Radiology Informatics System Programme

Full Business Case

Contents

Revision History

Amended by	Version	Status	Date	Purpose of Change
Joao Martins	0.1	Draft	13/04/2023	Single document, all cases added. Document formatting
Joao Martins	0.2	Draft	14/04/2023	Small amendments
Gareth Cooke	1.0	Version 1	14/04/2023	Small amendments
Gareth Cooke	2.0	Version 2	18/04/2023	Updated section on local variations and considerations
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Reviewers

Date	Version	Name	Position
14/04/2023	1.0	Gareth Cooke	RISP Programme Lead
14/04/2023	0.2	John Collins	RISP SME
14/04/2023	0.2	Joao Martins	RISP Principal Project Manager

1. The Strategic Case

1.1 Introduction

The Radiology Informatics System Procurement (RISP) Programme was set up in 2019 to procure replacement PACS, RIS and PDMS systems for all health boards and trusts in Wales, due to the current PACS contract with FUJIFILM ending in 2023/2024 (DHCW provide the RIS). In addition to the procurement exercise, RISP provides the opportunity for national service improvement that will underpin future service delivery models that are based around the separation of acute and planned care facilities and the establishment of regional diagnostic centres. By delivering an "All Wales" view of the radiology record and ensuring that available functionality is not constrained by the setting in which care is being delivered RISP ensures that the ability to work across traditional organisational boundaries is embedded at the heart of the solution and will improve the quality of services delivered to patients and will help drive efficiency by reducing duplication, eliminating the requirement to manually request the transfer of imaging e.g. for regional MDT's or acute trauma or stroke care.

PACS refers to Picture Archiving and Communications System. Following an imaging procedure such as CT scan or X-ray examination, a PACS system stores images and the clinical reports in a digital system. RIS refers to Radiology Information System, which is a system which runs the "business" of imaging from scheduling patient examinations, room and modality utilisation and storing all the patients' imaging reports, records, and associated information. A PDMS refers to Patient Dose Management System, which automatically gathers, stores and analyses information on patients' radiation exposure from medical imaging involving ionising radiation.

This Strategic Case sets out the context and the case for change, together with the objectives for the Programme. This case demonstrates how the RISP programme will deliver the vision of a seamless end-to-end electronic solution that enables the Radiology service to provide a high quality, safe and timely clinical imaging service for the population of Wales.

This Strategic Case will describe the main components of the RISP programme, the risks associated with its development and implementation and how they can be mitigated to ensure success.

1.2 The Strategic Context

Imaging is a crucial clinical diagnostic and surveillance tool to investigate, monitor, and treat diseases and injuries. It is integral to all clinical services -hospital-based clinicians and general practitioners refer patients to radiology departments to undergo a wide range of imaging examinations. The nature of technological development and advances in drug, surgical and medical technologies have meant that there is a key dependency on imaging investigations to deliver timely and accurate diagnoses and assessments, facilitating timely care. The data from these investigations are evaluated, analysed and reviewed by a clinical radiologist, radiographer, or sonographer to produce a clinical report, which the requesting clinician will use to guide the 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 different diagnostic procedures, which are integral to healthcare across Wales. Modern diagnostic imaging is vital to diagnosis and treatment in modern patient care. Radiology services have always been delivered from a wide range of healthcare settings in all Health Boards and Trusts across Wales; the anticipated future development of Regional Diagnostic Hubs will expand the range of services provided outside typical hospital environments. Imaging services provide a core diagnostic function, along with therapeutic interventional imaging, in delivering 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 patient outcomes.

The diagram below illustrates key radiology techniques commonly used across the NHS.

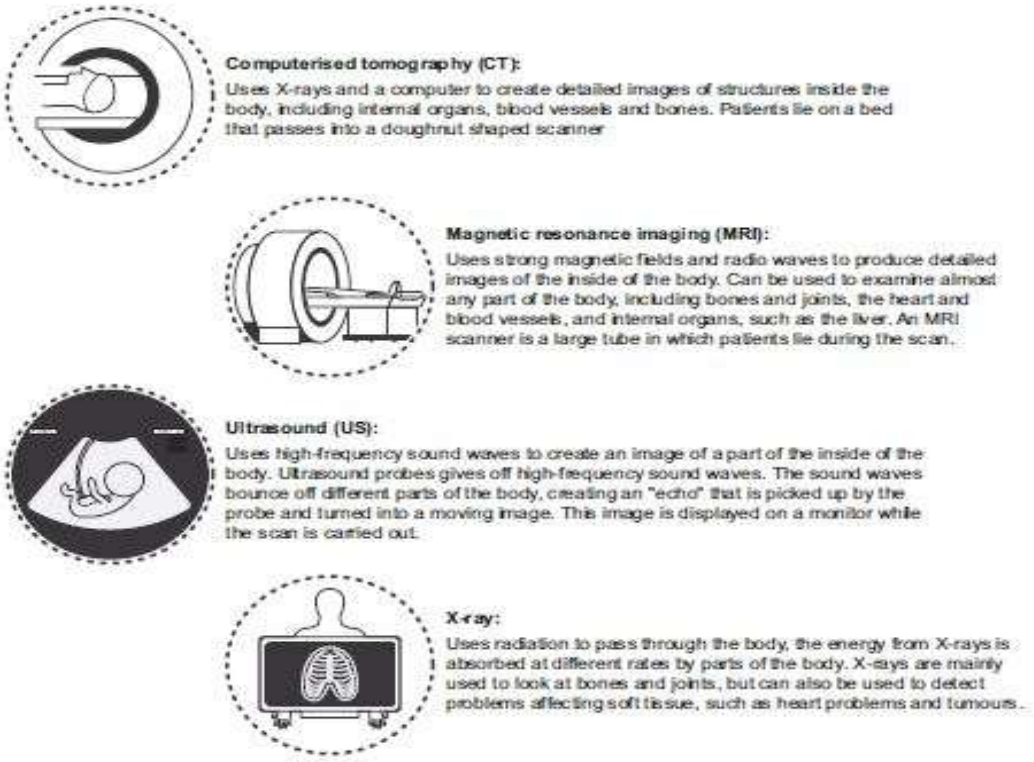


Diagram 1 – Illustration of key radiology techniques

1.3 Organisational Overview

The radiology service across Wales is delivered in several settings. Most radiology activity is provided through District General Hospitals and community sites at the University Health Boards (UHBs) and Trusts. Powys Teaching Health Board operates services from several community hospital sites with clinical and professional support from the adjacent UHBs and Trusts in England; Screening Services operate from fixed locations and several mobile units across the country. Imaging facilities are migrating outside of the secondary care setting based on the model of Community Diagnostic Centres. The rapid adoption of new portable technologies also allows Point of Care (POC) testing at patients' bedside or at home. The solution procured will need to recognise the current mix of rural and urban populations and locations where care is delivered in Wales whilst be able 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 University Hospital Llandough;
- ***Cwm Taf Morgannwg UHB:*** Prince Charles Hospital, Royal Glamorgan Hospital; Princess of Wales Hospital;
- ***Hywel Dda UHB:*** Bronglais General Hospital, Glangwili General Hospital, Withybush General Hospital and Prince Phillip Hospital;
- ***National Imaging Academy***
- ***Powys Teaching Health Board***: Brecon War Memorial Hospital, Llandrindod Wells County War Memorial Hospital, Machynlleth Community Hospital, Montgomeryshire County Infirmary, Victoria Memorial Hospital, Ystradgynlais Community Hospital;
- ***Public Health Wales Trust***: Breast Test Wales sites in Cardiff, Swansea, Llandudno, Wrexham;
- ***Swansea Bay UHB:*** Morriston Hospital, Neath Port Talbot Hospital, and Singleton Hospital;
- ***Velindre University NHS Trust***, Velindre Cancer Centre.

1.4 Business Strategies & Reports

Several 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

The Well-being of Future Generations (Wales) Act 2015 requires public bodies in Wales to think about the long-term impact of their decisions, to work better with people, communities,

and each other, and to prevent persistent problems such as poverty, health inequalities and climate change. The purpose of the RISP Programme aligns to delivering the digital needs of A Healthier Wales - one of the seven core well-being goals of the Future Generations Act, and Welsh Government's long-term plan for Health and Social Care; the other well-being goals also resonate with our approach, but we have more to do.

Achieving real digital transformation of public services provides an opportunity to support the ways of working described in the Well-being of Future Generations (Wales) Act. RISP will support the joining up of digital public services to improve patient experience and positive outcomes, notably helping support Mission 6: data and collaboration within the Digital Strategy for Wales.

The recently published NHS Wales Decarbonisation Strategic Delivery Plan demonstrates how NHS Wales can play its part in the recovery and its commitment to the Wellbeing of Future Generations (Wales) Act 2015, which directs the Programme to consider long-term persistent problems such as poverty, health inequalities, and climate change. We will work with the appointed supplier to develop a low carbon approach to implementation and operation of the services and look to minimise reliance on paper-based documents and thereby reduce unnecessary waste. The RISP programme has identified several decarbonisation benefits, including greener energy, more efficient use of energy and reductions in consumables and travel that can be delivered because of the using cloud or large scale data centre -hosted systems, new hardware technologies and remote management and support services.

A Healthier Wales: Our plan for health and social care

A Healthier Wales, the Government's plan sets out a long-term vision of 'a whole system approach to health and social care', highlighting the need for 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 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 in November 2018 summarises the key messages from the Auditor General's local work on radiology services. It highlights issues raised by the Health Boards around radiology informatics systems. The findings set out in the Auditor General's separate report on "Informatics Systems in NHS Wales " include:

- 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 on "Informatics Systems in NHS Wales" 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 critical areas of work.

Digital Strategy for Wales

The Digital Strategy for Wales aims to ensure people experience modern and efficient public services supported by effective and ethical use of data. The RISP programme will support this strategy by procuring an integrated system that will ensure information is easily transferred

and updated, allowing users to monitor the status of a patient going through diagnosis, treatment, and recovery pathways.

1.5 The Case for Change

Investment Objectives

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

Table 1: Investment Objectives

No.	Investment Objectives
RISP-IO1	To integrate Picture Archive and Communication System (PACS), Patient Dose Management System (PDMS) and Radiology Information System (RIS) systems into one single solution (with the ability for further integration with ETR and results acknowledgement systems) that all Health Boards and Trusts implement in Wales by 2026
RISP-IO2	To improve and optimise patient care by reducing the number of incidents caused due to missing/insufficient clinical information/reports, resulting in fewer misinterpretations and delayed diagnoses, by providing an integrated imaging patient record across Wales for all Health Boards and Trusts in Wales by 2026
RISP-IO3	To reduce the number of administrative resources required to support cross-boundary patient pathways, because of shared access for imaging and reporting, 12 months after contract commencement in a health board area
RISP-IO4	To reduce the carbon footprint of PACS and RIS systems by decreasing the use of paper-based systems for referring and reporting in radiology and utilising fewer devices that have higher energy consumption across all Health Boards and Trusts in Wales by 2026
RISP-IO5	To reduce the number of repeat examinations and hence inappropriate radiation dosage for patients, through improved access to imaging information and a standardised data sharing and recording process, by all Health Boards and Trusts in Wales by 2026

Current position

Radiology services within the current Health Board and Trust structures and configuration tends to drive care delivery within the traditional organisational boundaries.

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

Delivering cross-organisational working with the current system is possible, but it isn't easy to configure and maintain. As a result, regional working is typically a low-volume, high-

maintenance, and time inefficient activity rather than a core component of our working arrangements.

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

Challenges

- Increasing demand for Radiology services in the form of continuous growth in the number of referrals for CT scans, MRI scans (10% annually) etc., is outstripping scanning and reporting capacity, with the current workforce struggling to keep pace with the change.
- Capacity and demand mismatch results in the utilisation of locums, outsourcing and teleradiology services to deliver timely service. This has resulted in an accelerating cost pressure, and future projections indicate this situation will persist.
- 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 that impact on performance and availability of the solutions.
- 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, and informing surgical planning to reduce postoperative morbidity and mortality risk with targeted intervention.

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

This increase in demand has meant that in 2019, not one health board in Wales could meet its reporting requirements within the internal reporting capacity available. Clinical Directors of radiology departments at six of the seven health boards (60%) in Wales indicated there were not enough radiologists in their department to deliver safe and effective patient care.[1]

Workforce

The lack of a sufficient radiology workforce is the biggest challenge both Welsh & UK radiology departments face. These shortages vary in severity between the different regions of Wales and negatively impact patient care. Demands for diagnostic imaging have continued to increase for many years and have been further exacerbated by the covid-19 pandemic. The expansion of the imaging workforce and a significant drive to change ways of working are vital to meet these increasing demands (Richards Report). Workforce effectiveness and productivity need to be maximised wherever possible, which is difficult to achieve with the current systems.

The Royal College of Radiologists (RCR) annual workforce survey highlights key concerns for Wales. It suggests Wales' radiologist workforce is understaffed by 38% - the most significant shortfall in any UK nation. It means Wales lags significantly behind the UK and the EU average for the number of radiologists per head of population- Wales has 7.8 radiologists per 100,000; the UK average is 8.6, and the EU average is 12.8. The RCR 2021 Workforce report identified that whilst there has been a steady growth in the UK Radiologist workforce over the last five years, the report highlights that Wales has had some of the slowest growth in the UK in terms of Consultant Radiologist numbers at only 2% per annum. This is further compounded by Wales having an older Clinical Radiology workforce, with the highest number due to retire in the next five years (23%). [Taken from page 23 of the 2021 census report.]

Wales also has the most severe radiologist shortage of any UK nation. If nothing improves, the Royal College of Radiologists (RCR) predicts the UK's 33% actual radiologist shortfall will hit 44% by 2025.

Over the past 5 years since 2016, there has been an increasing reliance on outsourcing and international recruitment, with a reduction of 6% in staff recruitment from the UK and the same % increase in recruitment from non-EEA countries. However, Radiology Service Managers in Wales currently report increasing difficulties in sourcing locum or agency staff, both medical and Radiographers. These difficulties increase for Organisations located in the West and those covering rural areas of Wales.

On patient safety, the College says 60% of Wales's imaging directors 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. In Wales, the vacancy rate in 2021 has dropped from 10% to 8%. However, it is important to note that vacancy data provides limited insight into the extent of workforce shortfalls. Vacancies do not reflect the entire shortfall as several factors, including budgets or a lack of suitable candidates, constrain vacancies. The effects of the pandemic have magnified these issues.

