DEVELOPMENT OF A SATELLITE RADIOTHERAPY UNIT AT NEVILL HALL HOSPITAL

FULL BUSINESS CASE

Version No 7 – 19th May 2022

Contents

Appendices: *(not included with this version)*

NB – All capital / construction related information is included in the supporting Estates Annex which is available via a link

FULL BUSINESS CASE - EXECUTIVE SUMMARY

1.0 Introduction

1.1 Velindre Cancer Centre (VCC) is a centre of excellence for the non-surgical treatment of cancer. It is one of the ten largest regional clinical oncology centres in the United Kingdom and the largest of the three centres in Wales.

1.2 VCC serves the 1.5 million people who live in South East Wales, providing services at Velindre Cancer Centre in Cardiff and at a number of other sites in its catchment area and in patients' own homes. The Centre, however, is fast approaching the point where its facilities and skilled workforce will be unable to meet the needs of patients

1.3 To ensure that Cancer Services meets the needs of the population into the future, the Welsh Government requested that Commissioners and Velindre University NHS Trust (VUNHST) develop a Transforming Cancer Services (TCS) Programme Business Case for South East Wales. This work that commenced in 2015 and provided a PBC in 2017 established a Clinical Model for Cancer Services in South East Wales. This was actioned through extensive engagement and consultation with partner organisations including Third Sector and, importantly, patients and their families.

1.4 After significant stakeholder and patient engagement, the Clinical Model within the PBC required the development of Regional Radiotherapy Satellite Centre to serve the North of the South East Wales catchment population. An option appraisal, independently led, was undertaken and Nevill Hall Hospital in Abergavenny was identified as the preferred location for the Regional Radiotherapy Satellite Centre (RSC).

1.5 In parallel with this work on the RSC OBC, an nVCC OBC has been developed, approved by Commissioners and submitted to Welsh Government on 8th July 2019. In this context, the Trust has received Outline Planning Permission to build the new Velindre Cancer Centre (nVCC) in Whitchurch, Cardiff.

1.6 There is a key relationship between the new Velindre Cancer Centre project (nVCC) and RSC Project, and between both these Projects and the Integrated Radiotherapy Solution (IRS) procurement. These relationships relate to demand management, workforce development, clinical effectiveness and commissioning optimisation. The rationale for an RSC has been made in the TCS PBC and the selection of Nevill Hall Hospital as the preferred site in a separate option appraisal. The FBC focuses on the deliverability, affordability and VFM of that solution as compared to the expansion of the nVCC beyond the SOA contained within its current OBC.

1.7 Further, the Welsh Government approved resources in August 2019 to enable the development of an OBC for the RSC which was approved by both VUNHST and ABUHB on 24th September and 23rd September respectively, then WG. Following the approval work continued on the project to develop this FBC.

1.8 The FBC identifies that the preferred RSC option is deliverable, affordable and offers VFM.

1.9 It should be noted that significant additional revenue costs will be required in excess of the revenue cost of the preferred option to provide additional Radiotherapy capacity to meet forecast demand if the proposed satellite unit does not progress. The majority of that activity will need to be provided via other Providers.

2.0 Strategic Case

2.1 The Strategic Case sets out the case for the development of an RSC. It does this by articulating the deficiencies of the current Clinical Model and Service Capacity. The RSC FBC can be viewed as a partner Business Case to the nVCC OBC in terms of the sizing of the nVCC. It is important, however, to emphasise that the RSC FBC also stands alone and separate from the nVCC business cases in terms of the Solution proposed. The case is made for local provision regardless of the nVCC being progressed.

2.2 The limitations and challenges related to the current Clinical Model and Service capacity are impacting the Trust's ability to deliver effective high quality, patient centred services are presented.

2.3 It is widely accepted that the current patient travel distances are sub-optimal and does not sufficiently promote access, patient well-being and recovery. It is also widely accepted that improving the Clinical Interface and relationship between VCC and Local Cancer Services will improve patient care.

