

Outline Business Case for Radiology Informatics System Procurement (RISP) Programme



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FINAL DRAFT

1 Executive Summary

1.1 Introduction

The current Picture Archiving & Communication System (PACS) contract supporting the delivery of the clinical radiology service in Wales is coming to the end of its tenure, with the first Health Board deployment order expiry in November 2024. This Outline Business Case (OBC) sets out the need to invest in a Radiology Informatics System Procurement (RISP) Programme, which will achieve the vision of a seamless end-to-end electronic solution that enables the Radiology service to deliver a high quality, safe and timely clinical imaging service for the patients of Wales.

The OBC explores the potential options for how this provision can be delivered and identifies a preferred option that will deliver the clinical requirements with optimum value for money, outlining the commercial arrangements required to deliver it, the resulting financial impact, and the management arrangements for successful implementation.

The OBC seeks Welsh Government capital funding of £20.6m and non-recurring revenue funding of £1.2m as well as approval to proceed to procure the preferred option.

1.2 Strategic Case

Strategic Context

Radiology is a key diagnostic service utilised to investigate, monitor and treat diseases and injuries. Services are delivered in a wide range of healthcare settings, across all Health Boards and Trusts in Wales, where up-to-the-minute diagnostic imaging is pivotal to modern patient care. Equitable access to a robust, quality, and timely imaging service including the ultimate clinical end point of a reported image, is vital for clinicians from primary, secondary care and screening service to ensure optimal outcomes for their patients.

The proposed investment is informed by various national strategies and reports including:

- A Healthier Wales: Our plan for health and social care (2018). ¹
- The Imaging Statement of Intent (2018). ²
- Wales Audit Office Radiology Services Report (2018). ³
- Digital Architecture Review. ⁴

¹ [A Healthier Wales: Our plan for health and social care](#)

² [The Imaging Statement of Intent](#)

³ [Wales Audit Office Radiology Services Report](#)

⁴ [Digital Architecture Review](#)

Case for Change

All Health Boards and Trusts in NHS Wales use the following main systems:

- The **Picture Archiving and Communications System (PACS)** is a storage and distribution platform, which collates all imaging investigations performed on patients. This is the clinical interface that enables the analysis of all imaging performed, including complex reformatting, disease progression analysis and measurement. The ultimate output is the production of a clinical report for the referring clinicians. This system is currently provided by Fujifilm Medical, with the original health board deployment orders due to end during the period 2021-2025. As such, a single central termination notice was issued in May 2020, to secure up to 42 months termination assistance from Fujifilm Medical to support transition.
- The **Radiology Information System (RIS)** is a national system developed and supported by Digital Health and Care Wales (DHCW). It is known as Welsh Radiology Information System (WRIS) and supports the scheduling of radiology investigations, provides a clinical record of all imaging investigations performed on patients including the radiology report; and holds data that underpins health boards' ability to generate business reports and statistics on performance.

Current Situation

The current configuration of Radiology departments, along with their associated systems and infrastructure in Wales, confines the delivery of care within traditional organisational boundaries. Both PACS and WRIS are deployed within health board boundaries and health board reorganisation with the associated organisational arrangements have made transition more difficult because of this siloed approach.

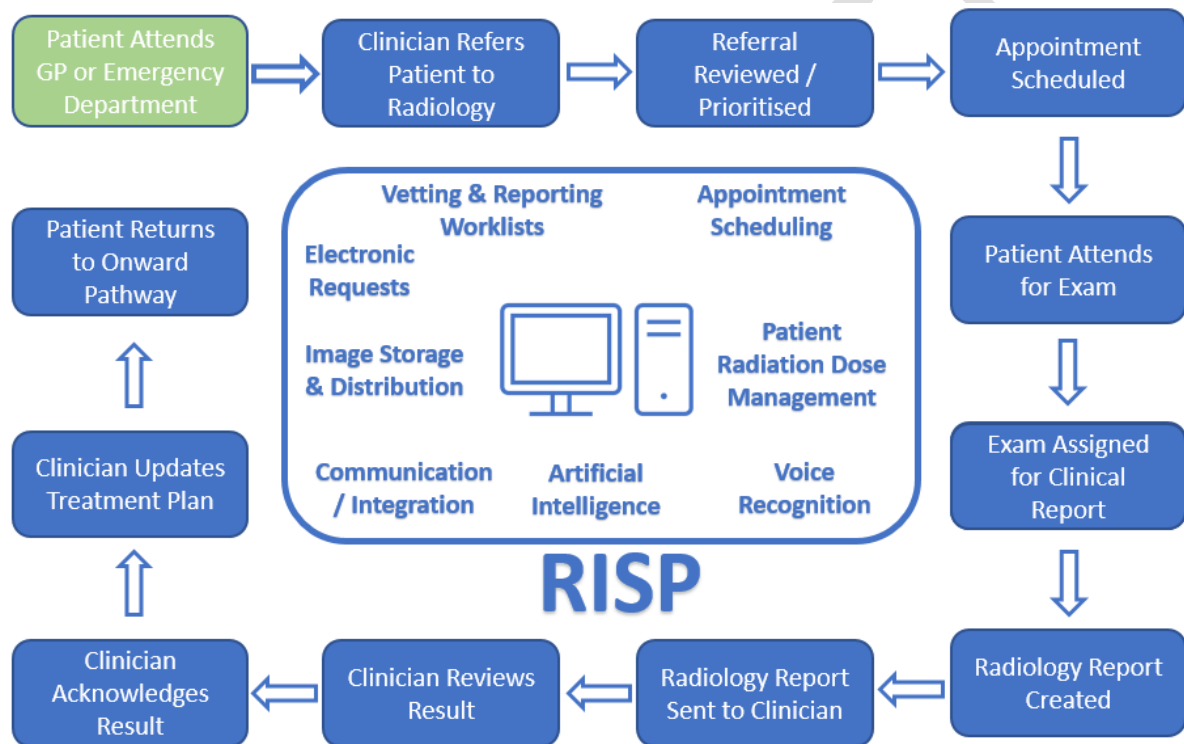
The Radiology services in Wales are currently under significant pressure with many challenges including:

- Demand for Radiology services in the form of continuous growth in the requirement for complex imaging (CT and MRI scan) is outstripping reporting capacity, with the current workforce struggling to deliver the increasing demand for reporting activity.
- The utilisation of outsourcing and Teleradiology services to deliver a timely service which has led to exponential cost rises and future projections indicate this situation will continue to deteriorate.
- The core Radiology IT system is not meeting health boards' and trusts' needs to deliver seamless imaging care for patients, which is often delivered across health board boundaries. Further weaknesses are identified in local IT infrastructures.

- The lack of a national Radiology dataset hinders the collation of Radiology activity at a national level this makes painting the national picture difficult and unnecessarily time consuming.

These challenges are explained further in Section 2.5 of the Strategic Case. Given these challenges, there is an increasing need to identify an informatics solution that will support the delivery of an imaging workflow that will provide an efficient and effective Radiology service for the population and all patients within Wales.

Figure 1: Depiction of the proposed end-to-end solution



The RISP Programme has engaged extensively with its stakeholders across NHS Wales, through meetings, workshops, and roadshows to gather the solution requirements, develop the OBC and agree the Programme investment objectives (see below).

Table 1: Investment Objectives

Ref	Investment Objective
RISP-IO1	To improve patient care, patient safety and patient outcomes.
RISP-IO2	To enable the transformation of healthcare services to be leaner, more sustainable and provide long-term stability.

RISP-IO3	To deliver a seamless, end-to-end technical solution for radiology services.
RISP-IO4	To contribute to the more prudent use of radiology resources through demand management, predictive costing and minimised financial risk.
RISP-IO5	To meet current and future service requirements.

Potential Scope & Service Requirements

Based on the business needs, the core scope of the RISP programme must incorporate services within the “footprint” of the current Radiology service and include:

- End to end Radiology solution, which includes PACS and Radiology Information System (RIS).
- Patient Dose Monitoring System (PDMS) to support statutory obligations for patient radiation protection and optimisation.
- Electronic requesting and results acknowledgement.
- Facility for storage of other disciplines, e.g., Cardiology.

Benefits, Risks, Constraints and Dependencies

The main benefits of delivering the RISP Programme include:

- Improved patient safety, with an electronic auditable trail from request to results acknowledgement. (NPSA 16 2007 and HSIB reports on failures to acknowledge and follow-up on radiological imaging reports)^{5, 6}
- Reduced risk of repeat examinations and inappropriate radiation dosage.
- Effective and efficient MDT meetings supporting cross health board boundary workings and streamlining patient care.
- Improved imaging workflow, enabling timely delivery of service, and the ultimate output of an imaging examination, a report available to the clinical referrer anywhere.
- Enable cross-site and health board reporting to facilitate service transformation and support the work of the Imaging Essential Services Group.
- Improved data quality and analytics on a local and national level.

⁵ [NPSA 16 2007](#)

⁶ [HSIB Failures in communication or follow-up of unexpected significant radiological findings](#)

- Streamlined and reduced training requirements for system use.

Key risks to the realisation of some of the benefits of the RISP programme:

- COVID-19 recovery activity may impact the ability of health boards to release the required resources to join the procurement dialogue teams in Tranche 2. The impact of this could be delays in the procurement process.
- Lack of certainty around the financial model associated with a possible cloud solution may mean it is not affordable for the health boards. This could lead to delays in the procurement process.
- There may be a delay in completion of the OBC caused by a lack of clarity on the treatment of capital within the Financial Case. This may delay moving to Tranche 2.
- Further slippage to procurement timescales caused by delays could impact the current Fuji PACS contract end dates.

The Strategic Case also highlights the key constraints and dependencies that will be managed as part of the Programme.

1.3 Economic Case

In accordance with HM Treasury's Green Book 2020 (A Guide to Investment Appraisal in the Public Sector) and Better Business Case guidance, stakeholders identified and assessed a broad range of options for the scope, technical and service solution, service delivery, implementation and funding of the programme. This involved a series of workshops to assess longlisted options against agreed investment objectives and critical success factors, and SWOT analysis undertaken. The resulting shortlist is presented in the table below.

Table 2: Shortlist of Options

Options	Option 0	Option 1	Option 2	Option 3	Option 4
	Business as Usual	Do Minimum	Preferred Way Forward A	Preferred Way Forward B	More Ambitious
Scope	Do nothing	PACS + PDMS + DHCW RIS	PACS + PDMS + Commercial RIS (+ options for ETR and results acknowledgment)	PACS + PDMS + Commercial RIS (+ options for ETR and results acknowledgment)	PACS + PDMS + RIS + ETR and results acknowledgment (+ options for other disciplines)
Technical Solution	Current solution ceases	National DHCW data centre	National supplier data hosted (either data centre or cloud hosted depending on provider)	National supplier data hosted (either data centre or cloud hosted depending on provider)	National supplier data hosted (either data centre or cloud hosted depending on provider)

Service Solution	N/A	Regional Deployment	Regional Deployment	National Deployment	National Deployment
Service Delivery	N/A	In House RIS with PACS + PDMS delivered with supplier full-service management	Supplier Full-Service Management which could be delivered by either: a. Managed Service Contract b. Contract for Service with Maintenance Support		
Implementation	N/A	Phased by Health Board			
Project Funding	N/A	Combination of capital and revenue funding via either a. Revenue funded fully managed service; or b. Capital funded NHS owned assets/Revenue funded support			

An economic appraisal was prepared to determine the value for money of the shortlisted options. This was based on indicative costs, benefits, and risks, which were estimated in accordance with the level of information available at this stage in the process. An overview of the results is presented in the table below.

The analysis concluded that Option 2 (Delivering the Preferred Way Forward via a regional deployment) and Option 3 (Delivering the Preferred Way Forward via a national deployment) offer best value for money, delivering the lowest discounted Net Present Cost and best Benefit Cost Ratio. Option 2 offers better value for money than Option 3, however this will depend on potential suppliers' final solutions and prices.

Table 3: Summary of Options Appraisal Results

	Option 0 Business as Usual	Option 1 Do Minimum	Option 2 Preferred Way Forward A	Option 3 Preferred Way Forward B	Option 4 More Ambitious
Net Present Cost (£'000)	68,561	68,609	67,460	67,592	101,414
Benefit Cost Ratio	0.0	1.0	1.1	1.0	0.4
Significant non-financial benefits	N/A	Seamless system, improved turnaround times, improved staff satisfaction	Seamless system, improved turnaround times, improved staff satisfaction	Seamless system, improved turnaround times, improved staff satisfaction	Potential to incorporate other disciplines
Residual risks	Unable to provide a service without a new system in place	All Wales infrastructure may not support preferred solution	All Wales infrastructure may not support preferred solution	All Wales infrastructure may not support preferred solution	Uncertainty around costs and significant impact on timescales
Other considerations	N/A	DHCW's RIS solution scored the lowest in a qualitative assessment compared to a commercial RIS solution	Commercial RIS scored higher than DHCW RIS in qualitative assessment	Commercial RIS scored higher than DHCW RIS in qualitative assessment	Commercial RIS scored higher than DHCW RIS in qualitative assessment

Life span	Contract ends 2023/24	5-years from 2023/24 + option for 2-year extension	5-years from 2023/24 + option for 2-year extension	5-years from 2023/24 + option for 2-year extension	Uncertain because of timeline risks
Switching analysis	Will not offer value for money because of service continuity risk	Would outrank Option 3 if NPC reduced by 2.0%	Highest ranking relatively sensitive to changes in assumptions	Would outrank Option 3 if NPC reduced by 0.2%	Would require significant reduction in NPC to outrank Option 3

Sensitivity analysis confirmed that the ranking of options is relatively sensitive to changes in assumptions for Options 1, 2 and 3, suggesting that the results of the procurement process will be critical to the final selection of a preferred option.

The following non-financial factors were also considered in comparing the options:

- Option 0 (Business as Usual) is not a feasible option and is only provided for baseline comparator purposes.
- Option 4 (More Ambitious) offers opportunities to increase benefits associated with incorporating other disciplines but results in significant risk to the core programme due to elongated timelines.
- Continuing with the current DHCW developed and supported application, WRIS, which is a key component of Option 1 (Do Minimum), was found to be less favourable than the procurement of a commercial RIS when a qualitative comparison was undertaken using information gathered as part of the Prior Information Notice (PIN).

Based on the overall analysis, it is recommended that Options 2 and 3 are carried forward as the preferred options. They both involve procuring a supplier full-service management solution for PACS + PDMS + RIS (with the option to incorporate ETR/ results acknowledgment if current proposed solution is not deliverable in current time scales) with data hosted by the supplier (either via cloud or supplier data centre) or within an NHS data centre. However, the decision to deliver via national or regional deployment will be dependent on the final preferred solution. The programme will be delivered using a combination of capital and revenue funding.

1.4 The Commercial Case

Procurement Scope

Based on an assessment of the current solutions available in this market, the procurement approach envisages a single “contractor”-provided service with that Contractor taking prime responsibility for all in-scope aspects of the solution, including the contracting and management of any other required contractors as Sub-contractors to the Contractor. Key components for the scope include:

- End-to-End Radiology Solution (Including PACS and RIS).

- Patient Dose Monitoring System (PDMS).
- Electronic requesting and results acknowledgment.

The contract will be for a managed service, with the Supplier responsible for all aspects of the solution and its ongoing performance over the life of the contract. The successfully procured service will include the totality of the deliverables as set out in Schedule 2.1.

Procurement Strategy

The purpose of the Procurement Strategy is to set out in a formalised manner the key aspects of the procurement of the Radiology Informatics Solution. It is a high-level document that states the programme's approach to its procurement activities, its objectives, and key initiatives. This strategy is developed along with the business case and defines the approach to be adopted by the Procurement Project. The objectives of the procurement are to ensure that the new Radiology Informatics System will meet the needs of the project team and patient clinical outcomes.

Single Contractor versus Multiple Contractor

Given the scope and scale of this project, potential suppliers are unlikely to be able to supply all components and services to fulfil the Solution without the use of sub-contractors, which the Authority will allow as part of Supplier Bids.

Contract Duration

The length of contract for the RISP Procurement will be tailored to give best value for money for the project. The appropriate length of contract which ensures value for money is considered in the Commercial Case.

Contracting Approach

The contract form of Agreement will be a Master Services Agreement, based on an amended form of the IT Services Contract having regard to the Crown Commercial Services and other best practice guidance of Information Management & Technology (IM&T) procurement. Advice will be sought on the construction of the draft contract using the NHS Wales appropriately commissioned specialist advisers for commercial, legal, and technical aspects. Appropriate internal governance arrangements will also be established to ensure that all Authority Parties agree and commit to the implementation plan and other Authority Responsibilities within the Contract, including the payment terms.

Procurement Route

Possible procurement routes include:

- Procurement under an existing Framework Agreement
- Open Procedure

- Restricted Procedure
- Competitive Dialogue Procedure

Procurement Approach

The following is an outline of the basic procurement approach, which will be developed further in a more detailed Procurement Plan:

- Bidder engagement and market assessment
- A RISP Procurement Team
- Procurement training and awareness sessions
- Contract Notice
- Prequalification
- An Invitation to Participate in Dialogue (ITPD)
- ITPD Evaluation
- Detailed Dialogue
- Trial Invitation to Submit Final Tender
- Invitation to Submit Final Tender (ISFT)
- Final Tenders

Subject to clarifications and minor refinements concerning the final tender submission, if required, and approval of the Full Business Case, a contract will be awarded to the bidder with the most economically advantageous tender. The selection and evaluation criteria will guide the evaluation at the three (3) stages of the procurement. On conclusion of the ISFT phase and final evaluation of the ISFT responses, a recommendation will be made on the most economically advantageous tender. This recommendation will be recorded in a final evaluation report, which will set out the basis for the award decision and will require to be signed via the agreed governance process.

Timescales

The high-level timescales for the four (4) Tranches of the RISP Programme include:

- Tranche 1 Pre-Procurement: June 2019 – December 2021
- Tranche 2 Procurement: January 2022 – February April 2023
- Tranche 3 Configuration & Integration: May 2023– April 2024
- Tranche 4 Deployment: May 2024 – June 2025

Risk Apportionment

While the RISP Programme will adhere to the general principle that risks should be passed to the party best able to manage them, a formal risk apportionment exercise was considered unnecessary for this programme.

Payment Mechanisms

Charging mechanisms will depend on many factors that require further clarification. These include the final contracting arrangements regarding the selected solution and service management issues. These will be confirmed at FBC stage.

Key Contractual Issues

Key aspects of the contractual relationship that the RISP Programme is seeking to achieve will be reflected in the contract as follows:

- Clinical Value for Money (VfM)
- Ownership of assets by the Contracting Authority
- Intellectual Property Rights (IPR)
- Warranties and guarantees

The three (3) procurement models that have been considered are:

- Traditional purchase and service support model
- Managed Service Provider model
- Hybrid Managed Service Provider model

Accounting Treatment

There has been consultation with NHS Finance colleagues on the initial assessment of accounting treatment, which has confirmed that there is likely to be a requirement for both capital and revenue accounting and funding. The project team will further assess the various IFRS standards with finance experts before procurement commences, however the final accounting treatment can only be assessed once the details of the proposed Solution are explored through competitive dialogue.

Initial advice will be sought from one of the NHS Wales VAT advisors as to the possible VAT accounting treatment for the RIS procurement in order to ascertain the likely VAT treatment of the contract.

1.5 Financial Case

Indicative financial implications of delivering the preferred option have been estimated based on current information available to determine capital and revenue costs of the following categories:

- Solution costs
- NHS Wales Programme costs
- Change management costs
- Legacy data costs

- Local infrastructure costs
- DHCW recurring costs

The results of the initial Prior Information Notice (PIN) pricing submission in May 2021 did not provide sufficient detail for the solution cost to enable a more robust assessment of those costs. Assumptions have been made as to what could potentially be capitalised, so the split of revenue and capital cost are based on the project team's knowledge and experience of similar All Wales IT Systems and the information obtained in initial market testing in January 2021.

Based on this initial assessment of costs and the **assumptions** outlined in the Financial Case, it is anticipated that funding is required from Welsh Government as follows:

- Capital Funding of £20.6m.
- Non-Recurring Revenue Funding of £1.2m.

Health Boards and Trusts funding is required as follows:

- Non-Recurring Revenue Funding of £2.1m.
- Recurring Revenue Funding of £7.3m p.a. against current available revenue funding of £6.8m. At this stage, these costs are indicative based on a mean of the PIN Responses. The maximum cost of £12.3m and minimum cost of £3.9m have been excluded from the mean, but it's important to note that the recurring revenue costs could be greater than the estimated £6.8m. Until the competitive dialogue is in progress and a better understanding of costs is obtained no specific mitigations have been identified to cover the shortfall of £0.6m. However, there are £0.6m of revenue costs within DHCW relating to the current WRIS that have been identified by DHCW as un-releasable. Further work will be undertaken to assess if these costs could be released by 2024/25.

The estimated revenue requirement DOES NOT include any costs of additional All Wales or local infrastructure investment, which is outside the scope of this Programme.