Waiting Times

The number of patients on radiology waiting lists has increased by 50% since December 2019, with almost 30% of patients waiting longer than 8 weeks at the end of October 2022. There is significant variation between Health Boards and modalities, and these delays and inequalities will likely persist without a more concerted effort to address them. Whilst RISP won’t fundamentally eliminate workforce and equipment short falls by enabling a regional and national view of the patient record, supporting cross-organisational working, improving operational efficiency and providing insights that allow better decisions around resource allocation RISP will maximise the use of the available skills and resources.

Morale

At the start of April 2020, the RCR polled 1,089 consultants around the UK about their feelings about 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 standard leaving rate.

RCR census 2021 identified that 98% of clinical directors are worried about morale, stress and burnout.

Table 2: Regional breakdown of RCR workforce data[2]

	All radiologists (consultants and trainees) per 100,000 **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)

Table 3: Radiologists availability survey

	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

To meet the rising demand for reporting, health boards are turning to insource (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 RISP needs to support a seamless, undisrupted workflow to allow the clinical reporting of imaging to occur most efficiently, given workforce constraints.

RCR identified that in 2020/21, £178m was spent on insourcing, outsourcing and ad-hoc locums across the UK, the equivalent to 1,876 CR Consultant salaries (or half the entire current CR workforce). These short-term fixes are helping to manage workload, but demand for imaging in the UK continues to increase, and these measures will ultimately not be sustainable. For Wales, Health Education and Improvement Wales have again committed to funding 22 additional training places, but this won't be sufficient to meet demand, with there being an estimated shortfall of 77 consultants currently, rising to 146 by 2026.

Informatics

Radiology is a high throughput, capital-intensive service that requires an efficient and effective IT system to deliver an efficient radiology service that maximises the use of expensive equipment.

The diagram below illustrates a typical journey to and through the radiology service. Integration between the individual components of the RISP solution are key to delivering operational efficiency and maximising the use of available resources whilst integration with external systems e.g. referral solutions, clinical portals and results acknowledgement, underpin more efficient clinical pathways across clinical specialities.

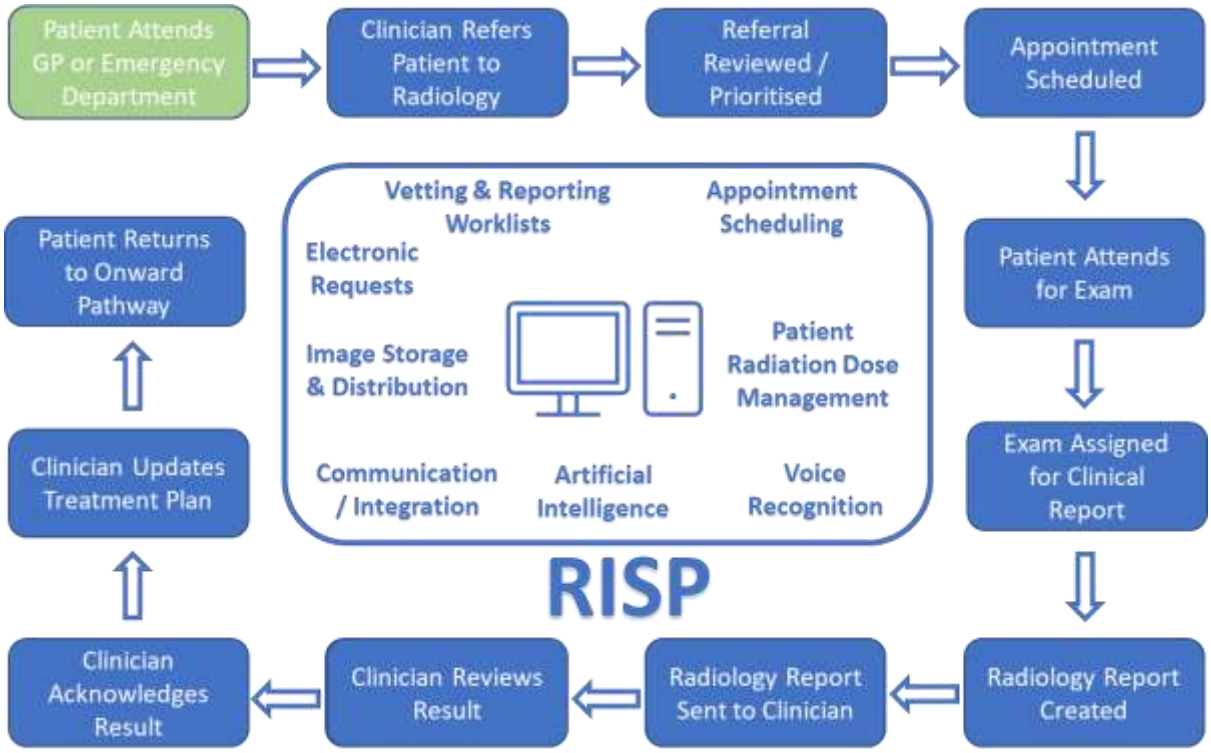


Diagram 2 - Typical clinical pathway to and through radiology

The current radiology IT systems neither enable service planning nationally nor provide the information needed to maximise the utilisation of available resources 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 readily 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, leading 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 acute/emergency care and MDTs and leading to inefficient care. Manual workarounds are in place to enable the correct information to be available for use in the right place at the right time; these are relatively inefficient and contribute to delays and increased clinical risk.

The rationale for change:

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 arrangements.

1.6 Existing Arrangements

PACS National Agreement

A national agreement for the provision of PACS was established in 2012 following a two-year procurement process. The procurement process involved representatives of radiology, ICT, NWIS (now DHCW), legal, and procurement services.

FUJIFILM 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 for 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.

All health boards now use the FUJIFILM solution and Trusts following a phased deployment, with Cardiff and Vale UHB and the National Imaging Academy Wales being the last to deploy.

NWIS (now DHCW) are the contracting authority and take overall responsibility for managing the contract. A PACS Service Management Board (PACS SMB) comprising representatives from DHCW and all health boards oversees the management of the service provided by FUJIFILM. Each deployment order holder's responsibility is to performance manage the service provided to them under the contract and feed this into the PACS SMB.

FUJIFILM provides 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 health board and trust have its own PACS Manager and support staff to enable the service and systems to integrate and function with more comprehensive radiology resources.

Change requests are submitted to, and managed by, the FUJIFILM Business Relationship Manager under the change management process set out in the contract, but are largely determined between each HB/Trust and Fujifilm. This arrangement has meant that it has been difficult to coordinate and deploy some changes because of dependencies on local or national infrastructure, applications or resources.

The current contract includes provision for "Termination Assistance Services" (TAS) where the incumbent supplier continues to provide operational service and support along with additional support as required to enable a smooth transition to the new supplier solution. The termination assistance period can run to a maximum of 42 months after the normal contract end date. In May 2020 DHWC (then NWIS issued a single central termination notice to FUJIFILM, acting on behalf of the health boards and Trusts.

The planned deployment order end dates for each Health Board and Trust are shown in the diagram below. The timelines in Figure 3 reflect the maximum duration of the termination assistance periods exercised in May 2020.

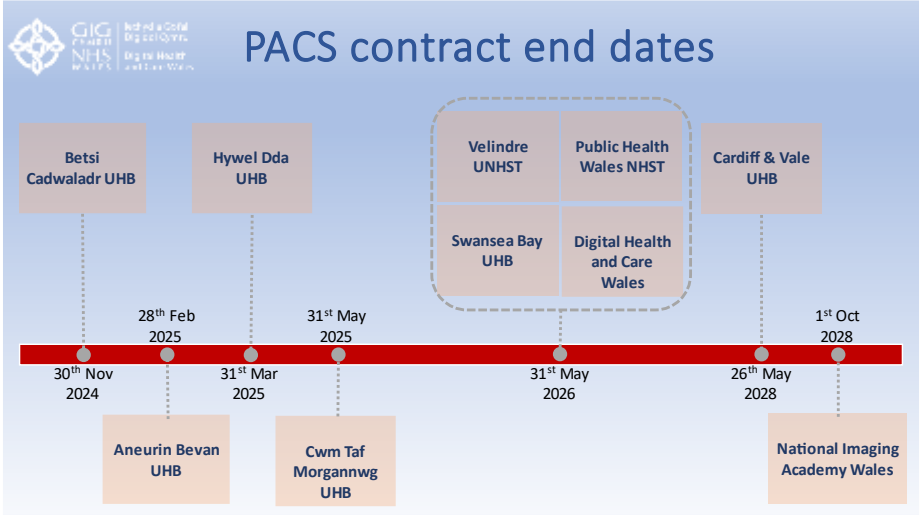


Diagram 3 – Contract End Dates

An extension of the Termination Assistance Services ("TAS") provision for the Deployment Order is required to support Data Migration and transfer to a new solution. Each Authority Party shall have the ability to extend the current Termination Assistance Service ("TAS") for a period of at least three (3) months, with the option for a further three (3) periods of three (3) months of Termination Assistance Services. For the avoidance of doubt, the Change Control Notice ("CCN") has the total effect of extending the Termination assistance period by up to twelve (12) months in total.

In Wales, the 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 allows Health Boards to generate business reports and statistics on performance.

The transition activities from the current WRIS to the new RISP solution is likely to cover the pre-population of radiology data to ensure there are three years of data for the go live at each of the live 10 instances, migration of the existing 17 WRIS databases into the new solution as well as any cutover activities identified.

These cutover activities will also include decoupling WRIS from the DHCW electronic radiology requesting integrated solutions currently being rolled out across Wales. Consideration is also needed to determine if a complete national radiology dataset needs to be populated before the move to the new solution; this will involve teams from DHCW, including WRIS, Integration Services and the National Operational Database team. The exact requirements on the work required for DHCW to manage the move to the new RISP solution are yet to be determined, but the timescales and work needing to be undertaken means that many of the tasks will need to be carried out concurrently, resulting in an increased level of resources during this implementation period.

1.7 Local considerations

Whilst the RISP procurement focussed on a solution to be deployed across NHS Wales, there are a number of local considerations that have informed the functional requirements or the business case. These are outlined below:

Integration with locally developed applications:

Aneurin Bevan HB and Cardiff and Vale HB have invested in deploying a locally developed clinical portals and electronic requesting solutions. Integration of the RISP solution adopts a standards based approach and the requirements to integrate with the local solution is included within the scope of the programme. The detailed work plan will be described within the Health Boards own deployment order.

Cwm Taf Morgannwg / Swansea Bay boundary changes:

At OBC stage of the RISP programme the PACS contract baseline costs were still aligned to the predecessor organisations (Abertawe Bro Morgannwg and Cwm Taf). At FBC these baseline costs have been revised to reflect the expected configuration of the new solution as it will be deployed in the Health Boards. As such any cost impacts outlined in the financial case are made on a like for like basis.

Powys Deployment Order:

Under the current Fuji contract Powys do not hold their own deployment order- PACS costs for equipment and support are accommodated within the deployment orders that the neighbouring Health Boards hold with Fuji. The programme implementation plan assumes that Powys will hold their own deployment order for the new solution with Philips. It is anticipated that within their local implementation plan Powys will have four separate go live phases aligned to the go live dates for these Health Boards.

The radiology services at Llandrindod Wells are supported by Wye Valley NHS Trust (WVT). It is anticipated that these will be brought within the scope of the RISP solution but the discussions between Powys and WVT and the impact on their respective SLA's will need to be led by Powys rather than the RISP programme.

Powys has a number of service level agreements with the neighouring Health Boards and with Wye Valley NHS Trust to support their locally delivered radiology services but these SLA's do not identify all of the PACS costs and include reporting services. As such the baseline costs for Powys do not reflect the full cost of current solution for Powys and therefore accentuate the financial impact of the new solution and discussions regarding the impact of the transition to the Philips solution on the detail of the SLA's and any requirements for local PACS/RIS support arrangements within Powys are not within the scope of the RISP programme.

Hywel Dda Legacy PACS Archive:

Hywel Dda maintain a legacy PACS archive for digital mammography images. The demographic data within the archive is not aligned to a reliable index (RIS, PAS or eMPI) and

as such the data quality may be poor. It is likely that additional work will be required from the Health Board and from Philips to bring these records into alignment with the current patient index. The detailed requirements will need to be addressed within the Hywel Dda deployment order.

Swansea Bay Legacy RIS:

Swansea Bay UHB transitioned from a commercial RIS (RadCentre) to RadIS. Whilst the clinical report data was copied into WRRS so it could be made available for review the Health Board continues to maintain a contract with the supplier for access to the legacy system. The RISP programme data migration plan proposes to migrate all data from RIS/PACS instances into the new solution. The Health Board may need to consider whether it is still appropriate to migrate the RadCentre data and whether this will require additional support from the supplier or whether this can be achieved within their current commercial arrangements.

1.8 Business Needs Current & Future

Stakeholder Engagement

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

The complete list of stakeholder groups engaged, and comments/ feedback received during this process are listed below and include but are 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.

Business Needs

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

- “Single patient view” of the 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

1.9 Solution Scope

The RISP solution is intended to replace the systems currently supporting "Services within the 'footprint' of the current radiology service" 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 minimum required to deliver the programme objectives and 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 (RIS) and Picture Archiving and Communication System (PACS) from receipt of request to publishing of the result and receipt of acknowledgement. The solution must deliver an "All Wales" view of the radiology record for any patient irrespective of where the radiology "event" occurred. 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 potentially improves image quality or reduces radiation exposure for people with multiple imaging procedures.
- Offering substantial improvements in collection efficiency and quality and 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 Test Requesting and Results Acknowledgement[3]

Electronic Test Requesting (ETR) 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 two-way electronic 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 acknowledgement systems remain primarily manual processes, driven by paper/email, telephone and faxed based triggers tailored to meet local

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

clinical needs. The current systems fail to close the diagnostics loop because no automated facility records a result acknowledgement within the RIS. Therefore, urgent, or unexpected findings are frequently escalated manually rather than electronically. The processes are tailored to local clinical demands. The recommendations of NPSA 16 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 speciality;
- 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 acknowledgement has failed. One of the frustrations of the radiology service in Wales is the lack of progress in delivering 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).

Two Health Boards have developed a local solution for electronic requesting, but there is no integration with the WRIS, and the benefits gained are somewhat limited. Following a successful implementation of electronic requesting in Royal Glamorgan Hospital (CTMUHB), a wider rollout across the HB and across other health boards is underway.

