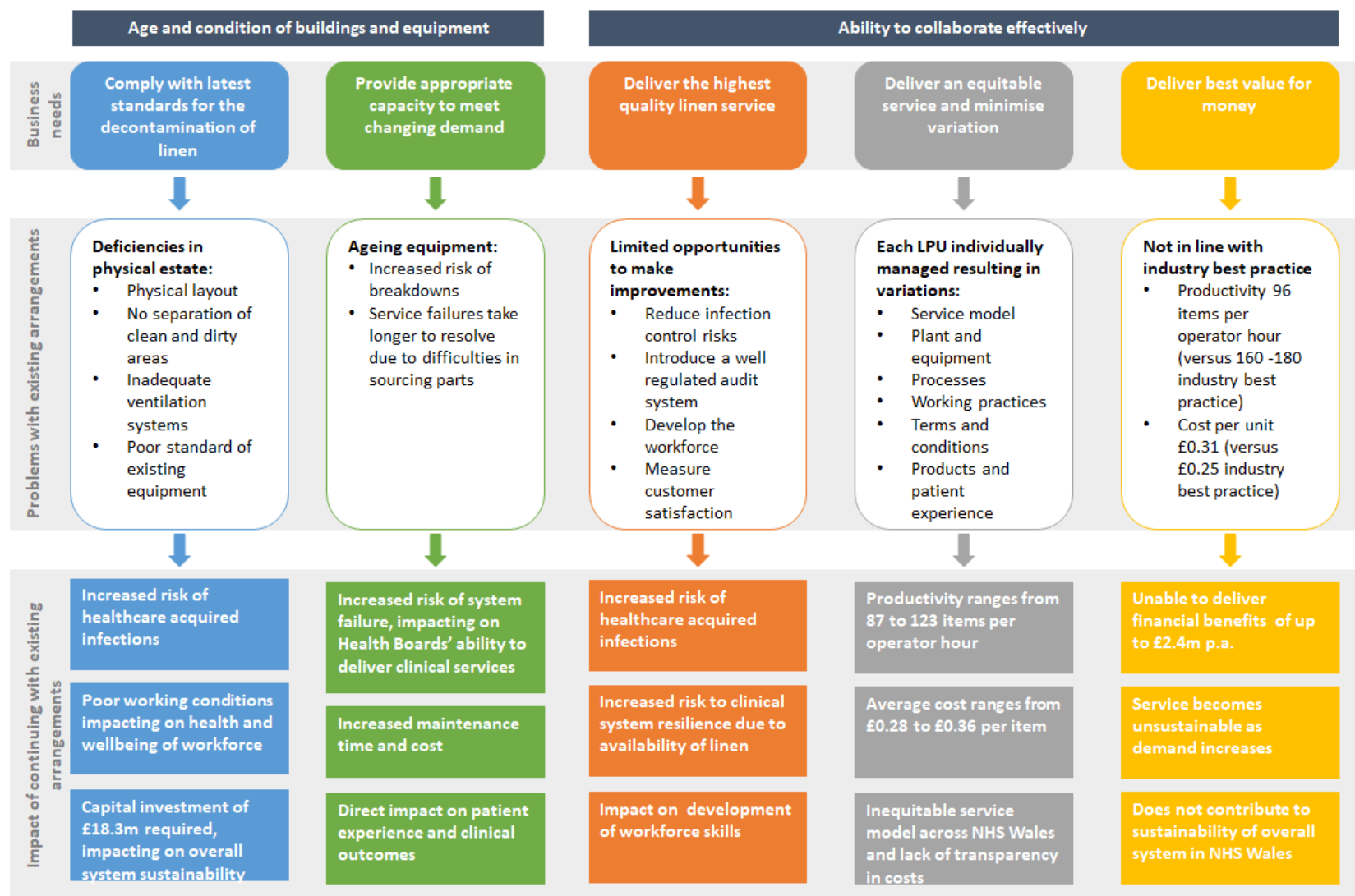
Figure 3-6 Average cost per item 2018/19 (including microfibre)



3.4 Business needs

- 3.4.1 Business needs are the improvements and changes that are required to achieve the agreed spending objectives. The diagram below summarises the overarching case for change by showing the main business needs, specifically focusing on why it is not possible to achieve the agreed spending objectives under the existing arrangements.

Figure 3-7 Case for change



3.4.2 This is explored in further detail in relation to each of the spending objectives below.

Spending Objective 1: To minimise risk to patients, staff and organisation by complying with the latest standards on decontamination of linen

3.4.3 The main driver for change is the introduction of new guidance for the decontamination of linen which includes:

- *BS EN 14065 Textiles – Laundry – Processed Textiles – Biocontamination Control System*, (BS EN 14065) which was introduced to provide management systems for the microbiological quality of laundry; and
- *Welsh Health Technical Memorandum 01-04* (WHTM01-4) which was subsequently published to provide NHS Wales organisations with guidance on all aspects of the decontamination of linen for health and social care settings in line with BS EN 14065.

3.4.4 An initial review of the sites established that currently none of the LPUs are compliant with the standards and guidance set out in BS EN 14065 and WHTM01-04. The detailed results of this assessment are provided in Appendix B1 but, in summary, some common issues emerged in terms of key challenges in complying with new standards. The main issues are summarised in the table below.

Figure 3-8 Overview of review findings

Key compliance area	Common findings
Area separation	<ul style="list-style-type: none">• None of the LPUs currently have adequate floor to ceiling physical barriers in place to separate clean and dirty areas.
Disinfection processes	<ul style="list-style-type: none">• Current decontamination processes are controlled using time and temperature parameters, which is not in line with latest standards that refer to chemical disinfection in a number of areas.
Safe storage of linen	<ul style="list-style-type: none">• Standardisation is needed in the control of disinfection of trolleys and cages.
Record keeping	<ul style="list-style-type: none">• While operational procedures are deemed to be of reasonable standard, there is a lack of adequate documentation, in particular relating to the need for<ul style="list-style-type: none">○ Fully documented policies and procedures; and○ Detailed risk assessment and hazard analysis.• There is a lack of consistency in relation to training records, making it difficult to ascertain that all staff members are up to date with relevant training.

3.4.5 Clearly a number of these issues can be addressed by changing working practices and these will be considered in relation to the other spending objectives.

3.4.6 However, the main issues preventing LPUs from complying with BS EN 14065 and other regulatory standards relate to deficiencies with the physical estate, which include:

- Physical layout, specifically lack of separation between soiled and clean linen;
- Lack of or substandard ventilation systems resulting in the possibility of achieving either negative air pressure in the soiled linen area, or positive air flow from the clean textiles area through the soiled textiles area with ventilation directly to the outside;
- Poor standard of existing equipment; and

- Generally dilapidated condition of buildings, some of which are more than 30 years old and have an extensive backlog of maintenance work.
- 3.4.7 This inability to comply with regulatory standards increases infection control risks as well as significantly impacting on the health and wellbeing of the workforce due to poor working conditions.
- 3.4.8 These issues can only be addressed with significant capital investment. The scale of this was assessed as part of a survey of the condition of LPUs which was undertaken by Nifes in August 2017. The detailed report is available in Appendix B2 but overall it is estimated that investment in the region of £13.8m (at 2016/17 prices) is required over the next ten years is required. This includes £2.6m of immediate investment to address the areas of highest risk.
- 3.4.9 Subsequent to this LTC's site visits identified additional issues related to the roof and utilities supplies.
- 3.4.10 The table below outlines investment requirements for each of the LPUs including the inflation-adjusted Nifes report and current LTC estimates.

Figure 3-9 Capital investment requirements to achieve compliance (£'000)

	Glan Clwyd	Green Vale	Church Village	Llansamlet	Glangwili	TOTAL
Backlog (Cost to B)	334	258	210	96	283	1,181
Impending Backlog (Years 1-5)	1,397	1,758	1,402	3,684	1,094	9,335
Future Costs (Years 6-10)	78	320	535	0	18	950
6 facet statutory compliance	290	11	36	42	43	423
BS EN 14065	307	314	227	341	471	1,661
Functional suitability	205	5	8	3	8	229
Quality of the environment	11	0	20	1	27	60
Inflation adj (from 2016/17 to 2021/22)	212	215	197	337	157	1,118
Nifes report (inflation adjusted)	2,834	2,882	2,636	4,504	2,099	14,956
Roof	1,500	0	0	0	0	1,500
Supply of utilities	0	0	0	300	1,500	1,800
LTC Report	1,500	0	0	300	1,500	3,300
TOTAL	4,334	2,882	2,636	4,804	3,599	18,256

Spending Objective 2: To provide effective support to clinical services by delivering the highest quality linen service

- 3.4.11 In the main, the five LPUs provide a high-quality service across NHS Wales, delivering clean and decontaminated linen as and when required according to the specific needs of customers. This ensures that Health Boards:
- Have adequate linen stocks enabling them to continue to deliver services; and

- Are supported in reducing the risk of healthcare acquired infections.

3.4.12 Continuing with the status quo operating under local management arrangements limits opportunities to improve service levels, whereas redesigning the service to enable it to comply with the latest standards and collaborate more effectively is likely to offer a range of opportunities to do so. Recent reviews of the service have highlighted a number of these as summarised in the table below.

Figure 3-10 Opportunities to improve quality

Opportunity	Details
Reduce infection control risks	<ul style="list-style-type: none"> • Complying with the latest best practice guidance on decontamination will further reduce risks associated with healthcare acquired infections.
Introduce well-regulated audit system	<ul style="list-style-type: none"> • The review of the existing LPUs highlighted inconsistencies in record keeping and documentation supporting processes. • To achieve an overall increase in service quality and directly align with the latest standards, there is a need for a well-regulated audit system to manage and accurately document activity. • A documenting system would allow the regulation of biocontamination, stock control and overall quality.
Develop the workforce	<ul style="list-style-type: none"> • In addition, the LPU workforce would be required to receive training in line with the new standards. • This would also provide the workforce with personal developmental opportunities.
Measure customer satisfaction	<ul style="list-style-type: none"> • Currently there appears to be a lack of customer (ward and patient) feedback with regards to quality of linen. • A mechanism for feedback needs to be established to ensure that customers are satisfied with laundry services. This would further support of equity of service between LPUs.

Spending Objective 3: To deliver an equitable service across NHS Wales and minimise variation between sites

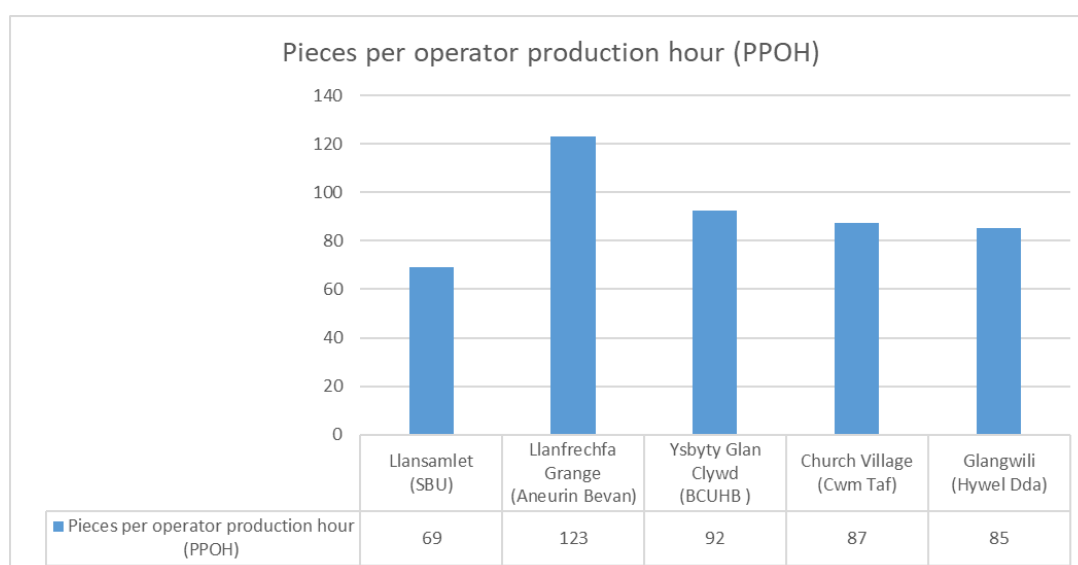
3.4.13 While the five LPUs deliver relatively similar services across NHS Wales, they are all independently managed. This naturally results in variations including:

- Minor service model differences outlined in paragraphs 3.3.5 and 3.3.6;
- Differences in plant and equipment utilised;
- Inconsistencies in laundry production processes and protocols (although these are largely related to plant and equipment); and
- Differing working practices in relation to shift patterns and operating hours.

3.4.14 It is reasonable to assume that such variations are likely to impact on the productivity of the LPUs. Productivity can be measured in terms of numbers of linen items processed

per operator per hour (including microfibre items). Currently, this ranges from 69 to 123 depending on the LPU, as shown in the chart below.

Figure 3-11 Productivity levels per LPU



- 3.4.15 This directly impacts on the variations in the average cost per item at LPUs which currently ranges from £0.28 to £0.36 per item including microfibre.
- 3.4.16 In addition, the cost charged to Health Boards appears to vary across NHS Wales (as outlined in Figure 3-9), suggesting that Health Boards do not receive equitable value for money. This has emerged because, partly as a symptom of being independently managed, the LPUs have not effectively collaborated to date. As a result of this, organisations compete with one another, customers are allocated according to organisational rather than geographical arrangements, and there is little evidence of transparency in costing models.
- 3.4.17 Continuing with existing arrangements with independent management arrangements creates challenges in standardising practice and minimising variations across NHS Wales which will limit the ability to
- Ensure best practice is being followed in all LPUs;
 - Ensure that all Health Boards receive an equitable service and value for money; and
 - Address variations in productivity and ultimately average price per unit.

Spending Objective 4: To provide the highest quality service that offers the best value for money in terms of cost per unit

- 3.4.18 Large scale laundry services are capital investment heavy and require significant /labour and maintenance resources. At current operating cost of £9.8m per year, an average of £0.31 per item including microfibre, any increase in demand is likely to result in significant financial pressures in the future. Sustainability of the service is reliant on delivering value for money.
- 3.4.19 As well as driving out variations between NHS Wales LPUs, improving productivity and reducing costs in line with industry best practice is necessary to provide a sustainable and efficient laundry service, although it is important to recognise that this should not be

to the detriment of quality and may be hindered by the use of current plant and equipment.

3.4.20 A benchmarking exercise using intelligence gathered from external organisations suggests that:

- Best practice productivity levels range from 160 items per operator hour for other NHS providers to 180 items per operator hour for private providers; and
- The current average price per item charged by external providers is around £0.29 per item for a similar product mix which includes a profit margin of around 12-15%; indicating a best practice comparable cost per item estimated to be in the region of £0.25 per item.

3.4.21 This indicates that, provided there is appropriate investment in facilities and the workforce to re-engineer plant and production flows and provide plant and equipment with greater throughput per hour, moving towards best practice in NHS Wales could achieve significant benefits.

Spending Objective 5: To provide appropriate level of capacity to meet changing demand and mitigate the risk of service failure

3.4.22 A significant proportion of laundry equipment is of an advanced age. Replacement parts are difficult to source and in some cases not available at all since they have been discontinued, which means that they are being sourced from other machines.

3.4.23 Clearly this increases the risk of major breakdowns which threatens the ability of the LPUs to continue to deliver efficient and effective services. Any reduction in the availability of linen represents a significant system resilience risk impacting on Health Boards' ability to deliver clinical services due to reduced availability of hospital beds leading to potential delays in treatment.

3.4.24 In addition to this, it is worth noting that, in the main, LPUs appear to be operating below their potential optimum capacity creating over capacity in the system. Any ability to increase utilisation, however, is constrained by the need to invest.

3.5 Conclusion

3.5.1 In order to achieve the stated spending objectives for the service, continuing with the status quo is not a feasible option as the service will not be able to continue to ensure the provision of a high quality, safe and sustainable laundry production service that supports the delivery of clinical services across NHS Wales.

4 POTENTIAL SCOPE

4.1 Introduction

- 4.1.1 This section of the PBC identifies the potential scope of the NHS Wales Laundry Production Units Service Review in terms of the key service requirements that should be considered in designing the future service model and developing options.

4.2 Scope of review

- 4.2.1 The review is concerned with the strategic direction of laundry production services for NHS Wales, in particular determining the optimal solution that will ensure compliance with best practice.

- 4.2.2 Areas that are excluded from this project are:

- Laundry processes external to the five major LPUs; and
- Non-NHS Wales laundries.

- 4.2.3 It is critical that in redesigning the service, the resilience of the service is not undermined and that Health Boards continue to have access to adequate linen stocks at the time and place they are required. Any reduction in the availability of linen presents a risk to system resilience in terms of reduced availability of hospital beds and possible postponement of treatment.

4.3 Potential scope of services

- 4.3.1 Stakeholders considered the potential scope of services to be provided under the future service model based on the following continuum of need:

- **Core:** Essential services that must be delivered.
- **Desirable:** Additional services which could be delivered if they provide value for money.
- **Optional:** Additional services which could be delivered if they are affordable or low cost.

- 4.3.2 The resulting assessment is provided in the table below.