2.4 As well as the sub-optimal patient model, it is evidenced within the Strategic Case that the current Radiotherapy Service capacity (8 treatment machines) does not meet current and projected patient demand

2.5 The Strategic Case confirms continued alignment with updated national and regional cancer policies.

2.6 To demonstrate the level of future demand at the existing VCC, the Trust has undertaken a detailed demand modelling exercise. This involved comparing the current hospital capacity to meet demand in any new infrastructure. This analysis has been presented to, and supported by Commissioners, NHS Wales Shared Services and WG Officers. In developing this FBC activity and projected activity levels have been reviewed and confirmed that the original TCS assumptions of 2% average per annum increase in referrals is still relevant in projecting radiotherapy capacity requirements.

2.7 There is also no space to expand on the existing VCC site. This represents a high risk to patients given the anticipated growth timeline in demand for services. While planning is underway to mitigate as far as possible capacity limitations in the short term, it is imperative that a substantive term solution is urgently established. The timeline for the nVCC, currently being projected to open in 2025 is a significant concern.

2.8 Essentially, the Strategic Case presents the case for additional capacity to be built at the RSC in support of the following Project Spending Objectives:

Table 1-1: RSC Project Spending Objectives

Project Spending Objective	Description
Project Spending Objective 1	To build new hospital infrastructure that supports **quality** and **safe** services.
Project Spending Objective 2	To provide sufficient **capacity** to meet future **demand** for services.
Project Spending Objective 3	To **improve patient, carer** and **staff experience.**
Project Spending Objective 4	To provide **capacity** and **facilities** to support the delivery of high quality **education**, **research**, **technology** and **innovation.**

2.9 The Strategic Case sets out a compelling case for development of a RSC given the capacity requirements and the benefit to patients of care closer to home. The overall objective is to deliver an RSC that will provide excellent care for cancer patients from across the North of the region, closer to their homes. The RSC will provide a range of radiotherapy services for patients across South East Wales. In addition the RSC will support the VCC, and in due course the nVCC, to be an international focal point for research and education.

3.0 Economic Case

3.1 As with the Strategic Case factors contributing to the Economic Case have also not changed significantly since submission of the OBC and the shortlisted options remain unchanged, as follows:

Option 1 The Status Quo Option 'Do Nothing': This option provides a benchmark for assessing the value for money of all options. It is limited to the Operational Optimisation of existing arrangements as far as possible in order to improve the organisation's capability to meet current demand for core services and the provision of outsourced capacity to meet forecast additional demand.

Option 2 nVCC Expansion 'Do Minimum': This option offers the same capacity solution as the RSC Option with the feature of incorporating this capacity within an expanded nVCC. This option requires a delayed implementation which will be funded through a mix of private and public funding. It will also maintain the 'Status Quo' in terms of service location for the residents of the Northern catchment of South East Wales

Option 3 'Intermediate': This option provides the development of a purpose built RSC on the Nevill Hall Hospital site. This option offers an early implementation which increases radiotherapy capacity in South East Wales and will be funded through NHS Capital.

3.2 A full Economic Appraisal was undertaken in the OBC and this has been re-run as part of this FBC to reflect updated capital and revenue costs. The overall results of which are shown in the table below:

Table 1-2 FBC Economic Appraisal Results

Expenditure Heading	Do Nothing	Do Minimum (nVCC Extension)	RSC
Initial capital costs	0	9,213	36,973
Lifecycle capital costs	0	1,866	3,471
Total capital costs	**0**	**11,079**	**40,444**
Transitional costs	0	726	726
Outsourcing during transitional period	0	7,208	0
Recurring revenue costs	306,810	220,605	194,739
Total revenue costs	**306,810**	**228,540**	**195,465**
Quantified risks - capital costs	0	0	1,620
Optimism bias	0	0	0
Revenue expected risk value	0	2,771	1,566
Total risk costs	**0**	**2,771**	**3,186**
Total costs	**306,810**	**242,389**	**239,095**
Benefits	0	0	-585,010
Total benefits	**0**	**0**	**-585,010**
Net Present Social Value (undiscounted)	**306,810**	**242,389**	**-345,916**
Net Present Cost (discounted)	120,863	101,292	108,719
Total benefits (discounted)	0	0	-374,968
Net Present Social Value (discounted)	**120,863**	**101,292**	**-266,249**
Rank	**3**	**2**	**1**
Benefit Cost Ratio (discounted)	**0.00**	**0.00**	**3.45**
Rank	**2**	**2**	**1**