The adoption process of e-requesting has been delayed primarily due to constraints within the health boards. However, a fully integrated requesting, notification and results acknowledgement system is essential to deliver the RISP programme's efficiency and patient safety benefits. The ETR programme still raises concerns for RISP- related to the timeline for deployment and adoption of the available functionality and integration of the solution with the newly procured RIS.

1.10 Benefits

The key benefits of delivering RISP include the following:

- 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)
- 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.
- Streamlined and reduced training requirements for system use
- Decarbonisation; the supplier has to meet standard ISO 14001.
- Investment in network infrastructure will provide additional capacity and security capabilities that will benefit future digital programmes for NHS Wales.

A Benefits Group has been established and has identified specific benefits and associated measures outlined in detail in the Economic and Management Cases. A mapping exercise was undertaken to align those identified benefits to the wider investment objectives.

Table 4: Strategic Objectives Benefits Map

No	Investment Objective	Benefit ID	Benefit
RISP-IO1	To integrate Picture Archive and Communication System (PACS), Patient Dose Management System (PDMS) and Radiology Information System (RIS) systems into one single solution (with the ability for further integration with ETR and results acknowledgement systems) that all Health Boards and Trusts implement in Wales by 2026	B03	Reduced time to imaging referral contributing to earlier diagnosis (and ultimately patient outcomes)
		B08	Reduced lost time waiting for system to respond
		B22	Contributes to reduced inequalities
RISP-IO2	To improve and optimise patient care by reducing the number of incidents caused due to missing/insufficient clinical information/reports, resulting in fewer misinterpretations and delayed diagnoses, by providing an integrated imaging patient record across Wales for all Health Boards and Trusts in Wales by 2026	B01	Reduced time to imaging referral contributing to earlier diagnosis (and ultimately patient outcomes)
		B06	Reduced risk of missing urgent diagnosis
		B19	Earlier diagnosis and improved clinical decision-making leads to better patient outcomes
		B20	Improved Patient Experience
RISP-IO3	To reduce the number of administrative resources required to support cross-boundary patient pathways, because of shared access for imaging and reporting, 12 months after contract commencement in a health board area	B02	Reduced manual intervention to manage referrals
		B04	Reduced manual intervention for reporting and acknowledgement
		B05	Reduced reporting costs
		B07	Reduced manual intervention to review lists
		B09	Reduced risk of repeat examinations and inappropriate radiation dosage
		B10	Effective and efficient MDT meetings supporting cross Health Board boundary workings and streamlining patient care
		B15	Improved strategic planning / better demand management
		B21	Improved workforce experience
RISP-IO4	To reduce the carbon footprint of PACS and RIS systems by decreasing the use of paper-based systems for referring and reporting in radiology and utilising fewer devices that have higher energy consumption across all Health Boards and Trusts in Wales by 2026	B11	Reduced reliance on paper-based systems leading to paper, printing, and manual storage cost savings
		B12	Reduced reliance on paper-based systems leading to reduced manual intervention
		B28	Greener energy as a result of cloud-based system
		B29	Greater energy efficiency as a result of cloud-based system
		B30	Reduced number of devices
RISP-IO5	To reduce the number of repeat examinations and hence inappropriate radiation dosage for patients, through improved access to imaging information and a standardised data sharing and	B13	Reduced risk of errors
		B14	Streamlined and reduced training requirements
		B16	Improved accuracy of referral codes
		B17	Increased ability for optimisation between patients or devices

	recording process, by all Health Boards and Trusts in Wales by 2026	B18	Reduced amount of unreliable/unusable data leading to increased sample size of dose audits
		B23	Improved ability to accurately and frequently access radiation dosage to evidence statutory compliance
		B24	Increased compliance for recording dosage in PDMS vs manual entry
		B25	Increased accuracy of patient dose record
		B26	Improved personalisation of dose assessments
		B27	Reduced amount of unreliable/unusable data leading to increased sample size of dose audits

1.11 Risks

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

A programme risk register is used to record, and risk assess all Programme and project-level risks. Each risk is documented and evaluated based on the impact and likelihood to the Programme. The risks are discussed and updated monthly via the programmes Working Group, Programme Board and monthly risk rating meeting.

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 health boards. This could lead to delays in the procurement process.

Further slippage to procurement timescales caused by delays could impact the current FUJIFILM PACS contract end dates.

A complete list of Risks, Actions, Issues and Decisions can be found in Appendix M4.

1.12 Constraints

The Programme is subject to the following constraints:

- Lack of resources within DHCW to release staff to support the development of the FBC, 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.
- The Capacity of the Imaging service to support the Programme, and the business change associated with moving to an entirely electronic workflow.

1.13 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 approval of Welsh Government, health boards, trusts and professional bodies to this FBC.

1.14 Business Continuity Plans

The RISP solution is designed to meet a service availability with an uptime target of 99.99% and architected in such a way as to ensure there are no single points of failure. The Contractor will provide a business continuity (BC) solution to all Authority parties (excluding NIAW and PHW), which maintains key service elements if there are issues with the central core services. As a minimum, the BC solution will hold the last two years of clinical data for the Health Board and will allow them to continue to:

- Schedule, acquire and report on acute ED and inpatient requests;
- Acquire and report prebooked studies attending during the period of BC operation;
- Report studies acquired before the period of BC operation;

- Allow non-radiology clinicians to review any image stored within the BC solution; and
- Publish any results generated throughout the period of BC operation to external systems

In addition to the BC facilities, the Contractor will maintain an immutable copy of any clinical data to protect against delayed malware attacks or other data corruption and commit to undertake penetration testing and testing of BC and recovery procedures twice per year or after any significant upgrade or system reconfiguration.

To meet these requirements, the supplier will provide:

- Multiple geographically separated datacentres with high availability infrastructure and automated failover between the DCs,
- A third offline copy of data to protect against data corruption, and
- A local BC instance of RIS and PACS within each HB/Trust to ensure continuity of service if the services delivered from the central DC's are unavailable.

If the core services are unavailable to one of the HB's (e.g. if its PSBA connection is down), they will be able to continue with the majority of planned and unplanned care activity. Still, they will lose the ability to do so cross-HB work. Other HB's would still be able to see the entirety of the All Wales record until the affected HB went off line.

2. The Economic Case

2.1 Introduction

The purpose of the Economic Case in the FBC is to revisit the options following the results of the procurement process and confirm that the preferred option continues to offer optimal value for public money by:

- Identifying the procurement process and evaluation of Best and Final Offers (BAFOs).
- Revisiting the OBC Options to confirm they remain valid and outline any adjustments.
- Confirming the rankings remain unchanged by updating the Economic Appraisal with latest cost and benefit assumptions, including the results of the procurement process.
- Confirming the Preferred Option.

2.2 Revisiting the OBC Options

As part of the OBC, the Programme Board and key stakeholders identified a shortlist of options to appraise by using the Options Framework to identify and long list of options and test them against agreed criteria which included:

- Was the option likely to deliver the spending objectives and CSFs?
- Was the option likely to deliver sufficient benefits?
- Was the option practical and feasible?
- Was the option deliverable within the constraints of the project?
- Was the option deliverable without incurring an unacceptable degree of risk?

Following this review, the shortlist of options was approved by the Programme Board. The final shortlist of five options is presented below.

Table 5: Shortlist of Options

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
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 next stage of the OBC involved evaluating the shortlisted options within the economic appraisal, the results are outlined in the table below.

Table 6: OBC Economic 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
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 following conclusions were reached based on these results and an analysis of non-financial factors:

- **Option 0 (Business as Usual):** 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. It was included to provide a counterfactual to allow value for money of the other options.
- **Option 1 (Do Minimum):** This option involves continuing with the current DHCW developed and supported application; the Welsh RIS. A comprehensive evaluation was undertaken which confirmed that the commercial RIS scored significantly higher than the DHCW RIS option largely due to available capacity to develop and deploy the additional functionality which posed a risk to timelines and the ability to hold commercial suppliers to account for any failure in an end-to-end solution. Furthermore, the economic appraisal demonstrated that the increased costs of delivering this option would reduce value for money.
- **Options 2 and 3 (Preferred Way Forward):** The preferred way option offered the best value for money since it results in the lowest Net Present Cost and an incremental Benefit Cost Ratio of between 1.0 – 1.1 when compared to the counterfactual (Business as Usual option). The variance between Option 2 (delivering the programme via a regional deployment) and Option 3 (delivering the programme via a national deployment) was found to be immaterial, therefore it was agreed that the final implementation arrangements would be determined based on the final procured solution.
- **Option 4 (More Ambitious):** This option 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. The increased revenue costs would significantly reduce the value for money.

Therefore Options 2 and 3 were combined and carried forward as the Preferred Option and it was recommended that Options 1 and 4 be discounted on the basis of low value for money and risks to timescales.

2.3 The Procurement Process

Following approval of the OBC, the work commenced to procure the preferred option. The procurement process was undertaken as per the procurement strategy, route and evaluation that was outlined in the Commercial Case of the OBC. The FBC Commercial Case outlines in detail the most economically advantageous tender and sets out the commercial and contractual arrangements that have been negotiated.

2.4 The FBC Economic Appraisal

The HMT Green Book guidance suggests it is only necessary to conduct a full cost benefit analysis on all shortlisted options considered at OBC stage if it is proportionate to do so.

The alternative short-listed options outlined in section 1.2 were re-visited and it was concluded that:

- **Option 1 (Do Minimum):** The conclusions reached in the OBC in terms of this option being discounted because of low value for money and increased timescales remain valid. In fact, costs and timescales would likely increase given the time that has passed since the OBC which would reduce value for money even further and is no longer considered a feasible option.
- **Option 4 (More Ambitious):** The conclusions reached in the OBC in terms of this option being discounted because of low value for money and high degree of uncertainty. In fact, costs and timescales would likely increase given the time that has passed since the OBC which would reduce value for money even further and is no longer considered a feasible option.

As it was anticipated that these assumptions remain largely unchanged since the OBC, it was deemed that it would be disproportionate to revisit the cost benefit analysis for these options, particularly since neither are thought to be feasible any longer given the time that has passed since the OBC.

It was therefore concluded that it would be sufficient to conduct an appraisal of the Preferred Option compared to the baseline counterfactual.

Cost Assumptions

Costs have been updated for the FBC following negotiations with suppliers, selection of the Preferred Bidder and a more developed understanding of other costs.

The calculations and assumptions behind these costs are provided in the Financial Case and are summarised below.

Baseline costs

Baseline costs have been updated to reflect Baseline costs are estimated based on the Financial Commercial paper from February 21 which identified revenue costs for PACS and WRIS of £6.2m. These have been uplifted to 2023/24 prices using the HM Treasury GDP Deflator.

Table 7: Baseline Costs

	Total £'000
PACS	5,996
WRIS	500
Total Baseline Costs	**6,495**

Capital Costs

Capital costs have been calculated based on the Preferred Bidder's initial solution charges as well as capitalisable programme resource and local infrastructure requirements. For the purposes of the Economic Case these exclude VAT.

Table 8: Capital Costs

	Option 0 - BAU £'000	Option 1 - Preferred £'000
Solution - Supplier Initial Charges	0	14,124
Programme Resource Plan	0	2,861
Local Infrastructure Costs	0	5,042
Total capital costs excluding VAT	**0**	**22,026**

Transitional Costs

Non-recurring revenue costs have been calculated based programme resource requirements for roles that cannot be capitalised during the 3-year implementation period.

Table 9: Transitional Costs

	Option 0 - BAU £'000	Option 1 - Preferred £'000
Programme Resource Plan	0	4,307
Total transitional costs	0	4,307

Recurring Revenue Costs

Ongoing revenue costs have been calculated based on the following assumptions:

- Current PACS and WRIS costs of £6.5m p.a. will continue until each Health Board's stable operation date for the new system plus one month of dual running costs.
- Annual service charges of £5.4m p.a. for the new solution are based on tendered costs submitted by the Preferred Bidder, which will be incurred from each Health Board's stable operation date (as outlined in the Financial Case).
- For the purposes of the 10-year appraisal period, it is assumed that the average annual service charge costs will continue at the same level following the contract end date at each Health Board.
- Ongoing revenue consequences of £0.9m p.a. related to investment in local infrastructure is assumed to be incurred from the beginning of 2024/25.
- Ongoing revenue consequences of £0.15m p.a. related to ongoing support for integration is assumed to be incurred from the beginning of 2026/27.

The resulting total revenue costs during the 10-year appraisal period are provided in the table below.

Table 10: Total revenue costs

	Option 0 - BAU £'000	Option 1 - Preferred £'000
Current PACS Costs	59,955	12,356
Current WRIS Costs	4,999	989

	Option 0 - BAU £'000	Option 1 - Preferred £'000
Solution - Supplier Service Charges	0	33,098
Solution - Extend Supplier Service Charges	0	11,140
Local Infrastructure Costs	0	8,047
Ongoing Support for Integration	0	1,050
Total revenue costs (10-year period)	**64,955**	**65,630**
Equivalent Annual Costs	**6,495**	**6,563**

Benefits assumptions

As part of the OBC, the main benefits were identified and measures established, and a Benefits Group established agreed to collect baseline data and agree targets and methods of monitoring. The resulting benefits analysis is provided in the table overleaf.