Figure 4-1 Potential scope of future service model

	Core (Essential)	Desirable (Should provide value for money)	Optional (Should be affordable / low cost)
NHS Wales	X		
Bed linen	X		
Gowns	X		
Scrubs	X		
Towels	X		
Transport (to be sub categoried)	X		
Microfibre *	X		
Curtains	X		
Mops *	X		
Patient clothing *	X		
Mattresses		X	
Manual handling equipment	X		
Sewing room (repair services) *	X		
Staff uniforms	?	?	?
Income generation (private hospitals, private ironing) - current and opportunities for additional income		X	
Transport of goods to other Health Boards			X

**Indicates core services that may have different local arrangements e.g. need to be delivered but not necessarily from the laundry production unit.*

? Service not consistently provided nationally and will be further evaluated at the OBC stage.

- 4.3.3 This potential scope was considered in detail in Section 6 as part of developing the options. However, it was agreed that since the differences between core, desirable and optional are minimal and have little impact on the cost of delivering services, the economic appraisal should assume that the current scope of services continues to be delivered.

5 BENEFITS AND RISKS

5.1 Introduction

5.1.1 This section of the PBC identifies the benefits, risks, constraints and dependencies that should be considered in the NHS Wales Laundry Production Units Service Review, when developing and assessing the options for the optimal solution.

5.2 Benefits

5.2.1 The optimal solution should address the business needs and achieve the spending objectives identified as part of the review in order to deliver a range of benefits including:

- **Cash releasing benefits (CRB):** those that can be monetised and include improved economy (i.e. reduction in costs);
- **Non cash releasing benefits (non CRB):** those that can be monetised and include improved efficiency (i.e. staff time released to focus on more value added tasks);
- **Quantifiable benefits (QB):** those that can be measured but not monetised (i.e. patient experience); and
- **Qualitative benefits (Qual):** those that cannot be measured or monetised.

5.2.2 The table below provides an overview of the main outcomes and benefits arising from achieving the spending objectives.

Figure 5-1 Main benefits

Outcome	Benefit	Class	Measure	Spending objectives				
				SO1 Compliance	SO2 Quality	SO3 Equity	SO4 VFM	SO5 Resilience
Modern fit for purpose facilities	Improved system resilience due to reduced likelihood of plant failure	Quantifiable	Number of HB linen shortages incidents		✓			✓
	Reduced maintenance requirements	Cash releasing	Reduced maintenance costs				✓	
	Better working conditions improving health and wellbeing of workforce	Quantifiable	Number of incidents Sickness absence levels Staff satisfaction	✓	✓			
	Energy efficiencies	Cash releasing	Utilities costs				✓	
Compliance with standards	Improved system resilience due to better decontamination of linen	Quantifiable	Number of customer returns Customer satisfaction	✓	✓			
	Reduced risk of healthcare acquired infections	Quantifiable	Number of HAI incidents	✓	✓			
	Skilled and sustainable workforce	Quantifiable	Training records Recruitment and retention rates	✓				
Improved productivity	Better able to respond to changing demand	Quantifiable	Items per operator per production hour			✓	✓	✓

Outcome	Benefit	Class	Measure	Spending objectives				
				SO1 Compliance	SO2 Quality	SO3 Equity	SO4 VFM	SO5 Resilience
	Improved productivity leading to reduction in operator pay costs	Cash releasing	Operator pay costs			✓	✓	✓
Improved utilisation of assets	Reduction in non-production staff pay costs	Cash releasing	Non-production pay costs				✓	
	Estate released to reduce overheads or provide space for the delivery of core clinical services	Qualitative	Not measurable				✓	
Review of management arrangements	Centralised management arrangements will release Health Boards to focus on core business	Qualitative	Not measurable				✓	
	Centralised management arrangements will enable more effective collaboration leading to improved standardisation	Qualitative	Not measurable	✓	✓	✓	✓	✓
	Centralised management arrangements will enable the delivery of all other benefits	Qualitative	Not measurable	✓	✓	✓	✓	✓

5.3 Risks

5.3.1 Risk is the possibility of a negative event occurring that adversely impacts on the success of the future service model.

5.3.2 Identifying, mitigating and managing the key risks is crucial to successful delivery, since the key risks are likely to be that the project will not deliver its intended outcomes and benefits within the anticipated timescales and spend.

5.3.3 The main risks identified are listed in the table below.

Figure 5-2 Main risks

Risk category	Risk	Mitigation	Likely impact
Resilience	Increased frequency of system failures due to equipment breakdown	On-site maintenance teams and increased maintenance time	Increased maintenance costs
	Increased duration of system failures due to scarcity of parts	Other LPU's process items	Increased pay costs (enhancements)
	Insufficient back up capacity available in the event of an elongated system failure	Outsource to private provider	Premium rate paid to private contractor
	Risk of linen shortage at HB level due to logistical failures	Increased linen stocks	Increased production costs
Capacity and demand	Demand increases at a higher level than anticipated	Build in flexibility to expand capacity in future	Cost of additional line and production costs

Risk category	Risk	Mitigation	Likely impact
	Service unable to respond to short term fluctuations in demand	Additional shifts / Outsource to private provider	Premium rate paid to private contractor
Workforce	Workforce unable to adapt new ways of working	Robust change plan	Financial benefits will not be fully realised
	Loss of experience, knowledge and skills	Robust change plan	Reduced productivity leading to increased pay costs
	Unable to redeploy staff appropriately	Robust change plan	Redundancy costs higher than estimated
	Impact on workforce of redeployment leading to reduced morale	Communication and change plan	Increased sickness absence leading to increased pay costs
	Impact on local economy of reduced local employment	Robust change plan	Not measurable
Operational	Failure to meet required levels of quality	Compliance with latest standards; records	Cost of returns, double washing leading to increased processing costs
	Failure to meet local requirements due to loss of HB ownership	Engagement plan to understand HB needs	Decreased customer satisfaction
	Failure to deal with logistical challenges of Welsh geography (North and South deliveries)	Robust logistics plan	Increased production costs
Reputational and policy	Failure to secure support of all HBs	Communication	Financial benefits will not be fully realised
	Failure to identify and address the impact on local economies	Robust change plan	Not measurable
Implementation	Failure to ensure business continuity, impacting on clinical services	Robust implementation plan	Financial benefits will not be fully realised
	Failure to collaborate effectively impacting on pace of delivering benefits	Centralised management arrangements	Benefits will not be fully realised
Funding and finance	Failure to secure adequate capital funding	Outsource to private provider (as NHS LPU's will not be compliant)	Premium rate paid to private contractor
	Implementation costs higher than estimated	Robust change plan	Increased implementation costs
	Recurring revenue costs are underestimated	Detailed costing to be undertaken at FBC	Increased running costs

5.4 Constraints

5.4.1 Constraints relate to the parameters that the project is working within and any restrictions or factors that might impact on the delivery of a project. These typically include limits on resources and compliance issues.

5.4.2 The main constraints that should be considered in developing a solution for the future delivery of the LPU service include the following parameters:

- The need for any future service model to comply with the latest standards on decontamination;
- Logistical considerations in relation to the geography of Wales;
- The ability to provide the appropriate capacity and resilience for Health Boards to ensure business continuity; and
- The need to operate within the current cost envelope and deliver efficiency savings where possible.

5.5 Dependencies

5.5.1 Dependencies include things that must be in place to enable the project or project phases and typically include links to other projects and funding requirements that are likely to be managed elsewhere.

5.5.2 The success of the future service model relies on the following main dependencies:

- Buy in from all Health Boards and stakeholders; and
- Availability of capital funding.

5.6 Conclusion

5.6.1 Stakeholders have identified the benefits, risks, constraints and dependencies in relation to the agreed scope of the LPU Service review. These together with the key spending objectives are used to develop and assess a shortlist of options. This option development process is covered in the Economic Case.

ECONOMIC CASE

6 OPTIONS IDENTIFICATION

6.1 Introduction

6.1.1 The purpose of the Economic Case is to identify and appraise the options for the delivery of project and to recommend the option that is most likely to offer best value for money.

6.1.2 The first stage of this explores the preferred way forward by undertaking the following actions:

- Agree critical success factors (CSFs);
- Identify and evaluate the long list of options; and
- Recommend the preferred way forward in the form of a shortlist of options.

6.2 Critical Success Factors

6.2.1 Critical success factors (CSFs) are the essential attributes for successfully delivering the project and are used along with spending objectives to evaluate the options. Stakeholders developed the CSFs at Workshop 2 and these are presented below.

Figure 6-1 Critical Success Factors

Critical Success Factor	Description
Strategic Fit	<ul style="list-style-type: none">• Meets agreed spending objectives, related business needs and service requirements.• Aligns with local and national strategic direction.
Value for Money	<ul style="list-style-type: none">• Optimises public value in terms of the potential costs, benefits and risks.
Potential Achievability	<ul style="list-style-type: none">• Is likely to be deliverable.• Matches the available skills required for successful delivery.
Supply capacity side and capability	<ul style="list-style-type: none">• Matches the ability of service providers to deliver required services.• Is likely to be attractive to the supply side.
Potential Affordability	<ul style="list-style-type: none">• Can be funded from available sources of finance.

6.3 The options framework

6.3.1 The options framework, outlined in the Welsh Government Better Business Cases guidance, provides a systematic approach to identifying and filtering a broad range of options.

6.3.2 An overview of the key dimensions within the options framework is provided in the table below.

Figure 6-2 Options framework

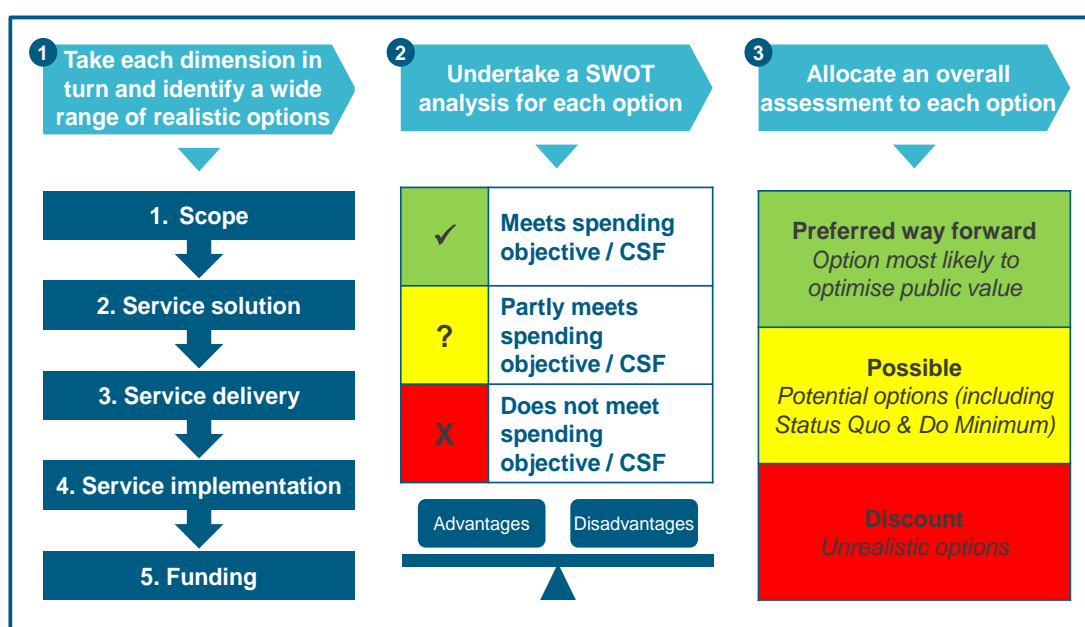
Dimension	Description
Scope	What to include in the future service model
Service solution	How to deliver the future service model
Service delivery	Who will deliver the future service model
Implementation	Timescales and phasing for delivering the future service model
Funding	Financing the future service model

6.3.3 The process for identifying and assessing options takes each of the key dimensions in turn and undertakes the following steps:

- Identify a wide range of realistic potential options within that dimension
- Undertake an analysis for each option to:
 1. Assess how well the option meets the project's spending objectives and critical success factors; and
 2. Identify the option's main advantages and disadvantages.
- Use the outputs of the analysis to determine whether the option will be carried forward as the preferred way forward, carried forward as a possible solution, or discounted at this stage.

6.3.4 A diagram illustrating this process is shown in the diagram below.

Figure 6-3 Process to identify and assess the long list of options



6.4 Determining the long list of options

6.4.1 Stakeholders at Workshop 2 identified a range of options within the first three dimensions of the options framework, specifically 'scope', 'service solution' and 'service delivery'.

6.4.2 Two additional dimensions were incorporated at a later stage, specifically 'configuration' and 'management arrangements' as stakeholders agreed these should be assessed separately for the purposes of the project. It was agreed that options for 'implementation'

and 'funding' did not require assessment as would be determined as part of the specific options.

6.4.3 The initial long list of options that was developed is provided in the table below.

Figure 6-4 Long list of options: Scope, Service Solution, Service Delivery

Dimension	Option	
Scope		
Do nothing	1A	Continue with existing arrangements (mixed operating model)
Intermediate options	1B	Deliver core* laundry services only
	1C	Deliver core* and desirable* (e.g. capacity to explore opportunities for additional income generation + dynamic mattresses) laundry services
Do maximum	1D	Deliver core*, desirable* (e.g. capacity to explore opportunities for additional income generation + dynamic mattresses) and optional* (e.g. transport of hospital goods) laundry services
Service solution		
Do nothing	2A	Do nothing - continue to deliver services from the five existing laundry units with no investment
Intermediate options	2B	Continue to deliver services from the five existing units, investing in them to a standard compliant with latest standards
	2C	Deliver laundry services from optimum number of existing units (that have been invested in to achieve compliance)
	2D	Deliver laundry services from optimum number of units (hybrid of new / existing)
	2E	Deliver from optimum number of new purpose built units
Do maximum	2F	Outsourcing / co-sourcing solution
Service delivery		
Do nothing	3A	Retain current provision
Intermediate options	3B	Delivered by another NHS Wales organisation
	3C	Other public sector organisation delivers
Do maximum	3D	External private organisation delivers

**The definitions of core, desirable and optional are provided in Section 4 - Potential Scope.*

6.5 Evaluating the long list of options

6.5.1 Stakeholders at Workshop 2 assessed each of the long listed options in terms of how well it is likely to meet spending objectives and critical success factors, using the criteria below.

Figure 6-5 Scoring criteria

✓	Meets the spending objective / critical success factor
?	Partly meets the spending objective / critical success factor
X	Does not meet the spending objective / critical success factor

Scope

6.5.2 The four options related to Scope - what services will be included within the future service model - were assessed by stakeholders. The results of this are shown in the table below.

Figure 6-6 Long list appraisal: Scope

Assessment criteria		Option 1A Continue with existing operating model	Option 1B Deliver core services only	Option 1C Deliver core + desirable	Option 1D Deliver core, desirable + optional	Comments
Spending objectives	SO1 Compliance	✓	✓	✓	✓	No impact on compliance
	SO2 Quality / Effective support	✓	?	✓	?	1B Betsi customers will not receive mattresses; 1D additional activities may distract from core
	SO3 Equity / Minimise variation	X	✓	?	?	1A Difficult to reduce variation; 1C and 1D income generation may introduce further variation
	SO4 Best cost per unit	?	X	?	?	1B loss of income generation may increase unit cost but difficult to assess without further information
	SO5 Resilience	✓	✓	?	?	Currently sufficient capacity - 1C and 1D income generation will impact on available capacity
Critical success factors	A Strategic fit	✓	✓	✓	✓	All fit with strategic direction
	B Potential value for money	?	?	?	?	Unable to make assessment at this stage
	C Achievability	✓	✓	✓	✓	All achievable
	D Supply side	✓	✓	✓	✓	Internal capacity and capability to delivery any option
	E Potential affordability	?	?	?	?	Unable to make assessment at this stage
Assessment		POSSIBLE	POSSIBLE	POSSIBLE	POSSIBLE	All options possible

6.5.3 It was initially agreed that based on this assessment all options should be carried forward as possible.

6.5.4 However since, in economic terms, the difference between the four options is likely to be immaterial, it was subsequently agreed that it should be assumed that the scope of the service model remains unchanged for the purpose of the economic appraisal. However, this should be explored in further detail at OBC stage.

6.5.5 In summary, it is recommended that a single option related to the scope of the future service model is carried forward to the shortlist, specifically:

- Continue to deliver current scope of services.

Service Solution

6.5.6 Options for the Service Solution - how the future service model will be delivered - were evaluated and the results of this are shown below.