1.6 Management Case

The Management Case considers the approach taken to support the successful delivery of the programme, in accordance with best practice.

Programme Governance

The RISP Programme sits within the portfolio of the NHS Wales Health Collaborative and is managed in accordance with the OGC Managing Successful Programmes and PRINCE2 standards, which will be tailored to

suit the needs of the service. The Programme Board reports to the Collaborative Executive Group, which comprises the Chief Executive Officers of the health boards, Trusts and Special Health Authorities in Wales. The Programme also reports to the National Imaging Strategy Programme Board. A RISP Programme Board is well established whose remit is to provide oversight and direction and to review and assure the Programme's progress. The governance arrangements for the Programme are shown below in the Management Case.

Programme Management Arrangements

There is a RISP Programme Management team that will be responsible for managing and driving the delivery of the programme. The Programme team comprise:

- A Programme Management Office
- Clinical Leads
- Subject Matter Experts
- Technical Advisors

Programme Costs

The RISP Programme costs are listed in the Management Case and include all programme resources identified plus non-pay and 10% contingency with effect from 2021/22. Notes associated with the assumptions underpinning each of these costs are provided. The RISP Programme costs total £4,498,216 over 4 years.

Workstreams

The RISP Programme is an all-Wales Programme being delivered through several key workstreams. These workstreams are underpinned by the Programme Governance workstream which will ensure the RISP Programme is professionally managed and assured. Below outlines the key workstreams.

- Commercial Workstream
- Technical and Functional Workstream
- Clinical Workstream
- Information and Business Intelligence Workstream
- Business Change Workstream

RISP High Level Plan

The RISP Programme is planned to be delivered in four (4) tranches which are subject to approval and sign off. The OBC sets out a plan for tranche 1 with high-level deliverables for the remaining tranches. Work is ongoing as part of an iterative process to develop the plan in more detail as the

programme progresses providing opportunities for stakeholder engagement and consultation.

Change and Contract Management

The Change Management Strategy for dealing with change and associated contract management will be managed by the RISP Procurement Project. A Contract Management Board chaired by the NHS and facilitated by DHCW will manage the contract and any contract changes will be managed in accordance with contract Schedule 8.2 Change Control.

Benefits Realisation

A key responsibility of the Programme Management team and Programme Board will be to establish a Benefits Management Strategy and framework for the monitoring and management of the benefits the programme will enable. A Benefits Project is established and will run throughout the life of the programme. As part of the OBC, benefits have been identified and measures established, and a plan agreed to collect baseline data and agree targets and methods of monitoring.

Risk Management

The Programme has a strategy and a framework to manage risks effectively. A risk register has been designed in accordance with good practice guidelines within PRINCE2 and NHS Wales Health Collaborative standards. The Senior Programme Manager will escalate any risks that cannot be managed by the PMO and required urgent action to the Programme Director.

Post Project Evaluation

The outline arrangements for post implementation review (PIR) and project evaluation review (PER) have been established in accordance with best practice and are as follows:

- Post implementation review (PIR)
- Project evaluation reviews (PERs)
- Gateway review arrangements

2 The Strategic Case

2.1 Introduction

This Strategic Case sets out the context and the case for change, together with the investment objectives for the Programme. It describes the current situation and will make a case for a new Radiology Informatics System Procurement (RISP). This case demonstrates how the RISP programme could deliver the vision of a seamless end-to-end electronic solution that enables the Radiology service to deliver a high quality, safe and timely clinical imaging service for the patients of Wales.

This Strategic Case will explain how RISP aligns with the existing digital strategies and reports of Welsh Government and Welsh health and care providers. It will describe the main components of the RISP programme, the associated risks with its development and implementation and how they can be mitigated to ensure success.

2.2 The Strategic Context

Radiology is a key clinical diagnostic service utilised to investigate, monitor and treat diseases and injuries. It is integral to most clinical services - hospital-based clinicians and general practitioners refer patients to radiology departments to undergo a wide range of imaging examinations. Following the examination, the images are reviewed by a clinical radiologist, radiographer or sonographer to produce a clinical report, which the requesting clinician will use to guide management of the patient.

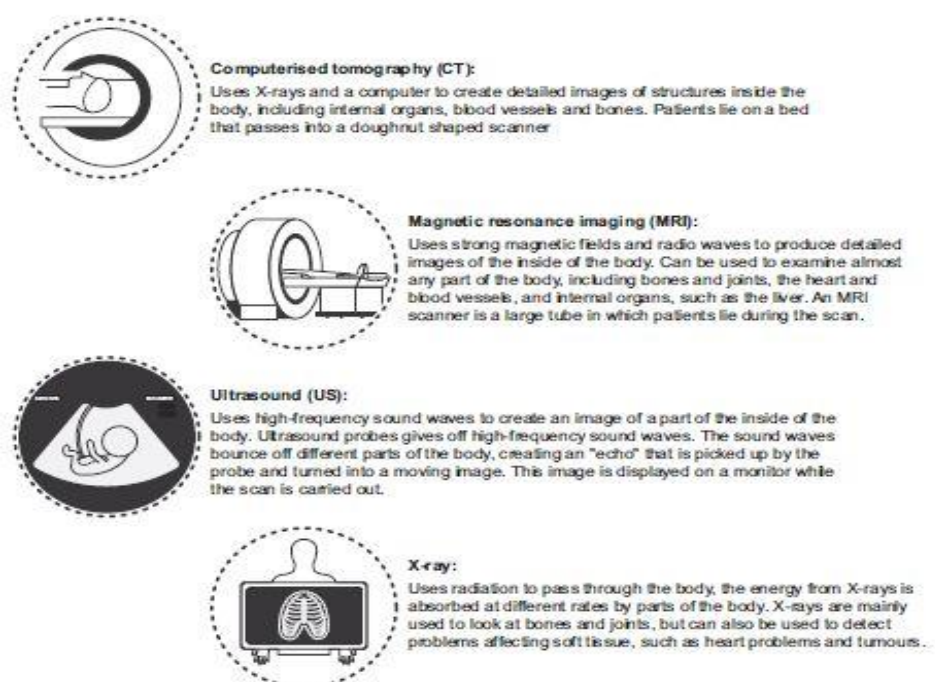
Diagnostic radiology has evolved over the last century from the plain film x-ray to the modern suite of digital imaging services and differing diagnostic procedures, which are integral to the provision of healthcare across Wales. Modern diagnostic imaging is key to diagnosis and treatment in modern patient care. Available in a wide range of healthcare settings, in all health boards and trusts across Wales. Imaging services provide a core diagnostic function in the delivery of a number of key patient pathways including screening services, cardiac, stroke, cancer, orthopaedics and emergency care, which facilitates timely diagnosis for patients and facilitate quality patient outcomes.

Equitable access to a robust, quality and timely imaging service and its output is vital for all clinicians to ensure optimal outcomes for their patients.

The diagram below⁷ provides an illustration of some of the key radiology techniques commonly used across the NHS.

⁷ WAO Radiology Services in Wales Report

Figure 2: Illustration of key radiology techniques



2.3 Organisational Overview

The radiology service across Wales is delivered in a number of settings. Most activity is delivered through District General Hospital and community sites at the University Health Boards (UHBs) and Trusts. Powys Teaching Health Board operate services from a number of community hospital sites with clinical and professional support from the adjacent UHB's and Trusts in England, and Screening Services operate from fixed sites and a number of mobile units across the country. Looking to the future, imaging facilities may potentially migrate outside of the secondary care setting, based on the model of community diagnostic centres. The solution procured will need to facilitate and support future diagnostic delivery structures.

The main sites within each organisation are shown below:

- **Aneurin Bevan UHB:** The Grange University Hospital, the Royal Gwent Hospital, Nevill Hall Hospital and Ysbyty Ystrad Fawr;
- **Betsi Cadwaladr UHB:** Ysbyty Glan Clwyd, Wrexham Maelor Hospital and Ysbyty Gwynedd;
- **Cardiff and Vale UHB:** University Hospital of Wales and Llandough Hospital;
- **Cwm Taf Morgannwg UHB:** Prince Charles Hospital, Royal Glamorgan Hospital; Princess of Wales Hospital
- **Hywel Dda UHB:** Bronglais General Hospital, Glangwili General Hospital, Withybush Hospital and Prince Phillip Hospital;

- **Powys Teaching Health Board:** Brecon, Llandrindod Wells, Machynlleth, Newtown, Welshpool, Ystradgynlais
- **Public Health Wales:** Breast Test Wales sites at Cardiff, Swansea, Llandudno, Wrexham
- **Swansea Bay UHB:** Morriston Hospital, Neath Port Talbot Hospital, and Singleton Hospital;
- **Velindre University NHS Trust,** Velindre Cancer Centre

2.4 Business Strategies & Reports

A number of national strategies and reports inform this investment (see Appendix S1 for full list of reports), key ones include:

- A Healthier Wales: Our plan for health and social care (2018)
- The Imaging Statement of Intent (2018)
- Wales Audit Office Radiology Services Report (2018)
- Digital Architecture Review

A Healthier Wales: Our plan for health and social care

A Healthier Wales (Appendix S1), the Government's plan setting out a long-term vision of 'a whole system approach to health and social care', which highlights the need for making better use of digital, data, and communication technologies.

The Imaging Statement of Intent (ISoI)

Key priority areas to support the development of modern, sustainable Imaging services are set out in the *Imaging Statement of Intent*⁸ (Appendix S1), published in March 2018 by Welsh Government. The statement is aligned to "A Healthier Wales" as it sets out clear objectives for radiology including the need for informatics systems to be secure with a robust IT infrastructure that operates pan Wales.

The Wales Audit Office (WAO) Radiology Services Report

The WAO Radiology Services Report published November 2018 (Appendix S1) summarises the key messages from the Auditor General's local work on radiology services and refers to radiology informatics the findings set out in the Auditor General's separate report on "Informatics Systems in NHS Wales"⁹.

The key findings from this report include:

⁸ [Imaging Statement of Intent](#) published March 2018, Welsh Government

⁹ "[Informatics Systems in NHS Wales](#)" published November 2018, National Assembly for Wales

- Wales-wide radiology IT system challenges and weaknesses in local IT infrastructures inhibit radiology services' efficiency.
- Radiology services are well managed operationally but there is scope to strengthen board level scrutiny and the strategic planning of services.

Digital Architecture Review

Welsh Government commissioned a review of digital delivery in Wales following the Public Accounts Committee report into "Informatics Systems in NHS Wales"⁹ published in November 2018. The Digital Architecture Review' explored how digital systems are designed to work together 'across Wales.

RISP will align with these strategies by supporting efficient and effective clinical care and utilising vendor agnostic and future proof technologies to deliver the vision of "a seamless end-to-end electronic solution, from receipt of a referral to the delivery of a radiology report" (electronic test request, receipt of radiology referral to delivery and acknowledgement of radiology report) that will enable the transformation of imaging services and other key areas of work.

2.5 The Case for Change

Investment Objectives

The following investment objectives have been identified and agreed during discussions in workshops, presentations, and board meetings:

Table 4: Investment Objectives

No.	Investment Objectives
RISP-IO1	To improve patient care, patient safety and patient outcomes.
RISP-IO2	To enable the transformation of healthcare services to be leaner, more sustainable and provide long-term stability.
RISP-IO3	To deliver a seamless, end-to-end technical solution for radiology services.
RISP-IO4	To contribute to the more prudent use of radiology resources through demand management, predictive costing and minimised financial risk.
RISP-IO5	To meet current and future service requirements.

The Current State

The current configuration of the radiology departments and their associated systems and infrastructure tends to drive care delivery within the traditional organisational boundaries.

Both PACS and WRIS have been deployed in line with these boundaries and subsequent changes to organisational arrangements have been made more difficult because of this siloed approach.

Whilst it is possible to deliver cross-organisational working with the current system, it is difficult to configure and maintain. This is typically low volume activity rather than as a core component of our working arrangements.

Increasingly clinical care is delivered across organisational boundaries with regional MDTs for cancer and non-cancer diagnoses and cross border referrals to England for tertiary services in stroke, cardiac and neurology care pathways necessitating a more patient and pathway focussed approach to delivery of IT based clinical systems.

Challenges

- Demand for Radiology services in the form of continuous growth in the demand for CT scans, MRI scans etc is outstripping reporting capacity, with the current workforce struggling to deliver the increase demand for reporting activity.
- This results in utilisation of outsourcing and Teleradiology services to deliver a timely service. This has resulted in exponential rise in costs and future projections indicate this situation will continue to deteriorate.
- The core Radiology IT system is not meeting health boards' and Trusts' needs to deliver seamless imaging care for patients, which is often delivered across health board boundaries. Further weaknesses are identified in local IT infrastructures.
- The lack of a national Radiology dataset hinders the collation of Radiology activity at a national level, this makes painting the national picture difficult and unnecessarily time consuming.

These challenges illustrated above are expanded upon below:

Demand

There is ever increasing justified demand for all imaging, aimed at earlier diagnosis to improve outcomes, examples include earlier stage cancer interventions & treatment modification, prevention of unnecessary exploratory surgery, informing surgical planning to reduce post- operative morbidity and mortality risk, with targeted intervention.

A number of factors drive this increase in demand including demographic changes, new clinical guidelines, lower thresholds for referral, advances in technology and understanding how the features of disease present themselves on diagnostic images.

This increase in demand has meant that in 2019, not one health board in Wales was able to meet its reporting requirements within the internal reporting capacity available. Clinical Directors of radiology departments at six of the seven health boards (86%) in Wales felt there was not enough radiologists in their department to deliver safe and effective patient care.¹⁰

Workforce

The paucity of sufficient radiology workforce is the biggest challenge that both Welsh & UK radiology departments face. These shortages vary in severity between the different regions of Wales and are negatively impacting patient care. The workforce effectiveness and productivity needs to be maximised wherever possible and this is difficult to achieve in the current climate.

The Royal College of Radiologists (RCR) annual workforce survey highlights key concerns for Wales. It suggests Wales' radiologist workforce is understaffed by 38% - the biggest shortfall in any UK nation. It means Wales lags significantly behind the EU average for the number of radiologists per patient. Wales has 7.8 radiologists per 100,000 people, the UK average is 8.6, the EU average is 12.8.¹¹

On patient safety, the College says 60% of Wales' imaging directors say they do not have enough consultants to keep patients safe. Wales also has the worst interventional radiology (radiologists undertaking procedures) provision of any UK nation, with 60% of health boards unable to provide 24/7 rotas or transfer arrangements for patients needing interventional care.

At the start of April, the RCR polled 1,089 consultants around the UK about their feelings on working in the NHS post-Covid. 37 were from Wales, and of those:

- 41% felt demoralised (individuals)
- 43% intended to cut their hours
- 11% say they planned on leaving the NHS in the next 12 months – according to the RCR, this is three times the normal leaving rate.

¹⁰ [RCR Clinical Radiology UK Workforce Census 2020 Report](#)

¹¹ [RCR Census Press Release](#)

Table 5: Regional breakdown of RCR workforce data¹²

	All radiologists (consultants and trainees) per million EU average is 12.8	2020 consultant radiologist headcount	2020 full-time equivalent (FTE) consultant numbers	Increase in FTE consultants 2019-2020	2020 FTE % shortfall and consultant numbers needed to meet service and safety needs
UK	8.6	4,277	3,902	+ 170 (from 3,732)	33% (1939)
England	8.5	3,587	3,267	+ 146 (from 3,120)	34% (1675)
Scotland	9.1	354	324	+ 5 (from 319)	29% (130)
Wales	7.8	169	156	+ 0 (from 156)	38% (97)
Northern Ireland	11.1	168	156	+ 19 (from 137)	24% (48)

	Hospital radiology managers who say they do not have enough consultants to provide safe care	Trusts/health boards without the radiologists or transfer arrangements to provide safe 24/7 interventional radiology services
UK	58%	47%
England	58%	47%
Scotland	65%	40%
Wales	60%	60%
Northern Ireland	33%	44%

Reporting Costs

In order to meet the rising demand for reporting, health boards are turning to insourcing (additional payment to contracted consultant radiologists to report outside of core contracted hours) and private sector outsourcing companies. Expenditure on outsourcing and insourcing has quadrupled since 2014 to an estimated £8.3 million in 2018 and is forecast to continue to rise. The current RISP needs to be able to support seamless, uninterrupted

¹² [RCR Clinical Radiology UK Workforce Census 2020 Report](#)

workflow to allow the clinical reporting of imaging to occur in the most efficient manner, given workforce constraints.

Informatics

Radiology is a high throughput, capital intensive service so having effective IT systems plays an essential role in delivering efficient radiology services and maximising the use of expensive equipment.

The current radiology IT systems neither enable service planning on a national basis, nor provide the information needed to enable the utilisation of available resource across NHS Wales health board boundaries. The current IT systems (PACS/ RIS):

- Are disparate with disjointed approaches to coding, administrative process, data collection and analysis and do not support strategic planning or service improvement.
- Do not facilitate cross boundary working resulting in variation in the delivery of radiology services across NHS Wales health boards and trusts that leads to increased waiting time for scans or delays to reporting and diagnosis.
- Make it difficult to share patient information easily between health boards and trusts both within Wales and England, impacting on acute/emergency care, MDT's and leading to inefficient care. Manual workarounds are in place to enable the right information to be available for use in the right place, at the right time but these are relatively inefficient and contribute to delays and increased clinical risk.

The Implications of Doing Nothing

It is questionable whether there is the level of awareness within health boards regarding the substantial risk that exists with current radiology IT systems and the substantial risk of harm to our patients. This is highlighted in the user cases added below:

Senior Consultant Radiologist: "There are many examples across Health Boards of clinical risk to patients that have come to light through incident reports, serious incident investigation and external reviews. Lack of an integrated IT system means that **workarounds** and safety nets (where they exist like the example below) has become the **primary process**, a situation that is completely **unsatisfactory**."

"A cancer patient had imaging in different hospitals. The radiologist reporting the scan in one hospital, compared to a previous study from that hospital and interpreted disease progression. Another scan within weeks was carried out on the same patient for a different reason in another hospital and the radiologist there, compared to a prior scan taken at that hospital, interpreted a response to treatment. Fortunately, this was picked up by an Oncologist in the MDT and was corrected."

"It is essential the new Radiology Informatics System procurement addresses all these elements including a properly functioning electronic end to end system. To have an electronic referral and results alert system that works seamlessly with the new informatics system is absolutely integral to a properly functioning and safe solution".

This user story shows the fragmented nature of our current RIS/PACS systems between health boards and Trusts, the issues being:

- No single imaging timeline for patients across Wales
- A lack of visibility of scans carried out in other health boards, which leads to a duplication of scans and lack of awareness of appropriate prior studies to compare; this can lead to inaccurate interpretation and a substantial risk of harm to the patient.

2.6 Existing Arrangements

PACS National Agreement

A national agreement for the provision of PACS was established in 2013 following a two-year procurement process. The procurement process involved representatives from radiology, ICT, DHCW, legal, and procurement services.

Fujifilm Medical was selected as the contractor for PACS as part of a national agreement with other elements including patient dose management (PDMS) as sub-contracted components. The radiology directorates at each health board/trust then used this agreement to establish local deployments of PACS as replacements of their legacy systems. The local deployments were set up to provide PACS for up to nine years; the agreement does not allow any further extensions to the local deployments after this initial period.

The Fujifilm solution is now used by all health boards and Trusts following a phased deployment with Cardiff and Vale UHB and the National Imaging Academy Wales being the last to deploy.

The planned deployment order end dates for each Health Board and Trust are shown in the diagram below.

Figure 3: Contract End Dates



A single central termination notice was issued to Fujifilm by Digital Health and Care Wales (DHCW) acting on behalf of the health boards and Trusts, in May 2020. This was in line with the current contractual arrangements to secure up to 42 months termination assistance from Fujifilm to support transition. DHCW are the contracting authority and take overall responsibility for managing the contract. Fujifilm provide the services to NHS Wales.

A PACS Service Management Board (PACS SMB) comprising representatives from all health boards oversees the management of the service provided by Fujifilm. It is the responsibility of each deployment order holder to performance manage the service provided to them under the contract and feed this into the PACS SMB. Change requests are submitted to, and managed by, the Fujifilm Business Relationship Manager under the change management process set out in the contract.

Each health board has to fund any changes to its original deployment order which has meant little or no budget available for this purpose. This has made some change requests difficult to deliver.

Fujifilm provide all the support where it is the supplier's responsibility. The support is provided via the UK Fujifilm medical support desk with each issue being assigned a severity as set out in the contract and managed

accordingly. Each of the health boards and trusts has their own PACS Manager and support staff to enable the service and systems to integrate and function with wider radiology resources.

Welsh Radiology Information System (WRIS)

In Wales, the Radiology Information System (RIS) is a national system developed and supported by Digital Health and Care Wales (DHCW). All Health Boards use WRIS, which supports the scheduling of radiology investigations, provides a clinical record of imaging performed on patients including reports and the system also allows Health Boards to generate business reports and statistics on performance.