Table 11: Benefits Analysis

ID	Description	Measure	Target Improvement	Value £'000	Assumptions
More streamlined workflow					
B01	Reduced time to imaging referral contributing to earlier diagnosis (and ultimately patient outcomes)	Average time from request to receipt of referral	Reduce from average of 4.6 days to within 1 day	Unmonetised	The introduction of RISP will improve the end-to end process
B03	Reduced time to imaging referral contributing to earlier diagnosis (and ultimately patient outcomes)	Average time from receipt of referral to report availability	Reduce from average of 9.2 days to within 1 day	Unmonetised	The introduction of RISP would improve the end-to end process
B15	Improved strategic planning / better demand management	Not easily measurable	Qualitative	Unmonetised	Electronic vetting should streamline the workflow and automate rules but will still require some level of manual intervention to review and schedule. Multiple factors that may impact on this average time taken such as the number of occasions when appointments need to be vetted before being booked and the number of walk-in cases make it difficult to set an achievable target improvement that is directly impacted by the investment in RISP.
Increased accuracy					
B06	Reduced risk of missing urgent diagnosis	Not easily measurable	Qualitative	N/A	Information from claims managers was found not to be a suitable measure due to the variability.
B13	Reduced risk of errors	Number of obsoleted reports	Reduce by 80%	Unmonetised	A major benefit of RISP will be that it will prevent errors in the digital dictation system reporting against an incorrect patient. However, this would not be eradicated completely as there may be other reasons for a report being obsoleted.
Greater System Reliability					
B08	Reduced lost time waiting for system to respond	Number of Severity 1 and 2 incidents	Qualitative	N/A	Not easily measurable

ID	Description	Measure	Target Improvement	Value £'000	Assumptions
Improved productivity					
B02	Reduced manual intervention to manage referrals	Time spent on request handling	80% reduction in time spent manually transcribing requests	£852k p.a.	It is reasonable to expect RISP will result in a minimal amount of time spent manually transcribing requests into RIS since there will be very few paper requests received, although it should be recognised that the rest of the 'request handling' process, such as appointment scheduling, would only see marginal improvement. On average takes around 2 minutes per request, applying to around 1.9m requests p.a. which are currently managed manually
B04	Reduced manual intervention for reporting and acknowledgement	Time spent on process for the acknowledgement of urgent referrals	50% improvement	£65k p.a.	Currently increased time spent on the process for the acknowledgement of urgent referrals due to the need for printing. ABUHB already has an electronic process in place which has reduced the amount of manual printing requirements significantly. It is anticipated that 2/3 of referrals are printed (the remaining 1/3 being GP referrals which are typically not printed). There are other factors other than just RISP contributing to this improvement, therefore a target reduction of 50% was reasonable.
B05	Reduced reporting costs	Average time between subsequent reports	Between 1% - 5% improvement	£1,127k	Current average 26.7 minutes between subsequent reports. Exact level of improvement difficult to measure and would be relatively small. Therefore, range of scenarios have been modelled to estimate the impact of between 1% to 5% improvement. Prudent estimate has been made at 1%.
Workforce Benefits					

ID	Description	Measure	Target Improvement	Value £'000	Assumptions
B21	Improved workforce experience	Not easily measurable	Qualitative	N/A	Multiple factors impacting staff satisfaction so not easily measurable
Cost Reduction Benefits					
B11	Reduced reliance on paper-based systems leading to paper, printing and manual storage cost savings	Expenditure on paper, printing and manual storage	80% improvement	£11k p.a.	
Patient Safety Benefits					
B09	Reduced risk of repeat examinations and inappropriate radiation dosage	Number of significant accidental and unintended exposures as a result of repeat imaging in a 2-3 year period	10% improvement	Unmonetised	10% improvement target to reflect direct impact on proportion of events (i.e. alert so not imaging people who have already had imaging)
B23	Improved ability to accurately and frequently access radiation dosage to evidence statutory compliance	Time saved manual vs automated audits	80% improvement	£19k p.a.	Based on BCU baseline of 2 weeks spent on audits p.a.
B24	Increased compliance for recording dosage in PDMS vs manual entry	Number of times dosage not recorded	80% improvement	Unmonetised	Currently not recorded in 7% of cases. Will be mandated in functional requirements so would largely be eradicated but there may be some circumstances where booked a procedure with radiated dose but scan abandoned.
B25	Increased accuracy of patient dose record	Not easily measurable	Qualitative	N/A	
B26	Improved personalisation of dose assessments	Time spent dealing with patients flagged for skin injury review	75% improvement	£5k p.a.	Average of 30 p.a. as reasonable baseline for number of patients flagged for skin injury review based on BCU and C&V actuals. It is estimated that currently 2 hours per patient are spent on this which it is estimated could be reduced to 0.5 hours per patient.

ID	Description	Measure	Target Improvement	Value £'000	Assumptions
B27	Reduced amount of unreliable/unusable data leading to increased sample size of dose audits / B18 - Reduced amount of unreliable/unusable data leading to increased sample size of dose audits	Amount of data 'thrown out'	Target to reduce to 5%		Currently 19% of data 'thrown out'. Target improvement to reduce down to 5% (some manual input errors will remain)
B17	Increased ability for optimisation between patients or devices	Not easily measurable	Qualitative	N/A	
Patient Outcome Benefits					
B10	Effective and efficient MDT meetings supporting cross Health Board boundary workings and streamlining patient care	Time spent managing images for MDTs	Save 2 minutes per number of transfers	£113k p.a.	Baseline data includes both PACS and IEP data. RISP will significantly reduce the time spent on this since images will be automatically visible to all sites across NHS Wales with no need for transfers. This will improve cross-site functionality and ensure images are easy to access for MDTs, reducing the risk that MDTs may be delayed as a result of images not being available. Indicative calculation for the scale of this benefit is to assume each transfer currently takes Radiology circa. 2 minutes (in addition to the time spent in clinics having to chase missing images) multiplied by the number of transfers within NHS Wales each year.
B19	Earlier diagnosis and improved clinical decision-making leads to better patient outcomes	Not easily measurable	Qualitative	N/A	It has not been possible to identify the number of patients not discussed at MDTs as a result of not having images available (links to B10)
B20	Improved patient experience	Not easily measurable	Qualitative	N/A	
B22	Reduced inequalities	Not easily measurable	Qualitative	N/A	Combination of B01 and B03 but reported in relation to the benefit to the patient rather than NHS Wales. Availability of reports from all locations would reduce the burden across health boards due to reporting on

ID	Description	Measure	Target Improvement	Value £'000	Assumptions
					backlogs from elsewhere in Wales. This would reduce the variance.
Environmental Benefits					
B28	Greener energy and greater efficiency as a result of cloud-based system	Not easily measurable	Qualitative	N/A	Not easily measurable
B31	Reduced reliance on paper based systems leading to paper savings	Paper usage	80% reduction	N/A	In line with B11

Expected Risk Value

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.

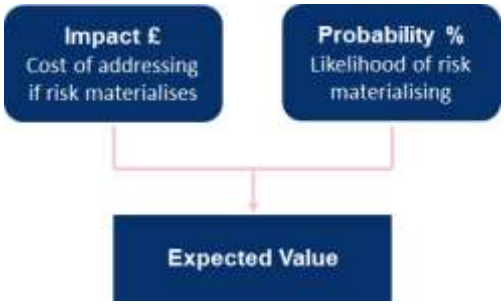


Diagram 4 - Risk quantification approach using single-point probability analysis

The assumptions included to assess the impact and probability of these risks are outlined in the tables below.

Table 12: Risk assumptions

	Option 0 - BAU £'000	Option 1 - Preferred £'000
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 (uplifted to 23/24 prices)	No impact – mitigated by investment in new system
Probability	**95%**	**0%**
Timescales	Year 2	
Risk Value £'000	**19,485**	**0**
R2: Existing system no longer supported		
Risk	**Delivery delayed**	

	Option 0 - BAU £'000	Option 1 - Preferred £'000
Consequence	**Increased programme costs and extended double running**	
Impact	N/A	Delay of between 12-24 months x Programme Cost per month
Probability	**0%**	**10%**
Timescales		Year 2
Risk Value £'000	**0**	**299**

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 10-year appraisal period based on the timeline used within the Preferred Bidder's submission.
- Year 0 is 2023/24.
- Costs and benefits use real base year prices – all costs are expressed at 2023/24 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 overleaf.

Table 13: FBC Economic Appraisal Results

	Option 0 - BAU £'000	Option 1 - Preferred £'000
Capital costs	0	22,026
Revenue costs	64,955	65,630
Total costs	**64,955**	**87,656**
Expected risk value	19,485	299
Total risk adjusted costs	**84,440**	**87,955**
Benefits		-15,340
Net Present Cost (Undiscounted)	**84,440**	**72,614**
Total discounted costs	74,100	83,158
Total discounted benefits	0	-12,509
Net Present Cost (Discounted)	**74,100**	**70,649**
Incremental costs	0	-26,968
Incremental benefits (including risk reduction)	0	30,419
Risk-adjusted Net Present Social Value	**0**	**3,451**
Benefit Cost Ratio	**0.0**	**1.1**
Rank	**2**	**1**

This demonstrates that the preferred option continues to offer value for money, delivering a lower discounted Net Present Cost of £70.6m over a 10-year appraisal period, which is £3.5m lower than the Business-as-Usual position. It delivers an incremental Benefit Cost Ratio of 1.1 i.e. £1.10 of monetisable benefits is delivered for every £1.00 of incremental costs.

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 14: Switching Analysis

	Option 0 - BAU	Option 1 - Preferred
Total discounted costs	-15.96%	0.00%
Total discounted benefits	N/A	0.00%
Net Present Cost (Discounted)	**-15.96%**	**0.00%**

This demonstrates that the costs would need to reduce by 15.96% for the Business-as-Usual position to outrank the preferred option. This equates to delivery of the same level of benefits as the preferred option with no investment and so is not feasible.

In addition, several scenarios were run to estimate the impact on the value for money of the preferred option.

Table 15: Sensitivity Analysis

	Incremental NPSV £'000	BCR
Economic appraisal results	3,451	1.1
Scenario 1: Capital increases by 10%	1,228	1.0
Scenario 2: Revenue increases by 10%	145	1.0
Scenario 3: Benefits reduce by 25%	309	1.0
Scenario 4: BAU risk reduced by 25%	1,111	1.0

This demonstrates that even with some relatively significant changes to key assumptions, the preferred option would continue to offer reasonable value for money with a lower Net Present Cost (higher incremental Net Present Social Value) than the Business-as-Usual option.

Therefore, it can be concluded that the value for money of the preferred option is not particularly sensitive to changes in assumptions.

2.5 Summary of Options Appraisal Results

The cost benefit analysis demonstrates that the Preferred Option continues to offer optimal value for public money, following the results of the procurement process and development of more detailed cost and benefits analysis.

It will result in a Net Present Cost of £70.6m over a 10-year appraisal period. This represents an improvement compared to Business as Usual or Net Present Social Value of £3.5m and a Benefit Cost Ratio of 1.1 (i.e. every £1 of incremental cost will realise £1.10 of incremental benefits)

Investment in RISP will deliver a range of financial and non-financial benefits due to more streamlined workforce, increased automation, greater accuracy and reliability, and reduced reliance on paper-based systems. This will result in benefits such as:

- Improved patient safety due to the more accurate records which will reduce the risk of repeat examinations and inappropriate radiation dosage and better support personalisation of dose assessments.
- Contribution to earlier diagnosis leading to better patient experience and outcomes due to reduced turnaround time from referrals to reporting, and more effective MDT working.
- Improved workforce experience and greater staff satisfaction due to more efficient and effective ways of working.
- Productivity gains worth £2.2m due to reduced need for manual interventions to manage activities such as referrals, reporting and providing MDT images. It should be noted that these are not expected to be cash releasing.
- Use of cloud-based system leading to greener and more efficient use of energy.

3. The Commercial Case

The commercial case considers the commercial feasibility of the award recommendation.

3.1 Procurement Scope

Based on an assessment of the current solutions available in this market, the procurement approach envisaged 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.

The service requirement includes the following key components:

- 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 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 Contractor responsible for all aspects of the solution and its ongoing performance over the life of the contract

The successfully procured service includes 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 includes an option for the provision of electronic test requesting, results acknowledgement and notification. This is included in the Service Catalogue.

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.

3.2 Procurement Regulations

As NHS Wales organisations are public sector bodies; all NHS Wales procurements must comply with Standing Financial Instructions 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 is 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), of which this document forms a part, by the Welsh Government.

3.3 Procurement Strategy

Purpose of the Procurement Strategy

The purpose of the Procurement Strategy was to set out in a formalised manner the key aspects of the procurement of the Radiology Informatics Solution. It was a high-level document that stated the programme's approach to its procurement activities, its objectives, and key initiatives. The document provided general information on expenditure, procurement structures, and regulatory considerations and contained a statement of its commitment to developing good working relationships and dealing fairly with all potential suppliers. This strategy was developed along with the outline business case and defined 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 formed an important part of the audit trail for procurement setting out the intentions of the Contracting Authority 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 was officially "Noted" by Welsh Government, the procurement process could 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 envisaged 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 explored and gave due consideration to this approach but not to the detriment of any clinical services. However, it was anticipated that any hosting of the major Solution components would be provisioned by the Contractor via private or public cloud hosting services. The scope, architecture and options bidders offered were explored as part of the competitive procurement process to ensure performance, functionality, efficiency, and security requirements of NHS Wales have been fully met.

Given the scope and scale of this project, potential suppliers are unable to supply all components and services to fulfil the Solution other than through the use of subcontractors, which the Authority allowed as part of their Bids, subject to said Contractor(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"[4] with any other suppliers supporting the Service.

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

Contract Duration

The length of contract for the RISP Procurement is tailored to give best value for money for the project. The agreed contract period will:

- 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, stated 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 with a term of no less than sixty-two (62) months, that being five (5) years and two (2) months, the latter allowing 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 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 has been tested and explored on various options during the procurement phase.

Contracting Approach

The contract form of Agreement is 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 was 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 have been 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 was recommended that this requirement was 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 was 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 considered the Competitive Dialogue appropriate for this requirement.

Procurement Approach

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

- **Bidder engagement and market assessment** 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 was undertaken, further

presentation days were required closer to the commencement of the formal procurement process. The approach was supported through advertisements on national platforms and via the use of social media. Such events were managed formally in line with the spirit of procurement regulations.

- **A RISP Procurement Team** was 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 was a requirement. Initial briefing sessions 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 augmented the training with ongoing advice and attendance at key meetings during the procurement process.
- **Contract Notice:** A Contract Notice was placed through the UK e-Notification service under the Competitive Dialogue Procedure. At this stage, key documentation also needed to be finalised and published to enable bidders to make an informed decision regarding their participation.
- **Prequalification:** Screening of Bidder Qualification Information was undertaken with the pre-qualification information received from bidders within thirty (35) days of the issue of the Notice (in accordance with the statutory timescale of thirty (30) days for the Notice). Assessment of pre-qualification information (which included details of previous relevant experience as well as financial and technical capability and capacity questions). From this exercise, a long list of five (5) bidding "Prime" Contractors were invited to participate in dialogue.
- **An Invitation to Participate in Dialogue (ITPD)** was issued to the long-listed Bidders. The ITPD required bidder responses to the Authority Requirements, pricing refinement, Contract Terms and Conditions and Draft Contract Schedules, detailed adherence to the Key Commercial Principles governing the procurement and participation in user evaluations.