Figure 6-7 Long list appraisal: Service Solution

Assessment criteria		Option 2A Continue with 5 existing units	Option 2B Invest in 5 existing units	Option 2C Optimum number of existing units	Option 2D Optimum number of new / existing units	Option 2E Optimum number of new units	Option 2F Outsourcing / Co-sourcing	Comments
Spending objectives	SO1 Compliance	X	✓	✓	✓	✓	✓	2A will not comply with new standards
	SO2 Quality / Effective support	?	✓	✓	✓	✓	✓	2A will not support reduction in rejection rates
	SO3 Equity / Minimise variation	X	X	?	?	✓	✓	2A-2D Using existing units even with investment means challenges minimising variation will continue
	SO4 Best cost per unit	?	?	✓	✓	✓	✓	Difficult to assess at this stage but it is assumed that 2C-2F will reduce unit cost although consider transport impact
	SO5 Resilience	✓	✓	✓	✓	✓	?	2F increases risk of inability to mitigate against service failure
Critical success factors	A Strategic fit	X	X	X	✓	✓	?	2C not aligned with Betsi local strategy (LPU on hospital site) 2F Depends on preferred provider
	B Potential value for money	?	?	?	?	?	?	Unable to make assessment at this stage
	C Achievability	✓	✓	X	✓	✓	✓	2C not aligned with Betsi local strategy (LPU on hospital site)
	D Supply side	✓	✓	✓	✓	✓	?	2F Depends on preferred provider
	E Potential affordability	?	?	?	?	?	?	Unable to make assessment at this stage
Assessment		DISCOUNT	POSSIBLE (Baseline)	DISCOUNT	POSSIBLE	POSSIBLE	POSSIBLE	2A Discount as will not achieve compliance 2C Discount as not achievable for N Wales

6.5.7 Based on this assessment, stakeholders concluded at the workshop that four options should be carried forward as possible options and that two options should be discounted at this stage for the reasons set out below:

- **Option 2A – Do Nothing:** Stakeholders **discounted** this option as it would not achieve the main objective of complying with the new standards for decontamination of laundry. It was agreed that Option 2B (Investing in the five existing units to comply with new standards) would be the most appropriate baseline option.
- **Option 2C – Deliver services from optimum number of units using existing facilities only:** Stakeholders **discounted** this option since it was considered at least one existing unit is not suitable to be retained within an optimum future solution. This refers specifically to the work undertaken at BCUHB which has identified the unsustainable nature of the current LPU and the urgent need for an off-site solution for laundry.

6.5.8 It should be noted that at a later stage the Independent Panel Review recommended that Option 2C should not be discounted since an optimum configuration may not necessarily require the retention of a unit in North Wales.

6.5.9 In addition, work undertaken subsequent to Workshop 2 determined that Options 2C, 2D, and 2E should be combined into one overarching option. The decision about whether to utilise existing facilities or develop new units should be determined, based on available capacity and value for money, once potential optimum configurations have been identified.

6.5.10 In addition to this, it was later concluded that Option 2F should be discounted based on the following findings:

- Welsh Government confirmed that outsourcing to an external private provider is not aligned with current strategic policy.
- There are unlikely to be suitable providers within the public sector.
- Benchmarking data suggests external providers charge at least £0.29 per item so it is unlikely this option would be able to deliver any significant cash releasing benefits (current average cost £0.31 per item).

6.5.11 In summary, it is recommended that the following options related to how the future service model will be delivered are carried forward to the shortlist, specifically:

- Continue to deliver services from five existing units which have been invested in to a standard compliant with the latest standards; and
- Deliver laundry services from an optimum configuration of units using the most appropriate hybrid of existing and new facilities. The next stage of the process will determine the possible configurations.

Service Delivery

6.5.12 Options for the service delivery – who will deliver the future service model - were evaluated and the results of this are shown below.

Figure 6-8 Long list appraisal: Service Delivery

Assessment criteria		Option 3A Continue with current providers	Option 3B Another NHS Wales provider	Option 3C Other public sector provider	Option 3D External private provider	Comments
Spending objectives	SO1 Compliance	✓	✓	✓	✓	All providers would have to achieve compliance
	SO2 Quality / Effective support	✓	✓	✓	✓	All providers would have to achieve agreed service levels
	SO3 Equity / Minimise variation	X	✓	✓	✓	3A Existing providers would be unable to minimise variation
	SO4 Best cost per unit	?	?	?	?	Unable to make assessment at this stage
	SO5 Resilience	✓	✓	?	?	3C and 3D Moving outside NHS Wales reduces control
Critical success factors	A Strategic fit	✓	?	?	X	3B May not be supported locally 3D Query about NHS Wales strategic direction
	B Potential value for money	?	?	?	?	Unable to make assessment at this stage
	C Achievability	✓	✓	✓	✓	All options achievable
	D Supply side	✓	✓	✓	✓	All options have sufficient capacity and capability
	E Potential affordability	?	?	?	?	Unable to make assessment at this stage
Assessment		POSSIBLE	POSSIBLE	POSSIBLE	POSSIBLE	All options possible

6.5.13 Stakeholders at the workshop agreed that, based on their initial assessment, all four options could be carried forward.

6.5.14 However, a subsequent review concluded that:

- Options 3A and 3B are so similar that they should be combined into a single option; and
- Since the outsourcing option has been discounted from the Service Solution options, Options 3C and 3D should similarly be discounted.

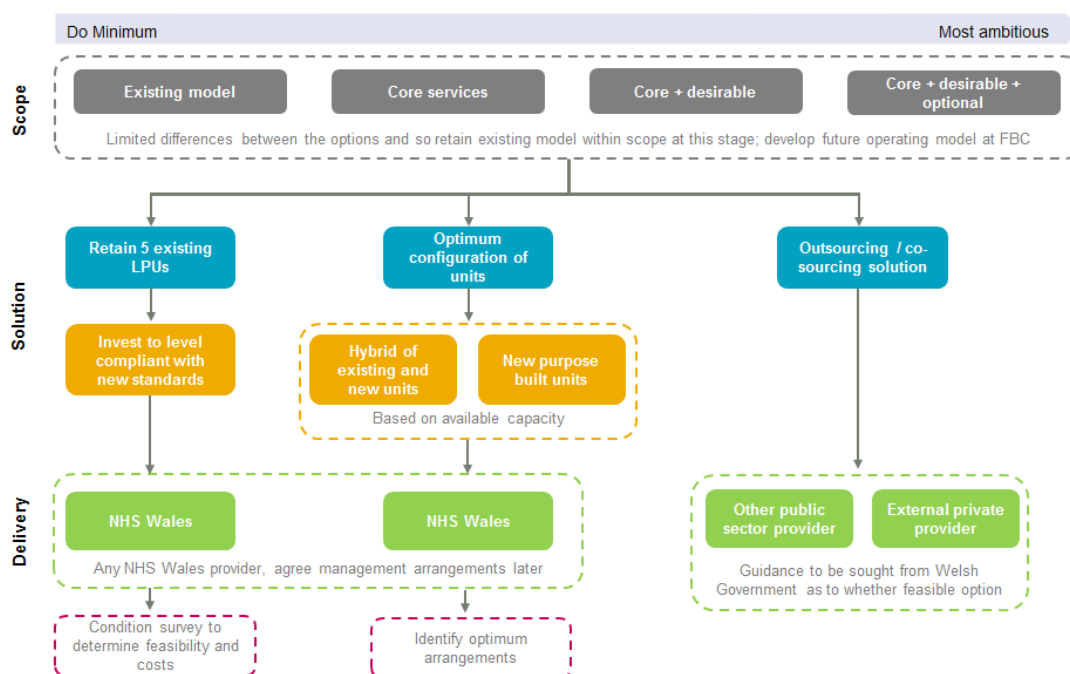
6.5.15 In summary, it is recommended that a single Service Delivery option is carried forward to the shortlist, specifically:

- Services continue to be delivered by NHS Wales workforce.

6.6 Results of the initial long list appraisal

6.6.1 A summary of the initial assessment at the end of Workshop 2 is provided below.

Figure 6-9 Initial long list appraisal



6.7 Expanding the long list

6.7.1 The long list was expanded at Workshop 3 when stakeholders identified the range of options in terms of the potential configurations of units required to deliver the future service model.

Figure 6-10 Long list of Configuration of Units

Dimension	Option	
Configuration of Units		
Do nothing	4A	Deliver services from five LPUs
Intermediate options	4B	Deliver services from four LPUs
	4C	Deliver services from three LPUs
	4D	Deliver services from two LPUs
Do maximum	4E	Deliver services from one LPU

6.7.2 After an initial assessment, stakeholders agreed there was insufficient information available at that stage to undertake a sufficiently robust appraisal and so all five options related to the future configuration of units should be carried forward to the next stage of evaluation.

6.8 Management arrangements

6.8.1 In addition to this, Workshop 5 was used to identify the options for management arrangements and assess the advantages and disadvantages of each option. The options that were identified are shown below.

Figure 6-11 Long List of Management Arrangements Options

Dimension	Option
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Scope		
Do nothing	5A	Continue with existing arrangements: Existing configuration with LPU managed by Local Health Boards
Intermediate options	5B	Localised management arrangements: New laundry configuration with the LPU managed by Local Health Boards
Do maximum	5C	Centralised management arrangements: New laundry configuration, managed centrally, with LPU managers reporting centrally

6.8.2 The workshop outputs provide a detailed analysis of the benefits and risks of each option in relation to the spending objectives. This was then used to complete the appraisal below. Given that configuration options have already been assessed separately, Options 5A and 5B are considered too similar, therefore have been combined into one option for appraisal purposes to avoid duplication.

Figure 6-12 Long list appraisal: Management Arrangements

Assessment criteria		Option 5B LHB management	Option 5C Centralised management	Comments
Spending objectives	SO1 Compliance	?	✓	Although possibilities of LPU's using local connections as well as working together to achieve there has been little evidence of this to date and so high risk that LPU's would continue to tackle in own way. Centralised arrangements would address the risk of fragmented funding and provide a holistic approach.
	SO2 Quality / Effective support	✓	?	While centralised management would result in greater transparency and consistent support, with customers having a collective voice, it would reduce opportunities to provide a collaborative tailored approach to LHBs.
	SO3 Equity / Minimise variation	X	✓	Current arrangements lends itself to a more tailored approach for LHBs. Centralised has potential to deliver more equitable service across Wales with standardized approach and less emphasis on local agendas and control.
	SO4 Best cost per unit	?	✓	While some potential to improve under current arrangements using strong local links, costs per unit currently vary between LHBs. Centralised more likely to address this with strong collective customer voice and one price for all across Wales. Although some risk that this would have negative impact on some individual LHBs due to loss of income streams or increased cost per unit, on balance this option offers best opportunity to reduce the cost per unit while maintaining quality.
	SO5 Resilience	?	✓	Centralised would allow for more formal arrangements for contingency arrangements and sharing of capacity (which under current arrangements has only been achieved informally). However would not address geographical issues in the North.
Critical success factors	A Strategic fit	?	✓	Local management arrangements would not align with Parliamentary Review
	B Potential value for money	?	✓	Value for money greater risk under existing arrangements as limits ability to reduce costs and deliver benefits
	C Achievability	✓	✓	
	D Supply side	✓	✓	
	E Potential affordability	✓	✓	
Assessment		DISCOUNT	PREFERRED	

6.8.3 Based on this assessment, it is recommended that Option 5A and 5B should be discounted at this stage for the reasons set out below:

- **Option 5A – Existing configuration and LHB management:** Configuration options are assessed separately and so it is concluded that options 5A and 5B are the same option and so should be combined.
- **Option 5B – New configuration and LHB management:** It is recommended that this option is discounted as although it provides opportunities for developing stronger relationships at Health Board level and delivering a tailored local approach, it creates challenges in achieving an equitable, consistent and standardised service and costs across Wales since LPU's would continue to work in different ways and be more likely to be conflicted by local requirements. It is not in line with the recommendations outlined in the Parliamentary Review.

6.8.4 Option 5C – Centralised management arrangements is carried forward to the shortlist as the preferred way forward since it affords the best opportunity to deliver spending objectives as outlined in the Parliamentary Review recommendations. The risk of negative impact on services and costs for any individual Health Board is likely to be

mitigated since a shared services model already exists with representation from all Health Boards. However, there is a need for a transitional period that ensures there is no financial disadvantage to any Health Board or NHS Wales Shared Services Partnership through the new organisational and management arrangements.

6.9 Overall results of the long list appraisal

6.9.1 A summary of the final appraisal is provided in the tables below.

Figure 6-13 Results of long list assessment

1. Scope				
Do Nothing	Intermediate options			Do maximum
1A Continue to deliver current scope of services	1B Deliver core services only	1C Deliver core and desirable services		1D Deliver core, desirable and optional services
Carry forward	Discount	Discount		Discount
For purposes of economic appraisal. Explore at FBC	Immaterial difference to current arrangements	Immaterial difference to current arrangements		Immaterial difference to current arrangements

2. Service Solution					
Do Nothing	Intermediate options				Do maximum
2A Continue to deliver from 5 existing units – no investment	2B Continue to deliver from 5 existing units – invest to comply with new standards	2C Deliver services from optimum configuration – existing units	2D Deliver services from optimum configuration – hybrid of existing and new units	2E Deliver services from optimum configuration – new units	2F Outsourcing / co-sourcing solution
Discount	Carry forward	Carry forward as single option			Discount
Would not comply with latest standards	Baseline Do Minimum option	Further work required to determine potential number of configurations			Not feasible (see 3C & 3D)

3. Service Delivery				
Do Nothing	Intermediate options			Do maximum
3A Services continue to be delivered by current providers	3B Services delivered by other NHS Wales providers	3C Services delivered by other public sector providers		3D Services delivered by external private providers
Carry forward as single option		Discount		Discount
Services continue to be delivered by NHS Wales workforce		Limited suitable providers available		Not aligned with WG strategic direction

4. Configuration of Units

Do Nothing	Intermediate options				Do maximum
4A Continue to deliver from 5 units	4B Deliver from 4 units	4C Deliver from 3 units	4D Deliver from 2 units		4E Deliver from 1 central unit
Carry forward	Carry forward	Carry forward	Carry forward		Carry forward

5. Management arrangements					
Do Nothing	Intermediate options				Do maximum
5A Continue with current configuration and local management	5B New configuration and local management arrangements				5C New configuration and centralised management arrangements
Discount	Discount				Carry forward
Do Nothing re configuration has already been discounted from solution option	Creates challenges in delivering equitable, standardised service across Wales				Offers best opportunity to deliver future service model and realise benefits

6.10 Short list of options

6.10.1 The results of the final assessment were amalgamated to create a shortlist of options. This is shown below in relation to the options framework.

Figure 6-14 Shortlist of options

	Option 1	Option 2	Option 3	Option 4	Option 5
Scope	Current scope of services	Current scope of services	Current scope of services	Current scope of services	Current scope of services
Service Solution	Invest in facilities to comply with new standards	Optimum hybrid of existing and new facilities	Optimum hybrid of existing and new facilities	Optimum hybrid of existing and new facilities	Optimum hybrid of existing and new facilities
Configuration	Deliver from 5 units	Deliver from 4 units	Deliver from 3 units	Deliver from 2 units	Deliver from single unit
Service Delivery	NHS Wales	NHS Wales	NHS Wales	NHS Wales	NHS Wales
Management arrangements	Centralised	Centralised	Centralised	Centralised	Centralised

6.11 Conclusion

- 6.11.1 Following the robust development and assessment of a long list of potential options, a shortlist of five options is carried forward to the economic appraisal to evaluate in further detail. The agreed shortlist is summarised below.

Figure 6-15 Shortlist of options

Shortlist of options	
Option 1 5 LPUs	Continue to deliver laundry services from 5 existing NHS Wales LPUs under centralised management arrangements (A 'do minimum' solution that invests in existing facilities to a standard compliant with latest statutory guidance)
Option 2 4 LPUs	Reconfigure to deliver laundry services from 4 NHS Wales LPUs under centralised management arrangements (Using optimum hybrid of existing or new facilities to provide adequate capacity and comply with latest statutory guidance)
Option 3 3 LPUs	Reconfigure to deliver laundry services from 3 NHS Wales LPUs under centralised management arrangements (Using optimum hybrid of existing or new facilities to provide adequate capacity and comply with latest statutory guidance)
Option 4 2 LPUs	Reconfigure to deliver laundry services from 2 NHS Wales LPUs under centralised management arrangements (Using optimum hybrid of existing or new facilities to provide adequate capacity and comply with latest statutory guidance)
Option 5 Single LPU	Reconfigure to deliver laundry services from a single NHS Wales LPU under centralised management arrangements (Using existing or new facilities to provide adequate capacity and comply with latest statutory guidance)

7 SITE SELECTION

7.1 Introduction

- 7.1.1 This section outlines the process undertaken to evaluate the existing LPUs to determine
- The most suitable existing LPUs for delivery of the future operating model; and
 - In the event of there being insufficient suitable existing LPUs to deliver the future operating model, the most suitable location for replacement facilities.

7.2 Context

- 7.2.1 An initial evaluation of the shortlisted options considered the whole life costs, benefits and risks of each. As a result of this, Option 3 (Deliver laundry services from 3 LPUs) was identified as the option most likely to offer best value for money.
- 7.2.2 This model was endorsed by Shared Services Partnership Committee in November 2018 as the preferred way forward.
- 7.2.3 Therefore, the site selection process was undertaken based on the preferred way forward – i.e. to identify the most suitable sites to deliver laundry services from 3 LPUs in NHS Wales – with the results to be adapted accordingly when appraising the alternative options.

7.3 Site selection process

- 7.3.1 It was agreed that a robust site selection process should be undertaken to assess existing LPUs against a wide range of factors, including:
- Geography;
 - Transport requirements;
 - Capacity requirements;
 - Condition of plant equipment and buildings;
 - Suitability for expansion;
 - Ability to achieve productivity targets; and
 - Impact on workforce and local economy.
- 7.3.2 During stakeholder workshops, the following site selection criteria were agreed with stakeholders for assessing each site using a range of operational, capacity, productivity, transport and carbon efficiency metrics.