3.3 The Economic Appraisal demonstrates that the Preferred Option in the OBC continues to offer the best Net Present Social Value of the three options, suggesting that it offers best value for money in terms of whole life costs and benefits. It also offers the best benefit cost ratio at 3.45. The Intermediate RSC Option, Option 3, is therefore confirmed as the Preferred Option for the Project.

4.0 Commercial Case

4.1 The Commercial Case sets out the overall approach the Health Board has taken to ensure there is a competitive market for the supply of services.

4.2 The procurement route involves the construction of a purpose built Radiotherapy Satellite Centre on the Nevill Hall Hospital site, funded through centrally funded public sector capital, utilising The Designed for Life: Building for Wales 4 Regional Framework (D4L:BfW4). This method of capital procurement implements the Welsh Government's construction policy to ensure the scheme complies with best practice models of procurement based on long-term strategic partnerships.

4.3 In accordance with the requirements of this Framework and the business case process a "cost not to be exceeded" has been agreed with the Supply Chain Partner, Kier Construction, for the construction of the proposed new facility.

4.4 The procurement of all Groups 2, 3 and 4 equipment, and major medical equipment for the Project will be funded through Welsh Government capital funding and procured via the assistance of Shared Services Procurement Services.

4.5 Equipment and ICT costs have been calculated based on equipment lists provided by VUNHST and ABUHB, these are included in the Estates Annex. The vast majority of equipment will be purchased and owned by VUNHST with only a very small amount of equipment being required by ABUHB.

4.6 The capital costs now include the major equipment being procured by VUNHST as part of the Integrated Radiotherapy Solution (IRS). These were excluded from the OBC costs. The procurement of this equipment is currently being progressed as part of a much larger procurement for both the existing Velindre site and the proposed new Velindre Cancer Centre by VUNHST. The FBC for the larger procurement is planned to be submitted to Welsh Government in May 2022.

4.7 The table below identifies the equipment costs, including VAT, applicable to each organisation including IRS:

	Groups 2 ,3,4 equipment & ITC	**IRS**	**Total**
VHNHST	£3,414,240	£7,998,275	£11,412,515
ABUHB	£30,660	0	£30,660

5.0 Financial Case

Capital Costs

5.1 The preferred option is Option 3, the construction of a new Radiotherapy Satellite Centre on the Nevill Hall Hospital site. The estimated outturn costs for the preferred option is £46,180 million, the detail of which is set out below:

	FBC Option 3 - £'000m
Works Cost	22,042
Fees	3,091
Non-Works	2,324
Equipment (VT £2.845, AB £0.026)	2,871
Contingency	1,620
Sub-Total	**31,948**
VAT	6,390
VAT Recovery on fees	(156)
Total VAT	**6,234**
Total Capital Cost (for comparison with uplifted OBC)	**38,182**
Satellite Integrated Radiotherapy Solution (IRS)	6,665
VAT on IRS	1,333
Total IRS	**7,998**
Total Project Capital Cost For Approval	**46,180**

5.2 The total FBC capital cost, (excluding IRS), is £38,182 million, which is within the uplifted approved OBC sum, i.e. uplifted for inflation, Decarbonisation and SMART, of £38,211 million.