- **ITPD Evaluation**: ITPD responses were evaluated to arrive at a short list of bidders. From this exercise, a short list of three (3) bidders were 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 was then conducted to finalise draft contract offers and identify the commercial terms on which the solution would be provided. The draft contracts are based on an amended version of the Crown Commercial Service (CCS) standard form IM&T contract. This stage commenced with site visits to other Bidder customers, the arrangements were defined and arranged by the Authority. Following this, detailed dialogue took place with each Bidder over two (2) "rounds", per workstream ('Functional', 'Technical', 'Implementation & Service' and 'Commercial, Legal & Financial'), each comprised of the following:
    - Receipt of the Bidder's mark-up on each part of the Agreement,
    - Review by Authority representatives,
    - Discussion with Bidders to seek clarification on submissions and providing 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 were 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 were not restricted prematurely.
- **Trial Invitation to Submit Final Tender** was issued to assess the readiness of bidders to proceed to the final ISFT stage. Submissions were not formally evaluated but were reviewed and, feedback was provided where necessary, to ensure compliance, completeness, and appropriate understanding of the Authority's requirements.
- **Invitation to Submit Final Tender (ISFT)** is the stage at which bidders provided their final tender for the Services.

- **Final Tenders** were then evaluated, and a most favoured tender was selected based on the most economically advantageous tender, which was calculated in accordance with agreed weightings for the functional/technical requirements and price.

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, 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 guided 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 were issued at the start of the procurement, including evaluation criteria for the PQQ/SPD, ITPD and ISFT stages. All evaluation approaches highlighted 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 has been made on the Most Economically Advantageous Tender (MEAT), which has been calculated in accordance with the agreed weightings for functional/technical requirements and price. This recommendation has been recorded in a final evaluation report, which sets out the basis for the award decision and has been signed via the agreed governance process.

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

Final award is subject to subsequent approvals by the RISP Programme Board 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 successful Bidder.

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.

3.4 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 included 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. Included as an optional requirement within 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

Following the Welsh Government approval of the OBC, the Contract Notice was published in December 2021. The design and development of the new service under the proposed contract took account of the migration/exit off the legacy solutions and in accordance with the RISP Programme Plan. The aim is to complete the full implementation by April 2025, subject to detailed negotiations with the successful Contractor and the commitment of the local health boards. Further details are provided in the Management Case.

The table below shows the high-level timescales for the five (5) Tranches of the RISP Programme:

Table 16: 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
• Programme definition • Outline business case • Procurement documentation	• Procurement • Full business case	• Config and testing • Systems integration • Data migration	• Implementation • Handover	• Business as usual

3.5 Risk Apportionment

While the RISP Programme adhered 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.

3.6 Payment Mechanisms

Charging mechanisms will depend on many factors, one important aspect being the phased deployment of the new Service which is expected to occur over a twelve (12) 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 therefore required the Master Services Agreement to be flexible, given that the actual dates for when the Service will 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 supported Service roll out over multiple organisations, with health boards entering into their own Deployment Orders, each of which has the potential to determine local timescales and resources.

3.7 Key Contractual Issues

The development of the Contract was 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 have been reflected in the contract as follows:

- Value for Money (VfM) – the procurement was underpinned by a financial model that provided transparency and certainty around costs for key System and service elements. These costs have been considered alongside how well the System design meets the clinical & technical requirements. The aim was 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 have been 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 have been 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 was not envisaged to have significant value for the Contracting Authority and was not pursued in the contract.
- Warranties and guarantees – this is 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 have been pursued within the contract.

3.8 Accounting Treatment

Accountancy treatment is set out in the Financial Case. The classification of items of cost as capital and revenue have been informed by the Bidder Solution designs as part of the procurement process. This was 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 depended 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 RISP solutions are purchased outright as capital assets 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 RISP Software 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.

Capitalisation of Salaries

In accordance with IFRS16 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 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 will be capitalised. Ongoing support and maintenance will be expensed as appropriate via the relevant income and expenditure accounts.

Cloud Delivered Services

This procurement is contracting for Services through a primarily Cloud delivered service, i.e. not relying on elements of the Service being delivered through NHS Wales data centres.

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 have given due consideration to this preference, but not to the detriment of any clinical solution requirements.

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.

The Solution cost, based on the Bidder's ISFT submission, and funding requirements are set out in the Financial Case. The cost estimate and classification of costs as capital and revenue has been informed by the initial market soundings undertaken in January 2021 and responses to PIN in May 2021.

The project team will further assess the various IFRS standards with finance experts and agree a final accounting treatment once the details of the proposed Solution have been confirmed.

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 was provided by the Deputy Director of Finance Group together with audit review.

Value Added Tax (VAT)

Initial advice was sought from one of the NHS Wales VAT advisors as to the possible VAT accounting treatment for the RISP 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 was 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 concludes and the design of the solution and contract terms are finalised.

3.9 Personnel Implications (including TUPE)

A Senior Project Manager has been appointed to lead the Procurement Project working to the RISP Programme Lead. The Project Manager will manage the procurement and contract award process, 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.

Specific individuals have been involved across multiple activities and undertaken more than one role in order to ensure consistency and assist in securing an appropriately robust outcome. The combined staff and consultancy team covered the following roles for the procurement:

- **RISP Programme Team:** Comprising the Senior Responsible Owner, Clinical Lead, Programme Lead, 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 utilised DHCW's legal services partner, Blake Morgan LLP to provide the required legal advice, with support including assistance with Contract drafting and contractual discussions with Bidders.
- **Commercial Advisor**: This resource was 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, have informed the specification of requirements and acted as a link to other subject matter experts from the range of disciplines within the scope of the project.
- **Financial Expert:** A financial expert assisted 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 were 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**: Specifying 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 Procurement Team**: Screening 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 activities will fall under TUPE – Transfer of Undertakings (Protection of Employment) Regulations 1981.

4. The Financial Case

4.1 Introduction

The purpose of the Financial Case is to outline the financial implications of the preferred option and confirm it remains affordable when considering the final cost of delivery for the project, following negotiations with suppliers and a more developed understanding of other costs, benefits and risks.

As such it sets out updated capital requirements and revenue consequences of the proposed scheme, along with final underpinning assumptions. It outlines anticipated funding arrangements and presents the impact on the NHS Wales organisations' financial statements.

As outlined in the Economic and Commercial Cases, the preferred option involves procuring a seamless end-to-end solution from the Preferred Bidder which will replace the existing PACS and WRIS systems. The Financial Case outlines the costs involved in procuring and implementing the solution as well as the resulting ongoing costs.

4.2 Overview

In summary, based on the tendered costs from the Preferred Bidder and updated programme costs, delivery of the preferred option requires capital investment of £25.9m and non-recurring revenue funding of £2.1m from Welsh Government.

Overview - Capital Requirements

Capital funding of £25.9m is requested from Welsh Government to invest in the Preferred Bidder's initial solution charges as well as capitalisable programme resource and local infrastructure requirements. This assumes that VAT is not recoverable on either the solution charges or the infrastructure costs.

This is a £5.3m increase on the £20.6m capital funding committed by Welsh Government at OBC as a result of:

- £1.7m additional Programme resource requirements that have been identified to ensure a robust implementation programme is in place to deliver the programme.

£3.6m additional local infrastructure costs (including VAT) that have been identified to ensure the appropriate infrastructure is in place to support the preferred solution.

Overview - Non-recurring Revenue Requirements

One-off revenue funding of £4.3m is required to invest in programme resource that cannot be capitalised during the 3-year implementation period.

This includes:

- £2.1m requested from Welsh Government, which is a £0.9m increase on the £1.2m committed at OBC.
- £2.2m Health Board contribution during 2023/24 to 2025/26. Given that Health Boards have already contributed £0.7m during 2022/23 (not included in the figures above), this represents a £0.9m increase on the £2.1m identified at OBC.

Overview - Ongoing Revenue Implications

As outlined at OBC, there are minimal revenue implications for Health Boards since the current PACS/WRIS costs of £6.5m p.a. will cover the ongoing solution service charges of £5.4m, the infrastructure revenue costs of £0.9m p.a. and the ongoing support for integration of £0.2m p.a.

There will however be a cost pressure during 2024/25 and 2025/26 of £2.1m due to double running of the existing systems and implementing the local infrastructure. It should be noted that this may be reduced depending on phasing of infrastructure costs.

Table 17: Overview of total costs compared to OBC

	2023/24	2024/25	2025/26	2026/27	2027/28 - 2032/33	FBC Total		OBC Total	Change since OBC
	£'000	£'000	£'000	£'000	£'000	£'000		£'000	£'000
Capital									
Solution Supplier Initial Charges	0	8,758	5,366	0	0	**14,124**		**14,175**	-51
Programme Resource Plan	783	1,431	646	0	0	**2,861**		**1,154**	1,707
Local Infrastructure Costs	0	5,042	0	0	0	**5,042**		**2,020**	3,022
Total Capital excl VAT	**783**	**15,231**	**6,012**	**0**	**0**	**22,026**		**17,349**	**4,678**
Irrecoverable VAT - Solution	0	1,752	1,073	0	0	2,825		2,835	-10
Irrecoverable VAT - Local Infrastructure	0	1,008	0	0	0	1,008		404	604
Total Capital Requirement	**783**	**17,991**	**7,086**	**0**	**0**	**25,859**		**20,587**	**5,272**
Revenue									
Programme Resource Plan - WG Funding	507	847	721	0	0	**2,075**		**1,222**	853
Programme Resource Plan - HB Funding	447	964	821	0	0	**2,232**		**2,122**	*110*
Non Recurring Revenue Costs	**954**	**1,810**	**1,543**	**0**	**0**	**4,307**		**3,344**	**963**
Solution Supplier Service Charges	0	1,368	5,098	5,396	21,237	**33,098**		**32,410**	688
Extend Solution Supplier Service Charges	0	0	0	0	11,140	**11,140**		**5,177**	5,963
Local Infrastructure Costs	0	894	894	894	5,364	**8,047**		**145**	7,902
Legacy - PACS and WRIS	6,495	5,993	857	0	0	**13,346**		**19,715**	-6,370
Ongoing support for integration	0	0	0	150	900	**1,050**			1,050
Less: Current PACS/WRIS Budget	-6,495	-6,495	-6,495	-6,495	-38,973	**-64,955**		**-55,425**	*-9,530*
Recurring Revenue Costs Impact	**0**	**1,759**	**353**	**-55**	**-332**	**1,725**		**2,022**	**-297**
Net Revenue Impact	**954**	**3,570**	**1,896**	**-55**	**-332**	**6,032**		**5,366**	**666**
TOTAL COST	**1,737**	**21,560**	**8,982**	**-55**	**-332**	**31,891**		**25,954**	**5,938**

The following sections outline the main assumptions behind these numbers.

4.3 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:

4.4 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.

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.

4.5 Capital Charges

Depreciation

Depreciation estimates are based on a straight-line basis over 5 years in line with the planned contract term and commence from 2026/27 once all Health Boards are deployed and associated assets capitalised. Accelerated depreciation is assumed in 2031/32 to reflect asset write down at the point that all contract deployment periods come to an end.

4.6 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.

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.

4.7 Baseline Costs

FBC Costs

Baseline costs are estimated based on the Financial Commercial paper from February 21 which identified revenue costs for PACS and WRIS of £6.2m. These have been uplifted to 2023/24 prices using the HM Treasury GDP Deflator. Baseline costs have also been adjusted from the February 21 paper to reflect a realignment of the organisational boundaries between Swansea Bay and Cwm Taf and recognising the support for Powys provided by neighbouring health boards within the current PACS contracts. As a result, the baseline costs more accurately reflect the future configuration of RISP deployment orders.

Table 18: Baseline Costs

	PACS £'000	WRIS £'000	Total £'000
Aneurin Bevan UHB	830	63	893
Betsi Cadwaladr UHB	590	102	692
Cardiff and Vale UHB	1,018	85	1,103
Cwm Taf Morgannwg UHB	784	69	853
DHCW	81	-	81
Hywel Dda UHB	695	83	778
National Imaging Academy Wales	323	-	323
Powys Teaching HB	18	-	18
Public Health Wales	728	-	728
Swansea Bay UHB	781	78	859
Velindre University NHS Trust	146	19	165
Total Baseline Costs	**5,996**	**500**	**6,495**

It is anticipated that these costs will continue until each Health Board's stable operation date for the new system plus one month of dual running costs. The table below shows the stable operation date for each of the Health Boards and the number of months that the current PACS/WRIS costs are incurred during the three-year implementation period.

Table 19: Stable Operation Date

	Stable Operation Date	Number of months of current PACS/WRIS costs incurred during implementation period		
		2023/24	2024/25	2025/26
Aneurin Bevan UHB	Jan-25	12	10	0
Betsi Cadwaladr UHB	Oct-24	12	7	0
Cardiff and Vale UHB	Jul-25	12	12	4
Cwm Taf Morgannwg UHB	Mar-25	12	12	0
DHCW	N/A	12	12	4
Hywel Dda UHB	Feb-25	12	11	0
National Imaging Academy Wales	Jul-25	12	12	4
Powys Teaching HB	Jun-25	12	12	3
Public Health Wales	May-25	12	12	2
Swansea Bay UHB	Jun-25	12	12	3
Velindre University NHS Trust	Apr-25	12	12	1

As a result, the following total costs are included in the 10-year appraisal period for the existing PACS/RIS system.

Table 20: Existing PACS/RIS costs (2023/24 – 2025/26)

	Capital £'000	Revenue £'000	Total £'000
Aneurin Bevan UHB	-	1,639	1,639
Betsi Cadwaladr UHB	-	1,096	1,096
Cardiff and Vale UHB	-	2,575	2,575
Cwm Taf Morgannwg UHB	-	326	326
DHCW	-	1,568	1,568
Hywel Dda UHB	-	1,492	1,492
National Imaging Academy Wales	-	754	754
Powys Teaching HB	-	41	41
Public Health Wales	-	1,578	1,578
Swansea Bay UHB	-	1,933	1,933
Velindre University NHS Trust	-	343	343
Total Legacy Costs	**-**	**13,346**	**13,346**

Changes since OBC

These final costs have been compared to the estimated values which were included in the OBC.

Table 21: Legacy Solution Costs Compared to OBC

	Initial Charges including VAT £'000	Service Charges £'000	Total £'000
FBC Legacy Costs	-	13,346	13,346
OBC Legacy Costs	-	19,715	19,715
Movement since OBC	-	-6,369	-6,369

Legacy costs in the FBC are £6.4m lower since OBC, which is largely driven by the number of years considered in the appraisal period.