Figure 7-1 Site selection criteria

Criteria	Description
E1	<ul style="list-style-type: none">• Sufficient LPU capacity to meet regional activity levels with some resilience (Current facilities operating at 85% utilisation, 37.5 hours working week)
E2	<ul style="list-style-type: none">• Potential to improve productivity to 160 PPOH (With reasonable investment)
E3	<ul style="list-style-type: none">• Operational requirements to increase capacity to meet regional volumes is achievable

Criteria	Description
E4a	<ul style="list-style-type: none"> Required upgrades to facilities to meet regional activity levels and comply with decontamination standards - affordable
E4b	<ul style="list-style-type: none"> Required upgrades to facilities to meet regional activity levels and comply with decontamination standards - achievable
E5	<ul style="list-style-type: none"> Scale of disruption involved in upgrading the facility is acceptable
E6	<ul style="list-style-type: none"> Proximity to end users and accessibility of site to accommodate additional fleet/deliveries (future operating model) is acceptable
E7	<ul style="list-style-type: none"> Access to site for staff (including planned transport infrastructure improvements and travel plans) is acceptable
E8	<ul style="list-style-type: none"> Carbon emissions/ footprint of operations and transport (future operating model) – this criteria was not assessed, but provided for information in relation to baseline carbon efficiency of each LPU

7.3.3 There was a consensus in site selection workshops on pursuing with a regional model for 3 LPU sites: one each in North, South East and South West Wales.

7.3.4 Regional volumes were allocated on the basis of the current volumes being processed by each LPU for each region. This was based on findings from transport analysis which confirmed that there is no advantage in terms of journey times and annual mileage to be gained from moving current delivery and collection locations between regions.

Figure 7-2 Regional LPU split and allocated volumes

Region	LPUs	Regional Volume (p.a.)
North Wales	<ul style="list-style-type: none"> Ysbyty Glan Clwyd 	6.8m pieces
South East Wales	<ul style="list-style-type: none"> Llanfrechfa Grange 'Green Vale' Church Village 	15.4m pieces
South West Wales	<ul style="list-style-type: none"> Llansamlet Laundry Service Glangwili General Hospital Laundry 	9.2m pieces

7.3.5 Data was collected from each LPU to complete the analysis on productivity, capacity, transport and carbon impact which was used to assess existing sites against selection criteria above.

7.3.6 In addition, site visits and technical reviews were completed for each LPU to collect information on current operating model, existing equipment, local energy usage and transport arrangements.

7.4 Evaluating the existing sites

7.4.1 Stakeholders at each regional workshop assessed each existing site in terms of how well it is likely to meet selection criteria and critical success factors, using the scoring criteria below.

Figure 7-3 Scoring criteria

✓	Meets the spending objective / critical success factor
?	Partly meets the spending objective / critical success factor
X	Does not meet the spending objective / critical success factor

North Wales

7.4.2 The existing site in North Wales (Glan Clwyd) was assessed against the selection criteria and critical success factors, the outputs of which are shown in the table below.

Figure 7-4 Site assessment for North Wales

North –Glan Clwyd (6.8m items)				
E1	Current capacity (at 37.5 hours)	?	Capacity = 6.5m (37.5 hour week)	Achievable under current operating hours but 4% shortfall under 37.5 hour, limited resilience
E2	Ability to achieve 160 PPOH	X	Current = 92 PPOH Maximum = 157 PPOH	While new equipment would increase productivity to PPOH, facility is unable to expand to accommodate it
E3	Ability to increase capacity	?	Requires minimum 39.5 hour week	In reality, working practices require additional hours per week and provide limited resilience
E4a	Cost of upgrades	✓	New Roof £1.5m Equipment £3m + Building works	Similar cost to other sites
E4b	Feasibility of upgrades	X	Requires 20% increase in size of laundry	Expansion not possible due to existing footprint and space restrictions on a busy clinical site
E5	Acceptable scale of disruption	X	Build time c.18 months including planning	Significant disruption and would not meet full requirements
E6	Proximity to end users	✓	Average journey: Current = 31.9 miles, 56 minutes Alternative = 32.8 miles, 61 minutes	No benefits of moving from existing site
E7	Access to site for staff	✓	Current modes = 62% car, 30% bus Well located to A55, park and ride, regular bus routes	No issues with workforce accessibility
E8	Carbon emissions	N/A	CO2e per kg of laundry = 0.167kg	Not scored
CSF1	Strategic fit	?	Some concerns about location on a busy clinical site	
CSF2	Value for money	X	Investment would not meet all requirements because of inability to expand footprint therefore limited productivity gains	
CSF3	Supply side	✓	No issues	
CSF4	Affordability	✓	Level of investment similar to other sites so affordable if funding available	
CSF5	Achievability	X	Overall deemed not achievable because of the inability to expand to accommodate the required improvements	

7.4.3 Following the assessment, the stakeholders agreed that for North Wales:

- Significant investment is required to comply with standards, condition of plant, improve productivity, and create resilience.
- The current footprint cannot accommodate the level of improvements required and space restrictions on a busy clinical site means there is no potential to expand building, therefore any investment would deliver limited benefits.
- The current location of the LPU is the most beneficial given its position on a hospital site (thereby reducing transport requirements for that delivery point) and ease of access for the workforce. Locating off site would have an impact but this could be minimised by locating within reasonable proximity.

South East Wales

7.4.4 The two existing LPUs within South East Wales were assessed against the selection criteria and critical success factors, the outputs of which are shown in the tables below.

Figure 7-5 Site assessment for South East Wales

South East Wales –Green Vale (15.4m items)				
E1	Current capacity (at 37.5 hours)	X	Capacity = 13.9m (37.5 hour week)	10% capacity shortfall at 37.5 hours + no resilience
E2	Ability to achieve 160 PPOH	✓	Current = 123 PPOH Maximum = 162 PPOH	Achievable with investment
E3	Ability to increase capacity	✓	Requires minimum 41.5 hour week	Can provide required capacity with investment and minimal increase in operating hours
E4a	Cost of upgrades	✓	c.£7m equipment	Similar cost to other sites
E4b	Feasibility of upgrades	✓	Space available internally including mezzanine	Possible to accommodate upgrades to deliver improvements
E5	Acceptable scale of disruption	✓	3 month implementation period at weekends	Minimal disruption required
E6	Proximity to end users	✓	Average journey: Current = 15.1 miles, 31 minutes Future = 21.1 miles, 39 minutes	Will result in increased transport requirements but at a similar level to Church Village
E7	Access to site for staff	✓	Well located for car access and parking available, limited bus access	No issues with workforce accessibility
E8	Carbon emissions	N/A	CO2e per kg of laundry = 0.259kg	Not scored but one of the most efficient of the group
CSF1	Strategic fit	✓	No issues	
CSF2	Value for money	✓	Investment in existing asset would deliver required benefits	
CSF3	Supply side	✓	No issues	
CSF4	Affordability	✓	Level of investment similar to other sites so affordable if funding available	
CSF5	Achievability	✓	Overall deemed achievable with investment	

South East Wales – Church Village (15.4m items)				
E1	Current capacity (at 37.5 hours)	X	Capacity = 6.3m (37.5 hour week)	58% shortfall with 37.5 hour working week
E2	Ability to achieve 160 PPOH	X	Current = 87 PPOH Maximum = 102 PPOH	Not possible to achieve close to target productivity
E3	Ability to increase capacity	X	Requires minimum 91.5 hour week	Operating hours would need to more than double which is unrealistic
E4a	Cost of upgrades	✓	Equipment £7.2m	Similar cost to other sites
E4b	Feasibility of upgrades	X	Requires 50% additional space	Expansion unlikely to be feasible at this scale given the existing site
E5	Acceptable scale of disruption	X	Build time c.18 months including planning	Highly unlikely to get planning permission in residential area
E6	Proximity to end users	✓	Average journey: Current = 12.4 miles, 37 minutes Alternative = 17.4 miles, 34 minutes	Will result in increased transport requirements but at a similar level to Green Vale
E7	Access to site for staff	X	Limited parking availability	Significant issues with parking for workforce by more than doubling throughput
E8	Carbon emissions	N/A	CO2e per kg of laundry = 0.874kg	Not scored significantly higher than Green Vale
CSF1	Strategic fit	✓	No issues	
CSF2	Value for money	?	Investment would not meet all requirements because of inability to expand footprint therefore limited productivity gains	
CSF3	Supply side	✓	No issues	
CSF4	Affordability	✓	Level of investment similar to other sites so affordable if funding available	
CSF5	Achievability	X	Overall deemed not achievable because of the scale of change required to accommodate additional volumes and inability to expand the site	

7.4.5 Following the assessment, the stakeholders agreed that for South East Wales:

- With investment, Green Vale can comply with standards, accommodate required volumes, and improve productivity with minimal disruption.
- Church Village requires significant investment and expansion which is unlikely to be achievable given the scale of disruption, risks around planning permission and value for money in comparison to Green Vale.
- There will be an impact on transport requirements, but this is similar at both sites.

South West Wales

7.4.6 The two existing LPUs within South West Wales were assessed against the selection criteria and critical success factors, the outputs of which are shown in the tables below.

Figure 7-6 Site assessment for South West Wales

South West Wales – Llansamlet (9.2m items)				
E1	Current capacity (at 37.5 hours)	X	Capacity = 5.8m (37.5 hour week)	37% shortfall
E2	Ability to achieve 160 PPOH	X	Current = 69 PPOH Maximum = 112 PPOH	Not possible to achieve close to target productivity
E3	Ability to increase capacity	?	Requires minimum 59.5 hour week	Potentially could be achieved but some workforce challenges around public transport, etc
E4a	Cost of upgrades	✓	Equipment £5m Gas provision	Similar cost to other sites
E4b	Feasibility of upgrades	X	Requires 30% increase in size of laundry	Unlikely to be feasible given the age of the building and inability to pipe gas
E5	Acceptable scale of disruption	X	Build time c.18 months including planning + gas provision of 2 years	Significant disruption and would not meet full requirements, significant delay re gas provision
E6	Proximity to end users	✓	Average journey: Current = 13.3 miles, 27 minutes Future = 21.8 miles, 40 minutes	Increase in transport although at a lower level than Glangwili
E7	Access to site for staff	✓	Well located for car, some parking limitations, some bus limitations	No significant issues with workforce accessibility
E8	Carbon emissions	N/A	CO2e per kg of laundry = 0.657kg	Not scored but at higher end of the scale
CSF1	Strategic fit	✓	No issues	
CSF2	Value for money	?	Investment would not meet all requirements because of inability to expand footprint therefore limited productivity gains	
CSF3	Supply side	✓	No issues	
CSF4	Affordability	✓	Level of investment similar to other sites so affordable if funding available	
CSF5	Achievability	X	Overall deemed not achievable because of the scale of change required and inability to expand the site	

South West Wales – Glangwili (9.2m items)				
E1	Current capacity (at 37.5 hours)	X	Capacity = 4.3m (37.5 hour week)	54% shortfall
E2	Ability to achieve 160 PPOH	X	Current = 85 PPOH Maximum = 125 PPOH	Not possible to achieve close to target productivity
E3	Ability to increase capacity	?	Requires minimum 81.5 hour week	Would need to double operating hours to accommodate
E4a	Cost of upgrades	✓	Equipment £5.4m Gas provision c.£1.5m	Similar cost to other sites
E4b	Feasibility of upgrades	X	Requires 50% increase in size of laundry	Significant scale of change required and likely to be limitations around the site and planning permission
E5	Acceptable scale of disruption	X	Build time c.18 months including planning + gas provision of 2 years	Significant disruption and would not meet full requirements, significant delay re gas provision
E6	Proximity to end users	✓	Average journey: Current = 20.8 miles, 37 minutes Alternative = 29.0 miles, 51 minutes	Increase in transport and at a higher level than Llansamlet, however, it is achievable
E7	Access to site for staff	✓	Well located for car, park and ride, limited bus	No significant issues with workforce accessibility
E8	Carbon emissions	N/A	CO2e per kg of laundry = 0.283kg	Not scored but at lower end of the scale
CSF1	Strategic fit	✓	No issues	
CSF2	Value for money	?	Investment would not meet all requirements because of inability to expand footprint therefore limited productivity gains	
CSF3	Supply side	✓	No issues	
CSF4	Affordability	✓	Level of investment similar to other sites so affordable if funding available	
CSF5	Achievability	X	Overall deemed not achievable because of the scale of change required and inability to expand the site	

7.4.7 Following the assessment, the stakeholders agreed that for South West Wales:

- Both sites require significant investment to comply with standards, improve condition of existing plants, improve productivity, and create resilience.
- Improvements would require significant expansion at both sites which are challenging due to space constraints, ability to achieve planning permission, access to utilities.

7.4.8 Given the similarity of assessment results on operational and capacity criteria and requirements for upgrade, further analysis was completed on transport to differentiate between the two sites and to determine which site would offer average mileage and journey time savings compared to the current sites.

7.4.9 Transport analysis was undertaken to calculate the mean distance and journey time from the two existing LPU's to the delivery sites in south west Wales and to calculate the mean distance and journey time if all LPU operations were based at either Glangwili General Hospital Laundry Service, Llansamlet Laundry Service or at the geographical centre.

This was done using three scenarios – for high frequency sites with 5 or more deliveries a week, for high volume sites, and for all 28 sites pooled together.

- 7.4.10** The analysis from each scenario showed that of the two existing LPUs, Llansamlet LPU is better than Glangwili General Hospital LPU to achieve lower average journey times between the LPU and those delivery locations, and that the most efficient location is within 5 miles of existing LPU at Swansea. During the workshop, stakeholders agreed that the new LPU for South West Wales should most likely be at a location within a reasonable proximity on the west side of Swansea LPU.
- 7.4.11** A high-level analysis of weekly and annual mileage estimates for serving all south west Wales delivery sites from either the proposed site near Glangwili LPU or the proposed site near Llansamlet LPU has shown that a new site close to Llansamlet saves up to 55,000 miles and 85,000 minutes a year compared to a new site at Glangwili. Further detail is provided in Appendix E2 & F2

Figure 7-7 Map of Proposed Sites Near the Existing LPUs in South West Wales



Figure 7-8 Comparison of Weekly and Annual Mileage for LPU Serving All SW Wales Sites

LPU	Weekly Average Mileage to Serve All Delivery Sites in SW Wales (Miles)	Annual Average Mileage to Serve All Delivery Sites in SW Wales (Miles)
New LPU Within Five Miles of Glangwili General Hospital Laundry Service	5,424.1	282,054.5
New LPU Within Five Miles of Llansamlet Laundry Service	4,360.3	226,734.5

7.4.12 Carbon assessment of the three proposed LPUs has shown that Carbon emissions from all three LPUs will be less than 0.35 kg CO₂ per kg of laundry. This currently ranges from 0.163 to 0.874 kg CO₂e per kg of laundry for existing LPUs.

Figure 7-9 Total Carbon Emissions Equivalent per Laundry Processed for the five Existing LPUs

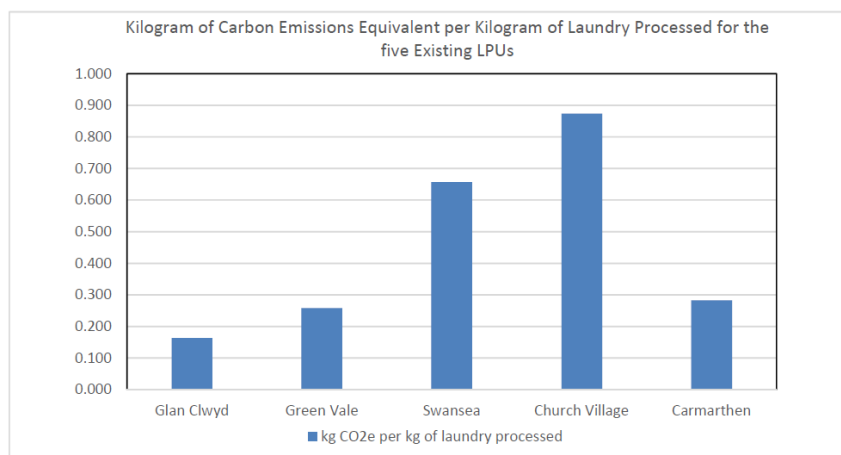
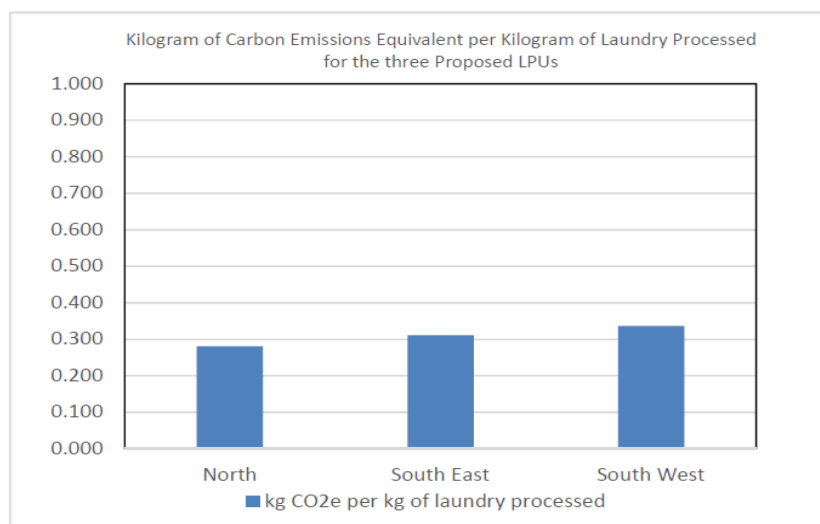


Figure 7-10 Total Carbon Emissions Equivalent per Laundry Processed for the three Proposed LPUs



7.4.13 It has been assumed that the proposed LPUs will process same amount of laundry in total as the existing laundries but will overall be more efficient in electricity, gas and water usage at a rate of 0.11 kWh/ kg of laundry, 1 kWh/kg of laundry and 6 litres/ kg of laundry, respectively. This has been modelled further and shows that there will be a net reduction in Carbon emissions for all LPUs across Wales from 0.411 kg CO₂ per kg of laundry to moving to 0.313 by moving to the new operating model. Further detail is provided in Appendix G2.