The solutions in each health board are successful in their remit of providing radiology services locally, but there exists considerable opportunity to enhance these mechanisms with the ability to work from a wider base in support of patients.

Other systems link to WRIS to provide additional functionality; these different systems must integrate with each other to ensure that information easily transfers and updates between systems. This includes PACS (Picture Archiving and Communications System) to manage the storage, retrieval, distribution, and presentation of images.

Cost of Existing Systems

It is estimated that it currently costs £6.8m p.a. to operate the existing PACS and WRIS systems as outlined in the table below.

Table 6: Current Costs

Organisation	PACS £'000	WRIS £'000	Total £'000
Aneurin Bevan UHB	794	60	854
Betsi Cadwaladr UHB	564	97	661
Swansea Bay UHB	970	74	1,044
Cardiff & Vale UHB	965	81	1,046
Cwm Taf Morgannwg UHB	517	65	582
Imaging Academy	306	0	306
Hywel Dda UHB	663	79	742
Digital Health Care Wales	77	635	712
Velindre NHS Trust	138	18	156

Organisation	PACS £'000	WRIS £'000	Total £'000
Public Health Wales	691	0	691
Annual revenue costs	5,684	1,109	6,793

2.7 Business Needs Current & Future

Stakeholder Engagement

There has been significant engagement with the service with 270+ attending meetings, workshops and roadshow events held at all health boards and Trusts across Wales and latterly via Microsoft Teams.

The full list of stakeholder groups engaged, and comments/ feedback received during this process are listed below and include but not limited to:

Radiologists, Radiographers, Secondary and Primary Care Clinicians, Trainer/ Trainees, Radiology Managers, Administrative staff, Directors of Finance, Directors of Planning, Clinical Directors, Directors of Therapies & Health Sciences, PACS Managers, Informatics Leads, Medical Physics, DHCW and Welsh Government.

The full list of organisations, stakeholder groups and engagement schedule for the RISP programme can be found in Appendix S1.

Business Needs

The key functional requirements from the engagements with the service has informed this case. These include:

- Single patient Radiology record
- Efficient reporting workflow
- Fully integrated advanced applications – 3D
- Intelligent worklists
- Fully integrated Speech solution
- Peer review solutions
- MDT solutions
- AI enhanced workflow including clinical decision support
- Full audit trails
- Structured reporting templates
- Business Intelligence

2.8 Potential Scope & Service Requirements

Scope

“Services within the “footprint” of the current radiology service”

This includes systems and services that collectively deliver an end-to-end technical solution to support the modernisation of imaging services. The scope is designed to be the core minimum required to deliver the programme objectives, benefits, and meet the business requirements identified above. The core scope includes:

End to End Radiology Solution

A paperless end-to-end solution with functionality of Radiology Information System (WRIS) / Picture Archiving and Communication System (PACS) from receipt of request to publishing of the result and receipt of acknowledgement. This is the best solution to meet the business needs of the service, support the delivery of the Imaging Statement of Intent and the recommendations from the Wales Audit Office Radiology Services Report.

Patient Dose Monitoring System (PDMS)

PDMS provide many tools to aid health boards in improving the quality and efficiency of imaging services as well as meeting their legislative requirements such as those under the Ionising Radiation (Medical Exposures) Regulations 2017, (IR(ME)R 2017), examples include:

- Alerting healthcare professionals to radiation exposures which are of a level significantly greater than that intended or when Diagnostic Reference Levels (DRLs) are consistently exceeded.
- Providing valuable inputs into required quality assurance and optimisation processes therefore potentially improving image quality or reducing radiation exposure for people having multiple imaging procedures.
- Offering substantial improvements in collection efficiency and quality as well as reducing time for analysis and reporting of radiation dose data compared with manual or semi-automated methods.
- Facilitating the management and harmonisation of imaging protocols and contrast media usage between devices (both within and between health boards)
- Enabling optimisation of equipment utilisation.

Electronic Requesting and Results Acknowledgement¹³

Electronic Requesting (ER) systems are designed to enable clinicians to request Diagnostic Imaging (DI) procedures and receive updates on their progress using an IT system, replacing the need for conventional paper-based systems. IT enables electronic two-way communication of patient information, clinical and diagnostic decision making, the progress of the imaging procedure and the image report status progress between the referrer and the hospital radiology department. In Wales, the practice remains paper based.

In many Health Boards results acknowledgment systems continue to be largely manual processes, driven by paper / email, telephone and faxed based triggers tailored to meet local clinical needs. The current systems fail to close the diagnostics loop because there is no automated facility to record a result acknowledgement within the RIS and therefore urgent or unexpected findings are frequently escalated by manual rather than electronic means. The processes are tailored to local clinical demands. The recommendations of NPSA 16¹⁴ are clear:

- Ensure that the radiological imaging reports of all patients are communicated to, and received by, the appropriate registered health professional and, where necessary, action is taken in a manner appropriate to their clinical urgency;
- Ensure registered health professionals design 'safety net' procedures for their specialty;
- Make it clear to patients how and when they should expect to receive the results of a diagnostic test.

This programme is an opportunity to address the NPSA 16 recommendations robustly with an electronic, auditable trail of results acknowledgement. This will also mitigate and decrease litigation claims where the analogue system of results acknowledgment has failed. One of the frustrations of the radiology service in Wales is the lack of progress in the delivery of an in-house electronic referral and results alert system for NHS Wales. There is despondency within the service at the lack of progress in the development of a national electronic requesting system being developed by DHCW to be delivered through the Welsh Clinical Portal (WCP).

A WCP electronic requesting pilot commenced in Royal Glamorgan Hospital (CTMUHB) in October 2020 with a small number of requestors. It has since

¹³ Optional commercial electronic requesting system, if the WCP cannot be developed to meet the requirements of the Radiology service in line with programme timeline.

¹⁴ [NPSA 16 2007](#)

been extended to Outpatients and A&E in both Royal Glamorgan Hospital and Prince Charles Hospital. Modalities live include CTs, MRIs, Plain Film and Ultrasound. The next steps for the pilot are to rollout to BCUHB and SBUHB.

Delivery of the electronic requesting system within the timescales of the RISP programme is of concern as this is a core requirement for the end-to-end solution to be successful and for the programme to meet its objectives. This is recorded on the RISP risk register and the programme are working with DHCW to monitor the position. The programme will monitor the position with the WCP solution; however, it is agreed to include electronic requesting and results acknowledgment and notifications as part of the scope of the business case and to include a commercial system as an optional component of the procurement.

2.9 Benefits

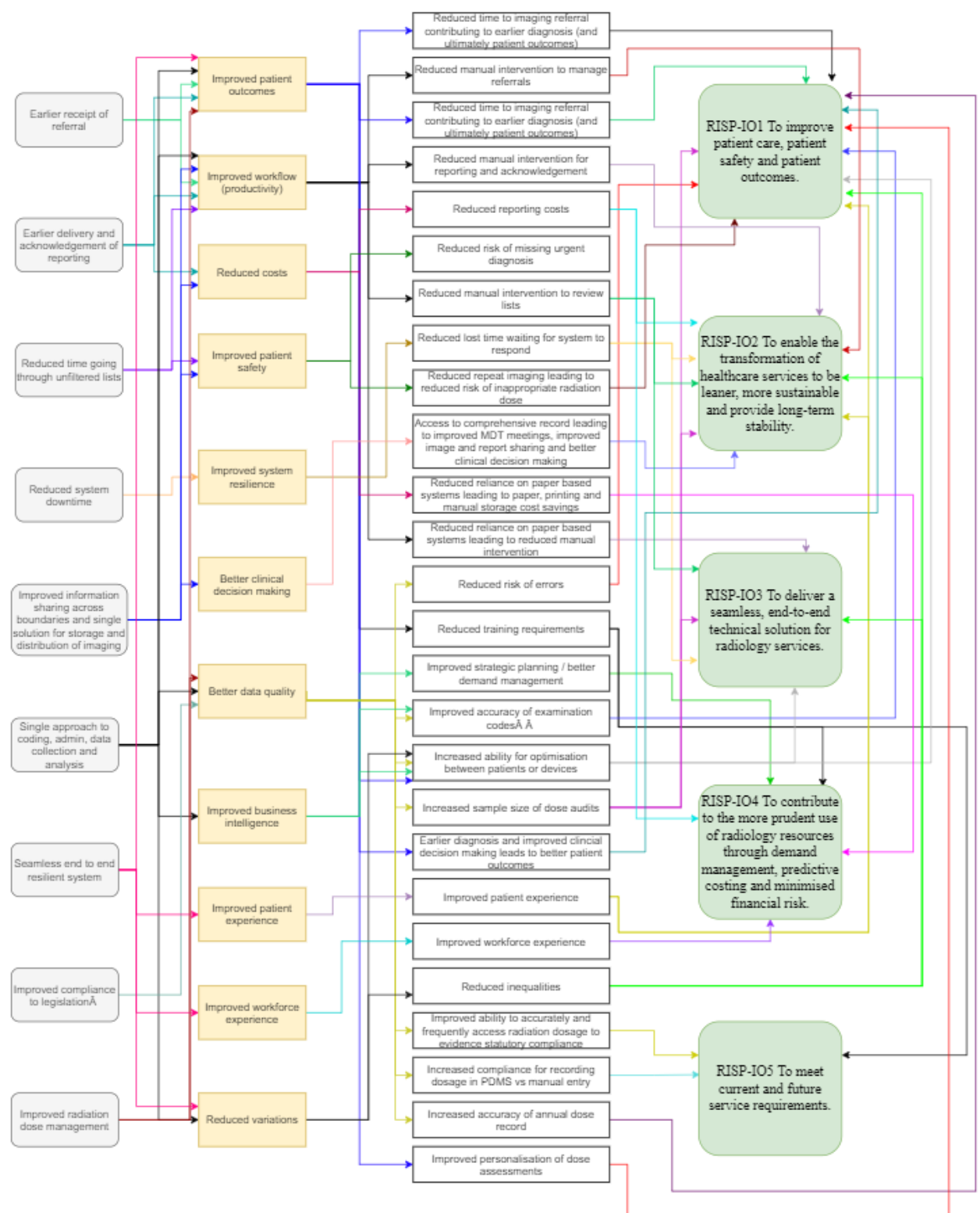
The key benefits from delivering RISP include:

- Improved patient safety, with an electronic auditable trail from request to results acknowledgement. (NPSA SPN 16 2007) ¹⁵.
- Reduced risk of repeat examinations and inappropriate radiation dosage.
- Effective and efficient MDT meetings supporting cross health board boundary workings and streamlining patient care.
- Improved imaging workflow, enabling timely delivery of service and - the ultimate output of an imaging examination - a report to the clinical referrer anywhere.
- Enable cross-site reporting to facilitate service transformation and support the work of the Imaging Essential Services Group.
- Improved data quality and analytics.
- Streamlined and reduced training requirements.

A Benefits Group has been established and have identified specific benefits and associated measures which are outlined in detail in the Economic and Management Cases. A mapping exercise was undertaken to align benefits to the investment objectives (figure 4).

¹⁵ [NPSA 16 2007](#)

Figure 4: Benefits Map



2.10 Risks

This Strategic Case highlights the key risks relevant to the successful implementation of RISP. The programme will employ risk management techniques to appropriately monitor how risks materialise. This will support the aims of the programme and help maximise value for money.

Key risks to the realisation of some of the benefits of the RISP programme:

- COVID-19 recovery activity may impact the ability of HBs to release the required resources to join the procurement dialogue teams in Tranche 2. The impact of this could be delays in the procurement process.
- Lack of certainty around the financial model associated with a possible cloud solution may mean it is not affordable for the health boards. This could lead to delays in the procurement process.
- There may be a delay in completion of the OBC caused by a lack of clarity on the treatment of capital within the Financial Case. This may delay moving to Tranche 2.
- Further slippage to procurement timescales caused by delays could impact the current Fuji PACS contract end dates.

A full list of RISP risks and mitigations can be found in Appendix M5.

2.11 Constraints

The programme is subject to the following constraints:

- Lack of resources within DHCW to release staff to support the development of the OBC, the procurement, development, testing and training and to take forward the work.
- Limited financial resources available to the NHS for a new radiology system, to support the procurement and further implementation.
- Capacity of the Imaging service to support the programme, particularly consultant staff.

2.12 Dependencies

RISP is subject to the following dependencies that will be carefully monitored and managed throughout the lifespan of the Programme:

- The development of the WCP to deliver electronic requesting, results acknowledgement and notifications to meet radiology requirements in time for deployment of the new RISP.
- The timelines for deployment of infrastructure and resilience that is within the scope of the All Wales Infrastructure Programme (AWIP).
- The approval of Welsh Government, health boards, trusts and professional bodies to this OBC.

3 Economic Case

3.1 The Options Framework

Introduction

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

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.
- Recommend the preferred way forward in the form of a shortlist of options.

Critical Success Factors

Critical success factors (CSFs) are the essential attributes for successfully delivering the project and are used along with spending objectives to evaluate the options. The CSFs for the project are crucial, not merely desirable, and not set at a level that could exclude important options at an early stage of identification and appraisal.

Table 7: Critical success factors

Reference	Spending Objective
CSF1	Business Needs: How well the option satisfies the existing and future business needs of NHS Wales.
CSF2	Strategic Fit: How well the option provides fit and synergy with other key Imaging national and local strategies.
CSF3	Benefits Optimisation: How well the option optimises the business outcomes and potential benefits, as highlighted in the spending objectives to improve overall VFM (economy, efficiency and effectiveness).
CSF4	Achievability: How likely is this option to be achievable with regard to the ability of stakeholders to innovate, adapt, introduce, support, and manage the required level of change, including the management of associated risks.
CSF5	Supplier Capacity & Capability: The ability of the marketplace and its potential suppliers to deliver the required services and deliverables.

CSF6	Affordability: The ability of relevant stakeholders, both national and local, to fund the required level of expenditure, the capital and revenue consequences associated with the proposed investment.
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Key Elements of the Options Framework

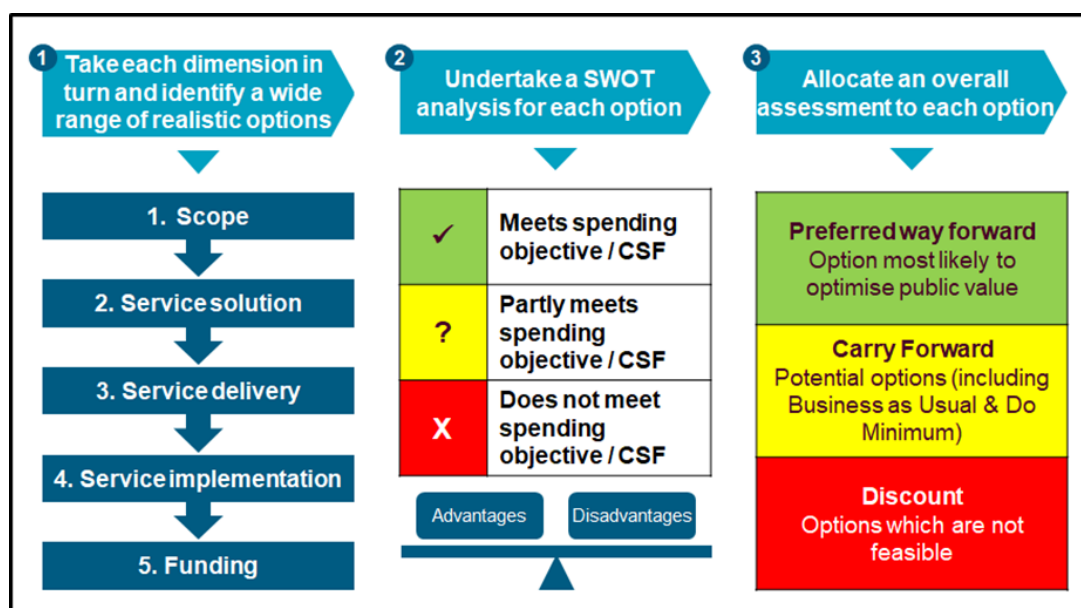
In accordance with the requirements of HM Treasury's Green Book (A Guide to Investment Appraisal in the Public Sector) and Welsh Government Better Business Case guidance, this section of the business case documents the wide range of options that have been considered that could deliver the agreed spending objectives for five categories of choice:

- Scope (service and geographical coverage).
- Solution (including services and required infrastructure) which is divided between:
 - Technical solution (hosting arrangements); and
 - Service solution (deployment arrangements).
- Service delivery (who will deliver the required services).
- Timing and phasing of delivery.
- Funding of the investment.

The long list must include an option that provides the baseline for measuring improvement and value for money. This option is known as 'Business as Usual'. It must also include a realistic 'Do Minimum' based on the core functionality and essential requirements for the project.

The diagram illustrating this process is shown below:

Figure 5: Process to identify and assess the long list of options



Through a series of workshops, the Programme Team identified and documented a long list of options. Options were generated for each category of choice by ascertaining the least ambitious, most ambitious, and intermediate option for scope, solution, service delivery, timing, and funding. The resulting options were assessed against the agreed critical success factors and spending objectives and a SWOT analysis undertaken to identify the main advantages and disadvantages of each.

The detailed evaluation and accompanying SWOT analysis can be found in Appendix E1 and the results are summarised below.

Scope

The options related to the project 'scope' are concerned with establishing the service coverage and key service requirements to be included within the programme. The long-listed options and results of the appraisal are provided in the table below.

Table 8: Long list of options - Scope

Dimension	Option	Conclusion
Business As Usual	Do nothing	Carried Forward
Do Minimum	Only replace PACS	Discounted
Intermediate Option	PACS + PDMS	Discounted
Intermediate Option	PACS + PDMS + DHCW RIS	Carried Forward
Intermediate Option	PACS + PDMS + Commercial RIS + ETR	Preferred Way Forward
Do Maximum	PACS + PDMS + RIS + ETR + other disciplines	Carried Forward

Technical Solution

The options related to 'solution' are concerned with establishing how the preferred scope for the programme can best be delivered. A range of options has been considered and the results of the evaluation of these options are provided in the table below.

Table 9: Long list of options - Technical

Dimension	Option	Conclusion
Business As Usual	Service to continue operating as usual.	Carried Forward
Do Minimum	National DHCW data centre	Carried Forward
Intermediate Option	National supplier data centre hosted.	Carried Forward
Do Maximum	National supplier cloud hosted.	Preferred Way Forward

Service Solution

The options related to 'solution' are concerned with establishing how the preferred scope for the programme can best be delivered. A range of options has been considered and the results of the evaluation of these options are provided in the table below.

Table 10: Long list of options - Service Solution

Dimension	Option	Conclusion
Business as Usual	Health Board Deployment	Discounted
Intermediate Option	Regional Deployment	Carried Forward
Do Maximum	National Deployment	Preferred Way Forward

Service Delivery

The options related to the programme 'delivery' are concerned with establishing the ways in which the preferred scope and solution can be delivered, specifically around who will deliver services in the future. The results of the evaluation of these options are provided in the table below.

Table 11: Long list of options – Service Delivery

Dimension	Option	Conclusion
Do Minimum	In House	Carried Forward
Intermediate Option	Service Management	Carried Forward

Intermediate Option	Supplier Partial Service management	Carried Forward
Intermediate Option	Supplier Full-Service Management	Preferred Way Forward
Do Maximum	Integrator Service Management	Carried Forward

Project Implementation

The options related to the programme 'implementation' are concerned with establishing the phasing for delivering the preferred scope, solution, and delivery options.

Table 12: Long list of options - Implementation

Dimension	Option	Conclusion
Business As Usual	Phased by Site	Carried Forward
Do Minimum	Phased by Health Board	Preferred Way Forward
Intermediate Option	Phased by Application	Carried Forward
Do Maximum	Big Bang	Discounted

Project Funding

The 'funding' required for delivering the 'preferred' scope, solution, service delivery and implementation path for the project. Potential funding options are driven by the availability and opportunity cost of public funding, Value for Money, and the characteristics of the project. Potential funding options include the public or private capital, the generation of alternative revenue streams, operating and financial leases, and mixed market arrangements.

Table 13: Long list of options - Funding

Dimension	Option	Conclusion
Intermediate Option	Revenue funded fully managed service	Carried Forward
Intermediate Option	Capital funded NHS owned assets/Revenue funded support	Carried Forward
Do Maximum	Capital funded	Discounted

Short Listed Options

The results of the assessment were aggregated into a shortlist of options as outlined in the table overleaf.