4.7 Preferred Bidder Solution Costs

FBC Costs

Solution costs are based on tendered costs submitted by the Preferred Bidder. The Preferred Bidder has allocated these costs as follows:

- **Initial Charges:** Includes initial investment in hardware and software, professional services for testing, training, PM, data migration and implementation during the implementation period (2024/25 – 2025/26). Current assumption is that VAT is not recoverable on the initial charges although this is under investigation.
- **Service Charges:** Includes ongoing annual maintenance and support during the term of the contract.

Costs have been allocated to Health Boards based on the contract value apportionment and stable operation dates provided to the Preferred Bidder as part of the procurement process.

The resulting costs are outlined in the table below.

Table 22: Solution Costs

	Initial Charges £'000	Service Charges £'000	Total £'000
Aneurin Bevan UHB	1,855	4,213	6,068
Betsi Cadwaladr UHB	1,683	3,977	5,660
Cardiff and Vale UHB	2,506	5,852	8,357
Cwm Taf Morgannwg UHB	1,480	3,745	5,225
DHCW			-
Hywel Dda UHB	1,407	3,475	4,882
National Imaging Academy Wales	718	1,228	1,946
Powys Teaching HB	532	1,236	1,768
Public Health Wales	1,492	3,625	5,117
Swansea Bay UHB	1,889	4,863	6,752
Velindre University NHS Trust	562	884	1,447
Total Solution Costs excluding VAT	**14,124**	**33,098**	**47,222**
VAT	2,825		2,825
Total Solution Costs including VAT	**16,949**	**33,098**	**50,047**

Changes since OBC

These final costs have been compared to the estimated values which were included in the OBC.

Table 23: Solution Costs Compared to OBC

	Initial Charges including VAT £'000	Service Charges £'000	Total £'000
FBC Solution Costs	16,949	33,098	50,047
OBC Solution Costs	17,010	32,410	49,420
Movement since OBC	-61	688	627

This demonstrates an increase in solution costs of £0.6m since OBC, which is largely driven by slightly higher service charges than anticipated.

For the purposes of the 10-year appraisal period, it is assumed that the average annual service charge costs will continue at the same level following the contract end date at each Health Board.

4.8 Programme Resource Plan

FBC Costs

The Resource Plan for delivery of the Programme has been updated as part of the FBC based on

- The resource plan required to deliver RISP including the key functions and requirements as outlined in the table below.
- Pay costs based on 2023/24 Agenda for Change pay scales including on costs plus 2.5% annual inflation.

Table 24: Resourcing Requirements

Function	Requirements
Programme Management Office	• Programme Director • Programme and Project Management • Project Support • Commercial Manager • Radiology SME • Business Change Manager

	• Clinical Leads
Technical Support	• Application architecture • Infrastructure and networking architecture • Integration and reference application teams • Applications development • RADIS teams (Team leads, developers, analysts, testers) • Service management • Data standards • Information governance and patient safety
Local Deployment Teams	• Project managers • IT support • PACS/RIS support

Costs have been allocated to Health Boards based on the contract value apportionment used by the Preferred Bidder within the solution costs.

The resulting costs for the programme resource plan are presented in the table below.

Table 25: Programme Resource Costs

	Capital £'000	Revenue WG Funded £'000	Revenue HB Funded £'000	Total £'000
Aneurin Bevan UHB	315	165	308	788
Betsi Cadwaladr UHB	286	84	347	717
Cardiff and Vale UHB	515	381	394	1,290
Cwm Taf Morgannwg UHB	286	169	262	717
DHCW	0	0	0	0
Hywel Dda UHB	286	105	325	717
National Imaging Academy Wales	172	258	0	430
Powys Teaching HB	114	172	0	287
Public Health Wales	372	415	145	932
Swansea Bay UHB	429	268	378	1,075
Velindre University NHS Trust	86	58	71	215
Total Programme Resource Costs	**2,861**	**2,075**	**2,232**	**7,168**

Changes since OBC

These final costs have been compared to the estimated values which were included in the OBC.

Table 26: Programme Resource Costs vs OBC

	Capital £'000	Revenue WG Funded £'000	Revenue HB Funded £'000	Total £'000
FBC Programme Resource Costs	2,861	2,075	2,232	7,168
OBC Programme Resource Costs	1,154	1,222	2,122	4,498
Movement since OBC	1,707	853	110	2,670

Following a full review of the programme resource requirements an additional £2.7m.

4.9 Local Infrastructure Costs

FBC Costs

Infrastructure costs have updated as part of the FBC based on estimated capital and revenue costs for PSBA networks, network switches, firewalls.

Costs have been allocated to Health Boards based on actual requirements.

The resulting costs for the infrastructure are presented in the table below.

Table 27: Infrastructure Costs

	Capital £'000	Revenue £'000	Total £'000
Aneurin Bevan UHB	717	1,080	1,797
Betsi Cadwaladr UHB	784	2,668	3,452
Cardiff and Vale UHB	1,059	2,572	3,630
Cwm Taf Morgannwg UHB	818	825	1,642
DHCW	-	-	-
Hywel Dda UHB	374	348	722
National Imaging Academy Wales	-	-	-
Powys Teaching HB	214	272	486
Public Health Wales	571	-	571
Swansea Bay UHB	92	99	191
Velindre University NHS Trust	413	184	597
Total Infrastructure Costs	**5,042**	**8,047**	**13,088**
Irrecoverable VAT	1,008		1,008
Total Infrastructure Costs including VAT	**6,050**	**8,047**	**14,097**

Changes since OBC

These final costs have been compared to the estimated values which were included in the OBC.

Table 28: Infrastructure Costs vs OBC

	Capital £'000	Revenue £'000	Total £'000
FBC Infrastructure Costs	6,050	8,047	14,097
OBC Infrastructure Costs	2,423	-	2,423
Movement since OBC	3,627	8,047	11,674

Following a full review of the local infrastructure requirements an additional £3.6m of capital investment requirements have been identified, including VAT.

This will incur £0.9m of annual revenue consequences. Although these were not identified separately in the OBC, they have been offset by reduced legacy costs compared to the OBC.

4.10 Ongoing Support for Integration Costs

FBC Costs

DHCW has estimated that an additional £150k p.a. of costs will be incurred for the ongoing support for integration.

Costs have been allocated to Health Boards in line with the solution contract value allocation.

The resulting costs for the ongoing support for integration are presented in the table below.

Table 29: Ongoing Support for Integration Costs

	Capital £'000	Revenue £'000	Total £'000
Aneurin Bevan UHB	-	116	116
Betsi Cadwaladr UHB	-	105	105
Cardiff and Vale UHB	-	189	189
Cwm Taf Morgannwg UHB	-	105	105
DHCW	-	0	0
Hywel Dda UHB	-	105	105
National Imaging Academy Wales	-	63	63
Powys Teaching HB	-	42	42

	Capital £'000	Revenue £'000	Total £'000
Public Health Wales	-	137	137
Swansea Bay UHB	-	158	158
Velindre University NHS Trust	-	32	32
Total Ongoing Support for Integration	**-**	**1,050**	**1,050**

Changes since OBC

These costs were not included at OBC-stage.

4.11 Impact on Financial Statements

Impact on Balance Sheet

The proposed accounting treatment for the preferred option is that £25.9m of assets will be capitalised and brought on balance sheet (including VAT where appropriate).

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.

4.12 Impact on Income & Expenditure

As outlined at OBC, there are minimal recurring revenue implications overall since the current PACS/WRIS costs of £6.5m p.a. will cover both the ongoing solution service charges of £5.4m and the infrastructure revenue costs of £0.9m p.a. resulting in a net overall saving to NHS Wales from 2026/27 onwards of £0.2m p.a.

However, there are non-recurring revenue impacts during the implementation period including:

- Programme resource costs of £4.3m during 2023/24 – 2025/26 which it is anticipated will be funded as follows:
    - £2.2m from Health Boards allocated based on the 2022/23 contribution of £744k continuing for the next 3 years.
    - The remaining £2.1m is requested from Welsh Government.
- £2.1m cost pressure during 2024/25 and 2025/26 due to double running of the existing systems and the revenue consequences of implementing the local infrastructure. It should be noted that this may be reduced depending on phasing of infrastructure costs.

The impact to Health Boards, based on the allocation of costs outlined in the previous sections, is outlined in the table below.

Table 30: Income & Expenditure Impact by Health Board

Non-recurring revenue costs	2023/24	2024/25	2025/26	2026/27	2027/28 - 2032/33	Total 10 Year Forecast
	£'000	£'000	£'000	£'000	£'000	£'000
Aneurin Bevan UHB	62	133	113	0	0	**308**
Betsi Cadwaladr UHB	70	150	128	0	0	**347**
Cardiff and Vale UHB	79	170	145	0	0	**394**
Cwm Taf Morgannwg UHB	52	113	96	0	0	**262**
DHCW					0	**0**
Hywel Dda UHB	65	141	120	0	0	**325**
National Imaging Academy Wales	0	0	0	0	0	**0**
Powys	0	0	0	0	0	**0**
Public Health Wales	29	63	53	0	0	**145**
Swansea Bay UHB	76	163	139	0	0	**378**
Velindre University NHS Trust	14	31	26	0	0	**71**
Health Board contribution to Programme cos	**447**	**964**	**821**	**0**	**0**	**2,232**
Welsh Government funding	507	847	721		0	**2,075**
Total non-recurring revenue costs	**954**	**1,810**	**1,543**	**0**	**0**	**4,307**

Recurring revenue costs	2023/24	2024/25	2025/26	2026/27	2027/28 - 2032/33	Total 10 Year Forecast
	£'000	£'000	£'000	£'000	£'000	£'000
Aneurin Bevan UHB	0	191	-88	-71	-428	**-396**
Betsi Cadwaladr UHB	0	331	249	264	1,587	**2,431**
Cardiff and Vale UHB	0	445	344	161	966	**1,916**
Cwm Taf Morgannwg UHB	0	216	-150	-135	-810	**-879**
DHCW	0	0	-54	-81	-485	**-619**
Hywel Dda UHB	0	127	-174	-159	-953	**-1,159**
National Imaging Academy Wales	0	77	-14	-113	-678	**-729**
Powys	0	66	197	220	1,322	**1,805**
Public Health Wales	0	115	-39	-110	-659	**-692**
Swansea Bay UHB	0	144	70	-35	-211	**-32**
Velindre University NHS Trust	0	47	12	3	17	**79**
Health Board impact on recurring revenue co	**0**	**1,759**	**353**	**-55**	**-332**	**1,725**
Welsh Government funding					0	**0**
Total recurring revenue impact	**0**	**1,759**	**353**	**-55**	**-332**	**1,725**

Total revenue costs	2023/24	2024/25	2025/26	2026/27	2027/28 - 2032/33	Total 10 Year Forecast
	£'000	£'000	£'000	£'000	£'000	£'000
Aneurin Bevan UHB	62	324	26	-71	-428	**-88**
Betsi Cadwaladr UHB	70	481	377	264	1,587	**2,779**
Cardiff and Vale UHB	79	615	489	161	966	**2,310**
Cwm Taf Morgannwg UHB	52	329	-54	-135	-810	**-617**
DHCW	0	0	-54	-81	-485	**-619**
Hywel Dda UHB	65	268	-54	-159	-953	**-833**
National Imaging Academy Wales	0	77	-14	-113	-678	**-729**
Powys	0	66	197	220	1,322	**1,805**
Public Health Wales	29	178	15	-110	-659	**-547**
Swansea Bay UHB	76	307	209	-35	-211	**346**
Velindre University NHS Trust	14	78	38	3	17	**150**
Total Health Board I&E impact	**447**	**2,723**	**1,174**	**-55**	**-332**	**3,957**
Welsh Government funding	507	847	721	0	0	**2,075**
Total impact on I&E	**954**	**3,570**	**1,896**	**-55**	**-332**	**6,032**

4.13 Overall affordability and funding

As outlined in section 1.2, based on the tendered costs from the Preferred Bidder and updated programme costs, delivery of the preferred option requires the following funding:

- £25.9m capital investment requested from Welsh Government, a £5.3m increase on the funding committed at OBC.
- £2.1m non-recurring revenue requested from Welsh Government, which is a £0.9m increase on the £1.2m committed at OBC.
- £2.2m Health Board contribution during 2023/24 to 2025/26. Given that Health Boards have already contributed £0.7m during 2022/23, this represents a £0.9m increase on the £2.1m identified at OBC.

As outlined at OBC, there are minimal revenue implications for Health Boards since the current PACS/WRIS costs of £6.5m p.a. will cover the ongoing solution service charges of £5.4m, the infrastructure revenue costs of £0.9m p.a. and the ongoing support for integration of £0.2m p.a.

There will however be a cost pressure during 2024/25 and 2025/26 of £2.1m due to double running of the existing systems and implementing the local infrastructure. It should be noted that this may be reduced depending on phasing of infrastructure costs.

5. The Management Case

5.1 Introduction

This section of the Full Business Case 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 the guidance set out in the Treasury Green Book and Welsh Government Five Case Model. It is assumed there will be flexibility to support any new developments and discoveries as they emerge.

A Strategic Outline Case (SOC) was not required for RISP, as it is driven by the need to re-procure a new radiology system. This Full Business Case (FBC) further evolves the approach to managing and delivering this programme, as originally set out in the Outline Business Case (OBC).

5.2 Programme Governance

Following a review period by the steering group overseeing the NHS Executive, it was agreed that the RISP programme would not transfer into the NHS executive but d into Digital Health and Care Wales, on 1st January 2023. The programme is managed in accordance with Managing Successful Programmes (MSP) and PRINCE2 standards, which are tailored to suit the needs of the service.

Diagram 2 below outlines the Programme Board reports to DHCW Executive Board. 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 to provide a comprehensive clinical imaging service for patients and healthcare service in Wales.