5.3 A "Cost not to be exceeded" has been agreed with the Supply Chain Partner in the sum of £29,587,769.

Revenue Costs

5.4 The costs have been updated from the OBC with the total revenue cost of the NHH RSC option to commissioners calculated as £2.983m (an increase of £0.436m from the Option 3 revenue cost included in the OBC of £2.547m). The revised revenue cost is broken down as follows:

	Option 3 - NHH RSC £
Workforce	
Radiotherapy Delivery	1,453,481
Medical Physics Delivery	555,748
Facilities	74,074
IT	19,679
Pharmacy	9,840
Pay	**2,112,822**
Non Pay	
Utilities	110,382
Hard FM	80,179
Rates	96,300
Soft FM	9,192
Consumables	33,500
Patient Transport	29,329
Equipment Maintenance	395,000
IM&T Maintenance	44,194
Pharmacy	708
Travel	71,500
Non Pay	**870,284**
TOTAL COST	**2,983,106**

5.5 The revenue projections are based on the delivery of the following levels of activity which are unchanged from the OBC:

Treatment Type	**No of Fractions**
Prostate Fractions	7,434
Breast non-DIBH	3,234
Breast DIBH	3,234
Palliative Treatment	1,699
Total	**15,600**

5.6 The Financial Case outlines the agreed methodology for the distribution of revenue costs between Commissioners. It also outlines the approach to risk sharing and cost inflation. The table below sets down the agreed Commissioner shares and the distribution of the recurring revenue costs of the Project over Commissioners.

Table 1-3: Indicative Split of Commissioner Costs

Commissioners	**Split**	**Recurring**
		Revenue
	%	**Costs**
		£
Swansea Bay UHB	0.64%	19,092
Aneurin Bevan UHB	39.24%	1,170,571
Cardiff & Vale UHB	28.69%	855,853
Cwm Taf Morgannwg UHB	27.78%	828,707
Hywel Dda UHB	1.51%	45,045
Powys THB	2.14%	63,838
WHSSC	0.00%	0
Total Recurring Revenue Costs	**100%**	**2,983,106**

5.7 The Financial Case outlines the non-recurring revenue requirements for Project pre-commissioning that will be funded by Commissioners. These non-recurrent costs total £0.523m.

6.0 Management Case

6.1 This describes the Project Governance, Assurance and Management Arrangements to successfully deliver the RSC Project, to time, cost and quality. It describes the role of the TCS Programme Delivery Board, Project Board, Project Team, the External and Internal Advisors and how their contribution will be integrated within the delivery of the RSC Project.

6.2 The high level project plan is set out in the following table:

Milestone	**Date**
Submission of FBC to WG	May 2022
WG Approval	July 2022
Start on Site	August 2022
Construction Completion	February 2024
Linac Commissioning Period & Anticipated Beam on Date	February to July 2024

6.3 A Gateway Review was undertaken in March 2022 and the project was rated as "Amber".

1.0 INTRODUCTION

Purpose of Business Case

1.1 The purpose of this Full Business Case (FBC) is to confirm:

- The case for change and the preferred option as set out in the approved Outline Business Case (OBC) are still relevant and that no significant changes have occurred since OBC approval.
- That the preferred option is still the construction of a new Satellite Radiotherapy Unit at Nevill Hall Hospital.
- That a "cost not to be exceeded" has been agreed with the Supply Chain Partner in the sum of £29.588 million.
- That the total cost of the preferred option is £46.180 million and that this includes the provision of the Integrated Radiotherapy Solution (previously excluded from the OBC) that is being procured by VUNHST as part of their larger proposed Integrated Radiotherapy Solution.