Table 14: Shortlisted Options

Options	Option 0	Option 1	Option 2	Option 3	Option 4
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	Business as Usual	Do Minimum	Preferred Way Forward A	Preferred Way Forward B	More Ambitious
Scope	Do nothing	PACS + PDMS + DHCW RIS	PACS + PDMS + Commercial RIS + ETR and results acknowledgment	PACS + PDMS + Commercial RIS + ETR and results acknowledgment	PACS + PDMS + RIS + ETR and results acknowledgment (+ options for other disciplines)
Technical Solution	Current solution ceases	National DHCW data centre	National supplier data hosted (either data centre or cloud hosted depending on provider)	National supplier data hosted (either data centre or cloud hosted depending on provider)	National supplier data hosted (either data centre or cloud hosted depending on provider)
Service Solution	N/A	Regional Deployment	Regional Deployment	National Deployment	National Deployment
Service Delivery	N/A	In House RIS with PACS + PDMS delivered with supplier full-service management	Supplier Full-Service Management which could be delivered by either: a. Managed Service Contract b. Contract for Service with Maintenance Support		
Implementation	N/A	Phased by Health Board			
Project Funding	N/A	Combination of capital and revenue funding via either a. Revenue funded fully managed service; or b. Capital funded NHS owned assets/Revenue funded support			

The shortlist of options carried forward to be explored further in the economic appraisal comprises:

- **Option 0 – Business as Usual:** No investment is made and the current solution ceases.
- **Option 1 – Do Minimum:** In-house RIS solution and supplier full-service management solution for PACS + PDMS with data hosted on premises using the national DHCW data centre. The programme will be deployed regionally and delivered using a combination of capital and revenue funding.
- **Option 2 – Preferred Way Forward A:** Supplier full-service management solution for PACS + PDMS + RIS (with the option to incorporate ETR if required) with data hosted by the supplier (either via cloud or supplier data centre). The programme will be deployed regionally and delivered using a combination of capital and revenue funding.

- **Option 3 – Preferred Way Forward B:** Supplier full-service management solution for PACS + PDMS + RIS (with the option to incorporate ETR if required) with data hosted by the supplier (either via cloud or supplier data centre). The programme will be deployed nationally and delivered using a combination of capital and revenue funding.
- **Option 4- More Ambitious:** Supplier full-service management solution for PACS + PDMS + RIS + ETR (with the functionality to incorporate other disciplines if required in the future) with data hosted by the supplier (either via cloud or supplier data centre). The programme will be deployed nationally and delivered using a combination of capital and revenue funding.

3.2 Economic Appraisal

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. In line with current NHS England and HM Treasury Green Book project business case guidance.

- Estimating whole life capital and revenue costs for each option.
- Undertaking an assessment of benefits and risks for each option, wherever possible quantifying these in monetary-equivalent values.
- Using DHSC's Comprehensive Investment Appraisal (CIA) Model to prepare discounted cash flows and estimate the Net Present Social Value (NPSV) and Benefit Cost Ratio (BCR) for each option.
- Presenting the results, including sensitivity analysis, to determine the preferred option.

Indicative costs, benefits and risks have been estimated for the purposes of the OBC as outlined below.

Baseline Costs

It is estimated that expenditure of £6,793k was incurred during 2020/21 in relation to the existing PACS and WRIS systems, as outlined in the table below.

Table 15: Baseline Costs 2020/21

Organisation	PACS £'000	WRIS £'000	Total £'000
Aneurin Bevan UHB	794	60	854
Betsi Cadwaladr UHB	564	97	661
Swansea Bay UHB	970	74	1,044

Organisation	PACS £'000	WRIS £'000	Total £'000
Cardiff & Vale UHB	965	81	1,046
Cwm Taf Morgannwg UHB	517	65	582
Imaging Academy	306	0	306
Hywel Dda UHB	663	79	742
Digital Health Care Wales	77	635	712
Velindre NHS Trust	138	18	156
Public Health Wales	691	0	691
Annual revenue costs	5,684	1,109	6,793

It should be noted that this includes £635k of costs incurred by DHCW which it has been determined are not releasable.

Estimating Indicative Future Costs

Indicative capital and revenue costs of delivering RISP have been estimated including:

- **Solution costs:** Indicative capital and revenue costs to procure the solution have been estimated based on initial supplier cost data received in response to a Prior Information Notice (PIN). This includes the upfront costs associated with licencing, production environments, workstations, local infrastructure, and project implementation, as well as ongoing costs of support and maintenance services, server environments and associated software. The mean excluding the minimum and maximum costs have been used.
- **NHS Wales Programme costs:** Indicative capital and revenue costs have been estimated based on the current NHS Wales resource plan required for the implementation of the programme.
- **Change management costs:** Ongoing revenue costs associated with change management for the 5-year contract period have been estimated.
- **Legacy data costs:** Indicative capital and revenue costs have been estimated relating to the cost of storing and maintaining legacy RIS data.
- **Local infrastructure costs:** An additional capital contingency has been included for local workstation and infrastructure costs to mitigate against the risk of requirements having been underestimated in the solution costs.
- **DHCW recurring costs:** Ongoing cost of integration services and contract management.

The detailed calculations and assumptions behind each of these costs are provided in the following appendices:

- Appendix F1 – RISP Financial Model
- Appendix F2 – NHS Wales Resource Plan
- Appendix F3 – RISP Cost Assumptions

Costing the Shortlisted Options

Baseline and indicative future costs have been used to estimate the whole life cost for each of the five shortlisted options. Costs are applied to each option based on the key features outlined in the table below.

Table 16: Key features of shortlisted options

	Option 0 Business as Usual	Option 1 Do Minimum	Option 2 Preferred Way Forward A	Option 3 Preferred Way Forward B	Option 4 More Ambitious
Description	Do nothing	PACS + PDMS + Inhouse RIS	Supplier hosted / Regional Deployment	Supplier hosted / National deployment	Future proofing technologies
Continue with existing systems (Note 1)	✓				
Replace PACS		✓	✓	✓	✓
Include PDMS		✓	✓	✓	✓
Implement DHCW RIS		✓			
Include external RIS			✓	✓	✓
Incorporate ETR			✓	✓	✓
Incorporate other disciplines					✓

	Option 0 Business as Usual	Option 1 Do Minimum	Option 2 Preferred Way Forward A	Option 3 Preferred Way Forward B	Option 4 More Ambitious
Cost basis	Current Baseline costs	RISP Financial Model excluding VAT and inflation (Note 2) + Adjusted to reflect DHCW RISP Solution Costs		RISP Financial Model excluding VAT and inflation (Note 2)	RISP Financial Model excluding VAT and inflation (Note 2) + Adjusted to reflect maximum Solution Cost (Note 3)

The following notes apply:

1. It should be noted that continuing with existing arrangements is not feasible, however, for the basis of the economic appraisal the current costs are used for the purposes of having a baseline comparator.
2. For the purposes of the Economic Appraisal all VAT is included and costs stated at base year prices in line with HM Treasury Green Book guidance.
3. In the absence of more detailed information at this stage, the maximum PIN Response has been used to calculate the potential Solution Costs.

Estimating Capital Costs

The resulting capital cost estimates are summarised in the table below.

Table 17: Capital Costs £'000

	Option 0 Business as Usual	Option 1 Do Minimum	Option 2 Preferred Way Forward A	Option 3 Preferred Way Forward B	Option 4 More Ambitious
NHS Wales Programme Costs	0	1,091	1,091	1,091	1,091
Local Infrastructure Costs	0	2,000	2,000	2,000	2,000
Legacy Data Storage Costs	0	20	20	20	20

	Option 0 Business as Usual	Option 1 Do Minimum	Option 2 Preferred Way Forward A	Option 3 Preferred Way Forward B	Option 4 More Ambitious
RISP Solution Costs	0	14,175	14,175	14,175	24,855
Total capital costs (excluding VAT and inflation)	0	17,285	17,285	17,285	27,965

Estimating Recurring Revenue Costs

The resulting indicative additional revenue costs are summarised in the table below.

Table 18: Revenue Costs £'000

	Option 0 Business as Usual	Option 1 Do Minimum	Option 2 Preferred Way Forward A	Option 3 Preferred Way Forward B	Option 4 More Ambitious
Existing Solution Costs	61,140	25,430	25,430	25,430	25,430
NHS Wales Programme Costs	0	3,150	3,150	3,150	3,150
Legacy Data Storage Costs	0	145	145	145	145
Change Management Costs	0	750	750	750	750
DHCW Costs	0	507	507	507	507
RISP Solution Costs	0	38,959	37,587	37,587	66,693
Total 9-year revenue costs (excluding VAT and inflation)	61,140	68,942	67,570	67,570	96,676
Equivalent Annual Cost	6,793	7,660	7,508	7,508	10,742

Estimating Benefits

The main benefits of the programme will be delivered as a result of the following features of the preferred solution:

- Improved patient safety, with an electronic auditable trail from request to results acknowledgement. (NPSA SPN 16 2007) ¹⁶.
- Reduced risk of repeat examinations and inappropriate radiation dosage.
- Effective and efficient MDT meetings supporting cross health board boundary workings and streamlining patient care.
- Improved imaging, service and departmental workflow, enabling timely delivery of service and - the ultimate output of an imaging examination - a report to the clinical referrer anywhere.
- Enable cross-site reporting to facilitate service transformation and support the work of the Imaging Essential Services Group.
- Improved data quality and analytics.
- Streamlined and reduced training requirements.

A Benefits Project is established and will run throughout the life of the programme. As part of the OBC, the main benefits have been identified and measures established, and a plan has been agreed to collect baseline data and agree targets and methods of monitoring. These are shown in the table below.

Table 19: Benefits Register

ID	Benefit	Measure	Actions to develop at FBC stage
B01	Reduced time to imaging referral contributing to earlier diagnosis (and ultimately patient outcomes)	Average time from request to receipt of referral	<ul style="list-style-type: none">• PACS Managers to take manual audit of 100 GP and OP referrals to establish average
B02	Reduced manual intervention to manage referrals	Workforce time spent on process	<ul style="list-style-type: none">• No baseline readily available so assumptions to be agreed with service leads
B03	Reduced time to imaging referral contributing to earlier diagnosis (and ultimately patient outcomes)	Average time to reporting and acknowledgement	<ul style="list-style-type: none">• No baseline readily available so assumptions to be agreed with service leads

¹⁶ [NPSA 16 2007](#)

ID	Benefit	Measure	Actions to develop at FBC stage
B04	Reduced manual intervention for reporting and acknowledgement	Workforce time spent on process	<ul style="list-style-type: none"> Obtain from Red Flag / Datix systems Review legal publications and audits
B05	Reduced reporting costs	Average reporting time between subsequent reports	<ul style="list-style-type: none"> Undertake productivity study
B06	Reduced risk of missing urgent diagnosis	Number of urgent diagnosis missed	<ul style="list-style-type: none"> Obtain from Red Flag / Datix systems Review legal publications and audits
B07	Reduced manual intervention to review lists	Workforce time spent on process	<ul style="list-style-type: none"> Assumptions to be agreed with service leads
B08	Reduced lost time waiting for system to respond	Number of hours of downtime	<ul style="list-style-type: none"> PACS Managers to examine Health Board and/or Fujifilm call logs to determine number of calls related to workstation faults or downtime and time taken to resolve
B09	Reduced repeat imaging leading to reduced risk of inappropriate radiation dose	Number of significant accidental and unintended exposures as a result of repeat imaging	<ul style="list-style-type: none"> PDMS sub-group to reconvene Review unintended exposures log
B10	Access to comprehensive record leading to improved MDT meetings, improved image and report sharing and better clinical decision making	Number of referrals into tertiary care across organisational boundaries	<ul style="list-style-type: none"> PACS Managers to determine how many cases transferred to other organisations for MDT / clinical review Determine whether can be monitored in RIS, Synapse or IES Determine whether to monitor as transfers out or in (to avoid double counting)
B11	Reduced reliance on paper-based systems leading to paper, printing and manual storage cost savings	Paper and printing costs	<ul style="list-style-type: none"> PACS Managers to determine how many reports were printed in the last 3 months using WRIS

ID	Benefit	Measure	Actions to develop at FBC stage
			<ul style="list-style-type: none"> Establish current expenditure related to paper usage
B12	Reduced reliance on paper-based systems leading to reduced manual intervention	Workforce time spent on process	<ul style="list-style-type: none"> No baseline readily available so assumptions to be agreed with service leads
B13	Reduced risk of errors	Number of incidents	<ul style="list-style-type: none"> PACS Managers / Clinical Directors to establish how many Datix entries / incidents arising as a result of data quality issues
B14	Reduced training requirements	Workforce time spent on training	<ul style="list-style-type: none"> No baseline readily available so assumptions to be agreed with service leads
B15	Improved strategic planning / better demand management	Qualitative	<ul style="list-style-type: none"> Review publications on ETR / decision support software to determine evidence-base for reducing demand for diagnostic services
B16	Improved accuracy of examination codes	%change accuracy (correct codes used)	<ul style="list-style-type: none"> Establish baseline / agree assumptions with service leads
B17	Increased ability for optimisation between patients or devices	Current variation vs future variation e.g. dose, protocol (hope to see a % decrease)	<ul style="list-style-type: none"> Establish baseline / agree assumptions with service leads
B18	Increased sample size of dose audits	Sample size current vs future	<ul style="list-style-type: none"> Establish baseline / agree assumptions with service leads
B19	Earlier diagnosis and improved clinical decision making leads to better patient outcomes	Time spent on data management / mining to get data out of system	<ul style="list-style-type: none"> Establish baseline / agree assumptions with service leads
B20	Improved patient experience	Patient surveys and/or better compliance to national guidelines on referral to treatment timelines	<ul style="list-style-type: none"> Establish whether patient engagement groups can be used Review ABUHB use of appointment reminders

ID	Benefit	Measure	Actions to develop at FBC stage
			<ul style="list-style-type: none"> Review CAVUHB use of patient touch screen check in
B21	Improved workforce experience	Staff surveys	<ul style="list-style-type: none"> Establish baseline / agree assumptions with service leads
B22	Reduced inequalities	Turnaround time	<ul style="list-style-type: none"> Comparison study needed between Health Boards to determine report turnaround times (before and after implementation)
B23	Improved ability to accurately and frequently access radiation dosage to evidence statutory compliance	Number of data points included in surveys/number of examinations covered	<ul style="list-style-type: none"> Establish baseline / agree assumptions with service leads
B24	Increased compliance for recording dosage in PDMS vs manual entry	Current compliance vs future compliance	<ul style="list-style-type: none"> Establish baseline / agree assumptions with service leads
B25	Increased accuracy of annual dose record	RIS vs PDMS dose for specific device	<ul style="list-style-type: none"> Establish how does will be recorded
B26	Improved personalisation of dose assessments	Case study/ potentially less litigation	<ul style="list-style-type: none"> Establish baseline / agree assumptions with service leads
B27	Increased sample size of dose audits	Sample size current vs future	<ul style="list-style-type: none"> Establish baseline / agree assumptions with service leads

As well as significant quality improvements, many of these benefits are associated with reduced manual interventions and improved turnaround times. This clearly provides opportunities for significant productivity gains, which would either produce direct cash savings or, most likely, enable the release of staff time to focus on more value-added activities and increase overall capacity.

At this stage, the Benefits Group has not yet identified the baseline data and agreed target improvements for these benefits, therefore it is not possible to estimate the monetary equivalent value of these productivity gains with any degree of accuracy. However, for the purposes of the Economic Appraisal, an assumption has been made that they would directly contribute to improving patient experience through better clinical and administrative efficiency by reducing safety manual tasks, e.g. entering referral details into the RIS, scanning and filing paper referral forms,

managing manual processes around vetting, justification, escalation of unexpected clinical findings and cross site reviews at speciality and regional multidisciplinary team meetings.

The Economic Appraisal therefore includes an indicative financial benefit of £1.9m p.a. related to the following:

- There is a reduction in the administrative processes in managing the patient imaging journey, end to end £780k per annum.
- There is an efficiency benefit in the clinical vetting and prioritisation process leading to a financial benefit in the region of £1.1m.
- Further work will be undertaken through the benefits project to validate these assumptions.

The calculation behind this is included in Appendix E2 – Economic Model. Further work will be undertaken through the benefits project to validate these assumptions.

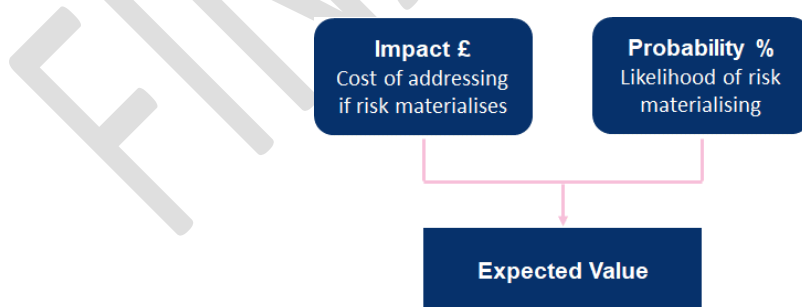
Estimating Risks

The risks for each option have been assessed and, as far as possible, quantified and expressed in monetary equivalent terms, comprising:

- Existing system is no longer supported.
- Infrastructure does not support supplier solution.

These risks have been quantified by calculating an 'expected value'. 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.

Figure 6: Risk quantification approach using single-point probability analysis



The assumptions included to assess the impact and probability of these risks are outlined in the tables below with detailed calculations included in the Appendix E2 – Economic Model.

Table 20: Risk assumptions

	Option 0 Business as Usual	Option 1 Do Minimum	Option 2 Preferred Way Forward A	Option 3 Preferred Way Forward B	Option 4 More Ambitious
R1: Existing system no longer supported					
Risk	System performance deteriorates and ultimately fails impacting on local business continuity				
Consequence	Mitigation would involve upgrading PACS				
Impact	Cost of investing in new PACS	No impact – mitigated by investment in new system	No impact – mitigated by investment in new system	No impact – mitigated by investment in new system	No impact – mitigated by investment in new system
Probability	95%	0%	0%	0%	0%
Timescales	Year 2				
Risk Value £'000	16,144	0	0	0	0
R2: Infrastructure does not support supplier solution					
Risk	Delivery delayed				
Consequence	Increased programme costs and extended double running				
Impact	N/A	Delay of between 12-24 months x Programme Cost per month	Delay of between 12-24 months x Programme Cost per month	Delay of between 12-24 months x Programme Cost per month	Delay of between 12-24 months x Programme Cost per month
Probability	0%	10%	10%	20%	10%
Timescales		Year 2	Year 2	Year 2	Year 2
Risk Value £'000	0	141	141	281	141

Economic Appraisal Results

The indicative assumptions above have been incorporated into a discounted cash flow for each of the options, using DHSC's Comprehensive Investment Appraisal (CIA) model, to support the appraisal of overall value for money and cost-benefit analysis of the shortlisted options.

In line with HMT Green Book requirements:

- Costs, benefits, and risks are calculated over a 9-year appraisal period based on programme commencing 2021/22, phased deployment from 2023/24, final deployment 2025/26 + 5 years contract life.
- Year 0 is 2021/22.

- Costs and benefits use real base year prices – all costs are expressed at 2020/21 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.
 - Non-cash items such as depreciation and impairments.
- A discount rate of 3.5% is applied.

The economic summary from the CIA model is shown in the table below.

Table 21: Key results of economic appraisals

	Option 0	Option 1	Option 2	Option 3	Option 4
	Business as Usual	Do Minimum	Preferred Way Forward A	Preferred Way Forward B	More Ambitious
Capital costs	0	17,285	17,285	17,285	27,965
Revenue costs	61,140	68,942	67,570	67,570	96,676
Total costs	61,140	86,227	84,855	84,855	124,641
Expected risk value	16,144	141	141	281	141
Total risk adjusted costs	77,284	86,367	84,995	85,136	124,782
Benefits		-9,720	-9,720	-9,720	-9,720
Net Present Cost (Undiscounted)	77,284	76,647	75,275	75,416	115,062
Total discounted costs	68,561	76,526	75,377	75,508	109,331
Total discounted benefits	0	-7,917	-7,917	-7,917	-7,917
Net Present Cost (Discounted)	68,561	68,609	67,460	67,592	101,414
Incremental costs	0	-22,904	-21,755	-21,755	-55,709
Incremental benefits (including risk reduction)	0	22,856	22,856	22,725	22,856
Risk-adjusted Net Present Social Value	0	-48	1,101	969	-32,853
Benefit Cost Ratio	0.0	1.0	1.1	1.0	0.4
Rank	5	3	1	2	4

The results of the economic analysis demonstrate that the Preferred Way Forward offers best value for money since it results in the lowest discounted Net Present Cost and best Benefit Cost Ratio.

Option 2 (Delivering the Preferred Way Forward via a regional deployment) offers better value for money than Option 3 (Delivering the Preferred Way Forward via a national deployment), however this will depend on potential suppliers' final solutions and prices.

Sensitivity Analysis

A Sensitivity analysis has been undertaken on these results in the form of switching analysis which tests the degree to which costs and benefits would need to change to affect the ranking of options. The result of this testing is provided in the table below.

Table 22: Sensitivity Analysis

	Option 0 Business as Usual	Option 1 Do Minimum	Option 2 Preferred Way Forward A	Option 3 Preferred Way Forward B	Option 4 More Ambitious
Total discounted costs		-1.79%	0.00%	-0.19%	-36.39%
Total discounted benefits		17.33%	0.00%	1.78%	502.57%
Net Present Cost (Discounted)		-2.00%	0.00%	-0.21%	-39.23%

This demonstrates that the ranking is relatively sensitive to changes in assumptions for Options 1 and 3, where costs would only need to reduce marginally for the ranking to change. This suggests that the results of the procurement process will be critical to the final selection of a preferred option.