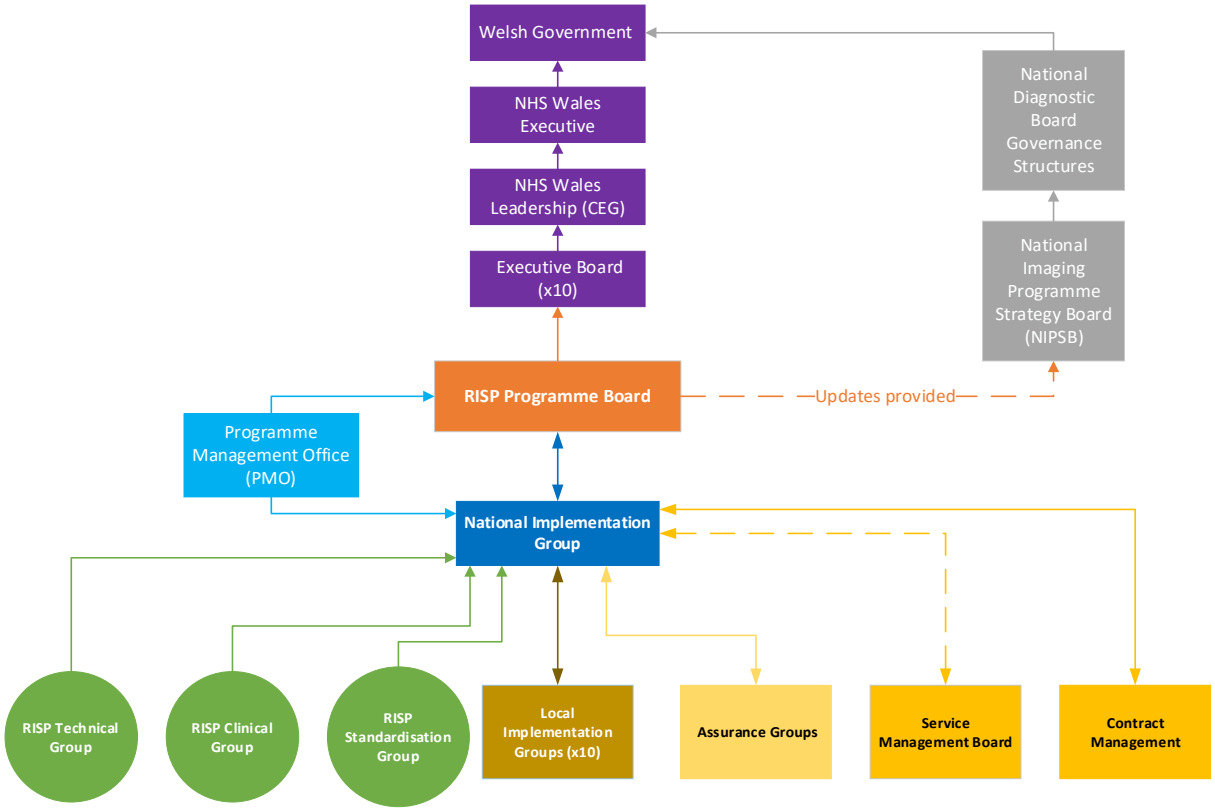


Diagram 5 – Programme Structure

A RISP Programme Board is well established with a remit to provide oversight and direction and to review and assure the Programme's progress. Membership comprises 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 chairs the RISP Programme Board, oversees all projects within the Programme, and will provide strategic direction and leadership to the Programme.

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

RISP Programme Management Structure

A RISP Programme Management Office (PMO) team is responsible for managing and driving the delivery of the Programme. The Programme team is led by the National Programme Lead, Gareth Cooke and overseen by a Programme Director, Alison Maguire. The role of the PMO is to plan, coordinate and manage the Programme on a day-to-day basis and adds value

through its staff's knowledge, experience and skills. The PMO sets and maintains standards for project management throughout the Programme to ensure best practice.

Following a review of the PMO resources as initially outlined in the OBC, it is proposed that an additional Principal Project Manager is appointed to support the complex work of implementation and the number of support workers is reduced from 3 to 2 as more efficient use of time and resources is adopted. From 2023/24, the Programme Management Office (PMO) will comprise of:2 Principal Project Managers, focussing on programme implementation; supported by

- Two Project Managers focussing on Commercial, Business Change and implementation projects
- Two Support Workers that support programme governance and assurance
- 1 Subject Matter Expert who works with the Radiology Departments on business change projects, as well as participates in the procurement, development, testing, training, and deployment of the new solution
- 0.5 FTE Commercial Manager who will manage the contract and support implementation following on from the procurement exercise
- 1 Business Change Manager who will be responsible for supporting the change process and developing training to support the implementation

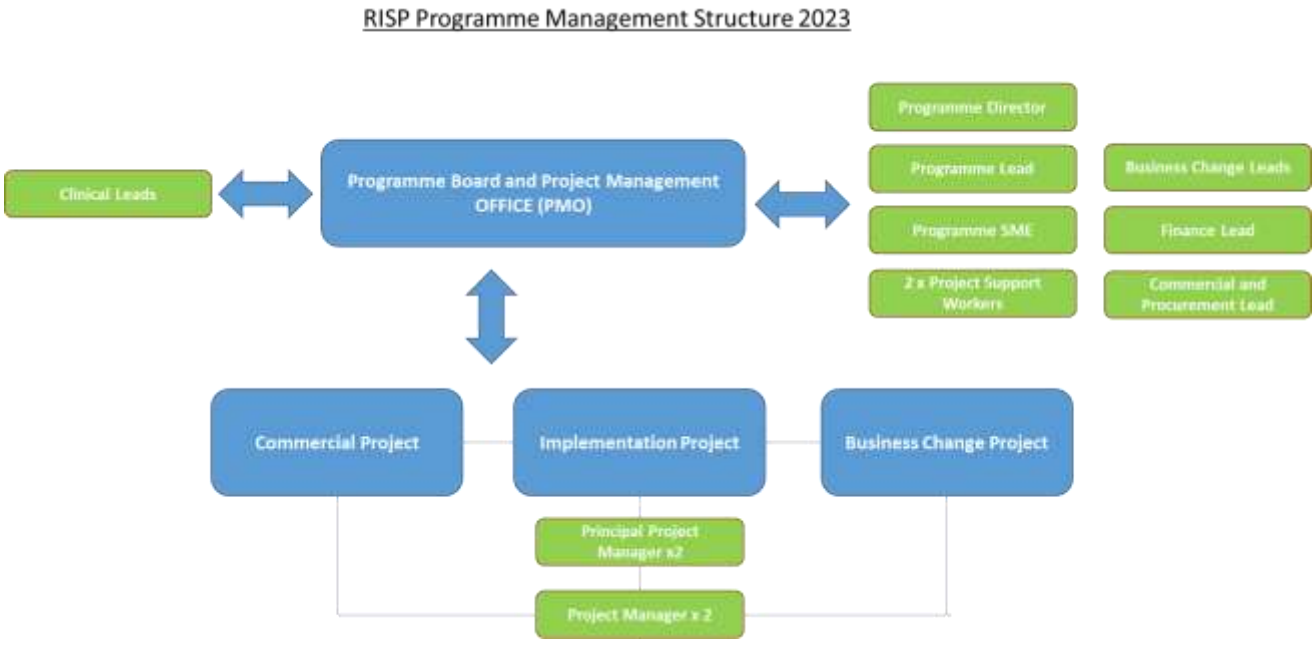


Diagram 6 – Programme Management Structure

Radiology Clinical Leads

Three (3) Consultant Radiologists are 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 clinical partners within Radiology and the wider NHS clinical service in defining the requirements, designing the standard solution, and supporting the deployment of the developed solution. Their continued support of the Programme will facilitate transitioning from legacy systems to the preferred bidder. They will support HBs in developing and optimising the new system service and business change/ modernisation.

Technical Advisors

The RISP Programme has a small team of experts from across Public Health Wales, National Imaging Academy Wales, and NHS Wales Shared Services Partnership (NWSSP), that support the procurement and implementation of the Programme.

- Archus Ltd has supported the development of the financial and economic cases.

Implementation

As the procurement process has progressed, it has become clear that further and more detailed consideration was needed to be given to programme implementation, hence why a separate project has been set up dedicated to implementation.

In order to successfully transition from the current systems to the new systems, it has been identified that a number of technical posts are required:

- Application Architects – Implement systems integration across applications /interoperability
- Infrastructure – to support design and implementation of DHCW infrastructure configurations required to deliver the solution (e.g., connectivity between NHS Wales networks and Contractor hosting locations, configuring of security systems such as firewalls, and national NHS-side monitoring systems). Also to provide NHS-side infrastructure-specific subject matter expertise and leadership to support implementation of the RISP solution, both within the national programme and to local implementation projects
- Software engineers – supporting Integration Services (Development, testing and deployment of messaging software and flows. Ongoing maintenance and updates). Integration Services (assisting with Testing of new flows and the comparison with existing functionality. Deployment of flows to environments, Service Management, connection and validation testing process for go live. Live support and reporting.)
- RADIS transition
    - Pre population of PACS/ RIS:
        - Analysis of requirements for data extraction and new feed
        - Document deliverables for data extraction and feed
        - Data extract build, test and execution
        - New feed build, test, implementation and support

- Data migration for cutover
    - Analysis of requirements for data migration
    - Document deliverables for data migration
    - Data migration build, test, execution
- National Radiology Data
    - Analysis of requirements
    - Document deliverables
    - Build, test and implement the solution

- Testing – although some testing will be undertaken at a health board level, at a national level, User Acceptance Testing will need to be conducted before implementation

Service Management

Current PACS and WRIS Service Management Boards (SMB) will continue until all of the HB's have implemented the preferred system. A New Service Management Board superseding PACS & WRIS SMB will be set up upon initial implementations as seen in diagrams 8 and 9 below:

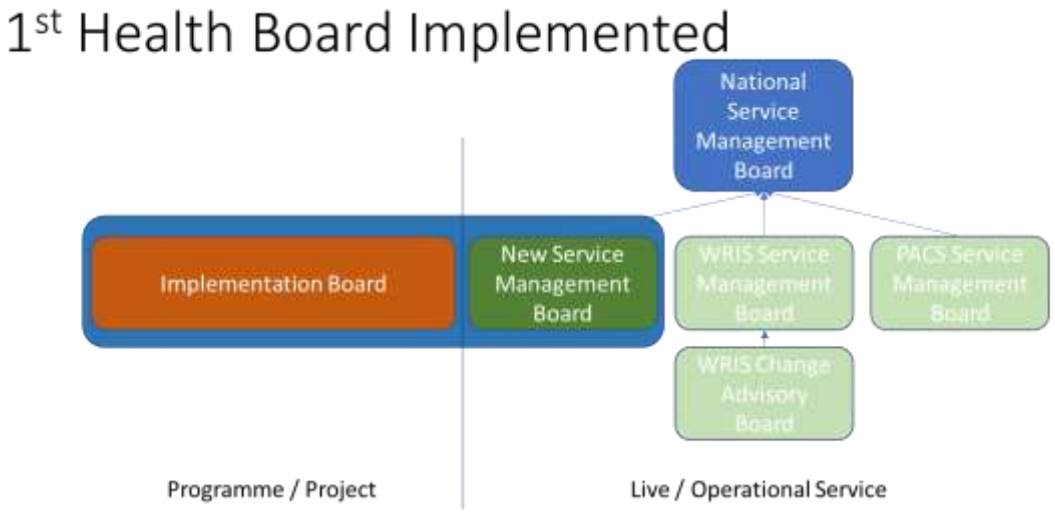


Diagram 7 -Transition SMB

Once all health boards are live, the new structure will be as follows:

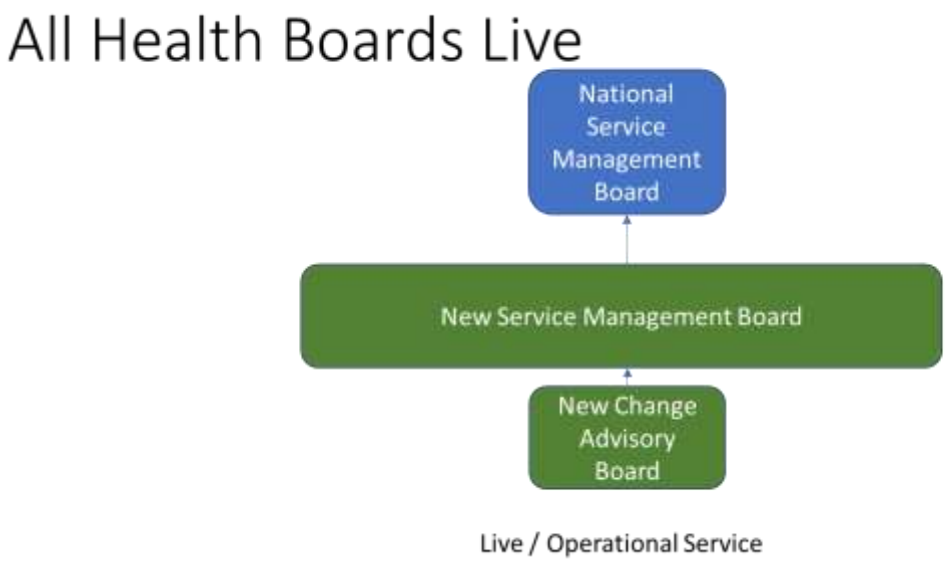


Diagram 8 – New SMB when all Organisations are live

Concerning Change Requests, CCNs with only a local impact are to be formally logged to the Supplier & copied to the central change log. CCNs with wider reaching impact will be taken to SMB for approval before being submitted officially to the Supplier and copied to the central change log. The Supplier will determine the local/national impact of each CCN.

Local Implementation

Underpinning the National SMB will be local implementation groups set up in each health board, 12 months before implementation.

These local groups will be supported by the Programmes PMO, but will also receive dedicated funding through the Programme for new or existing posts:

- 1 x FTE dedicated band 7 project manager for 12 months
- 1 x FTE IT support (band 6) for 3-6 months
- 1 x FTE PACS/RIS support (band 7) for 3-6 months

Individual health boards will be responsible for recruiting and employing/back filling these roles.

Under the current PACS agreement with Fuji, there are some computerised and digital Radiology hardware components that are not within the scope of the RISP Programme. This equipment will be replaced under a separate Programme of work.

5.3 Projects and Workstreams

In the OBC, the Programme identified several key projects 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 Contractor.
- **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, design the standard solution, and deploy 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 the radiology request, vetting, appointments (scheduling), 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 ensuring the RISP Programme is professionally managed and assured.

Now that the procurement process has been completed, a proposed new project structure has been developed, with a particular focus on implementation:

Diagram 9 – Proposed RSIP Project Structure

Implementation Project

This takes the technical aspect of the Programme's implementation and will ensure a smooth transition from existing to new systems and suppliers. This complex project involves several systems that need to be integrated.