Figure 7-11 Total Carbon Emissions for all five Existing LPUs

Carbon assessment: Current Operating Model with 5 LPU's						
Sites	Glan Clwyd	Green Vale	Swansea	Church Village	Carmarthen	All Wales
Laundry processed (kg)	2,469,617	4,280,307	1,917,601	2,291,771	2,107,440	13,066,736
Total kg CO2e	402,402	1,107,191	1,259,069	2,002,857	596,331	5,367,850
kg CO2e per kg of laundry processed	0.163	0.259	0.657	0.874	0.283	0.411

Figure 7-12 Total Carbon Emissions for three Proposed LPUs

Carbon assessment: Proposed Model with 3 LPUs				
Sites	North (New Build)	South East (Upgrade Green Vale)	South West (New Build)	All Wales
Laundry processed (kg)	2,469,617	6,572,078	4,025,040	13,066,735
Total kg CO2e	693,532	2,047,262	1,352,440	4,093,234
kg CO2e per kg of laundry processed	0.281	0.312	0.336	0.313

7.5 Conclusion

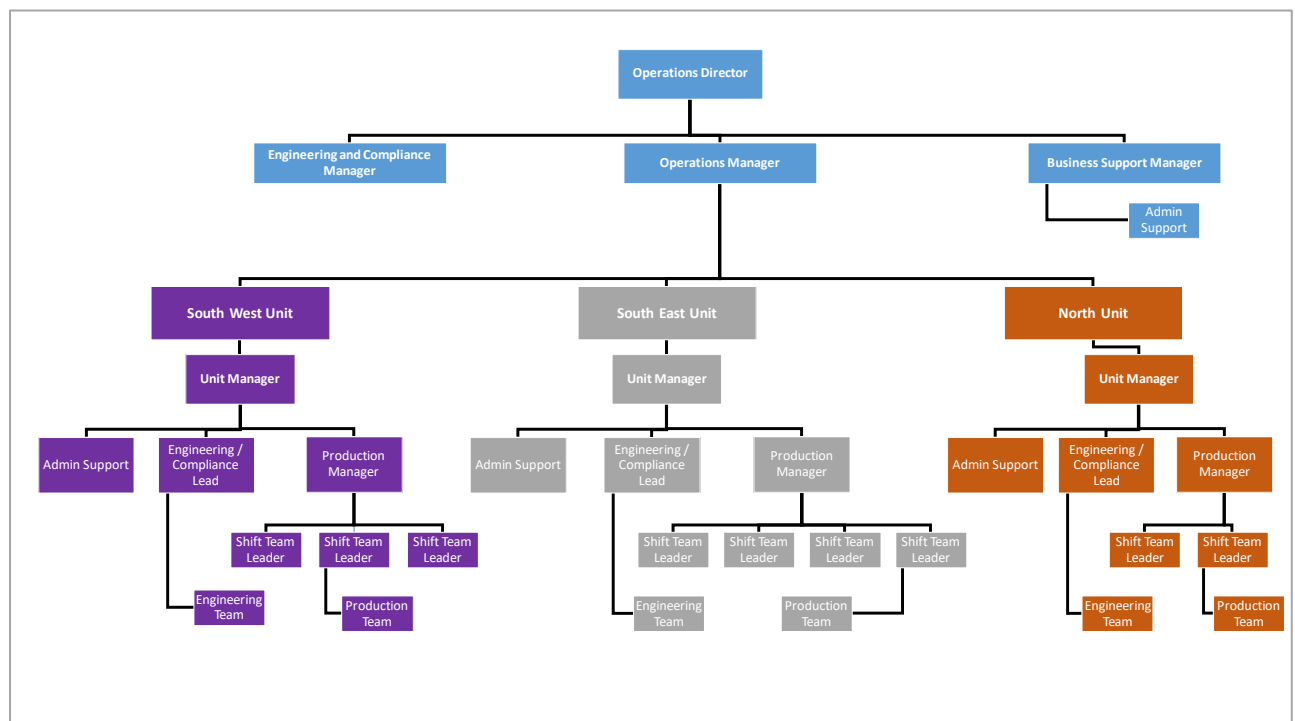
7.5.1 The assessment of existing LPUs was undertaken by considering a range of selection criteria and critical success factors, backed up by analysis and evidence. The table below provides an overview of the assessment against these for each site.

Figure 7-13 Site assessment for all existing LPU sites

Selection Criteria and CSFs		North 6.8m items	South East 15.4m items		South West 9.2m items	
		Glan Clwyd	Green Vale	Church Village	Llansamlet	Glangwili
E1	Current capacity (at 37.5 hours)	?	X	X	X	X
E2	Ability to achieve 160 PPOH	X	✓	X	X	X
E3	Ability to increase capacity	?	✓	X	?	?
E4a	Cost of upgrades	✓	✓	✓	✓	✓
E4b	Feasibility of upgrades	X	✓	X	X	X
E5	Acceptable scale of disruption	X	✓	X	X	X
E6	Proximity to end users	✓	✓	✓	✓	✓
E7	Access to site for staff	✓	✓	X	✓	✓
CSF1	Strategic fit	?	✓	✓	✓	✓
CSF2	Value for money	X	✓	?	?	?
CSF3	Supply side	✓	✓	✓	✓	✓
CSF4	Affordability	✓	✓	✓	✓	✓
CSF5	Achievability	X	✓	X	X	X
Assessment		New facility required	Retain and invest in Green Vale		New facility required	

- 7.5.2 In North Wales, the current Glan Clwyd LPU is not suitable for development and proposed that a replacement LPU should be developed as close as is reasonably practical to the existing Glan Clwyd site.
- 7.5.3 In South East Wales, Church Village LPU is not suitable for development given the scale of change required and limited ability to expand.
- 7.5.4 Green Vale LPU is suitable for development and should be upgraded to accommodate all South East Wales volumes.
- 7.5.5 Neither LPU in South West Wales is suitable for development given the scale of change required and limited ability to expand.
- 7.5.6 A replacement LPU to accommodate South West Wales volumes should be developed and, based on transport analysis, it was concluded that this should most likely be at a location within a reasonable proximity on the west side of Swansea LPU.
- 7.5.7 Further work needs to be completed to identify suitable sites in the North and South West Wales for the new LPUs.
- 7.5.8 A proposed draft management structure to deliver this future operating model is shown below.

Figure 7-14 Proposed future operating model



8 ECONOMIC APPRAISAL

8.1 Introduction

8.1.1 The purpose of the economic appraisal is to evaluate the costs, benefits and risks of the shortlisted options in order to identify the option that is most likely to offer best public value for money.

8.1.2 This is achieved by undertaking the following actions in line with current Welsh Government Better Business Case guidance:

- Estimating the costs and benefits for each option including:
 - Capital: initial capital and ongoing lifecycle investment costs; and
 - Revenue: Ongoing running costs and one-off implementation costs
- Undertaking a benefits appraisal;
- Undertaking a risks appraisal;
- Calculating the net present value (NPV) or net present cost (NPC) for each option, using the Green Book discount rate, and record the discounted values and Benefit Cost Ratios (BCRs); and
- Selecting the preferred option and undertaking sensitivity analysis.

8.2 Capital costs

8.2.1 Capital costs have been estimated based on the investment requirements for each of the shortlisted options. These requirements were established considering:

- The initial assessment of existing facilities, using the results of a six-facet condition survey.
- The results of the site selection process outlined in section 7 including the assessment of space and equipment requirements.

8.2.2 Based on the findings of this assessment, the most likely configuration and resulting investment requirements were identified for each of the options as outlined in the table below.

Figure 8-1 Capital investment requirement assumptions

Option	Investment requirements
Option 1 (5 LPUs)	Represents the Do Minimum solution and so it is reasonable to assume that all five existing units will be retained but facilities need to be invested in to reach a standard that is compliant with the latest statutory guidance and address any major backlog issues.
Option 2 (4 LPUs)	Based on the results of the site selection process and initial sensitivity testing of the configuration most likely to offer best value for money is: <ul style="list-style-type: none">• Investment in two existing sites in South East Wales (Green Vale and Church Village) to reach a standard compliant with the latest statutory guidance.• Development of a new LPU in North Wales near the existing Glan Clwyd site with sufficient capacity to accommodate North Wales activity; and

	<ul style="list-style-type: none"> Development of a new LPU in South West Wales, within a reasonable distance to the west of the existing Llansamlet site, with sufficient capacity to process South West Wales activity.
Option 3 (3 LPUs)	<p>Based on the results of the site selection process, the following requirements have been identified:</p> <ul style="list-style-type: none"> Investment in one existing site in South East Wales (Green Vale) to reach a standard compliant with the latest statutory guidance and increase capacity to process South East Wales activity. Development of a new LPU in North Wales near the existing Glan Clwyd site with sufficient capacity to accommodate North Wales activity; and Development of a new LPU in South West Wales, within a reasonable distance to the west of the existing Llansamlet site, with sufficient capacity to process South West Wales activity.
Option 2 (2 LPUs)	<p>Based on the results of the site selection process, this option is likely to require:</p> <ul style="list-style-type: none"> Development of a new LPU in North Wales near the existing Glan Clwyd site with sufficient capacity to accommodate North Wales activity. Development of a new LPU in South Wales, with sufficient capacity to process South West Wales activity.
Option 1 (1 LPU)	<p>This option is likely to require the development of a new unit at a central location.</p>

8.2.3 Indicative capital costs associated with these requirements were estimated based on the following key assumptions:

- Where an option involves investment in existing facilities, the estimated cost is based on forecast costs from the six-facet condition survey and any further building and equipment requirements identified during the recent LPU visits;
- Where an option includes a replacement unit, this is based on the indicative costs for land, construction and equipping.

8.2.4 Detailed capital cost assumptions are provided in Appendix C2 (Capital Cost Assumptions) and are summarised in the table below.

Figure 8-2 Capital cost assumptions

Requirement	Costing assumptions
Make existing units compliant	<p>Costs based on results of 6-facet survey:</p> <ul style="list-style-type: none"> Initial capital to comply with BS EN 14065 and other statutory; Other backlog maintenance issues related to building fabric and equipment which are anticipated to become high risk over the next 10 years All costs adjusted to reflect 2021/22 prices <p>Indicative costs of other major capital</p> <ul style="list-style-type: none"> Replacement roof at Glan Clwyd LPU estimated at £1.5m Mains utilities supplies at Glangwili LPU (estimated at £1.5) and Llansamlet LPU (estimated at £0.3m)
Expand capacity within existing facilities	Indicative costs based on equipment requirements.
Develop new unit in North Wales	<p>Indicative costs based on initial assumptions (to be explored in detail at OBC)</p> <ul style="list-style-type: none"> £200k land purchase (Based on BCUHB estimate of local land at 2 acres) 1617 m2 unit @ £1082m2 (2013 Turner Townsend construction at 21/22 prices) Equipment replacement of £4.5m
Develop new unit in South West Wales	<p>Indicative costs based on initial assumptions (to be explored in detail at OBC)</p> <ul style="list-style-type: none"> £576k land purchase (North Wales estimate expanded to represent 100% price increase in South and 44% increase in floor space) 2332 m2 unit @ £1082m2 (2013 Turner Townsend construction at 21/22 prices) Equipment replacement of £5.5m
Develop new unit in South Wales (Option 4 only)	<p>Indicative costs based on initial assumptions (based on Option 3)</p> <ul style="list-style-type: none"> £961k land purchase (North Wales estimate expanded to represent 100% price increase in South and 188% increase in floor space) 3887 m2 unit @ £1082m2 (2013 Turner Townsend construction at 21/22 prices) Equipment replacement of £10.6m
Develop new central unit (Option 5 only)	<p>Indicative costs based on initial assumptions (based on Option 3)</p> <ul style="list-style-type: none"> £1,154k land purchase (North Wales estimate expanded to represent 100% price increase in South and 140% increase in floor space) 4664 m2 unit @ £1082m2 (2013 Turner Townsend construction at 21/22 prices) Equipment replacement of £13.6m

Requirement	Costing assumptions
Programme implementation	Professional fees <ul style="list-style-type: none"> 18% of works costs 1.5% of equipment costs 0.5% of other costs
	Programme implementation fees <ul style="list-style-type: none"> Programme team: Senior Responsible Owner, Project Director, Business Change Manager, Programme Manager, Programme Administration Business case support Programme workstream leads

8.2.5 The details for each option are shown in the table below comprising.

Figure 8-3 Capital costs (£'000)

	Option 1 5 LPUs	Option 2 4 LPUs	Option 3 3 LPUs	Option 4 2 LPUs	Option 5 1 LPU
Address compliance and backlog in existing LPUs – infrastructure	11,451	3,503	1,739	0	0
Address compliance and backlog in existing LPUs – equipment	6,805	2,016	1,143	0	0
Expand existing LPUs to increase capacity - equipment	0	0	5,741	0	0
Improve existing LPUs	18,256	5,518	8,623	0	0
Land	0	777	777	1,161	1,154
Construction	0	4,273	4,273	5,955	5,046
Equipment	0	9,952	9,952	15,095	13,618
Develop new LPUs	0	15,002	15,002	22,211	19,818
Fees and programme management	0	2,013	1,769	1,734	1,548
Programme implementation	0	2,013	1,769	1,734	1,548
Total capital requirements	18,256	22,533	25,394	23,945	21,366

8.3 Recurring revenue costs

8.3.1 Indicative revenue costs have been estimated based on the following key assumptions:

- Baseline LPU operating costs for 2018/19;
- Estimated workforce requirements for each option based on available design blueprint and future structure;
- Productivity improvements to align with best practice in the industry;
- Estimated non-pay costs per item based on available benchmarking data and local expertise.

Baseline costs

- 8.3.2 It currently costs £9.8m to deliver services from the existing five NHS Wales LPUs. This is based on the figures reported by laundry production leads at 2017/18 costs that are set out in Section 3. The table below provides a summary of pay and non-pay costs.

Figure 8-4 Baseline LPU operating costs as at 2017/18 (£'000)

	WTE	Total annual revenue costs
Pay costs	231.86	5,775
Direct processing costs		1,786
Utilities		1,536
Overheads		151
Transport		516
Non-pay costs		3,989
Total costs	231.86	9,765

Future workforce requirements and pay costs

- 8.3.3 Estimated future workforce requirements for each option have been estimated based on the future operating model outlined in Figure 7-14.

- Direct staff: Supervisors and production staff required to deliver the throughput under each LPU, based on the technical design of each plant.
- Indirect staff: Based on the future operating structure.

- 8.3.4 The assumptions used for each option are provided in the table below.

Figure 8-5 Workforce requirements assumptions

Staff Group	Option 1 5 LPUs	Option 2 4 LPUs	Option 3 3 LPUs	Option 4 2 LPUs	Option 5 1 LPU
Central Management Team	Baseline	Central Management Team	Central Management Team	Central Management Team	Central Management Team
	-	5.0 WTE	5.0 WTE	5.0 WTE	5.0 WTE
Unit Management	Baseline	3.0 WTE per LPU	3.0 WTE per LPU	3.0 WTE per LPU	13.0 WTE per LPU
	10.0 WTE	12.0 WTE	9.0 WTE	6.0 WTE	3.0 WTE
Admin	Baseline	2 WTE per LPU	1. 2 WTE per LPU	12 WTE per LPU	2 WTE per LPU
	11.1 WTE	8.0 WTE	6.0 WTE	4.0 WTE	2.0 WTE
Maintenance	Baseline	2.0 per shift per LPU	2.0 per shift per LPU	2.0 per shift per LPU	2.0 per shift per LPU
	16.0 WTE	12.0 WTE	8.0 WTE	6.0 WTE	4.0 WTE
Supervisors	Baseline	2.0 per shift per LPU	2.0 per shift per LPU	2.0 per shift per LPU	2.0 per shift per LPU

Staff Group	Option 1 5 LPUs	Option 2 4 LPUs	Option 3 3 LPUs	Option 4 2 LPUs	Option 5 1 LPU
	20.0 WTE	12.0 WTE	8.0 WTE	6.0 WTE	4.0 WTE
Operators	Baseline	Baseline for existing 2 LPUs + Technical assessment of 2 new LPUs	Technical assessment of 1 improved LPU + 2 new LPUs	Technical assessment of 2 new LPUs	Technical assessment of 1 new LPUs
	159.6 WTE	113.5 WTE	84.0 WTE	90.3 WTE	89.6 WTE
Distribution team	Baseline	Transport requirements	Transport requirements	Transport requirements	Transport requirements
	15.2 WTE	14.0 WTE	16.0 WTE	12.0 WTE	10.0 WTE
Distribution hubs	Baseline	No hubs required	No hubs required	1 hub with 5.0 Band 2 WTE each	2 hubs with 5.0 Band 2 WTE each
	-	-	-	5.0 WTE	10.0 WTE
TOTAL	231.9 WTE	176.5 WTE	136.0 WTE	134.3 WTE	127.6 WTE

8.3.5 Future pay costs have been estimated for each option based on these staffing requirements and the following assumptions:

- 37.50 available production hours per week at new LPUs; 50.0 hours per week at improved Green Vale site; continue with current working pattern at existing LPUs.
- All salaries calculated at mid-point on pay scale; and
- 30% allowance included for on costs including pension, NI, annual leave and sickness cover.