Non-Financial Considerations

There are several other non-financial factors that should be considered in comparing the options:

Undeliverable Business as Usual Option

Continuing with existing arrangements is not a feasible option as the current PACS contract ends during 2023/24 which poses a catastrophic risk to service continuity. Option 0 (Business as Usual) is only included to provide a counterfactual to allow value for money comparisons of the other options.

Risks of More Ambitious Option

Option 4 (More Ambitious) would offer opportunities to incorporate other disciplines. However, as well as a high degree of uncertainty about the likely costs and benefits of this, it is anticipated that this would significantly elongate timelines and risk deployment of a PACS replacement.

Qualitative Assessment of Do Minimum option

Option 1 (Do Minimum) involves continuing with the current DHCW developed and supported application; the Welsh RIS. Information was obtained as part of the Prior Information Notice to enable a comparison of this with the procurement of a commercial RIS within the scope of the ongoing programme to procure PACS/PDMS.

Appendix E3 - RIS Options Evaluation Report outlines the process undertaken to compare these two options. It confirms that the commercial RIS scored significantly higher than the DHCW RIS option. This was largely due to the following factors:

Concern that the DHCW option had considerably more risk around the capacity of DHCW and NHS Wales to support the development and deployment of additional functionality which might impact on the timelines for the project and these risks were not offset by perceived benefits that might arise because developments could be bespoke to the needs of radiology services within NHS Wales.

The role of DHCW in this part of the end-to-end solution could impact on the ability to hold the commercial suppliers to account for any failure to deliver on the requirements of the solution.

There was unlikely to be a significant financial benefit from the DHCW option on the basis of the cost estimates, which has subsequently been confirmed by the Economic Analysis outlined above.

3.3 Summary of Options Appraisal Results

The overall results of the options appraisal are set out in the table below.

Table 23: Options overview

	Option 0 Business as Usual	Option 1 Do Minimum	Option 2 Preferred Way Forward A	Option 3 Preferred Way Forward B	Option 4 More Ambitious
Net Present Cost (£'000)	68,561	68,609	67,460	67,592	101,414
Benefit Cost Ratio	0.0	1.0	1.1	1.0	0.4
Significant non-financial benefits	N/A	Seamless system, improved turnaround times, improved staff satisfaction	Seamless system, improved turnaround times, improved staff satisfaction	Seamless system, improved turnaround times, improved staff satisfaction	Potential to incorporate other disciplines
Residual risks	Unable to provide a service without a new	All Wales infrastructure may not support	All Wales infrastructure may not support	All Wales infrastructure may not support	Uncertainty around costs and significant

	Option 0 Business as Usual	Option 1 Do Minimum	Option 2 Preferred Way Forward A	Option 3 Preferred Way Forward B	Option 4 More Ambitious
	system in place	preferred solution	preferred solution	preferred solution	impact on timescales
Other considerations	N/A	DHCW's RIS solution scored the lowest in a qualitative assessment compared to a commercial RIS solution	Commercial RIS scored higher than DHCW RIS in qualitative assessment	Commercial RIS scored higher than DHCW RIS in qualitative assessment	Commercial RIS scored higher than DHCW RIS in qualitative assessment
Life span	Contract ends 2023/24	5-years from 2023/24 + option for 2-year extension	5-years from 2023/24 + option for 2-year extension	5-years from 2023/24 + option for 2-year extension	Uncertain because of timeline risks
Switching analysis	Will not offer value for money because of service continuity risk	Would outrank Option 3 if NPC reduced by 2.0%	Highest ranking relatively sensitive to changes in assumptions	Would outrank Option 3 if NPC reduced by 0.2%	Would require significant reduction in NPC to outrank Option 3

3.4 The Preferred Option

Based on the analysis above it is recommended that Options 2 and 3 are carried forward as the preferred options.

They both involve procuring a supplier full-service management solution for PACS + PDMS + RIS (with the option to incorporate ETR if required) with data hosted by the supplier (either via cloud or supplier data centre).

However, the decision to deliver via national or regional deployment will be dependent on the final preferred solution.

The programme will be delivered using a combination of capital and revenue funding.

4 The Commercial Case

The commercial case considers the commercial feasibility of the preferred option.

4.1 Procurement Scope

Based on an assessment of the current solutions available in this market, the procurement approach envisages a single “Contractor”-provided service with that Contractor taking prime responsibility for all in-scope aspects of the solution, including the contracting and management of any other required contractors as Sub-contractors to the Contractor.

A service requirement is therefore under consideration whose key components would include:

- An End-to-End Radiology Solution – A modular paperless end-to-end solution which will include the Radiology Information System (RIS) and Picture Archiving and Communication System (PACS) functionality to support an electronic workflow from “receipt of request to publishing of the result and receipt of acknowledgement”
- A Patient Dose Monitoring System (PDMS)
- Electronic requesting and results acknowledgement will be explored as an ‘optional’ service in the event that the Welsh Clinical Portal (WCP) cannot be developed to meet the requirements of the Imaging services in line with the programme’s timeline
- The contract will be for a managed service, with the Supplier responsible for all aspects of the solution and its ongoing performance over the life of the contract

The successfully procured service will include the totality of the deliverables as set out in the Schedule 2.1 – ‘The Authority’s Requirements’ and associated contract schedules.

The Authority’s Requirements will include an option for the provision of electronic test requesting, results acknowledgement and notification. However, the Authority may choose not to include this solution in the end contract.

The service will provide a national application that will integrate with the national technical architecture to provide a seamless solution from requesting of procedure to results acknowledgment and notification.

4.2 Procurement Regulations

As NHS Wales organisations are public sector bodies; all NHS Wales procurements must comply with Standing Orders and the Public Contracts Regulations 2015 (PCR2015).

On 1st April 2021, the NHS Wales Informatics Service (NWIS) transitioned to the new Special Health Authority, Digital Health and Care Wales (DHCW), which will be the Contracting Authority for the purposes of this procurement.

Approval to proceed with any contract will be governed by the authorisation of a Full Business Case (FBC) by the Welsh Government.

4.3 Procurement Strategy

Purpose of the Procurement Strategy

The purpose of the Procurement Strategy is to set out in a formalised manner the key aspects of the procurement of the Radiology Informatics Solution. It is a high-level document that states the programme's approach to its procurement activities, its objectives, and key initiatives. The document will provide general information on expenditure, procurement structures, and regulatory considerations and contain a statement of its commitment to developing good working relationships and dealing fairly with all potential suppliers. This strategy is developed along with the business case and defines the approach to be adopted by the Procurement Project.

An effective procurement strategy is based upon a shared understanding of the role and purpose of the procurement process.

The Procurement Strategy forms an important part of the audit trail for procurement setting out the intentions of the Contracting Authority (DHCW in this instance) in advance of the commencement of the formal process.

Prior to the publication of the Contract Notice, DHCW are mandated under its Standing Financial Instructions (SFI's), to Notify Welsh Government of the intended Contract and the procurement process that will be undertaken. Until the Procurement Strategy has been officially "Noted" by Welsh Government, the procurement process may not commence.

Objectives of the Procurement

The principal aim of the procurement is to procure a Radiology Informatics Service to replace the existing legacy solution/s and to provide a service that meets current and future requirements.

The objectives of the procurement are to ensure that the new Radiology Informatics Service will:

- Deliver safe and effective clinical outcomes for patients
- Procure a solution and associated support
- Meet the identified functional characteristics and requirements
- Provide options for additional functional and/or technical capabilities over the contract term (future proofing the solution)
- Offer value for money over its lifetime
- Be "best in class" (where technically, clinically, and financially feasible)
- Be fully interoperable with other national solutions
- Provide the requisite business management functionality as well as clinical functionality
- Meet the investment objectives and critical success factors as set out in the business case
- Contribute to the delivery of the national information and business strategies in accordance with Welsh Government strategies for health
- Be implemented in a fully supported manner within the required timescale for migration off the existing legacy solution(s)

Single Contractor versus Multiple Contractor

Based on an initial assessment of the current solutions available in this market, the procurement approach envisages a single "Prime" Contractor-provided solution with that Contractor taking full contractual responsibility for all in-scope aspects of the requirement, including those delivered by any Sub-contractors under the contract.

In line with the Welsh Government preference of "*Cloud first*", consideration for any new investments should explore and give due consideration to this approach but should not be to the detriment of any clinical solution. It is, however, anticipated that any hosting of the major Solution components will be provisioned by the Supplier via private or public cloud hosting services. The scope, architecture and options bidders offer will be explored as part of the competitive procurement process to ensure performance, functionality, efficiency, and security requirements of NHS Wales are fully met.

Given the scope and scale of this project, potential suppliers are unlikely to be able to supply all components and services to fulfil the Solution other than through the use of subcontractors, which the Authority will allow as part of Supplier Bids, subject to said Supplier(s) entering into appropriate subcontracts, including taking full responsibility for the performance of any subcontracted services, i.e. operating as a "Prime Contractor" to the

Authority for any and all aspects of their contracted solution. Procuring the solution from a single Prime Contractor achieves:

- A full and seamless end-to-end service, i.e. a managed "Service"
- Flexibility in bringing about business change driving the requirements for the Service and its development within clinically and operationally appropriate timescales.
- Clear responsibility for integration and end-to-end delivery of the service. This approach removes the risk of "boundary disputes"¹⁷ with any other suppliers supporting the Service.

Contract Duration

The length of contract for the RISP Procurement will be tailored to give best value for money for the project. The appropriate length will need to:

- Allow sufficient time to exit off the legacy agreements and transition onto any new solution.
- Allow for adequate flexibility for the Authority during the investment life.
- Attract a sufficient range of bidders for the project.
- Enable a viable return on any investment.
- Ensure continuity of support as a minimum to achieve the potential short to medium term aims of the Programme.

The Contract Notice, published through the UK e-Notification service, will indicate the duration of the Contract to be for a period of nine (9) years in total with each Authority Party (health board/trust/Special Health Authority etc.) entering into Deployment Orders that shall have a term of no less than sixty-two (62) months, that being five (5) years and two (2) months, which shall allow for two (2) months local implementation, followed by a period of five (5) years operational service. All Deployment Orders shall have the option to be extended by a period of up to two (2) years per Deployment Order. Please see Appendix C1 for the indicative implementation plan and roll out across NHS Wales.

Procurement analysis and prior experience of national IT system implementations suggest that the complexity involved with delivering an All-Wales solution and standardising technical processes across organisational boundaries requires a longer-term contract.

Additionally, the expected business criticality of this procurement to NHS Wales lends itself to the stability that a longer contract provides. Finally, the solution may need to flex, in terms of user volumes and data types, but

¹⁷ Boundary disputes means which contractual party is contractually obligated to deliver against the requirements in question

will not materially change its scope. There needs to be flexibility in terms of:

- Extending the initial term of the contract flexibly in order to adapt to the needs of the service.
- Planning for an overlap period between the existing contractor and any new Contractor of at least twelve (12) months to ensure a seamless transition.
- Expanding the scope of the Service to allow more users, data types/flows to be deployed under the contract and/or provide the ability to respond to technical development opportunities, using the same contractual model and performance assumptions.

Value for money will be tested on various options, which will be explored during the procurement phase.

Contracting Approach

The contract form of Agreement will be a Master Services Agreement, based on an amended form of the IT Services Contract having regard to the Crown Commercial Services and other best practice guidance of Information Management & Technology (IM&T) procurement.

Advice will be sought on the construction of the draft contract using the NHS Wales appropriately commissioned specialist advisers for commercial, legal, and technical aspects. Each NHS Wales participating organisation "Authority Party" will "call off" their requirements from the contract "the Agreement" and via this process will execute their own "Deployment Orders" with the Contractor. All Deployment Orders will be managed centrally in line with the "Once for Wales" approach.

Appropriate internal governance arrangements will also be established to ensure that all Authority Parties agree and commit to the implementation plan and other Authority Responsibilities within the Contract, including the payment terms.

Procurement Route

On 31 December 2020, the Transition period for the United Kingdom (UK) ended and the UK left the EU Single Market and Customs Union. The UK Government has published a Green Paper 'Transforming Public Procurement' which details many of the changes that they propose to make to the current procurement framework including consolidating the Public Contract Regulations, the Utilities Contract Regulations, the Concession Contract Regulations and the Defence and Security Public Contract Regulations into a single set of regulations specifically designed for the UK market and priorities.

However, at the time of writing this commercial case, public bodies must continue to comply with the Public Contracts Regulations 2015, with minor modifications including the requirement to place an advertisement through the UK e-Notification service. Under these regulations there are potentially several alternative procurement routes open to the project which meet this requirement:

- Procurement under an existing Framework Agreement
- Open Procedure
- Restricted Procedure
- Competitive Dialogue Procedure

Following an evaluation of alternative procurement routes (see Appendix C2), it has been recommended that this requirement is procured under the Public Procurement Directives 2015 Competitive Dialogue Procedure. This procedure, according to the Public Contracts Regulations 2015, should be used in the case of particularly complex contracts, where purchasers may be aware of their needs but not know in advance, what the best technical, legal, or financial solution for satisfying those needs are.

The RISP Programme is keen to explore a range of technical solutions, in conjunction with bidders, including the introduction of new and potentially innovative solutions, as well as ensuring that the most appropriate commercial deal is secured, and therefore considers the Competitive Dialogue appropriate for this requirement.

Procurement Approach

The following is an outline of the basic procurement approach, which will be developed further in a more detailed Procurement Plan:

- **Bidder engagement and market assessment** has commenced to validate the proposed approach and test for an adequate level of interest, capability, and capacity to deliver the requirements. Whilst a preliminary engagement has been undertaken, further presentation days will be required closer to the commencement of the formal procurement process. This approach will be supported through advertisements on national platforms and via the use of Social Media. Such events will be managed formally in line with the spirit of procurement regulations.
- **A RISP Procurement Team** will be established with defined members and Terms of Reference.
- **Procurement training and awareness sessions** for key staff on an ongoing basis throughout the Competitive Dialogue process is a requirement. Initial briefing sessions will set the scene for ongoing training allowing the RISP Evaluation Team to ascertain the level of experience of this type of procurement and the amount of additional training that will be required. The team will augment such training

with ongoing advice and attendance at key meetings during the procurement process.

- **Contract Notice:** Issue of a Contract Notice to be placed through the UK e-Notification service under the Competitive Dialogue Procedure. At this stage, key documentation is required, so this must be finalised in advance of the Contract Notice and is published to enable bidders to make an informed decision regarding their participation.
- **Prequalification:** Screening of Bidder Qualification Information will be undertaken with pre-qualification information to be received from candidates within 35 days of the issue of the Notice (in accordance with the statutory timescale of 30 days for the Notice). Assessment of pre-qualification information (to include details of previous relevant experience as well as financial and technical capability and capacity questions). From this exercise, a long list of up to six (6) bidding "Prime" suppliers will be invited to participate in dialogue.
- **An Invitation to Participate in Dialogue (ITPD)** will be issued to long-listed Bidders. The ITPD will require bidder responses to the Specification, pricing refinement, Contract Terms and Conditions and Draft Contract Schedules, detailed adherence to the Commercial Principles governing the procurement and participation in solution demonstrations.
- **ITPD Evaluation:** ITPD responses will be evaluated to arrive at a short list of bidders. Reference checks will be included during this period. From this exercise, a short list of not more than three (3) bidders will be invited to participate in the detailed dialogue process with Authority representatives on the full set of contract schedules.
- **Detailed Dialogue:** A second stage of dialogue with shortlisted bidders will be conducted to finalise draft contract offers and identify the commercial terms on which the solution would be provided. The draft contracts will be based on an amended version of the Crown Commercial Service (CCS) standard form IM&T contract. This stage will commence with site visits to other Bidder customers, the arrangements to be defined by the Authority as part of this stage planning. Following this, detailed dialogue will take place with each Bidder over at least two (2) "rounds", per workstream ('Functional, Technical', 'Commercial / Legal / Financial and Operational / Governance'), each comprising:
 - Receipt of the Bidder's mark-up on each part of the Agreement,
 - Review by Authority representatives,
 - Discussion with Bidders to allow clarification on submissions and to provide Authority feedback on said submission and,
 - Evolution of the Authority's contract documentation identifying any changes made. At the end of this detailed dialogue stage, all shortlisted Bidders with compliant offers will be taken forward to the Invitation to the ISFT (Invitation to Submit Final

Tender) stage to maintain competition in the process and ensure that the Authority's options are not restricted prematurely.

- **Trial Invitation to Submit Final Tender** will be issued in order to assess the readiness of bidders to proceed to the final ISFT stage. Submissions will not be formally evaluated but will be reviewed and, where necessary, feedback provided, to ensure compliance, completeness, and appropriate understanding of the Authority's requirements.
- **Invitation to Submit Final Tender (ISFT)** is the stage at which bidders will provide their final tender for the Services.
- **Final Tenders** will be evaluated, and a most favoured tender selected based on the most economically advantageous tender, which is calculated in accordance with agreed weightings for the function/technical requirements and price.

Subject to clarifications and minor refinements concerning the final tender submission, if required, and approval of the Final Business Case, a contract will be awarded to the bidder with the most economically advantageous tender, executed, and come into force following the ten-day standstill period. The Award Notice will be placed within forty-eight (48) days of the award decision.

Selection and Evaluation

Selection and evaluation criteria will guide the evaluation at the three (3) stages of the procurement:

- Bidder Qualification Information – Pre-Qualification Questionnaire (PQQ) and Single Procurement Document (SPD) responses, to select the longlisted bidders
- Invitation to Participate in Dialogue (ITPD) Responses (Dialogue Stage), to select the shortlisted bidders
- Invitation to Submit Final Tenders (ISFT) (At the end of the Detailed Dialogue Stage)

In accordance with PCR 2015, all key documents for the procurement will be issued at the start of the procurement, including evaluation criteria for the PQQ/SPD, ITPD and ISFT stages. All evaluation approaches will highlight the criteria and weightings to be used and the methodology for scoring and assessment across the whole procurement.

Contract Award

On conclusion of the ISFT phase and final evaluation of the ISFT responses, a recommendation will be made on the Most Economically Advantageous Tender (MEAT), which is calculated in accordance with the agreed weightings for functional/technical requirements and price. This

recommendation will be recorded in a final evaluation report, which will set out the basis for the award decision and will require to be signed via the agreed governance process.

Any award is subject to a mandatory ten (10)-day standstill period at which time all bidders are informed of the outcome of the procurement process and the relative advantages of the successful bidder.

Final award will be subject to subsequent approvals by the Collaborative Executive Group (CEG) and all health boards, trusts and Special Health Authorities (where appropriate), Full Business Case Approval by Welsh Government and notification being provided from the Welsh Government Minister for Health and Social Services. Upon acceptance by the DHCW Board, as the Contracting Authority, the Agreement can then be executed upon signature by the DHCW Chief Executive and the Supplier.

Unsuccessful Bidders will be offered an opportunity for a full debrief following the formal decision being ratified and approved.

Following the completion of the formal award process a Contract Award Notice will be placed through the UK e-Notification Service.

4.4 Required Services, Outputs and Timescales

Required Services

The principal aim of the procurement is to procure a Radiology Informatics Service to replace the existing legacy solutions and to provide a service that meets current and future requirements.

The service requirement under consideration would include the:

- Provision, ongoing development, upgrade and maintenance of an All Wales Radiology Informatics Service (RIS).
- Provision, ongoing development, upgrade and maintenance of an All Wales Picture Archiving and Communications System (PACS).
- Provision, ongoing development, upgrade and maintenance of an All Wales Patient Dose Management System (PDMS).
- Provision, ongoing development, upgrade and maintenance of an Electronic Test Requesting System (ETR) for radiology including integrated decision support tools relevant to radiology referral pathways. Currently an option for the procurement scope.
- Deployment of the solution across the multiple organisations that comprise NHS Wales, including, but not limited to, other nationally hosted organisations.
- Any advanced image manipulation and analysis applications that may be required.
- Contractor managed hardware and software environments:

- Hosted in non-NHS Wales owned or contracted data centres, public or private Cloud subject to NHS and Welsh Government security requirements.
- Using the Welsh Public Sector Broadband Aggregation (PSBA) for wide area networking to health boards and trusts.
- Business intelligence and reporting tools.

Timescales

Subject to the Welsh Government approval of the OBC, it is intended to publish the Contract Notice in January 2022. It is expected that the design and development of the new service under the proposed contract will need to take into account the migration/exit off the legacy solutions and in accordance with the RISP Programme Plan. The aim will be to complete the full implementation by April 2025, subject to detailed negotiations with the chosen Contractor and the commitment of the local health boards. Further details are provided in the Management Case.