Implementation timescales are challenging, and once the contract is awarded, it can be revisited with the successful Supplier.

Sitting underneath the National Service Management Board

Business Change

Building on the existing business change project, this project will measure and report on programme benefits and ensure standardisation for PACS and RIS systems across Wales. This will involve interoperability, adopting core datasets, developing shared working practices,

vetting and reporting, e-requesting, results viewing, and enterprise viewing. The Programme will not mandate that health boards adopt universal standards but instead recommends that these are adopted to maximise the full benefits of the Programme. This project will also support health boards regarding change management processes and work closely with the implementation project to ensure business processes are standardised.

Commercial Project

This new project will focus on contract management, supplier relationship and service management. This project will work closely with the Service Management Board (SMB – Diagrams 3&4) to oversee any contract changes.

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 following established best practice.

The Programme Lead and Programme Director will be responsible for appointing the Project Managers, with the approval of the Board. They 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.

5.4 Technical and Assurance

Medical Devices

Some parts of the RISP solution e.g. the PACS software and diagnostic workstation displays, fall under the remit of the Medical Devices Regulations 2002 (SI 2002 618, as amended. The Contractor is required to comply with relevant Medical Devices Regulations for any such devices. Before contract award the Contractor is specifically required to provide evidence demonstrating that software components are UKCA or CE marked, provide evidence of conformity against ISO 14971:2019 (Medical Device Risk Management) and ISO 13485:2016 (Medical Devices – Quality Management Systems); and to ensure appropriate management

of clinical safety issues through provision of post marketing surveillance, field safety notices and documented clinical safety management processes**.**

The Programme will work with the Wales Informatics Assurance Group and other national and Health Board teams to ensure compliance with requirements in all areas relating to equality, safety, technical architecture, infrastructure, service management, systems integrations, information governance, information standards, cyber security standards and Welsh language.

Systems and Integration

Diagram 11 below shows how the RISP solution interfaces with the various technical systems to support the clinical workflow.

Clinical Review

- Patient reviewed by clinician
- Clinician reviews result history in WCP (WCP “pulls” test and results from WRRS)
- Clinician makes new radiology request (e-request launched from WCP, and pulls reference data from RIS then posts new request to WRRS)

Exam Attendance

- WRRS posts request into RIS- if patient demographics don’t match a known RIS patient then RIS can “query” EMPI for demographics or post new patient identifier to EMPI
- When patient attends for exam- RIS posts study details to modality and to PACS
- When exam complete, modality sends images to PACS and PACS forwards them to PDMS.
- PDMS may post “summary data” back to RIS

Radiology Reporting

- Images reviewed in PACS
- PACS launches nuance VR
- PACS viewer may launch WCP to view external data- e.g. pathology results

- Radiology report created in PACS and posted to RIS
- RIS posts result to WRRS

Result Review

1. WRRS updates “My results” list in WCP
2. Clinician review result- WCP pulls data from WRRS
3. Clinician may review images by launching PACS viewer from within WCP
4. Clinician acknowledges radiology report in WCP
5. WCP acknowledgment posted back to RIS

The complexity and integration of the various systems is detailed in Diagrams 11 and 12.

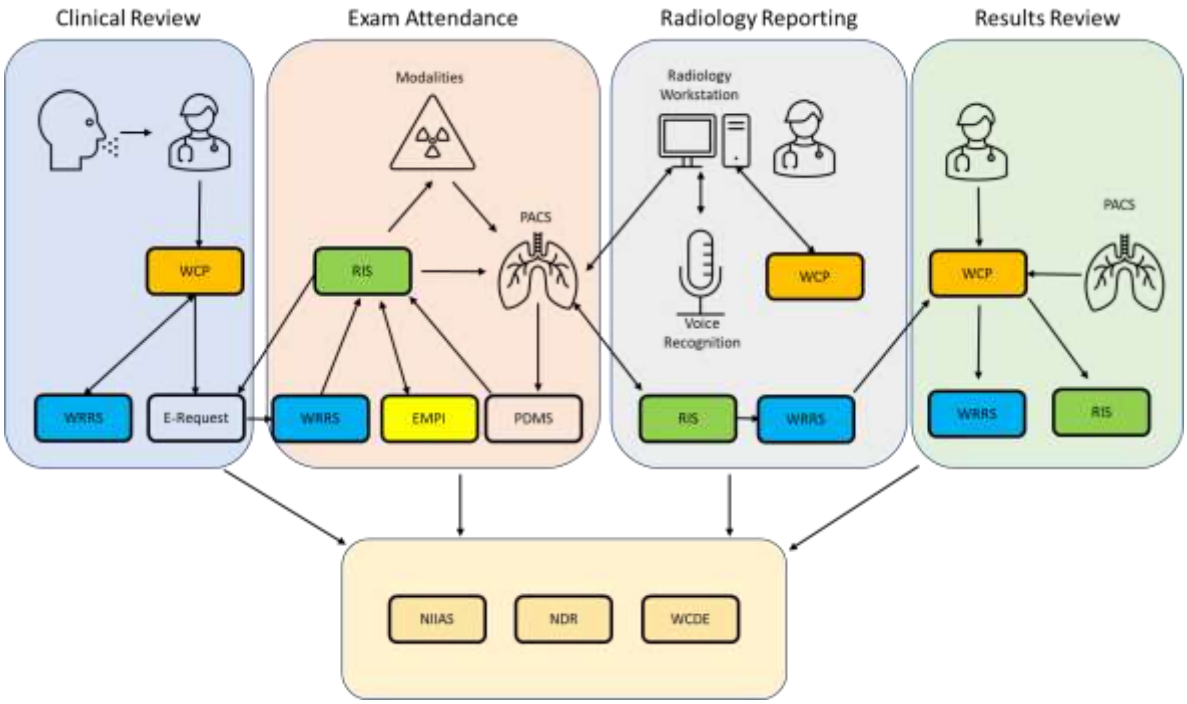


Diagram 10 – RISP solution Interfaces

Diagram 12 below shows a further detailed systems map of the RISP Programme. Some details may be subject to change following technical discussions with the supplier

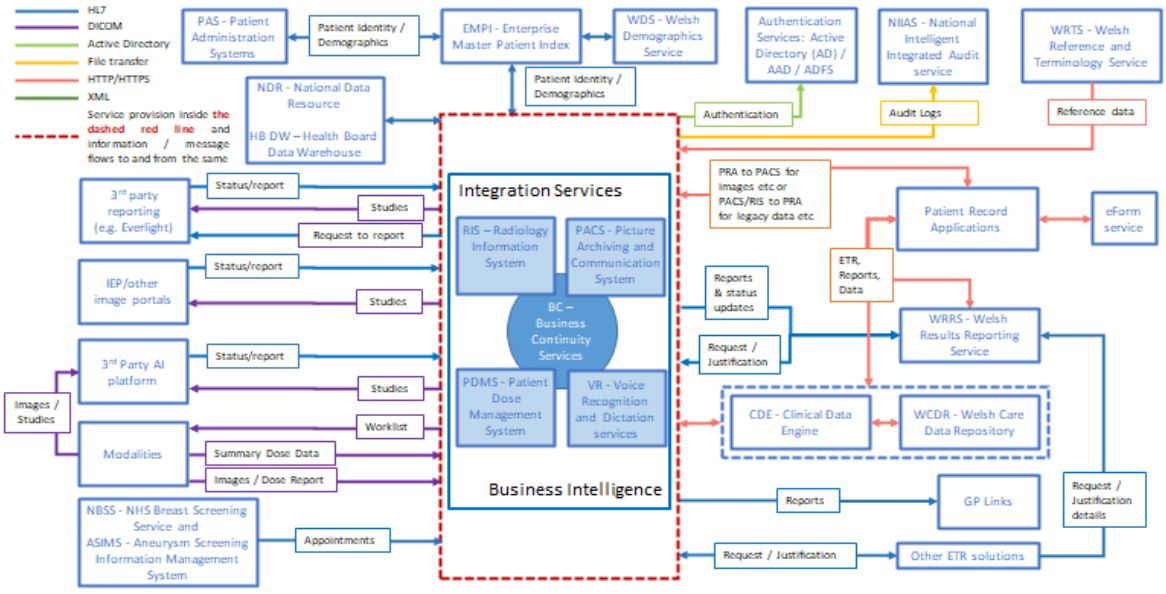


Diagram 11 – RISP Integrations

5.5 Benefits Realisation

A vital responsibility of the Programme Management Office and Programme Board has been establishing a Benefits Management Strategy and framework for monitoring and managing the benefits the Programme will enable. This includes a benefits register and profiles identifying 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 FBC, benefits have been identified, measures set, and a plan agreed to collect baseline data and agree targets and monitoring methods. The Benefits Register and Strategy are attached at Appendix M3 and Appendix M2.

5.6 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 DHCW standards.
- The risks are reviewed at least once a month by the PMO and Programme Board members at the Working Group and Programme Board.
- The Programme Lead will escalate any risks that the PMO cannot manage and require urgent action to the Programme Director. If needed, they will escalate to the SRO and jointly decide on the appropriate action.
- In liaison with the SRO, the Programme Director will escalate any risks that cannot be dealt with at the level of the Programme Board to DHCW Executive Board for corporate decision.
- The Programme RAID log, containing the Risk Register is attached at Appendix M4.

The high-level Programme risks are identified below:

Table 31:Programme high-level risks

High level risk	Mitigation
If funding is not identifed to upgrade the current firewall and PSBA infrastructure within each health board to the minimum contractor requirements, Then health boards may be unable to implement the new system, Resulting in delays to programme benefits and wider implementation	Some health boards have already begun to upgrade their infrastructure. Reconsider minimum requirements from Philips vs future proofing i.e. 1GB PSBA instead of 10GB.
If an extension to the termination assistance clause is not signed by the existing supplier, Then there will be even less time for implementation, Resulting in increased pressure on all health boards to implement within shorter timescales	Engage with Fuji in order to negotiate termination assistance clause.
If there are any delays in the sign off procedures within health boards, Then the contract start date will be delayed, Resulting in a delay in implementing the new contract	Ensure HB's are aware of timescales through national implementation meetings. Support HB's to set up local implementation meetings.
If there is no contingency plan to replace the existing Computerised/Digital Radiology equipment that belongs to the existing supplier the when new contract begins, Then some health boards may be without CR/DR equipment, Resulting in them not being able to undertake imaging, and potentially putting patients at risk (noting this has a greater impact on rural areas)	Continue to work with the National Imaging Board and HB's in order to develop replacement equipment and/or reconfiguration of service delivery models
If both LINC and RISP implementation timescales continue as planned, Then there may not be sufficient technical and project resources available to support both programmes, Resulting in delayed implementation	Continue to work closely with the LINC programme to ensure sufficient time in between implementation dates for each health board
If the Philips solution does not maintain the patient identity across multiple instances, Then patients may be incorrectly identified, Resulting in compliance failure, patient safety issues and the solution not going live	Proceed with FBC development and approval processes whilst clarification is sought from Philips.

Contingency Plans

If this programme fails, the current 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/or supported.

5.7 Outline Arrangements for Post Project Evaluation

Post Implementation Review (PIR)

Initial lessons learned and evaluation reviews will be conducted for each health board implementation. These reviews ascertain whether the anticipated benefits have been delivered and are scheduled 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, which began with the Gateway 2 review in June 2021 to ensure the delivery strategy and Gateway 3 in February 2023.

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 implemented.

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

Appendix

Appendix S1: 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

Alerts and notification of imaging reports Recommendations (2022)

4.
Alerts_notification_i

NPSA 16

npsa-16.pdf

Appendix E1: Economic Model

Appendix F1: Financial Model

Appendix M1: Programme Board Terms of Reference (Back)

RISP Programme Board ToRs Tranche 2

Appendix M2: Benefits Management Strategy (Back)

M3 RISP Benefits Management Strategy

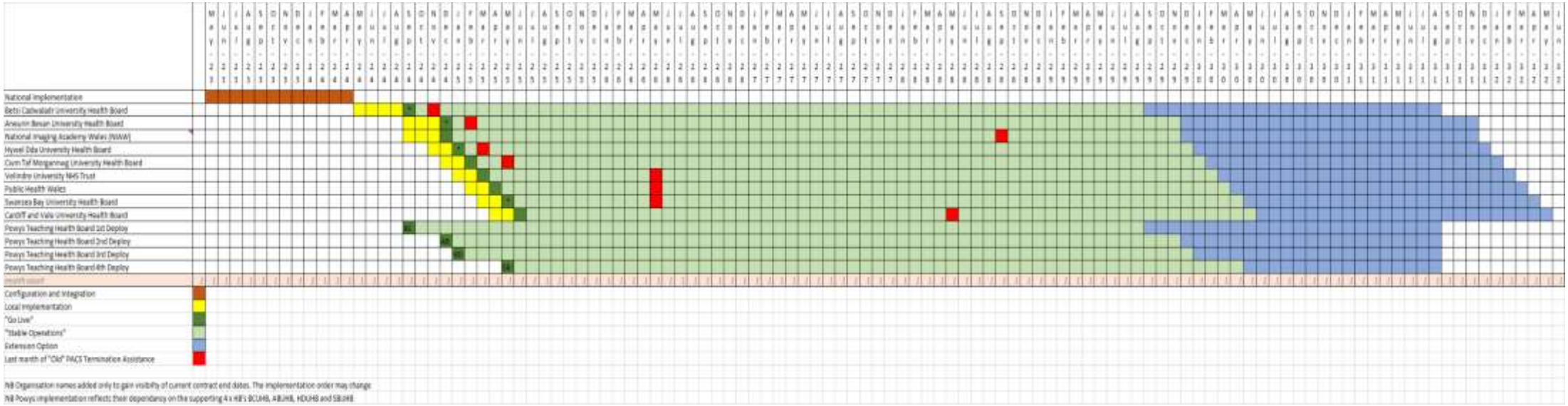
Appendix M3: Benefits Register (Back)

Appendix M4: RAID (Risks, Actions, Issues and Decisions) (Back)

Programme Risk Register 08-03-2023.x

Appendix C1: Draft Implementation Plan (Back)

This implementation plan is provided for indicative purposes only, the plan will be refined and further developed for approval following award to the successful Contractor.



Appendix C2: Procurement Route Evaluation (Back)

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