Non-pay costs

8.3.6 Indicative non-pay costs have been estimated based on available benchmarking data and laundry production leads' expertise. The assumptions used for each option are provided in the table below but include the following overarching principles:

- **Direct processing costs:** Current average cost per item used for all options since costs are unlikely to change regardless of the model as all sites utilise the same procurement framework. This has been adjusted to reflect detergent requirements of new equipment and increased linen stock requirements.
- **Utilities:** Utility costs have been estimated for new and improved LPUs based on equipment and plant requirements.
- **Overheads:** Baseline overhead costs carried forward for all options as these are largely fixed costs which would have to be continued to be absorbed. Additional building running costs of £22 per m2 are estimated for any new LPUs.
- **Transport:** Estimate is based on additional mileage for each option at an average cost per mile of £0.22 which includes trucks, drivers, fuel, tax, insurance, truck lease.

Recurring revenue costs

8.3.7 The annual recurring revenue costs for each option have been calculated using the assumptions outlined above. The results of this suggest that financial benefits of between £0.9m and £2.3m p.a. are possible for any but the 'Do Minimum' option.

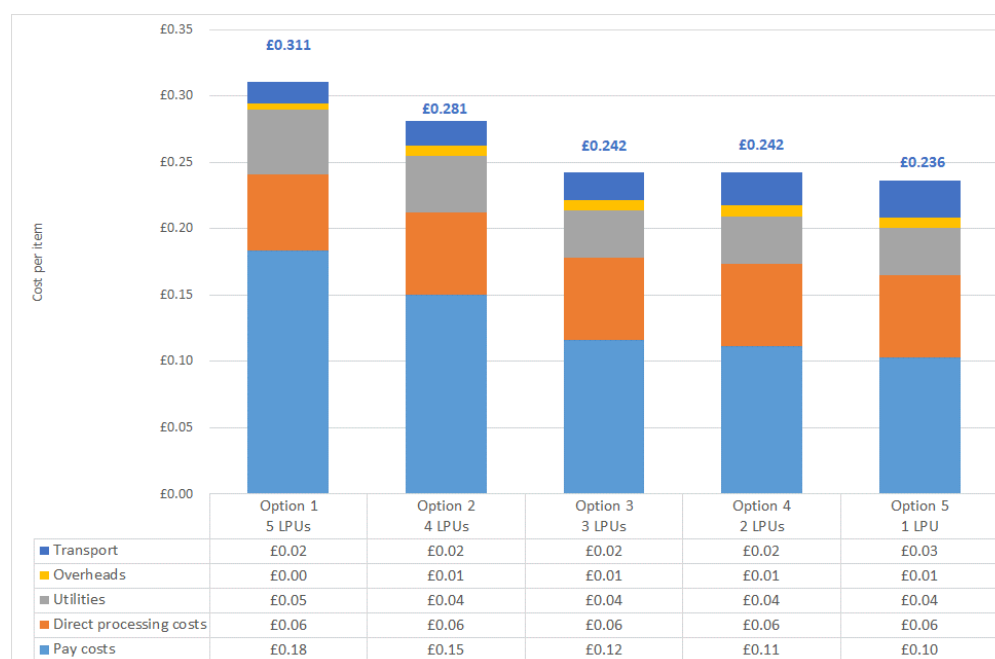
8.3.8 The details for each of the options are provided in the table below.

Figure 8-6 Future annual recurring revenue costs (£'000)

	Option 1 5 LPU's	Option 2 4 LPU's	Option 3 3 LPU's	Option 4 2 LPU's	Option 5 1 LPU
WTE	231.86	176.48	136.00	134.30	127.55
Pay costs	5,775	4,732	3,659	3,509	3,245
Pay costs	5,775	4,732	3,659	3,509	3,245
Direct processing costs	1,786	1,939	1,950	1,950	1,950
Utilities	1,536	1,349	1,105	1,105	1,105
Overheads	151	238	238	272	254
Transport	516	573	658	781	871
Non pay costs	3,989	4,099	3,951	4,108	4,179
Total costs	9,765	8,830	7,610	7,617	7,425
Annual saving	0	934	2,155	2,148	2,340

8.3.9 Based on this, the average cost per item is expected to reduce from £0.31 per item to up to £0.24 per item. The average for each option is provided in the chart below.

Figure 8-7 Future average cost per item



8.4 Non-recurring revenue costs

8.4.1 It is anticipated that any changes will result in transitional costs related to the implementation including the impact of:

- Double running costs; and
- The impact of redeployment expressed in terms of potential requests for voluntary early retirement payments.

8.4.2 The assumptions for this are provided in the table below.

Figure 8-8 Transitional costs assumptions

Cost	Option 1 5 LPU	Option 2 4 LPU	Option 3 3 LPU	Option 4 2 LPU	Option 5 1 LPU
Double running costs	Refurb 5 LPU	Refurb 3 LPU	Refurb 2 LPU	Refurb 1 LPU	
	1.0 week	1.0 week	1.0 week	1.0 week	-
		Transition: 1 LPU parallel runs at 25% of usual rate	Transition: 2 LPU parallel run at 25% of usual rate	Transition: 3 LPU parallel run at 25% of usual rate	Transition: 5 LPU parallel run at 25% of usual rate
	-	1.0 month	1.5 months	2.0 months	3.0 months
Re-deployment costs	None	90% of displaced staff redeployed	90% of displaced staff redeployed	90% of displaced staff redeployed	90% of displaced staff redeployed
	-	5.54 WTE @ average salary and 15 year service	9.59 WTE @ average salary and 15 year service	9.76 WTE @ average salary and 15 year service	10.4 WTE @ average salary and 15 year service

8.4.3 It should be noted that it has not been possible to estimate decommissioning costs at this stage. This will be explored further for each of the individual projects during the OBC and FBC stages. The latest Welsh Government guidance will be followed when planning and scoping for decommissioning of existing buildings.

It is however expected Decommissioning will follow standard practice and consist generally of

- Removal of Equipment
- Making supplies safe (Gas, Electricity & Water)
- Locking Premises & Ongoing Security Costs

8.4.4 The resulting transitional costs are provided in the table below.

Figure 8-9 Transitional costs

	Option 1 5 LPU	Option 2 4 LPU	Option 3 3 LPU	Option 4 2 LPU	Option 5 1 LPU
Double running costs	47	69	141	254	610
Redeployment costs	0	172	298	304	325
Transitional costs	47	241	439	557	935

8.5 Benefits analysis

8.5.1 An appraisal of the quantifiable and qualitative benefits has been undertaken. Every reasonable attempt has been taken to quantify benefits and where possible these have been expressed in monetary equivalent terms. The resulting analysis is separated into

- Financial benefits; and
- Non-financial benefits.

8.5.2 The financial benefits arise predominately from cash releasing benefits within four key areas:

- Modern fit-for-purpose facilities reducing maintenance requirements;
- Modern fit-for-purpose facilities generating energy efficiencies;
- Improved productivity reducing operator pay costs; and
- Better utilisation of assets resulting in reduced non-production pay costs.

8.5.3 However, additional distribution requirements resulting from a move towards fewer LPUs results in significant increased costs of transport and the workforce to distribute linen and operate the hubs for the more ambitious options. The overall financial dis-benefit this creates is offset against the financial benefits to show a net financial benefit for each option.

8.5.4 In addition, an assessment has been made of the wider economic benefits of the net carbon impact of each option based on improved CO2 emissions from the development of new facilities less the increased CO2 emissions resulting from any increased transport requirements.

8.5.5 An analysis of the financial benefits and dis-benefits is provided below.

Figure 8-10 Annual financial benefits (£'000)

	Option 1 5 LPUs	Option 2 4 LPUs	Option 3 3 LPUs	Option 4 2 LPUs	Option 5 1 LPU
Reduced maintenance requirements	0	40	177	246	314
Energy efficiencies	0	187	431	431	431
Improved productivity	0	1,219	1,885	1,742	1,759
Reduced non-production pay costs	0	-228	87	333	579
Direct benefits	0	1,218	2,580	2,752	3,084
Additional distribution requirements	0	-44	-174	-319	-477
Direct dis-benefits	0	-44	-174	-319	-477
Cash releasing benefits	0	1,174	2,406	2,433	2,607
Reduced CO2 emissions	0	15	105	93	72
Wider economic benefits	0	15	105	93	72

Total financial benefits	0	1,189	2,511	2,526	2,680
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- 8.5.6 In addition to this there are a number of benefits that it is not possible to quantify in monetary terms at this stage. Instead an assessment has been made as to the scale of non-financial benefits each of the options is likely to deliver using the criteria below.

Figure 8-11 Scoring criteria

✓	Most likely to deliver the benefit
?	Likely to partly deliver the benefit
X	Least likely to deliver the benefit

- 8.5.7 The results of this assessment are provided in the table below.

Figure 8-12 Non-financial benefits assessment

	Option 1 5 LPU's	Option 2 4 LPU's	Option 3 3 LPU's	Option 4 2 LPU's	Option 5 1 LPU
Appropriate capacity to best utilise assets	X	?	?	✓	✓
Better able to respond to changing demand due to improved productivity	X	?	✓	✓	✓
Ability to respond to local needs	✓	✓	?	?	X
Improved standardisation	?	?	✓	✓	✓
Better working conditions improving health and wellbeing of workforce	X	?	✓	✓	✓
Development of skilled and sustainable workforce	?	?	✓	✓	✓
Estate released creating opportunities for HBs	X	?	✓	✓	✓
Summary	Limited opportunity to improve performance	Medium opportunity to improve performance	Significant opportunity to improve performance	Significant opportunity to improve performance	Greatest opportunity to improve performance

- 8.5.8 Since these non-financial benefits have not been quantified in monetary terms it is difficult to incorporate the analysis above within the economic appraisal in a meaningful

way. It should also be considered that some of the factors raised here are assessed as part of the quantified risks and so care needs to be taken not to double count.

8.5.9 However, there are a number of observations that can be taken from this evaluation:

- Option 1 – Although it offers the best opportunity to provide localised services, the ‘Do Minimum’ option delivers very few non-financial benefits because it retains all the existing facilities which limits the service’s ability to improve working conditions and transition to a more standardised, efficient operating model.
- Option 2 – Delivers some of the expected benefits since it is likely to include the development of new facilities in North Wales, however it still relies on existing facilities in South Wales and provides little opportunity to improve productivity and standardise processes.
- Options 3 and 4 – Both deliver a similar range of benefits due to development of new facilities in North Wales and the expansion of facilities in South Wales to incorporate new production lines where required. This improves working conditions in a number of areas and provides significant opportunities to improve productivity and standardise processes.
- Option 5 – Delivers the greatest level of benefits and provides the most opportunities to improve productivity and standardise processes due to the development of purpose built facilities.

8.6 Risk analysis

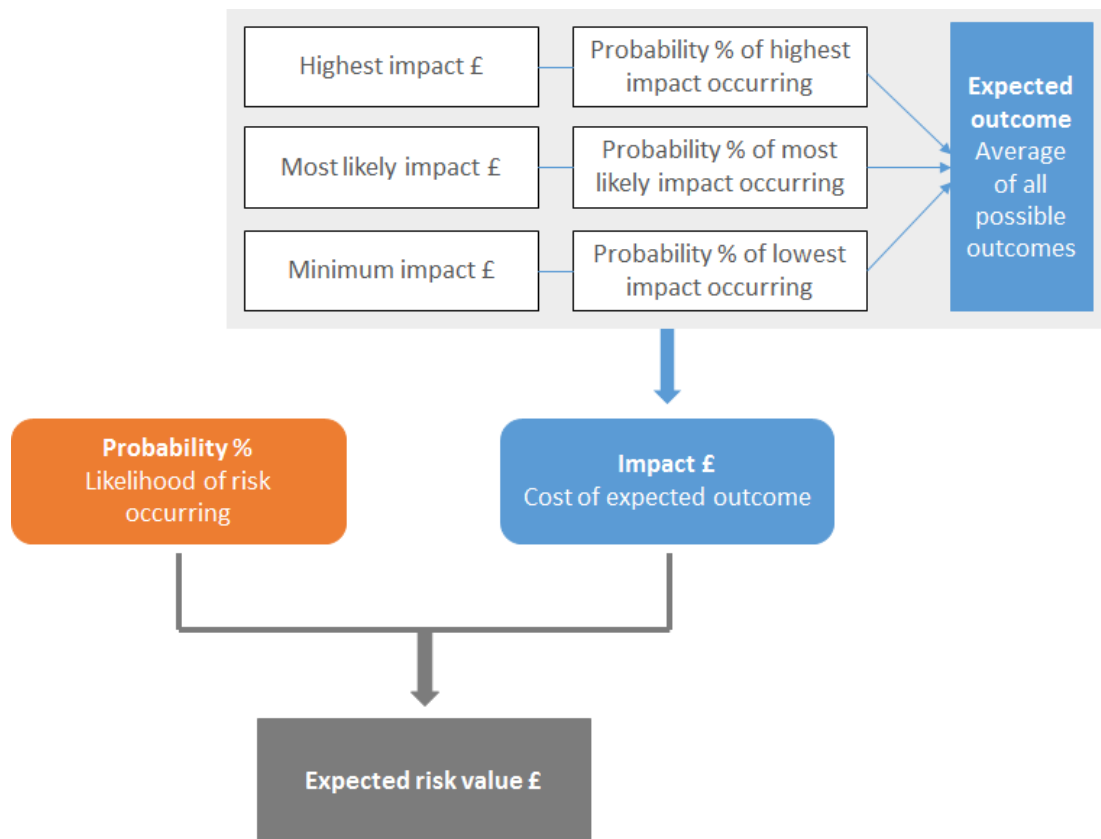
8.6.1 The risks for each option have been assessed and, as far as possible, quantified and expressed in monetary equivalent terms by calculating an ‘expected value’.

8.6.2 This provides a single value for the expected impact of all risks. It is calculated by multiplying the likelihood of the risk occurring (probability) by the cost of addressing the risk (impact) and summing the results for all risks and outcomes.

8.6.3 A multi-point probability analysis takes account of there being a range of possible outcomes for any risk. The risk assessment undertaken therefore uses an output probability distribution to provide a complete picture of the possible outcomes, recognising that some of these outcomes are more likely to occur than others. The resulting ‘expected outcome’ calculated is the average of all possible outcomes, taking into account their different probabilities.

8.6.4 The diagram below provides an overview of the risk assessment undertaken.

Figure 8-13 Risk quantification approach using multi-point probability analysis



Probability

8.6.5 Attendees at Workshop 4 assessed probability in terms of the likelihood of each of the risks occurring in relation to the five options. Following the workshop, adjustments were made to the including:

- **Increased frequency of system failures due to equipment breakdown:** At Workshop 4 attendees concluded that there is an equal 25% probability of the risk occurring across all options on the basis that they all include similarly reduced amount of aged equipment. However, the economic appraisal assumptions suggest that different levels of aged equipment will be retained for each option – namely because there are no new premises in Option 1, Option 2 includes only 1 new facility, Option 3 includes 1 new facility and 1 extended facility, Option 4 includes 1 new facility and 1 extended facility, and Option 5 relates to an entirely new facility. Therefore, the assessment has been amended to reflect this.
- **Increased duration of system failures due to equipment breakdown:** For the same reason, an adjustment was made to the assessment from Workshop 4 that had concluded an equal 5% probability of the risk occurring across all options.
- **Unable to redeploy staff appropriately:** At Workshop 4 attendees concluded that although there is likely to be some redeployments in Options 1 and 2, this will be manageable due to the low numbers involved, whereas there are significant risks associated with Options 3, 4 and 5 as the numbers of LPUs reduce. However, this was subsequently amended to reflect the estimated numbers of redeployments emerging from the economic appraisal which are: Option 1 = 0; Option 2 = 57.2; Option 3 = 77.1; Option 4 = 78.2; Option 5 = 89.0. Therefore Option 1 was adjusted from 10% to 0% and Option 2 from 20% to 66% (in proportion to Option 3).

8.6.6 The table below summarises the resulting final assessment.

Figure 8-14 Likelihood of risks occurring

Risk	Option 1 5 LPU's	Option 2 4 LPU's	Option 3 3 LPU's	Option 4 2 LPU's	Option 5 1 LPU
Resilience					
Increased frequency of system failures due to equipment breakdown	30%	20%	10%	10%	5%
Increased duration of system failures due to scarcity of parts	30%	20%	10%	10%	5%
Insufficient back up capacity available in the event of an elongated system failure	10%	25%	50%	75%	100%
Risk of linen shortage at HB level due to logistical failures	10%	10%	10%	10%	15%
Workforce					
Workforce unable to adapt new ways of working	10%	10%	10%	10%	10%
Short term loss of experience, knowledge and skills	10%	15%	25%	70%	70%
Unable to redeploy staff appropriately	10%	10%	10%	10%	10%
Impact on local economy of reduced local employment	10%	10%	10%	10%	10%
Operational					
Failure to meet required levels of quality	10%	10%	10%	10%	10%

Impact

8.6.7 At Workshop 4, attendees agreed assumptions for estimating the expected impact should the risk occur in terms of the minimum (best case scenario), most likely and maximum (worst case scenario) impact.