Figure 7 below shows the high-level timescales for the four (4) Tranches of the RISP Programme:

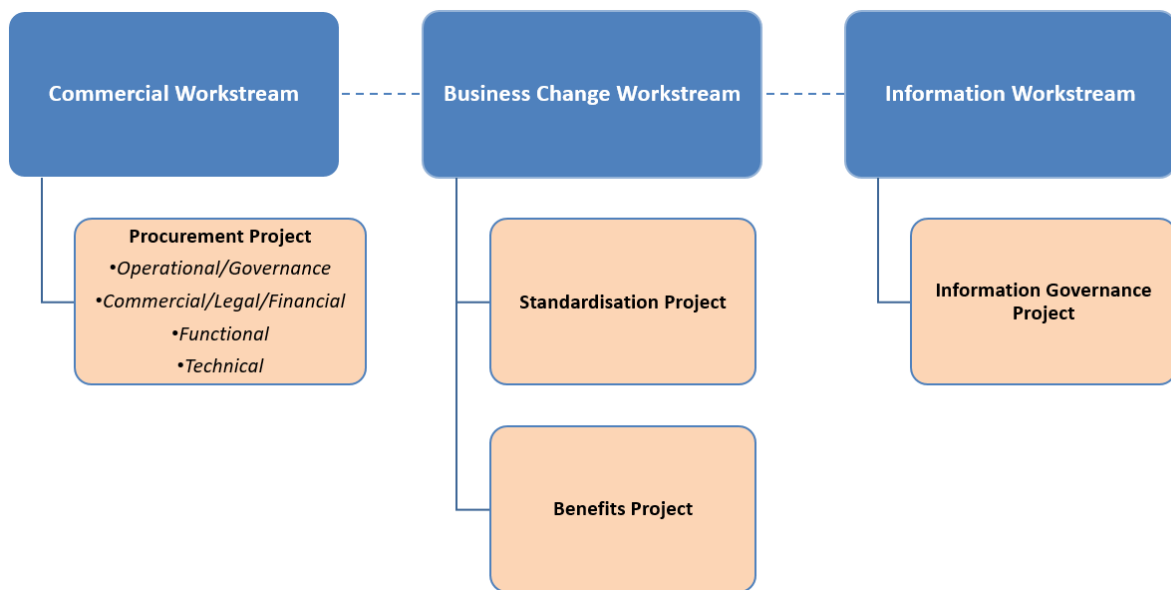
Figure 7: RISP Programme Timescales

Tranche 1	Tranche 2	Tranche 3	Tranche 4	Tranche 5
Pre-Procurement	Procurement	Configuration and Integration	Deployment	Ongoing Contract Management
Jun 2019 – Dec 2021	Jan 2022 – Apr 2023	May 2023 – Apr 2024	May 2024 – Jun 2025	Jul 2025 Onwards
<ul style="list-style-type: none"> • Programme definition • Outline business case • Procurement documentation 	<ul style="list-style-type: none"> • Procurement • Full business case 	<ul style="list-style-type: none"> • Config and testing • Systems integration • Data migration 	<ul style="list-style-type: none"> • Implementation • Handover 	<ul style="list-style-type: none"> • Business as usual

Project Structure and Outputs

The RISP Programme has been broken down into three (3) Workstreams for Tranche 2: Commercial, Business Change and Information, and their constituent projects are shown in Figure 8 below:

Figure 8: Structure of Workstreams and Projects in Tranche 2



Each project has its own defined outputs/ products which are maintained by the assigned Project Manager in both a high-level Product Plan, and a detailed Microsoft Project Plan.

4.5 Risk Apportionment

While the RISP Programme will adhere to the general principle that risks should be passed to the party best able to manage them, a formal risk apportionment exercise was considered as not required for this programme.

4.6 Payment Mechanisms

Charging mechanisms will depend on many factors that require further clarification. These include the final contracting arrangements regarding the selected solution and service management issues. These will be confirmed at full business case stage.

One important aspect that needs consideration, is the phased deployment of the new Service that is expected to occur over an eighteen (18) month period. The implications of this are that each health board and trust will only start paying for the Service once they start using it. This will require a flexible Master Services Agreement contract, given that the actual dates for when the Service is to commence in some health boards may not end up being the same as the estimated dates currently identified. The selection of a Master Services Agreement specifically supports Service roll out over multiple organisations, with health boards entering into their own Deployment Orders, each of which have the potential to determine local timescales and resources.

4.7 Key Contractual Issues

The development of the Contract will be undertaken as part of the Competitive Dialogue process with the short-listed bidders on the basis of an appropriately amended form of the Crown Commercial Services (CCS) standard IM&T Agreement and taking account of lessons learned from other similar initiatives. Key aspects of the contractual relationship that the RISP programme is seeking to achieve will be reflected in the contract as follows:

- Value for Money (VfM) – the proposed procurement will have an underpinning financial model that provides transparency and certainty around costs for key System and service elements. These costs can be considered alongside how well the System design meets the clinical & technical requirements. The aim is to secure the optimum combination of whole-of-life costs and quality (or fitness for purpose) of the System and services to meet NHS Wales requirements. A key contractual issue when considering the VfM is how risks are allocated between the supplier and NHS Wales.
- Ownership of assets by the Contracting Authority will be driven by the design of the Solution that best meets the clinical & technical requirements to deliver the optimum service solution. There may be additional service benefits to be gained from some ownership of assets and/or improvement in the overall affordability for the Contracting Authority, for this contract any assets owned by NHS Wales will be reflected on the balance sheet of those Authority Parties receiving the Service and / or where ownership and control of the asset resides.
- Intellectual Property Rights (IPR) – The IPR from the application and the interfaces is not envisaged to have significant value for the Contracting Authority and need not be pursued to any major extent. The above comments are subject to further review at the Full Business Case stage. In instances where the Authority works with the successful Contractor to develop and refine clinical content, question sets and workflow, then IPR equivalent to the invested resource by the Authority shall be retained.
- Warranties and guarantees – this is notionally a high cost deal and the perceivable risk of loss (of the Service) is moderate, given its intended use by all the NHS in Wales. These should be pursued within the contract.

4.8 Accounting Treatment

Accountancy treatment is set out in the Financial Case. The classification of items of cost as capital and revenue will be informed by the Bidder Solution designs as part of the procurement process. This will be an iterative process

seeking detail through clarification with Bidders, with the accounting classifications that emerge reflected in the Financial Case of the FBC.

The Accounting treatment and Funding model will also depend on the preferred contract model and the outcome of the procurement process.

The three (3) procurement models that have been considered:

- **Traditional purchase and service support model:** In this model the RIS is purchased outright as a capital asset and the hardware and software owned by NHS Wales. The supplier implements the system, but once implemented it would be managed by NHS Wales (i.e., RIS/PACS Administration) with the supplier providing technical & service support under a contract arrangement requiring recurrent revenue funding. The service support contract would still include all the same management responsibilities, KPI's, service credit regimes etc as a Managed Service Provider model.
- **Managed Service Provider model:** In this model, NHS Wales purchases a "service" from the supplier. The supplier then implements and manages the system with charges based on fee-per-service arrangements. NHS Wales does not own the hardware or software. This model moves most of the capital acquisition costs into recurrent revenue budget, spreading that expenditure across the life of the system.
- **Hybrid Managed Service Provider model:** The extent of the Hybrid Managed Service Provider model may be limited. For example, NHS Wales having ownership of an All Wales Enterprise License for the RIS and some infrastructure either located in NHS organisations and / or an NHS Data Centre, but with the supplier taking responsibility for management and ongoing service support. As with the Traditional purchase and service support model this would involve capital and revenue accounting treatment of costs and associated funding.

It is anticipated that the NHS will be required to implement IFRS16 Leases from April 2022. Under this accounting standard NHS Wales could be required to account for some of the RIS Solution costs in a Managed Service Provider model as a capital asset and amortise these costs over the life of the contract as a revenue expense, if the IFRS16 tests are met. This could require additional capital funding above the initial estimate identified in the OBC Financial Case. The RIS contract would include the right to use an asset (the lease component) in addition to the provision of services connected to that asset (the service component). As a Public sector lessee, NHS Wales will have the option of separating the lease and service components, in which case only the lease elements would be capitalised in the balance sheet. IFRS16 includes detailed guidance for this.

However, separation of these components is not compulsory, so there is the option of leaving the service and leasing elements together and accounting for them as a single lease, in which case the total cost of the contract would be capitalised in the balance sheet. This option would likely lead to a capital affordability issue.

Capitalisation of Salaries

In accordance with IS16 only those direct attributable labour costs (employee benefits) that relate to the time spent by employees involved in the acquisition, construction, development and commissioning of the infrastructure and system will be capitalised. The relevant proportion of internal costs relating to staff will also been included within the cost of the asset.

Capitalisation of Interface Development

Costs relating to interface acquisition, development and commissioning required for the specified operational running of the system will be capitalised. Ongoing support and maintenance will be expensed as appropriate via the relevant income and expenditure accounts.

Cloud Delivered Services

A further complicating factor in terms of accounting treatment is whether NHS Wales procures a fully Cloud delivered service or whether there are elements of the service delivered through NHS Wales owned infrastructure.

IFRS standards do not contain explicit guidance on accounting for cloud computing arrangements or costs to implement. NHS Wales will need to apply judgement to account for these arrangements and may need to apply various IFRS standards, including IFRS 16 Leases, IAS 38 Intangible Assets, and IAS 16 Property, Plant and Equipment to account for the costs.

NHS Wales will need to evaluate whether the rights granted in a cloud computing arrangement are within the scope of IAS 38 Intangible Assets or IFRS 16 Leases. Otherwise, the arrangement is generally a managed service contract and accounted for as revenue expenditure:

- Significant judgement will be required to determine whether a cloud computing arrangement that is not a lease provides NHS Wales with a resource that it can control i.e., an intangible asset
- If the cloud computing arrangement includes an intangible asset in the scope of IAS 38, NHS Wales should apply the guidance in IAS 38 to evaluate whether to capitalise or expense implementation costs
- If the cloud computing arrangement does not include an intangible asset and does not contain a lease, NHS Wales should expense

implementation costs unless they can be capitalised under other IFRS standards.

In line with the Welsh Government preference for “Cloud first”, through the competitive dialogue process the project team will explore and give due consideration to this preference, but it will not be to the detriment of any clinical solution requirements. Similarly, how any hosting of the major Solution components is provisioned via private or public cloud hosting services and the scope, architecture and options bidders offer will be explored as part of the competitive procurement process to ensure performance, efficiency and security needs are fully met.

Current Assessment of Capital and Revenue Accounting

There has been consultation with NHS Finance colleagues through the Deputy Director of Finance Group and an initial assessment of accounting treatment has been carried out which has confirmed that there is likely to be a requirement for both capital and revenue accounting and funding.

An estimate of the Solution cost and funding requirements is set out in the Financial Case. The cost estimate and classification of costs as capital and revenue is informed by the initial market soundings undertaken in January 2021 and responses to PIN in May 2021. Once further clarity and detail emerges around Solution design and costs as part of the competitive dialogue process the financial impact will be communicated via OBC addendums.

The project team will further assess the various IFRS standards with finance experts before procurement commences, however the final accounting treatment can only be assessed once the details of the proposed Solution are explored through competitive dialogue.

It is envisaged that any NHS Wales owned assets underpinning delivery of the service will be recorded on the balance sheet of the Digital Health and Care Wales (DHCW) and the relevant NHS body based on an assessment of ownership and control of the asset, those NHS Bodies receiving the service and Welsh Government requirement.

A letter supporting the balance sheet conclusion will be provided by the Deputy Director of Finance Group together with audit review.

Value Added Tax (VAT)

Initial advice will be sought from one of the NHS Wales VAT advisors as to the possible VAT accounting treatment for the RIS procurement in order to ascertain the likely VAT treatment of the contract. Initial review of VAT guidance would suggest:

In relation to SaaS and Cloud Services, the current HMRC view still seems to go back to the question - is the solution as a whole something that can be demonstrated to be 'to the specification of' NHS Wales? If NHS Wales can demonstrate that the answer to this question is yes, as appears to be the case for other PACS Solutions the costs should be VAT recoverable.

This assessment can be a bit subjective as HMRC's view is that the solution should have no application elsewhere however, they do also see that some software solutions are not entirely stand alone and integrate into a number of other solutions so that can complicate matters as to what really is the entire solution.

For the purposes of the Business Case, it is assumed that all capital costs (excluding capitalised staff) are not deemed VAT recoverable. Whilst ongoing service provision, support and maintenance will be VAT recoverable as per COS Heading 14 – Computer services supplied to the specification of the recipient.

This assumption regarding VAT accounting will be confirmed with NHS Wales VAT Advisors as the procurement progresses and the design of the solution and contract terms become clearer.

4.9 Personnel Implications (including TUPE)

A Project Manager will be appointed to lead the Procurement Project working to the RISP Senior Programme Manager. The Project Manager will manage the procurement, working with the Procurement Lead allocated by DHCW Commercial Services and specialist advice as required. An estimate of costs for the external specialist advisers has been included in the costs for the economic analysis.

It is likely that specific individuals will be involved across multiple activities and/or may undertake more than one role in order to ensure consistency and assist in securing an appropriately robust outcome. The combined staff and consultancy team will cover the following roles for the procurement:

- **RISP Programme Team:** Comprising the Senior Responsible Owner, Clinical Lead, Senior Programme Manager, the RISP Programme Management Office (PMO) and Subject Matter Experts.
- **RISP Procurement Project (RPP) Team:** A full time RPP Project Manager will be appointed to manage the project and deliver the planned outputs as expected within quality, time, and budget constraints. The RPP Project Manager will report to the RISP Senior Programme Manager and be supported by the RISP PMO.
- **Legal Advisers:** RISP will utilise DHCW's current legal services partner, Blake Morgan LLP to provide the required legal advice, with support to include assistance with Contract drafting and contractual discussions with Bidders.

- **Commercial Advisor:** This resource will be secured under an existing DHCW contract with In-form Solutions Limited, who has led a number of competitive dialogues for NHS Wales.
- **Radiology Informatics Subject Matter Experts:** Radiology specialists, who understand the requirements for the new system and are experienced with the procurement of the extant solution, will inform the specification of requirements and act as a link to other subject matter experts from the range of disciplines within the scope of the project.
- **Financial Expert:** A financial expert will be needed to assist with the financial modelling required for this project.
- **DHCW Procurement Team:** Comprising two (2) full time staff, including administrative support for the procurement.

Specialist teams will be created, as required at key stages during the procurement process, to provide the specific skills and expertise required to support the procurement, including:

- **Requirements Definition Teams:** To specify the service and technical requirements to be delivered by the new system utilising Radiology Subject Matter Experts (SMEs), DHCW technical experts and IT experts from across NHS Wales.
- **RISP Evaluation Team:** To screen the PQQ/SPD responses, score responses against the ITPD and evaluate the final tenders.
- **RISP Dialogue Team:** To negotiate the draft Contracts including representation from the Evaluation Team, Commercial, Legal and Technical Advisers.

It is not expected that any Phase 1 activities will fall under TUPE – Transfer of Undertakings (Protection of Employment) Regulations 1981. However, this will be further considered as Phase 1 progresses and re-considered at each business case refresh.

5 The Financial Case

5.1 Introduction

The purpose of the Financial Case is to outline the financial implications of delivering the preferred option that was identified in the Economic Case and demonstrate affordability.

5.2 Accounting Treatment and Value Added Tax (VAT)

The financial schedules reflect the appropriate financial treatment in accordance with standard NHS reporting rules, however it should be noted:

Capitalisation

Capitalisation of Salaries

In accordance with IAS 16 only those direct attributable labour costs (employee benefits) that relate to the time spent by employees involved in the acquisition, construction, development and commissioning of the infrastructure and system have been capitalised. The relevant proportion of internal costs relating to staff have also been included within the cost of the asset.

Capitalisation of Interface Development

Costs relating to interface acquisition, development and commissioning required for the specified operational running of the system have been capitalised. Ongoing support and maintenance will be expensed as appropriate via the relevant income and expenditure accounts.

Capitalisation of Cloud Hosting, Compute & Storage Costs

Cloud Hosting, Compute & Storage costs that were identified as part of the PIN pricing response have been assumed to be all revenue costs based on the assumption that NHS Wales will not be able to manage or control the underlying cloud infrastructure including network, servers, operating systems, storage, and individual application capabilities. NHS Wales would not have decision-making rights about which hardware (or infrastructure) the Supplier / 3rd party cloud provider will use to run RIS on. When accounting for Cloud Hosting, Compute & Storage the distinction between whether NHS Wales has "control" over an asset is what will allow for its capitalisation under specific Accounting Rules. Unless the Supplier / 3rd Party Cloud Provider specifically contracts to allow NHS Wales to retain control over underlying assets these costs cannot be capitalised under IAS's. If, however, assets hosted by the Supplier and / or Cloud provider are reserved exclusively for use by the Trust then it's possible to demonstrate that the Trust has sufficient control over the underlying assets and some of the costs may be capitalised. If this control over the underlying asset cannot be reflected in the RIS contract, then payments for the cloud

service will have to be accounted as revenue expenditure by NHS Wales. Therefore, these costs are assumed to be revenue until the Hosting arrangements are better understood through the competitive dialogue process.

Implementation costs

Implementation costs, such as initial delivery and handling costs, and installation costs which under FRS 15 are considered “directly attributable” to the development of the asset, are capitalised.

Capital Charges

Depreciation

Depreciation estimates are based on a straight-line basis over five (5) years in line with the planned contract term and commence from 2023/24 health boards are deployed and associated assets capitalised. Accelerated depreciation is assumed in 2029/30 to reflect asset write down at the point that all contract deployment periods come to an end.

Value Added Tax

VAT

Initial advice will be sought from one of the NHS Wales VAT advisors as to the possible VAT accounting treatment for the RIS procurement in order to ascertain the likely VAT treatment of the contract. Initial review of VAT guidance would suggest:

In relation to Software as a Service (SaaS) and Cloud Services, the current HMRC view is based on the question - is the solution as a whole something that can be demonstrated to be ‘to the specification of’ NHS Wales? If NHS Wales can demonstrate that the answer to this question is yes, as appears to be the case for other PACS Solutions across the UK, the costs should be VAT recoverable.

All participating organisations, at the time of placing local deployment orders, should consult with their own VAT advisors and auditors to ensure VAT treatment is compliant with HMRC definitions. For the purposes of the OBC, it is assumed that all capital costs (excluding capitalised staff) are not deemed VAT recoverable whilst ongoing service provision, support and maintenance will be recoverable as per COS Heading 14 - Computer services supplied to the specification of the recipient.

This assumption regarding VAT accounting will be confirmed with NHS Wales VAT Advisors as the procurement progresses and the design of the solution and contract terms become clearer.

5.3 Capital Requirements

Capital Costs

It is anticipated that development of the preferred option will require capital investment of £20.6m (Inc. VAT).

The estimated revenue requirement DOES NOT include any costs of additional All Wales or local infrastructure investment, which is outside the scope of this Programme.

This capital investment requirement is based on the results of PIN pricing submission (May 2021) which did not provide sufficient detail for the Solution cost. To enable a more robust assessment of costs which potentially could be capitalised, the split of revenue and capital costs are based on the project team's knowledge and experience of similar All Wales IT Systems, along with information obtained in initial market testing in January 2021. The £20.6m capital requirement includes the following assumptions:

- 'Front Loaded' costs include All Wales Enterprise Application Software Licence, Production Environments, Workstations, Local Infrastructure, Project Implementation etc.
- Mean (excl Min & Max) of 'Front Loaded' costs for eight (8) suppliers used to estimate capital costs
- Front Loaded costs in Year 1 can all be capitalised. This assumption has been made in order to identify capital costs as no detail breakdown of costs was obtained through the PIN
- Market Testing exercise provided some capital and revenue cost options which have been used to validate the reasonableness of using the 'Front Loaded' costs from PIN
- The planned implementation of IFRS16 Leases from 1st April 2022 will not impact on the identified Capital Investment as the procurement process will require both parties to agree the form of the Agreement. The NWSSP subject matter expert for the project has confirmed that the Suppliers in this market would not be able to enter into a lease agreement for the RIS as they are not finance companies regulated by the Financial Conduct Authority (FCA), so they would need to back the agreement off with a lease provider. Whether this is something they would be willing to do would have to be explored through the procurement process. Irrespective of this, NHS Wales never normally enters into a lease agreement for major Clinical IT systems. If there are any IFRS16 implications, Welsh Government will provide the capital funding required as part of the process with UK Treasury process.
- The System design will enable the successful supplier to offer NHS Wales some of the System resources it can control i.e., a tangible or

intangible asset that by applying IAS 38 NHS Wales can determine can be capitalised. If the design does not allow NHS Wales to control any of the resources, the RIS System costs will all have to be accounted for as revenue expenditure.

A summary of the resulting capital costs is outlined in the table below.

Table 24: Capital Costs – Summary

	Net £'000	VAT £'000	Total £'000
Solution costs	14,175	2,835	17,010
Programme costs	1,154		1,154
Other costs (hardware, etc)	2,020	404	2,424
Total Capital Costs	17,349	3,239	20,587

The associated cash flow is outlined in the table below.

Table 25: Capital Costs Cashflow

	Net £'000	VAT £'000	Total £'000
2021/22	289	-	289
2022/23	317	-	317
2023/24	12,960	2,499	15,460
2024/25	3,074	598	3,672
2025/26	709	142	850
Total Capital Costs	17,349	3,239	20,587

In the event a single system solution is implemented across Wales, it is anticipated that the majority of capital costs associated with the solution will be required during 2023/24 to ensure elements such as licensing and production environments are in place before the first site goes live. In the absence of detailed supplier information, it is assumed that 80% of the solution capital costs will be incurred 2023/24 and all other capital costs will be incurred in line with the proposed programme plan.

Further information is available in Appendix F1 Financial Model and Appendix F2 Cost Assumptions.

Capital Funding

Capital funding is sought from Welsh Government for this investment.

5.4 Revenue Requirements

This section outlines the impact on revenue costs associated with delivery of the preferred option including transitional costs, ongoing operating costs and capital charges.

The estimated revenue requirement DOES NOT include any costs of additional All Wales or local infrastructure investment, which is outside the scope of this Programme.

Recurrent Revenue funding will need to be provided by the NHS Wales Bodies that are within the scope of the RIS procurement. The existing PACS / WRIS revenue budgets will be used to fund the new System revenue costs. However, it should be noted that at this stage it is not possible to assess whether there will be a revenue affordability issue for NHS Wales Bodies until the procurement dialogue process commences and a better understanding of the Bidder solutions and the associated revenue costs is gained.

There is a requirement for non-recurrent revenue funding for certain Programme Costs, which are included in Tables 27-29 below.

There may be other implementation and transition costs of the existing PACS/WRIS Systems and the new RIS that are not known at this stage of the procurement that will require revenue funding and which are not reflected in Tables 27-29 below.

Non-recurrent Revenue Funding is sought from Welsh Government and from NHS Wales Bodies for this Investment.

DHCW has identified that it is unable to release £0.635m of existing revenue costs relating to staff that are part of the service support to the current WRIS system. It is expected that any costs of future All Wales procurements that require DHCW service support are reduced to account for the £0.635m funding not released.

Recurring Revenue Costs

Recurring revenue costs for the new RIS of £6.8m p.a. have been estimated based on the average (excl. Max and Min) of the PIN pricing submission (May 2021). The maximum cost of £12.3m and minimum cost of £3.9m have been excluded from the mean, but it's important to note that the recurring revenue costs could be greater than the estimated £6.8m. The PIN pricing did not provide sufficient detail for the Solution cost to enable a more robust assessment of those costs that could potentially be capitalised, so the split of revenue and capital cost are based on the project team's knowledge and experience of similar All Wales IT Systems and the information obtained in initial market testing in Jan 2021. The costs that are expected to be incurred in relation to delivery of the Solution include:

- Supplier Solution – Support & Maintenance Services, server environments & associated software.
- NHS Wales Change Management.
- Legacy data storage.
- DHCW ongoing costs for integration services and contract management.

Table 26: Recurring Revenue Costs - Summary

	Current Costs £'000	Future Costs £'000	Total Costs £'000
2021/22	6,793	-	6,793
2022/23	6,793	-	6,793
2023/24	6,494	402	6,896
2024/25	2,175	5,073	7,247
2025/26	635	6,739	7,374
2026/27	635	6,741	7,376
2027/28	635	6,743	7,378
2028/29	635	6,738	7,373
2029/30	635	6,635	7,270
Total Recurring Revenue Costs	25,430	39,071	64,501

Non-recurring Revenue Costs

Non-recurring revenue costs will be incurred in relation to NHS Wales Programme Costs, which are anticipated to be either:

- Welsh Government funded
- Health Board / Trust funded

Table 27: Non-Recurring Revenue Costs - Summary

	Current Costs £'000	Future Costs £'000	Total Costs £'000
2021/22	-	871	871
2022/23	-	923	923
2023/24	-	774	774
2024/25	-	777	777
Total Non-Recurring Revenue Costs	-	3,344	3,344

Table 28: Health Board / Trust Non-Recurring Revenue Costs Funding - Summary

	Current Costs £'000	Future Costs £'000	Total Costs £'000
2021/22	-	726	726
2022/23	-	775	775
2023/24	-	447	447
2024/25	-	173	173
Total Non-Recurring Revenue Costs	-	2,122	2,122

Table 29: Welsh Government Non-Recurring Revenue Costs Funding - Summary

	Current Costs £'000	Future Costs £'000	Total Costs £'000
2021/22	-	144	144
2022/23	-	148	148
2023/24	-	327	327
2024/25	-	604	604
Total Non-Recurring Revenue Costs	-	1,222	1,222

Capital Charges

Additional capital charges of £4.1m p.a have been calculated based on the following assumptions:

- Capital costs assumptions in Section 1.3
- April 2023 implementation with depreciation expensed the following quarter i.e., July 2023
- Depreciation calculated on a straight-line basis over five (5) years in line with contract
- A small amount of accelerated depreciation of £0.043 charged in 2029/30 to reflect asset write down should extensions not be actioned

Table 30: Capital Charges - Summary

	Current Costs £'000	Future Costs £'000	Total Costs £'000
2021/22	0	0	-
2022/23	0	0	-

2023/24	0	2,410	2,410
2024/25	0	3,764	3,764
2025/26	0	4,075	4,075
2026/27	0	4,117	4,117
2027/28	0	4,117	4,117
2028/29	0	1,708	1,708
2029/30	0	396	396
Total Capital Charges	-	20,587	20,587

Further information is available in Appendix F1 Financial Model and Appendix F2 Cost Assumptions.

5.5 Impact on Financial Statements

Impact on Balance Sheet

The proposed accounting treatment for the preferred option is that £20.587m of assets will be capitalised and brought on balance sheet (including VAT where appropriate).

Ownership of assets by the Contracting Authority will be driven by the design of the Solution that best meets the clinical & technical requirements to deliver the optimum service solution. There may be additional service benefits to be gained from some ownership of assets and/or improvement in the overall affordability for the Contracting Authority.

For this contract any assets owned by NHS Wales will be reflected on the balance sheet of those Authority Parties receiving the Service and / or where ownership and control of the asset resides. It is anticipated that as with other All Wales procurements the successful supplier will require the total All Wales capital cost to be included in the deployment order for the first Authority Party in which the new System is to be implemented. This Authority Party has not been agreed at this stage, but the Total All Wales Asset Value for the new System will need to be recorded on the balance sheet of that party and then the respective share of the asset value transferred to the Balance Sheet of each Party once the new System has been implemented and is operation in each organisation.

Impact on Income & Expenditure

Based on the recurring revenue costs estimates outlined in the previous section, it is anticipated that there will be an additional revenue impact on health boards and trusts of around £0.6m p.a. compared with the current annual revenue expenditure of £6.8m as outlined in the table below. However, as stated previously the maximum cost received via the PIN for the new RIS of £12.3m has been excluded from the mean cost calculated, but the recurring revenue costs could be greater than the estimated £7.3m.

Table 31: Revenue Impact

	Current Recurring Revenue £'000	Future Recurring Revenue £'000	Recurring Revenue Impact £'000	HB/T Non- Recurring Revenue Impact £'000	Total HB/T Revenue Impact £'000
2021/22	6,793	6,793	-	726	726
2022/23	6,793	6,793	-	775	775
2023/24	6,793	6,896	102	447	549
2024/25	6,793	7,247	454	173	627
2025/26	6,793	7,374	581	-	581
2026/27	6,793	7,376	583	-	583
2027/28	6,793	7,378	585	-	585
2028/29	6,793	7,373	580	-	580
2029/30	6,793	7,270	477	-	477
Total Revenue	61,140	64,501	3,361	2,122	5,483

5.6 Affordability and Funding

Based on the initial assessment of costs and the assumptions outlined above, it is anticipated that funding is required from Welsh Government as follows:

- Capital Funding of £20.6m
- Non-Recurring Revenue Funding of £1.2m

Health Boards and Trusts funding is required as follows:

- Non-Recurring Revenue Funding of £2.1m
- Recurring Revenue Funding of £7.3m p.a. against current available revenue funding of £6.8m. At this stage, these costs are indicative based on the PIN Responses. Until the competitive dialogue is in progress and a better understanding of costs is obtained no specific mitigations have been identified to cover the shortfall of £0.6m. However, there are £0.6m of revenue costs within DHCW relating to the current WRIS that have been identified by DHCW as un-releasable. Further work will be undertaken to assess if this cost could be released by 2024/25.

6 Management Case

6.1 Introduction

This section sets out the approach that will be taken to support the successful delivery of the programme, in accordance with best practice. The programme structure has been designed to ensure compliance with guidance set out in the Treasury Green Book and Welsh Government Five Case Model. Throughout, it is assumed there will be flexibility to support any new developments and discoveries as they emerge.

Welsh Government has agreed that a Strategic Outline Case (SOC) is not required for RISP, as it is driven by the need to re-procure a new radiology system. The RISP Programme has produced this Outline Business Case (OBC) and, following the procurement, will produce a Full Business Case (FBC). A robust business case assurance process is in place to assure that the OBC had made the case for investment in public monies.

6.2 Programme Governance

The RISP Programme sits within the portfolio of the NHS Wales Health Collaborative and is managed in accordance with the OGC Managing Successful Programmes and PRINCE2 standards, which will be tailored to suit the needs of the service.

The Programme Board reports to the Collaborative Executive Group, which comprises the Chief Executive Officers (CEOs) of the Health Boards, Trusts and Special Health Authorities in Wales. The Programme also reports to the National Imaging Strategy Programme Board on progress as part of its responsibility to deliver the Informatics element of the Imaging Statement of Intent and as it is clinically led, to meet the requirements of the Radiology service.

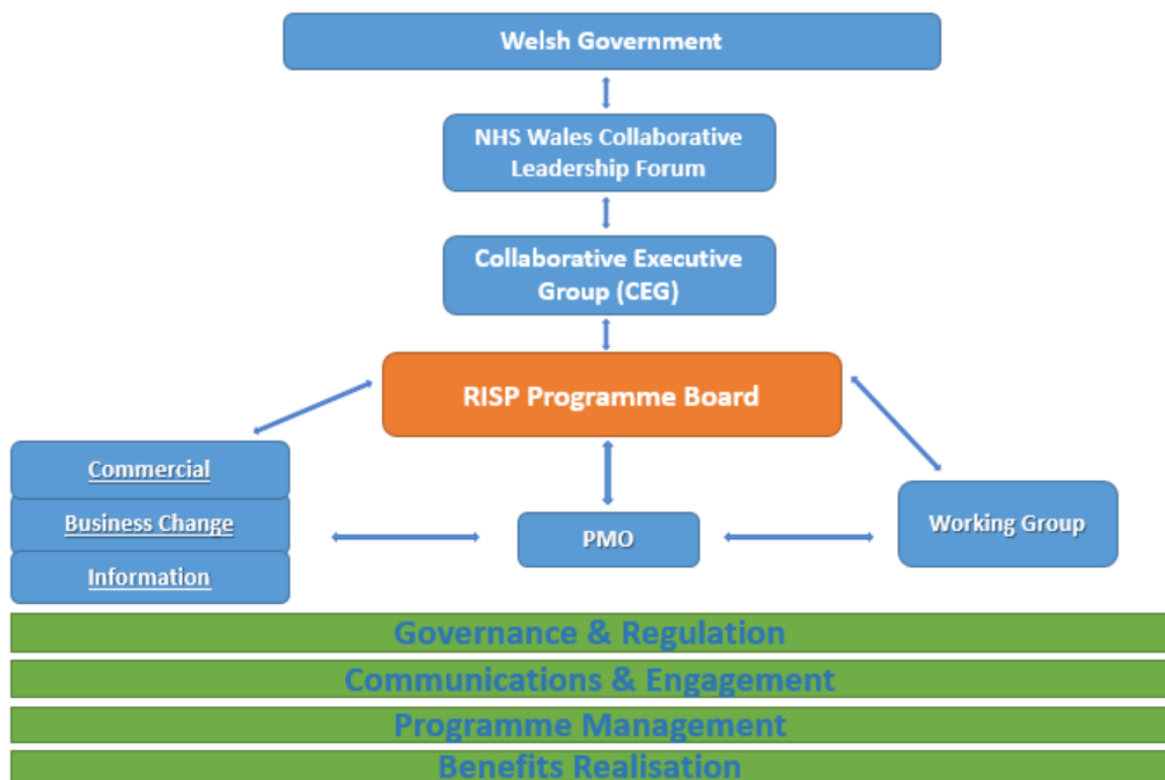
A RISP Programme Board is well established and its remit is to provide oversight and direction and to review and assure the Programme's progress. Membership is made up of senior representatives from each health board and trust, nominated by CEOs with key stakeholder groups also represented. The RISP Senior Responsible Owner (SRO) is Matt John (Head of Digital SBUHB) who will chair the RISP Programme Board, oversee all projects within the programme and will be responsible for providing strategic direction and leadership to the programme.

A list of the Board members can be found in Programme Board Terms of Reference Appendix M1.

A Programme Working Group is also well established which meets fortnightly and acts as the programme design assurance for all documentation and proposals which go to the Programme Board.

The Governance arrangements for the Programme are shown below:

Figure 9: RISP Governance Structure



Programme Management Arrangements

There is a RISP Programme Management Office team that will be responsible for managing and driving the delivery of the programme. The Programme team is led by Lynne Burrows, Senior Programme Manager (NHSWHC) and is directed by Judith Bates, Programme Director (NHSWHC).

-
- The Programme management structure comprises:
 - Programme Management Office (PMO)
 - Programme Team:
 - Programme Management Office
 - Clinical Leads
 - Subject Matter Expert
 - Technical Advisors
 - Working Group:
 - Programme Management Office
 - Programme Team
 - Service Representatives that chair or lead on the different elements of the procurement (PACS, RIS, PDMS, NWSSP)

The four elements of the Programme Team are further expanded upon below.

Programme Management Office (PMO)

The Senior Programme Manager manages the PMO, which comprises five (5) staff including a DHCW Procurement Project Manager, with two (2) additional staff members due to join in late 2021. The role of the PMO is to plan, coordinate and manage the programme on a day-to-day basis. The PMO set and maintain standards for project management throughout the Programme to ensure best practice.

Radiology Clinical Leads

There are three (3) Consultant Radiologists appointed to work with the programme on a sessional basis. These include Dr Sian Phillips (Consultant Radiologist CTMUHB, Chair of Medical Imaging Scientific Committee (MISC)) supported by Dr Balan Palaniappan (CTMUHB) and Dr Tishi Ninan (SBUHB). The clinical team will engage the Radiology and the wider NHS clinical service in the defining of the requirements, designing of the standard solution, and supporting the deployment of the developed solution. They will also Chair the Expert Users Group (Radiologists) and the Enterprise Users Group (Non-Radiology) who will provide clinical support and advice to the programme.

Radiology Subject Matter Expert (SME)

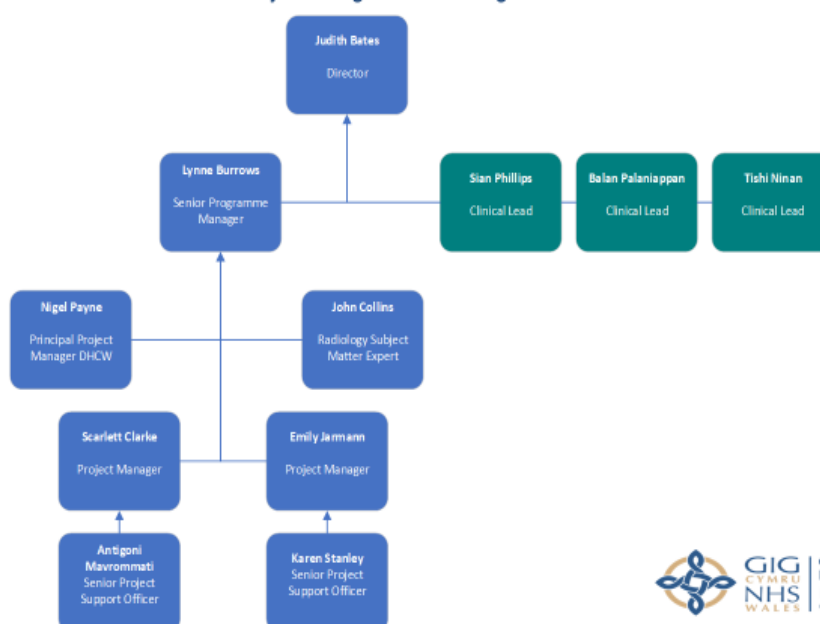
John Collins (BCUHB) has been appointed to the Programme on a full-time basis. He will work with the Radiology Service on the business change projects, as well as participate in the procurement, development, testing, training, and deployment of the new solution.

The RISP Programme Organisation Chart is shown below.

Figure 10: RISP Programme Organisation Chart

Radiology Informatics Systems Procurement (RISP)

Project Management Office Organisational Chart



Technical Advisors

The RISP Programme has a small team of experts from across the service who work with the programme on technical, functional and procurement projects as required with full support of their health boards. This includes Public Health Wales, National Imaging Academy Wales, and NHS Wales Shared Services Partnership (NWSSP).

The technical advisors appointed to support development of the OBC comprise:

- Legal advice: Blake Morgan LLP
- Commercial advice: In-Form Solutions
- Business Case support: Archus Ltd.

Digital Health and Care Wales (DHCW) are the contracting authority and will provide resources to support the delivery of the programme to include a Procurement Lead. This procurement team will include 'special advisers' for commercial and legal plus an adviser from NHS Wales Shared Services Partnership.

Special advisers will be used in a timely and cost-effective manner in accordance with the Treasury Guidance: Use of Special Advisers. This has been limited to advice for legal and commercial services as set out in the Commercial Case.

The Programme team and project structures will be regularly reviewed throughout the programme checkpoints to reflect business case updates.

This is to ensure the team structure, team roles and the work that the projects undertake is adaptive and staffing levels remain appropriate for each of the discrete phases of the programme.

Programme Costs

The RISP programme costs are listed in the spreadsheet below and include all programme resources identified plus non-pay and 10% contingency with effect from 2021/22. Notes associated with the assumptions underpinning each of these costs are provided.