Figure 8-15 Likely impact should the risk occur

Risk	Likely impact	Minimum impact	Most likely impact	Maximum impact
Resilience				
Increased frequency of system failures due to equipment breakdown	Increased maintenance costs	Based on current maintenance budget	Based on current maintenance budget	Based on current maintenance budget
Increased duration of system failures due to scarcity of parts	Increased pay costs (enhancements)	Based on current maintenance budget	Based on current maintenance budget	Based on current maintenance budget
Insufficient back up capacity available in the event of an elongated system failure	Premium rate paid to private contractor	65% increased production costs for 3 Days	75% increased production costs for 1 month	100% increased production costs for 18 months

Risk	Likely impact	Minimum impact	Most likely impact	Maximum impact
Risk of linen shortage at HB level due to logistical failures	Increased production costs	50% increased transport costs for 1 day	50% increased transport costs for 2 days	50% increased transport costs for 3 days
Workforce				
Workforce unable to adapt new ways of working	Benefits will not be fully realised	5% efficiency reduction	15% efficiency reduction	30% efficiency reduction
Loss of experience, knowledge and skills	Increased implementation costs	1% increase of start-up costs	5% increase in start-up costs	50% increase in start-up costs
Unable to redeploy staff appropriately	Redundancy costs higher than estimated	30% of staff who need to be redeployed to be paid redundancy	70% of staff who need to be redeployed to be paid redundancy	100% of staff who need to be redeployed to be paid redundancy
Impact on local economy of reduced local employment	Reduced earnings in wider economy	Equivalent annual income of all roles redeployed and made redundant	Equivalent annual income of all roles redeployed and made redundant	Equivalent annual income of all roles redeployed and made redundant
Operational				
Failure to meet required levels of quality	Cost of returns, double washing leading to increased processing costs	Cost of 3% double washing	Cost of 4% double washing	Cost of 5% double washing

8.6.8 For each risk, it is assumed that the probability of each impact occurring is as follows:

- Minimum impact – 25% probability
- Most likely – 50% probability
- Maximum – 25% probability.

8.6.9 This is used to calculate the average expected outcome of each risk occurring.

Expected risk value

8.6.10 The expected outcome is multiplied by the probability each risk occurring. This combines to create an overall expected risk value for each option.

8.6.11 The detailed results of this assessment are provided in Appendix C1. The table below shows the expected risk value over a 30-year appraisal period for each option by category of risk.

Figure 8-16 Expected risk value £'000

	Option 1 5 LPU's	Option 2 4 LPU's	Option 3 3 LPU's	Option 4 2 LPU's	Option 5 1 LPU
Resilience	27,908	25,425	26,609	36,169	41,820
Workforce	205	1,602	2,759	3,721	3,879
Operational	484	445	398	391	380
Expected risk value	28,597	27,471	29,766	40,282	46,079

8.6.12 The results of this assessment suggest that:

- Option 2 offers the lowest degree of risk as it addresses some of the risks around aged buildings and equipment while not impacting on resilience.
- Option 5, the 'most ambitious' option, offers the highest level of risk because of the scale of change required to move to a single site and risks associated with contingency arrangements, logistics, and workforce change, as well as the uncertainties around the cost of delivering new facilities at this stage.

8.7 Results of the economic appraisal

8.7.1 The assumptions above have been incorporated into a discounted cash flow for each of the options. Given the scale of the project, the discounted cash flow has been prepared over a 30-year period, using a discount rate of 3.5% in line with the requirements of HM Treasury.

8.7.2 The key elements used in this analysis are summarised in table below.

Figure 8-17 Key assumptions used in the economic appraisal

- Costs and benefits are calculated over a 15-year appraisal period.
- Year 0 is 2020/21.
- Costs and benefits use real base year prices – all costs are expressed at 2019/20 prices in line with the baseline costs.
- The following costs are excluded from the economic appraisal:
 - Exchequer 'transfer' payments, such as VAT;
 - General inflation;
 - Sunk costs; and
 - Non-cash items such as depreciation and impairments.
- A discount rate of 3.5% is applied to the economic appraisal.
- Financial benefits are incorporated based on the analysis in section 7.11.
- Quantified risks are included based on the analysis provided in section 7.17.

8.7.3 The results of the economic appraisal are provided in the table below. However, more detailed workings are provided in Appendix C2 and a copy of the Generic Economic Model (GEM) in Appendix C3.

Figure 8-18 Net Present Value 30-year period (£'000)

Inputs into cash flow (undiscounted):

	Option 1 5 LPU's	Option 2 4 LPU's	Option 3 3 LPU's	Option 4 2 LPU's	Option 5 1 LPU
Capital investment	18,256	22,533	25,394	23,945	21,366
Total capital costs	18,256	22,533	25,394	23,945	21,366
Transitional costs	47	241	439	557	935
One-off revenue costs	47	241	439	557	935
Recurring revenue costs excluding cash releasing benefits	302,706	308,560	306,509	307,726	307,775
Cash releasing benefits	0	-30,531	-62,555	-63,262	-67,791
Recurring revenue costs	302,706	278,028	243,954	244,464	239,984
Environmental benefits	0	-388	-2,734	-2,406	-1,877
Wider economic benefits	0	-388	-2,734	-2,406	-1,877
Expected value of risk (expressed in monetary equivalent terms)	28,597	27,471	29,766	40,282	46,079
Quantified risks	28,597	27,471	29,766	40,282	46,079
Total costs, benefits and risks (30 years)	349,605	327,886	296,819	306,843	306,487

Cash flow results (undiscounted):

Costs including risks	349,605	358,417	359,373	370,105	374,279
Net financial benefits	0	-30,919	-65,289	-65,668	-69,668
Net Present Cost (NPC)	349,605	327,498	294,085	304,437	304,610
Rank based on NPC	5	4	1	2	3
Benefit Cost Ratio (BCR)	0.00%	8.63%	18.17%	17.74%	18.61%
Rank based on BCR	5	4	2	3	1

Cash flow results (discounted):

Costs including risks	241,662	244,283	249,505	260,405	264,946
Net financial benefits	0	-13,970	-33,260	-32,971	-35,508
Discounted Net Present Cost (NPC)	241,662	230,313	216,245	227,434	229,438
Rank based on NPC	5	4	1	2	3
Discounted Benefit Cost Ratio (BCR)	0.00%	5.72%	13.33%	12.66%	13.40%
Rank based on BCR	5	4	2	3	1

8.7.4 The Net Present Cost (NPC) represents the total cost of delivering each option over the 30-year appraisal period. In relation to NPC, the results of this analysis suggest the following:

- Option 3, 3 LPU, represents the best value for money purely in NPC terms because although it does not offer the highest level of financial benefits it has the lowest level of risk resulting in the lowest NPC on both an undiscounted and discounted basis.
- Option 4, 2 LPU, offers next best NPC because although it requires slightly less investment, it delivers fewer benefits because of the increased transport requirements.
- Option 1, Business as Usual, does not offer value for money because although it reduces investment requirements this does not deliver any financial benefits.

8.7.5 The Benefit Cost Ratio (BCR) demonstrates the relationship between the cost and benefits of the project. In relation to BCR, this analysis suggests the following:

- Option 5, the most ambitious option, offers the best value for money in purely BCR terms as it has the highest level of benefits in relation to costs.
- This is closely followed by Option 3 which offers the second highest level of benefits in relation to costs.
- Option 1 offers the worst value for money in relation to BCR as it delivers no financial benefit in relation to its relatively high costs.

8.8 Conclusion

8.8.1 A robust economic appraisal has been undertaken to evaluate the costs, benefits, and risks of each of the five shortlisted options in monetary equivalent terms. This has been prepared using indicative values based on the best information available at this time including benchmarking data, market intelligence, and local expertise, and considers the costs over a 30-year appraisal period.

8.8.2 Section 9 analyses the results of the economic appraisal along with other key factors to select the preferred option.

9 PREFERRED OPTION

9.1 Introduction

- 9.1.1 This section of the PBC brings together all elements of the options appraisal in order to select the preferred option for delivering NHS Wales Laundry Production Units Services.

9.2 Results of the options appraisal

- 9.2.1 The selection of the preferred option is undertaken by considering a range of factors including investment requirements, ongoing running costs, cost benefit analysis and risks. The table below provides an overview of these factors for each option.

Figure 9-1 Results of options appraisal

	Option 1 5 LPU's	Option 2 4 LPU's	Option 3 3 LPU's	Option 4 2 LPU's	Option 5 1 LPU
Investment requirements	£18.9m	£22.3m	£25.4m	£23.9m	£21.4m
Average cost per item	31.1p	28.1p	24.2p	24.2p	23.6p
Annual cash releasing benefits	-	£1.2m	£2.4m	£2.4m	£2.6m
Benefit Cost Ratio	0.00%	5.72%	13.33%	12.66%	13.40%
Expected risk value over 30 years	£28.6m	£27.5m	£29.8m	£40.3m	£46.1m
Discounted Net Present Cost over 30 years	£241.7m	£230.3m	£216.2m	£227.4m	£229.4m
Rank – NPC	5	4	1	2	3

9.3 Selecting the preferred option

- 9.3.1 The results of the options appraisal suggest that the options should be ranked in relation to the value for money each offers as outlined in the paragraphs below.

RANK 1: Option 3 – 3 LPU's

- 9.3.2 Option 3 results in the lowest overall NPC (total value of costs, benefits, and risks over a 30-year period). It delivers the second highest level of financial benefits by reducing costs to 24.2p per item (£2.4m p.a.) while offering a medium level of risk and minimal disruption.
- 9.3.3 This is because it involves developing two new facilities and increasing the capacity of one of the existing units to improve productivity, quality and working conditions. At the same time, it offers a high level of system resilience since having three LPU's located across Wales allows for robust contingency arrangements, provides a relatively low risk of equipment failure and minimal logistics risks.
- 9.3.4 It is recommended that this is carried forward as the preferred option and individual project business cases developed for each of the individual sites.

RANK 2: Option 4 – 2 LPU's

- 9.3.5 Option 2 results in the next lowest NPC as despite reduced investment requirements, it delivers fewer benefits because of the increased transport requirements and results in

an increased resilience risks since the new site in North Wales would be unable to provide enough capacity to provide contingency for the single site in South Wales.

- 9.3.6 On this basis, it is recommended that this option is discounted at this stage

RANK 3: Option 5 – 1 LPU

- 9.3.7 Despite delivering the greatest benefits for the lowest overall investment, the most ambitious option ranks third in relation to NPC, because the risks of moving to a single site solution are so significant and involve a high level of disruption.

- 9.3.8 This option would provide opportunities to improve productivity to such an extent it will reduce the cost to 23.6p per item (£2.6m p.a.) in line with industry best practice. However, operating from a single site increases logistics risks, particularly between North and South Wales, and allows for limited contingency arrangements, which reduces the likelihood of achieving financial benefits.

- 9.3.9 It is recommended that, given the high level of risk it represents, this option is discounted at this stage.

RANK 4: Option 2 – 4 LPUs

- 9.3.10 Although Option 4 has limited investment requirements, it ranks fourth in relation to NPC, because it offers fewer benefits due to limited opportunities to improve productivity and does not sufficiently mitigate the failure risks associated with continuing with older buildings and equipment.

- 9.3.11 On this basis, it is recommended that it is discounted at this stage.

RANK 5: Option 1 – 5 LPUs

- 9.3.12 Option 1 is not a feasible option since it results in the highest NPC overall by delivering no benefits, while still requiring significant levels of investment.

- 9.3.13 This is because continuing to operate in existing facilities limits opportunities to improve productivity and quality while not addressing the system resilience risks associated with ageing equipment.

- 9.3.14 On this basis, it is recommended that it is discounted at this stage.

9.4 Conclusion

- 9.4.1 Following a robust options appraisal process that considered a range of factors it is clear that continuing with existing arrangements is not a feasible option since although investment of £18.9m will ensure the service is compliant with latest standards, it will deliver no benefits and continues to present significant risks.

- 9.4.2 While the alternative options all offer opportunities for reducing the cost per laundry item processed from 31.1p per item to between 23.6p and 28.1p, this results in varying degrees of risk depending on the level of retained ageing building and equipment and resilience factors, as well as varying degrees of environmental impact.

- 9.4.3 Option 3 (Delivering laundry services from 3 LPUs) provides the best value for money by investing £25.4m to

- Develop a new LPU in North Wales, in reasonable proximity to the existing facility at Glan Clywd, with the capacity to process North Wales volumes, improve productivity and comply with statutory requirements.
- Develop a new LPU in South West Wales, in reasonable proximity to the west of the existing facility at Llansamlet, with the capacity to process all South West Wales volumes, improve productivity and comply with statutory requirements.

- Invest in the existing Green Vale LPU to provide capacity to process all South East Wales volumes, improve productivity and comply with statutory requirements.

9.4.4 This will result in

- Reduction in processing costs to 24.2p per item which will deliver cash releasing benefits of £2.4m p.a.
- Improved resilience risk, with reduced risk of plant and equipment failures and business continuity arrangements shared between three facilities.
- Reduced carbon impact since the benefits of the new and improved facilities more than offset the increased carbon emissions associated with the additional transport requirements.

9.4.5 On this basis, it is recommended that Option 3 (delivering future services from 3 LPUs across Wales) is carried forward as the 'Preferred' option and project business cases developed for the investment required in each of the 3 LPUs.

COMMERCIAL CASE

10 COMMERCIAL ARRANGEMENTS

10.1 Introduction

10.1.1 This section of the PBC sets out the commercial arrangements to deliver the preferred option for providing the Laundry Production Units service in the future. This includes the following:

- Determining the key outputs and activities required to provide the three LPUs in the operating model;
- Identifying the appropriate procurement strategy to deliver the key outputs and activities; and
- Setting out commercial, contractual and risk transfer arrangements.

10.2 Procurement strategy

10.2.1 The procurement will be conducted in line with the Designed for Life: Building for Wales framework. The procurement scope will include the design, build and equipping of expanded and new facilities and the refurbishment of existing facilities.

10.2.2 Where possible, a single procurement exercise will be run for all equipment and installation required for the new builds in North and South West Wales, and for upgrade of existing Green Vale site in South East Wales. This is however subject to OBC and FBC approval timelines and the interest from suppliers to such procurement.

10.2.3 The various available procurement routes are contingent on the value, market conditions, agreed funding mechanisms and legislative requirements. Potential routes that would be explored include:

- Official Journal of the European Community (OJEU) - This is the publication in which all tenders from the public sector which are valued above a certain financial threshold according to EU legislation must be published. The current limits are £4,104,394 for works contracts and £62,842 for services.
- Procurement framework – These are pre-competed agreements that may contain a number of potential suppliers. As a result, it can be possible to procure in excess of OJEU limits given previous competition has been completed. In the event of multiple providers being on a framework it is likely a mini competition exercise would be undertaken.
- Competitive tender – Instigating a competitive tender process outside of a framework agreement.

10.2.4 The selected procurement approach will ensure that good competition is achieved within the market. It will also be transparent and demonstrate that value for money is achieved, and will adhere to NHS Wales and individual Health Boards' Standing Financial Instructions.

10.3 Required outputs

- 10.3.1 The preferred option involves reconfiguring the current operating model of five LPUs to develop the future operating model which will involve delivering services from three LPUs located across Wales.
- 10.3.2 The required services include refurbishment one existing LPU in South East Wales, design and build of two new LPUs, one each in North Wales and South West Wales, and providing equipment and installation for all 3 LPUs.
- 10.3.3 Detailed requirements will be identified at the OBC stage which will set out in detail the key outputs and activities.

10.4 Potential risk transfer

- 10.4.1 The general principle is that risks should be passed to 'the party best able to manage them', subject to value for money.
- 10.4.2 Risk apportionment between parties and opportunities for risk transfer will be identified and agreed as the Invitation to Tender and the associated contract documents are developed.

10.5 Potential payment mechanisms

- 10.5.1 The payment profile for the new build and refurbishment of LPUs will be based on deliverables, not just the timescales. This will be finalised as the Invitation to Tender and the associated contract documents are developed.
- 10.5.2 The level of payment for equipment installation will be linked to the level of service and adjustments for sub-standard performance or service failure agreed at the start, ensuring that clearly defined performance standards are specified in the contract to enable subsequent effective contract management.

10.6 Contractual arrangements

- 10.6.1 Full details, including the populated contractual documents will be finalised closer to the ITT issue timescale. The contract is likely to include consideration for the following:
 - Contract duration;
 - KPIs;
 - Compliance with law and with standards (including BS EN 14065, the standards for decontamination of linen);
 - Change control;
 - Remedies on failure;
 - Dispute resolution; and
 - Equipment, and building information monitoring.

10.7 Personnel and TUPE implications

- 10.7.1 Any personnel implications and TUPE arrangements will be managed through a formal 90-day consultation process, which will be led by individual Health Boards supported with Workforce representatives from Shared Services. Stakeholders involved in the PBC

workshops have included management teams from each LPU and representatives from trade unions who were involved in the site selection process.

10.8 Conclusion

- 10.8.1** A number of considerations have been identified relating to procurement strategy and commercial arrangements. These will need to be explored and set out in detail at project OBC stage.

FINANCIAL CASE

11 FINANCIAL APPRAISAL

11.1 Introduction

11.1.1 The purpose of this section is to set out the expected financial implications of the preferred option of reconfiguring the operating model to deliver services from three LPUs.

11.2 Capital costs

11.2.1 Specific capital requirements for the delivery of the preferred option will be determined as part of each of the individual project business cases.

11.2.2 However, indicative costs have been estimated based on the likely capital requirements to

- Development of a new LPU in North Wales;
- Development of a new LPU in South West Wales; and
- Investment in the existing Green Vale LPU in South East Wales to increase capacity and improve productivity.

11.2.3 Costs have been estimated based on

- Land acquisition for new sites.
- Floor space requirements for new sites at an average cost per m2 to construct a standard factory unit.
- Equipment requirements for each of the three sites.
- Programme implementation costs including professional fees and the programme team.

11.2.4 Based on these assumptions, it is estimated that the preferred option will require capital investment of £25.4m.

11.3 Capital cost risks

11.3.1 More detailed costings will need to be determined for each of LPUs at project business case stage with consideration for

- Development of new build or acquire leasehold premises;
- Availability of land or premises for development;
- Detailed design of the LPU; and
- Impact of Covid-19 due to impact on costs and timescales related to the introduction of Covid Safe working practices within both the LPUs and the construction industry.

11.3.2 There is also a risk, given the age and condition of current facilities, there is a risk of equipment breakdown during the planning and implementation period which could result in earlier and increased capital investment requirements. The condition survey undertaken from Nifes identified £9.7m of impending backlog maintenance of which none of it was categorised as high risk, 13% was categorised as significant risk and 84% was categorised as a moderate risk, as outlined in the table below.

Figure 11-1 Impending backlog maintenance

	Impending backlog (£'000)
Low risk	1,232
Moderate risk	8,140
Significant risk	290
High risk	0
Impending backlog	9,662

11.4 Recurring revenue costs

- 11.4.1 It is estimated that implementing the preferred option will reduce overall recurring revenue costs by around £2.4m p.a. (21.0% saving), resulting in an average cost per item of £0.242.
- 11.4.2 Consideration will be given to establishing an underwritten contingency fund during the implementation period for large plant failures, supported by professional options on plant life expectancy.
- 11.4.3 Under current arrangements each of the Health Boards incurs LPU costs at different average cost per item. Further work is required to determine how future costs and financial benefits should be allocated to each of the Health Boards on an equitable basis.

11.5 Affordability

- 11.5.1 The level of savings identified demonstrate that the preferred solution is affordable in revenue terms.
- 11.5.2 However, a capital funding allocation, estimated at £25.4m, is requested from Welsh Government to deliver this programme.

11.6 Conclusion

- 11.6.1 Delivering the preferred option is expected to result in the following:
- Capital investment of £25.4m funding from Welsh Government;
 - Recurring cash releasing benefits for NHS Wales of £2.4m p.a.; and
 - Contingency arrangements to be determined in particular with consideration for the £9.7m of impending backlog maintenance, of which 84% is considered to be a moderate risk.

MANAGEMENT CASE

12 MANAGEMENT ARRANGEMENTS

12.1 Introduction

12.1.1 This section of the PBC sets out the management arrangements required to deliver the preferred option including:

- Programme management arrangements;
- Change management arrangements;
- Benefits realisation plans;
- Risk management plans; and
- Project assurance and post project evaluation plans.

12.2 Programme management arrangements

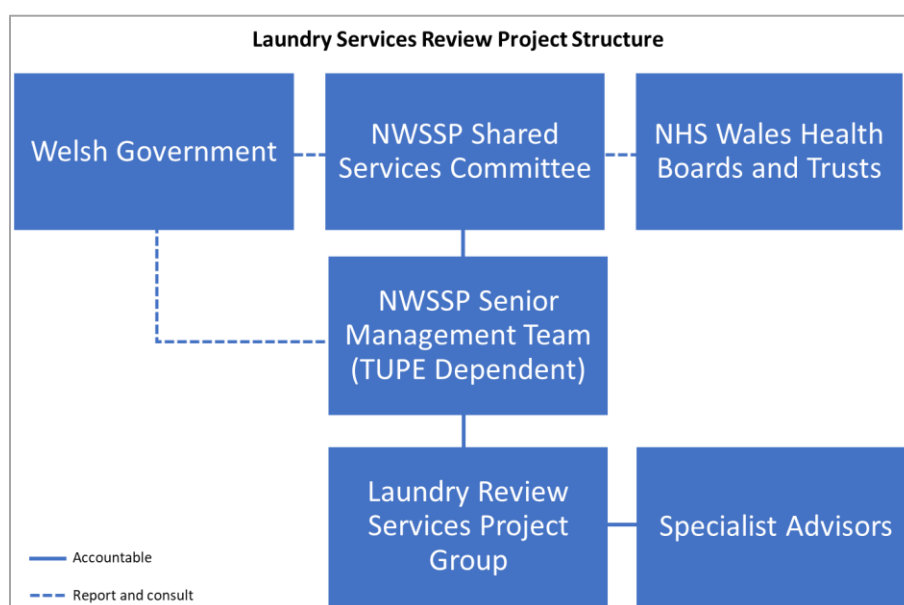
12.2.1 This programme of work will consist of three projects, aimed at the development of a new or upgraded LPU for each region – North, South West and South East Wales, each with its own strategy, framework and plans for successful delivery which will be developed in detail during the OBC stage.

12.2.2 The delivery of the programme and its constituent projects will embrace the principles of programme and project management, adopting the following methodologies as recommended by the Cabinet Office:

- **Managing Successful Projects (MSP):** which represents proven good practice for successfully delivering transformational change and is drawn from the experiences of both public and private sectors.
- **PRINCE - Projects IN Controlled Environment Managing Successful Projects (PRINCE2):** which represents proven good practice in project management and is drawn from the experiences of both public and private sectors over many years.

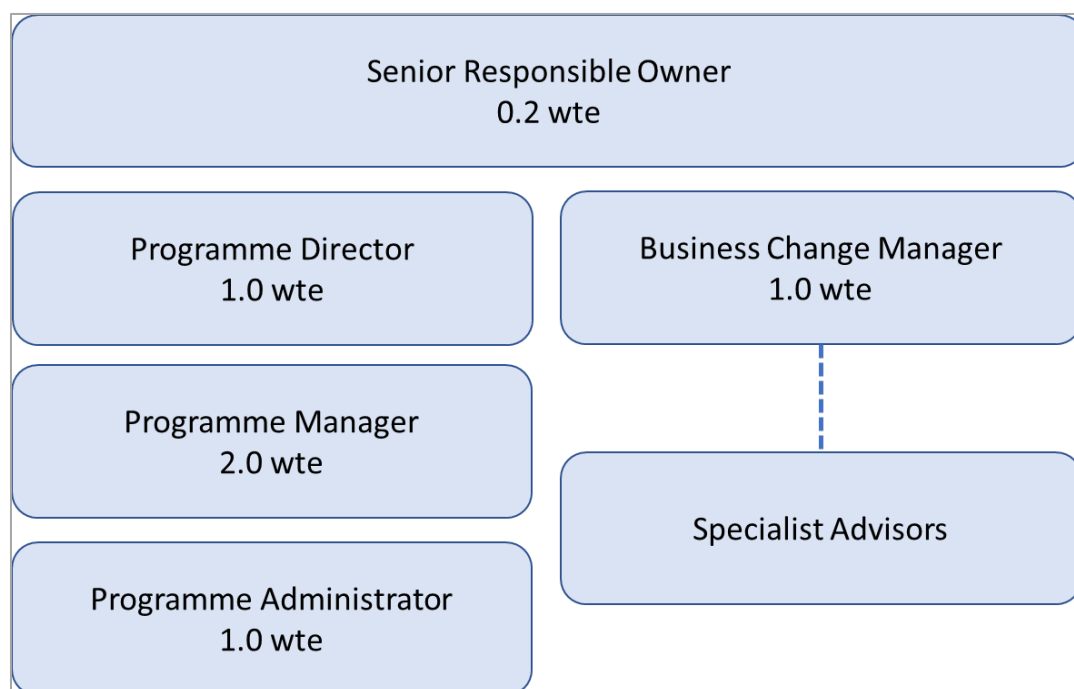
12.2.3 The governance arrangements are outlined in the diagram below.

Figure 12-1 Governance arrangement



- 12.2.4 The reconstituted Programme Board will be established to develop the three OBCs, and ultimately deliver the reconfigured operating model, and will include the key roles and responsibilities outlined in the table below.

Figure 12-2 Key roles and responsibilities



- 12.2.5 The diagram below illustrates the Programme Board workstreams.

Figure 12-3 Workstreams



- 12.2.6 Capital costs include appropriate allowances for the programme team and professional fees from specialist advisors

12.3 Specialist advisors

- 12.3.1 The programme team will require support for specialist advisors as outlined in the table below.

Figure 12-4 Specialist advisors

Technical Project Manager	Manage technical advisors and develop Estates Annex
Design Team	Technical advisors including cost advisors, architect, M&E consultant, planning consultant, BREEAM assessor, civil and structural engineer, other SMEs as required
Business Case Writer	Develop Outline and Full Business cases including options workshops and economic and financial analysis
Procurement	Develop ITT documents and run procurement process for construction and equipment

12.4 Programme implementation timescales

- 12.4.1 Detailed programme and project plans will be developed to control and track the progress and delivery of the programme and resulting outcomes. A high-level plan with indicative timescales is provided in the table below.

Figure 12-5 Indicative project timescales

OBC Procurement	90 days	0%	Mon 01/06/20	Sat 29/08/20
▲ South West Wales NEW BUILD	1320 days	0%	Tue 24/11/20	Fri 05/07/24
OBC, design + completion	270 days	0%	Tue 24/11/20	Fri 20/08/21
OBC approvals	120 days	0%	Sat 21/08/21	Sat 18/12/21
FBC Procurement	90 days	0%	Sat 21/08/21	Thu 18/11/21
FBC, design	180 days	0%	Sun 19/12/21	Thu 16/06/22
FBC approvals	120 days	0%	Fri 17/06/22	Fri 14/10/22
Mobilisation	90 days	0%	Fri 17/06/22	Wed 14/09/22
Construction	540 days	0%	Sat 15/10/22	Sat 06/04/24
Implement	90 days	0%	Sun 07/04/24	Fri 05/07/24
▲ South East Wales REFURB	1140 days	0%	Tue 24/11/20	Sun 07/01/24
OBC, design + completion	270 days	0%	Tue 24/11/20	Fri 20/08/21
OBC approvals	120 days	0%	Sat 21/08/21	Sat 18/12/21
FBC Procurement	90 days	0%	Sat 21/08/21	Thu 18/11/21
FBC, design	180 days	0%	Sun 19/12/21	Thu 16/06/22
FBC approvals	120 days	0%	Fri 17/06/22	Fri 14/10/22
Mobilisation	90 days	0%	Fri 17/06/22	Wed 14/09/22
Construction	360 days	0%	Sat 15/10/22	Mon 09/10/23
Implement	90 days	0%	Tue 10/10/23	Sun 07/01/24
▲ North Wales NEW BUILD	1320 days	0%	Tue 24/11/20	Fri 05/07/24
OBC, design + completion	270 days	0%	Tue 24/11/20	Fri 20/08/21
OBC approvals	120 days	0%	Sat 21/08/21	Sat 18/12/21
FBC Procurement	90 days	0%	Sat 21/08/21	Thu 18/11/21
FBC, design	180 days	0%	Sun 19/12/21	Thu 16/06/22
FBC approvals	120 days	0%	Fri 17/06/22	Fri 14/10/22
Mobilisation	90 days	0%	Fri 17/06/22	Wed 14/09/22
Construction	540 days	0%	Sat 15/10/22	Sat 06/04/24
Implement	90 days	0%	Sun 07/04/24	Fri 05/07/24
GLANGWILLI DECOMMISSION	90 days	0%	Sat 06/07/24	Thu 03/10/24
CHURCH VILLAGE DECOMMISSION	90 days	0%	Sat 06/07/24	Thu 03/10/24
LLANSAMLET DECOMMISSION	90 days	0%	Sat 06/07/24	Thu 03/10/24

12.5 Change management arrangements

- 12.5.1 The main purpose of the change management strategy is to assess the potential impact of the proposed change on the culture, systems, processes and people working within the organisation.
- 12.5.2 The change management strategy will be developed in line with NWSSP Project Management Procedures and in relation to the needs of the three LPUs that are selected to be included in the future operating model to deliver the preferred option.
- 12.5.3 The change management plans will be developed in partnership with stakeholder organisations, human resources and staff representatives and will set out the relevant communication and organisational development and training strategies required for the implementation phase.
- 12.5.4 The change management plan is likely to include the key tasks outlined below.

Figure 12-6 Indicative change management plan

Area	Planned tasks
Planning phase	<ul style="list-style-type: none"> • Appoint key programme roles and Change Managers. Confirm responsibilities, leadership, and reporting mechanisms. • Revisit and agree philosophy and principles • Confirm stakeholders and interested parties both within and outside of service • Develop core plan in more detail, identify high level milestones for change management plan • Confirm involvement of HR, managers and other individuals/groups in the process.
Communications and stakeholder engagement	<ul style="list-style-type: none"> • Confirm communication lead and protocol • Develop communication routes, including face-to-face briefings, emails, and phone calls. • Formulate and agree key communications messages against high level milestones • Set up further staff and stakeholder engagement plans • Launch change programme • Ongoing communication works
Training and development	<ul style="list-style-type: none"> • Complete detailed workforce planning to identify 'shadow' structures, roles and competencies for those roles • Work with staff through workshops and other training to clarify the workings of the existing and new models, and how these will impact in practice. • Identify training and development required to fulfil roles and competencies • Develop training plan, aligned to pilot work, mapped against high level project and change management milestones • Link training and development into communications plan
Piloting	<ul style="list-style-type: none"> • Testing and piloting phase
Full Implementation	<ul style="list-style-type: none"> • Implement changes in line with project plan ensuring actions are taken to deliver benefits and manage risks

12.6 Benefits realisation plan

- 12.6.1 A detailed plan will be developed to put in place the necessary arrangements to ensure that the project delivers its anticipated benefits.
- 12.6.2 This will include a benefits realisation strategy setting out the arrangements for planning, modelling and tracking the identified benefits as well as a framework that assigns responsibility for the realisation of the benefits throughout key phases of the project.
- 12.6.3 The main benefits for the preferred option are outlined in the benefits register included in Appendix D1. This register will be reviewed and updated as part of the OBC once and continuously throughout the programme.

12.7 Risk management plan

- 12.7.1 A detailed plan will be developed to put in place a structured approach to identify, assess, and control the risks that emerge during the course of the project lifecycle.
- 12.7.2 This will include a risk management strategy setting out the arrangements for the proactive and effective management of risk including
 - Mechanisms to minimise the likelihood of risks materialising with adverse effects;
 - Processes to monitor risks and access reliable, up-to-date information about risks;
 - Control mechanisms to mitigate the adverse consequences of risks should they materialise; and
 - Assigned responsibility for the management of risks.
- 12.7.3 The main risks for the preferred option are outlined in the risk register included in Appendix D2. This register will be reviewed and updated as part of the OBC and continuously throughout the project. The SRO will be the owner of the risks.

12.8 Project assurance

- 12.8.1 Project assurance provides independent and impartial assessment that the project's spending objectives can be delivered successfully and improves the prospects of intended outcomes and benefits. It is anticipated that this project will be subject to assurance reviews as appropriate.

12.9 Post project evaluation

- 12.9.1 The purpose of post project evaluation (PPE) is to improve project delivery through lessons learned during the project delivery phase and to appraise whether the project has delivered its anticipated outcomes and benefits.
- 12.9.2 The PPE will be completed in line with NWSSP Project Management Procedures and NWSSP is committed to ensuring that a thorough and robust PPE is undertaken at key stages in the process to ensure that lessons are learnt. The PPE sets in place a framework within which the benefits realisation plan can be tested to identify which benefits have been achieved and which have not.
- 12.9.3 The benefits of the programme will be evaluated collectively (for the programme) as well as individually (for each project). The benefits of the programme will be evaluated 6 months after the new service model outlined in this PBC has been delivered, followed

by annually thereafter. Evaluation of benefits from each project will be developed as part of the OBC and FBC stages.

12.9.4 The evaluation will be carried out in line with best practice and will measure the programme against the following factors:

- The extent to which the original objectives have been met;
- Measurement against the Benefits Realisation Plan;
- The cost of the project and the extent to which it can demonstrate value for money;
- The project outcome compared with the Business as Usual or 'Do Minimum' scenarios;
- The economic viability of the project in comparison with Business as Usual;
- Risk Allocation and an assessment of risks presenting during the programme;
- Suitability of the timetable;
- Functional Suitability – how the new LPUs compare to the specifications set out during the tendering process;
- User satisfaction; and
- Procurement route.

12.9.5 We envisage undertaking an internal PPE first and based on its findings, commission an external evaluation if required.