In summary, the RISP Programme costs total £4,498,216 over four (4) years, comprised as outlined in the tables below:

Table 32: Programme Costs - Summary

	Cost £'000
Programme Management Office	1,014
Radiology Operational Team	910
DHCW Programme Resources	819
Consultancy Services	515
Testing Services	142
Local Implementation Team	712
Non-Pay and Contingency	386
Total Programme Costs	4,498

Table 33: Programme Costs – Detail

RISP Programme Resources		RISP Programme Resource Requirements				RISP Programme costs per annum Total				
		WTE	Band (Spine Point)	End Date	Funding Stream	2021-22 £	2022-23 £	2023-24 £	2024-25 £	Total £
Programme Management Office (PMO)										
1	Programme Director	0.3	8d	Mar-25	HB	34,923	35,796	36,691	37,608	145,017
2	Senior Programme Manager	1.0	8b	Mar-24	WGREV	81,898	83,945	86,044	0	251,886
4	Project Manager	2.0	6	Mar-25	HB	99,171	101,650	104,191	53,398	358,410
5	Senior Project Support Officer	2.6	4	Mar-25	WGREV	62,363	63,922	65,520	67,158	258,964
Total (Programme Management Office)						278,354	285,313	292,446	158,164	1,014,277
Operational Team										
6	Clinical Lead (Expert Radiology)	0.4	Consultant	Mar-23	HB	56,841	58,262	0	0	115,103
7	Clinical Lead (Enterprise User)	0.2	Consultant	Mar-25	HB	27,733	28,426	29,137	29,137	114,433
8	Radiology SME Lead	1.0	8b	Mar-25	WGCAP	79,439	81,424	83,460	85,547	329,870
9	Radiology/PACS Technical Lead	0.2	8a	Mar-24	WGCAP	13,610	13,950	14,299	0	41,859
10	Radiology/WRIS Technical Lead	0.2	8a	Mar-24	WGCAP	13,610	13,950	14,299	0	41,859
11	Business Analyst	1.0	Contractor		WGCAP	30,000			0	30,000
12	Senior Project Support Officer	1.0	4	Mar-24	HB	31,182	30,750	31,519	0	93,450
13	Business Analyst (Technical Interface)	1.0	Contractor		HB	0	31,961	30,000	0	61,961
14	Finance Lead (procurement)	1.0	8a	Ma-24	HB	68,050	0	13,950	0	82,000
Total (Operational Team)						320,464	258,724	216,664	114,683	910,535
DHCW Programme Support										
15	Principal Project Manager Procurement	1.0	8a	Mar-24	HB	68,050	69,751	71,495	0	209,296
16	Commercial Services Procurement Lead	1.0	8b	Mar-24	HB	39,719	40,712	0	0	80,432
17	Integration Architect	0.2	8b	Mar-24	WGCAP	39,719	40,712	71,495	0	151,926
18	Business Analyst	0.5	7	Mar-24	WGCAP	29,224	5,991	0	0	35,215
19	WRIS SME	0.2	8b	Mar-24	WGCAP	15,888	16,285	16,692	0	48,865
20	Business Case Finance Lead	0.2	8b	Mar-24	HB	15,888	16,285	0	0	32,173
21	Infrastructure Design Architect	0.2	8a	Mar-24	WGCAP	13,610	13,950	14,299	0	41,859
22	Validation Lead	0.2	8a	Mar-24	HB	13,610	13,950	14,299	0	41,859
23	Service Management Lead	0.2	8a	Mar-24	HB	13,610	13,950	14,299	0	41,859
24	Information Governance Lead	0.1	8a	Mar-24	HB	6,805	6,975	7,149	0	20,930
25	Information Standards	0.1	8a	Mar-24	HB	6,805	6,975	7,149	0	20,930
26	Security	0.1	8a	Mar-24	WGCAP	6,805	6,975	7,149	0	20,930
27	Test Manager	0.1	8a	Mar-24	WGCAP	6,805	6,975	7,149	0	20,930
28	Senior Test Analyst	1.0	6	Mar-24	WGCAP	0	0	52,096	0	52,096
29	Contract Manager		8a	Mar-25	HB	0	0	0	0	0
Total (DHCW Programme Support)						276,537	259,487	283,272	0	819,296
Consultancy Services										
30	Legal Adviser	N/A	Contract		HB	50,000	150,000	10,000	10,000	220,000
31	Commercial Adviser	N/A	Contract		HB	75,000	75,000	10,000	0	160,000
32	Cloud Hosting - Infrastructure Architect	N/A	Framework		WGCAP	10,000	10,000	10,000	0	30,000
33	Business Case Development	N/A	Framework		WGCAP	30,000	75,000			105,000
Total (Procurement Project)						165,000	310,000	30,000	10,000	515,000
Testing										
	Test Leads	1.00	7	Mar-24	WGCAP			59,909	0	59,909
	Test Analyst	2.00	5	Mar-24	WGCAP			81,663	0	81,663
Total (Testing)						0	0	141,572	0	141,572
Local Resources										
HB1 BCU 6 mths	Project Manager Oct-Mar	1.0	7	Mar-24	WGREV			29,955		29,955
	IT support (Backfill) Oct - Mar	1.0	5	Mar-24	WGREV			20,416		20,416
	Radiology System Support Oct-Mar	1.0	7	Mar-24	WGREV			29,955		29,955
	Clinical Lead Health Board	0.2	Consultant	Mar-24	WGREV			13,813		13,813
	PACS/ RIS Support	0.5	7	Mar-24	WGREV			14,977		14,977
	Admin/ Clerical	0.5	4	Mar-24	WGREV			7,605		7,605
HB2 ABU 3 mths	Project Manager (3 mths)	1.0	7	Mar-24	WGREV			14,977		14,977
	IT support (3 mths)	1.0	5	Mar-24	WGREV			10,208		10,208
	Radiology System Support (3 mths)	1.0	7	Mar-24	WGREV			14,977		14,977
	Clinical Lead Health Board (3 mths)	0.2	Consultant	Mar-24	WGREV			6,907		6,907
	PACS/ RIS Support (3 mths)	0.5	7	Mar-24	WGREV			7,489		7,489
	Admin/ Clerical (3 mths)	0.5	4	Mar-24	WGREV			3,803		3,803
HB3 onwards	Project Manager (3 mths)	3.0	7	Mar-24	WGREV				179,728	179,728
	IT support (3 mths)	3.0	5	Mar-24	WGREV				122,494	122,494
	Radiology System Support (3 mths)	3.0	7	Mar-24	WGREV				179,728	179,728
	Clinical Lead Health Board (3 mths)	0.6	Consultant	Mar-24	WGREV				20,720	20,720
	PACS/ RIS Support (3 mths)	1.5	7	Mar-24	WGREV				22,466	22,466
	Admin/ Clerical (3 mths)	1.5	4	Mar-24	WGREV				11,408	11,408
										0
Total (Local Resource model)								175,081	536,544	711,625
Non-Pay and Contingency										
34	Non-Pay	N/A				15,000	15,000	15,000	15,000	60,000
35	Contingency (10%)	N/A				104,036	111,352	82,238	28,285	325,911
Total (Programme)						1,159,391	1,239,877	1,236,272	862,676	4,498,216

6.3 Workstreams

The RISP Programme is an all-Wales Programme being delivered through several key workstreams as set out below:

- **Commercial:** to develop and deliver the commercial case, manage the pre-procurement documentation and the procurement of the new service and the chosen supplier
- **Technical and Functional:** to define and deliver the output-based specification for the design and delivery of a seamless end-to-end solution from electronic requesting to results acknowledgement; develop the new solution at a national level, migrate the data and develop the local ICT model required to be in place to deploy the new solution.
- **Clinical:** to engage the Radiology and wider NHS service in defining the requirements, take forward standardisation to eliminate all unwarranted variation in service and design the standard solution, and the deployment of the developed solution.
- **Information and Business Intelligence:** to deliver the Business Intelligence (BI) requirements for the new Radiology Informatics System, and to baseline the status of business processes within Radiology to include receipt of request, vetting, appointments, reception and room procedures, reports and validation, MDT and peer review.
- **Business Change:** to define and realise the benefits of the new Radiology Informatics System, whilst also determining a set of harmonised codes, interface specifications, working practices and performance indicators to deliver the outcome of seamless care across organisational boundaries and support development of new and innovative service models built on a sound basis of service related metrics.

Underpinning all these workstreams is the Programme Governance workstream which will ensure the RISP Programme is professionally managed and assured.

6.4 RISP High Level Plan

The RISP Programme is planned to be delivered in four (4) tranches as set in Figure 7, subject to approval and sign off. The timescale for delivery of tranche 1, the OBC, is ambitious with a commitment required from the service, to enable its delivery. The OBC sets out a detailed plan for tranche 1 with high-level deliverables for the remaining tranches. Work is ongoing as part of an iterative process to develop the plan in more detail as the programme progresses providing further opportunity for wide stakeholder engagement and consultation.

Key milestones are set out in the table below:

Table 34: RISP Key Milestones

Tranche	Scope	Key Milestones	Timeframe
1	Pre-Procurement	<ul style="list-style-type: none"> • OBC developed & signed off • Procurement planned and draft schedules completed • Gateway Review 2 	Jun 2019 – Dec 2021
2	Procurement Business Change (standardisation and benefits) Information Governance	<ul style="list-style-type: none"> • Contract notice published • FBC developed and signed off • Competitive dialogue undertaken • Contract in place • Benefits further developed • Gateway Review 3 	Jan 2022 – April 2023
3	Configuration & Integration	<ul style="list-style-type: none"> • Configuration and testing • Systems integration • Data Migration • Gateway Review 4 	May 2023 – April 2024
4	Deployment	<ul style="list-style-type: none"> • Implementation • Handover 	May 2024 – Jun 2025

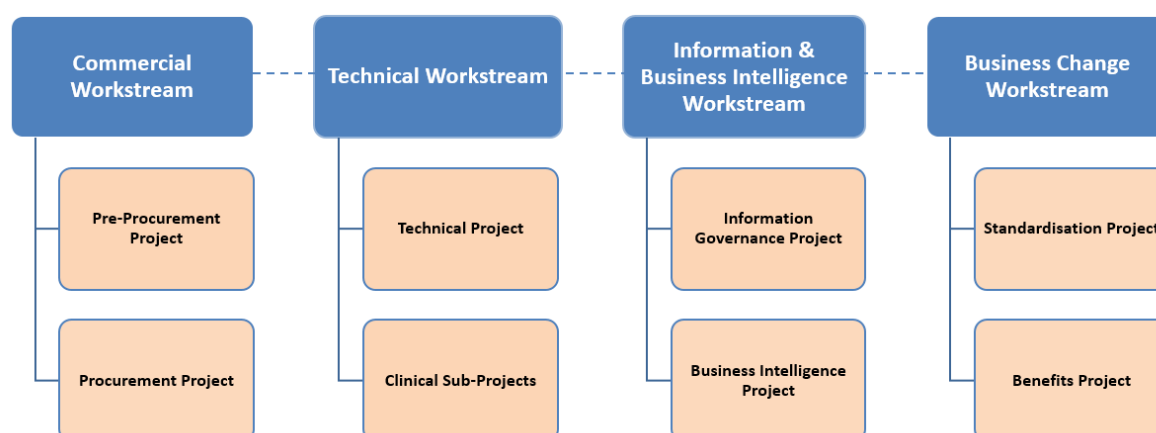
6.5 Outline Arrangements for the RISP Projects

There will be various projects that will be required throughout the life of the programme, depending on the deliverables within each tranche. The Programme Board will approve which projects are needed and the Programme Management team will ensure the appropriate project governance and management arrangements are in place in accordance with established best practice.

The Senior Programme Manager and Programme Director will be responsible for appointing the Project Managers, with the approval of the Board and will support the Project Managers in establishing their project teams. The Programme Board will ensure there is appropriate representation from RISP specialist teams across all the projects, depending on the requirements of each project. The RISP resources and project structures will be regularly reviewed throughout the Programme.

The Project Dossier containing the workstreams and projects is available in appendix M2. The key workstreams are illustrated below.

Figure 11: RISP Projects Dossier



6.6 Outline Arrangements for Change and Contract Management

The Change Management strategy, framework, and plan for dealing with change and associated contract management is as follows:

- A RISP Procurement Project will manage the procurement and completion of all contract documentation, including any changes requested.
- A Contract Management Board chaired by the NHS and facilitated by DHCW will manage the contract and any contract changes will be managed in accordance with contract Schedule 8.2 Change Control.
- A RISP Service Management Board (SMB) will monitor the service, supported by a RISP Change Advisory Board to control changes to the live service.

All documentation will be configured and managed to provide an audit trail of all changes made.

6.7 Outline Arrangements for Benefits Realisation

A key responsibility of the Programme Management team and Programme Board will be to establish a Benefits Management Strategy and framework for the monitoring and management of the benefits the programme will enable. This will include a benefits register and profiles that will identify how each benefit will be assessed and who will be responsible for delivering each benefit.

A Benefits Project is established and will run throughout the life of the programme. As part of the OBC, benefits have been identified and measures established, and a plan agreed to collect baseline data and agree

targets and methods of monitoring. The Benefits Register can be found on page 48 of the Economic Case and also in Appendix M4.

A copy of the Benefits Management Strategy is attached as Appendix M3.

6.8 Outline Arrangements for Risk Management

The strategy, framework, and plan for dealing with the management of risk are as follows:

- Risks can be raised by anyone on the programme and added to the risk register through the PMO.
- The risk register has been designed in accordance with good practice guidelines within PRINCE2 and NHS Wales Health Collaborative standards.
- The risks are reviewed at least once a month by the PMO and Programme Board members.
- The Senior Programme Manager will escalate any risks that cannot be managed by the PMO and require urgent action to the Programme Director. If required, they will in turn escalate to the SRO and jointly decide on the appropriate action.
- The Programme Director in liaison with the SRO will escalate any risks that cannot be dealt with at the level of the Programme Board to the Collaborative Executive Group for corporate decision.

A copy of the programme risk register is attached at Appendix M5.

6.9 Outline Arrangements for Post Project Evaluation

The outline arrangements for post implementation review (PIR) and project evaluation review (PER) have been established in accordance with best practice and are as follows:

Post Implementation Review (PIR)

Initial lessons learned and evaluation reviews will be carried out for each health board implementation. These reviews ascertain whether the anticipated benefits have been delivered and are timed to take place starting between March and September 2025.

Project Evaluation Reviews (PERs)

PERs appraise how well the project was managed and delivered compared with expectations and are timed to take place between March and September 2025.

Gateway Review Arrangements

Gateway reviews are planned for the end of each tranche of the programme, starting with the Gateway 2 review in June 2021 to assure the delivery strategy.

Contingency Plans

If this programme fails, the ongoing commercial arrangements will no longer be able to be relied upon, as the termination assistance period will have been exhausted. The programme will seek urgent legal advice to ensure service continuity is provided within the legal framework and the appropriate replacement contracts are put in place.

The risk is the current provider will no longer wish to support NHS Wales without significant investment, as some elements of the service may no longer be in production and supported.

7 Appendices

Appendix S1: List of RISP Engagements

Date	RISP Event	Organisations Represented
March 2018	IT Workshop – NIAW	HBs, Trusts, WG, RCR
02/05/2019	Informatics Workshop 1 –NIAW	HBs, Trusts, DHCW, WG
02/10/2019	Informatics Workshop 2 – NIAW	HBs, Trusts, DHCW, WG
Aug – Oct 19	Pre-Marketing Supplier days - NIAW	HBs, Trusts, DHCW
21/01/2020	SBUHB Roadshow	SBUHB
22/01/2020	HDUHB Roadshow	HDUHB
23/01/2020	VCC Roadshow	VCC
23/01/2020	CTMUHB Roadshow	CTUMUHB
27/01/2020	ABUHB Roadshow	ABUHB, PTHB
28/01/2020	PHW Roadshow	PHW
29/01/2020	CAVUHB Roadshow	CAVUHB
30/01/2020	BCUHB Roadshow	BCUHB, BTW
06/07/2020	Scope Options Workshop (Teams)	HBs, Trusts, DHCW
08/07/2020	Scope Options Workshop (Teams)	HBs, Trusts
08/07/2020	Scope Options Workshop (Teams)	HBs, Trusts, DHCW
10/07/2020	Scope Options Workshop (Teams)	HBs, Trusts, RCR

10/07/2020	Scope Options Workshop (Teams)	HBs, Trusts, WG
20/07/2020	Scope Options Workshop (Teams)	HBs, Trusts
20/07/2020	Scope Options Workshop (Teams)	HBs, Trusts
24/08/2020	Service Solution Options Workshop (Teams)	HBs, Trusts, DHCW
21/09/2020	Technical Solution Workshop	DHCW
28/09/2020	Technical Solution Workshop	HBs, Trusts, DHCW
19/01/2021	Cloud Workshop	HBs, Trusts, DHCW, WG
16/02/2021	Business Managers Workshop	HBs, NIAW, Trusts, DHCW
23/02/2021	Admin/Clerical Users Workshop	HBs, Trusts, NIAW, DHCW
07/04/2021	Admin Secretarial Users Part 1	HBs, NIAW, Trusts,
14/04/2021	Health Boards Roadshow	HBs, Trusts, Primary Care
16/04/2021	Health Boards Roadshow	HBs, Trusts, NIAW
21/04/2021	Health Boards Roadshow	HBs, Trusts, WG
23/04/2021	Health Boards Roadshow	HBs, Trusts, DHCW, Primary Care
05/05/2021	Admin Secretarial Users Part 2	HBs, Trusts
13/05/2021	Admin Obstetrics Users	HBs, Trusts, NIAW

Appendix S2: Business Strategies & Reports

[A Healthier Wales: Our plan for health and social care \(2018\)](#)



S2.1

a-healthier-wales-acti

[The Imaging Statement of Intent \(2018\)](#)



S2.2

imaging-statement-of

[Wales Audit Office Radiology Services Report \(2018\)](#)



S2.3 Auditor General
for Wales Report - Ra

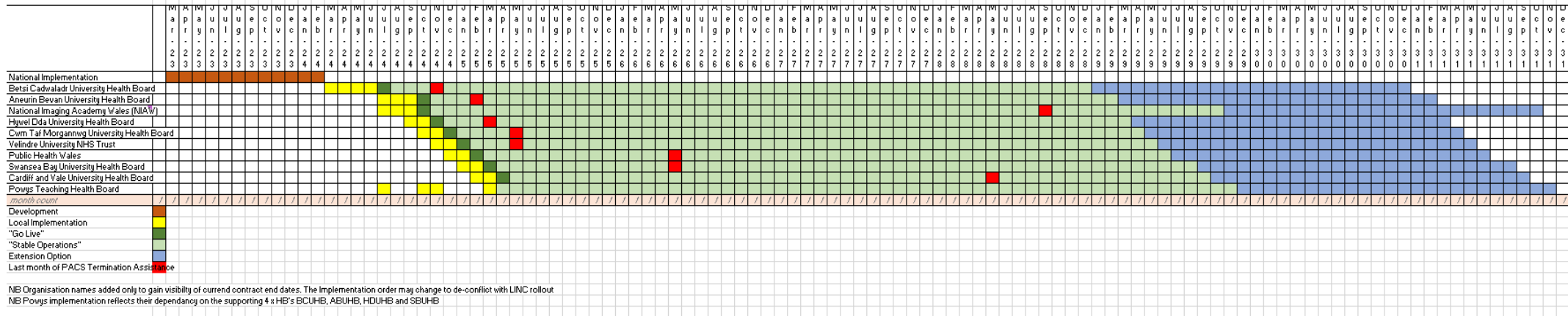
[Digital Architecture Review \(2019\)](#)



S2.4 Digital
Architecture Review R

Appendix C1: Draft Implementation Plan

This implementation plan is provided for indicative purposes only. As the RISP Functional and Technical Project Teams are established the plan will be refined and further developed for approval by the RISP Programme Board.



Appendix C2: Procurement Route Evaluation

The Public Contracts Regulations 2015:

<https://www.legislation.gov.uk/uksi/2015/102/contents/made>

<https://www.legislation.gov.uk/uksi/2015/102/regulation/29/made>

<https://www.legislation.gov.uk/uksi/2015/102/regulation/30/made>

Appendix E1: Options Framework



E1 Options
Framework.docx

Appendix E2: Economic Appraisal Model



E2_RISP OBC
Economic Model v2.xl

Appendix F1: Financial Model



App F1_RISP OBC
Financial Model Final.:

Appendix F2: Resource Plan



App F2_RISP
Programme Financial

Appendix F3: Cost Assumptions



App F3_RISP OBC
Costing Assumptions.

Appendix M1: Programme Board Terms of Reference



M1 RISP Programme
Board ToRs 29.09.21 \

Appendix M2: Project Dossier



M2 RISP Projects
Dossier Tranche 2 V1.

Appendix M3: Benefits Management Strategy



M3 RISP Benefits
Management Strategy

Appendix M4: Benefits Register



RISP OBC Benefits
Tracker v3.xlsx

Appendix M5: Programme Risk Register



Issue Risk Register
MASTER 30.09.21.xlsm

Glossary

Term	Definition
AI	Artificial Intelligence
BCR	Benefit Cost Ratio
BCUHB	Betsi Cadwaladr University Health Board
BI	Business Intelligence
CCS	Crown Commercial Service
CEG	Collaborative Executive Group
CIA	Comprehensive Investment Appraisal
CTMUHB	Cwm Taff Morgannwg University Health Board
COS	Contracted Out Services
CSFs	Critical Success Factors
CT	Computerised Tomography
DHCW	Digital Health and Care Wales
DI	Diagnostic Imaging
DRLs	Diagnostic Reference Levels
ETR	Electronic Test Requesting
FBC	Full Business Case
FCA	Financial Conduct Authority
HMRC	Her Majesty's Revenue and Customs
IAS	Intangible Assets
IFRS	International Financial Reporting Standards
IM&T	Information Management & Technology
IPR	Intellectual Property Rights

(IR(ME)R 2017)	Ionising Radiation (Medical Exposures) Regulations 2017
ISFT	Invitation to Submit Final Tender
ITPD	Invitation to Participate in Dialogue
LLP	Limited Liability Partnership
MEAT	Most Economically Advantageous Tender
MISC	Medical Imaging Scientific Committee
MRI	Magnetic Resonance Imaging
NHSWHC	NHS Wales Health Collaborative
NPC	Net Present Cost
NPSA SPN 16	National Patient Safety Association Safer Practice Notice 16
NPSV	Net Present Social Value
NWSSP	NHS Wales Shared Services Partnership
OBC	Outline Business Case
PACS	Picture Archiving Communications System
PCR2015	Public Contracts Regulations 2015
PDMS	Patient Dose Management System
PER	Project Evaluation Review
PIN	Prior Information Notice
PIR	Post Implementation Review
PMO	Programme Management Office
PQQ	Pre-Qualification Questionnaire
PRINCE2	PRojects IN Controlled Environments
PSBA	Public Sector Broadband Aggregation

RCR	Royal College of Radiologists
RIS	Radiology Information System
RISP	Radiology Informatics System Procurement
SaaS	Software as a Service
SBUHB	Swansea Bay University Health Board
SFIs	Standing Financial Instructions
SMB	Service Management Board
SMEs	Subject Matter Experts
SOC	Strategic Outline Case
SPD	Single Procurement Document
SRO	Senior Responsible Owner
SWOT	Strengths Weaknesses Opportunities and Threats
TUPE	Transfer of Undertakings (Protection of Employment)
UHBs	University Health Boards
VAT	Value Added Tax
VFM	Value For Money
WAO	Wales Audit Office
WCP	Welsh Clinical Portal