Structure of Document

1.2 This FBC has been prepared using the agreed standards and format for Business Cases, as set out in:

- HM Treasury Guide to Developing the Project Business Case 2018
- NHS Wales Infrastructure Planning Guidance (2015)
- HM Treasury, the Green Book: Appraisal and Evaluation in Central Government: Treasury Guidance (2003).
- Public Sector Business Cases using the Five Case Model: A Toolkit Guidance and Templates (2007)

1.3 The approved format is the 5 Case Model, which comprises of the following key components:

- The **Strategic Case** which sets out the Strategic Context and the Case for Change, together with the supporting investment objectives for the Scheme.
- The **Economic Case** which demonstrates that ABUHB / VUNHST have selected a *preferred way forward,* which best meets the existing and future needs of the Service and is likely to optimise Value for Money (VFM).
- The **Commercial Case** which outlines the potential procurement strategy.
- The **Financial Case** which addresses the capital and revenue implications and the issue of affordability.
- The **Management Case** which demonstrates that the scheme is achievable and can be successfully delivered in accordance with accepted best practice.

2.0 STRATEGIC CASE

2.1 Introduction

2.1.1 The Strategic context and associated case for change has not changed since submission and approval of the OBC and is summarised below for completeness.

2.2 Background

2.2.1 Radiotherapy is the use of ionising radiation, usually high energy x-rays to treat disease and is usually used to treat malignant disease (cancer) and some benign indications. It has an important role in treatment of cancers as 50% of all cancer patients will benefit from receiving radiotherapy as part of their cancer management. Developments in radiotherapy techniques and the increasing incidence of cancer indicate that the demand for radiotherapy will continue to rise and require sufficient and resilient capacity to be made available. Work to date by VUNHST indicates the service will be unable to deliver a high quality, reliable and sustainable service without an expansion in capacity.

2.2.2 This needs to meet the demand of non-surgical cancer services, together with the poor condition of the estate at Velindre Cancer Centre (VCC) led to the Transforming Cancer Services in South East Wales programme (TCS), which developed with partners a clinical model for non-surgical cancer services. This model included a Radiotherapy satellite centre (RSC) and this business case focuses on the RSC and its role to secure radiotherapy capacity for the population of South East Wales. The capacity needs to be in place ahead of the new VCC as demand is already exceeding capacity but also to enable medical physics staff to be available to commission the equipment in RSC but also in the new VCC.

2.2.3 In addition to the lack of capacity, a key factor supporting the case is the benefit of care being delivered closer to home, especially as there is evidence that uptake of radiotherapy in Wales is below best practice and there is evidence that availability of services closer to patients leads to increased uptake of treatments – which in turn will lead to improved outcomes and better experiences for patients.

2.2.4 Following agreement on the TCS clinical model, the process for determining the best site for the RSC was established with partner organisations through an evaluation exercise. This led to the selection of Nevill Hall Hospital as a site for the RSC and as such this is a joint project between the 2 organisations.

2.2.5 The remainder of this Strategic Case will provide more detail on the above issues to support the case for change for this service development.

2.3 Organisational Overview

2.3.1 This section will provide an overview of Aneurin Bevan University Health Board (ABUHB) and Velindre University NHS Trust (VUNHST) and their relevant Service

Hospitals as well as an overview of Cancer Services in South East Wales and the whole system leadership arrangements.

Aneurin Bevan University Health Board (ABUHB)

2.3.2 Aneurin Bevan University Health Board was established in October 2009 and achieved 'University' status in December 2013.

2.3.3 It serves an estimated population of over 639,000, approximately 21% of the total Welsh population.

2.3.4 With a budget of £1.4 billion the HB delivers healthcare services to people in Blaenau Gwent, Caerphilly, Monmouthshire, Newport, and Torfaen and also provide some services to the people of South Powys.

2.3.5 The Health Board covers diverse geographical areas and has to take account of a mix of rural, urban and valley communities. The valleys experience high levels of social deprivation, including low incomes, poor housing stock and high unemployment.

2.3.6 The Health Board employs over 16, 700 (11,972 WTE) staff, two thirds of whom are involved in direct patient care. ABUHB is the largest employer in Gwent.

2.3.7 The Health Board provides a comprehensive range of acute hospital based, Community based, Mental Health and Primary Care services via a large and complex estate consisting of the following:

- The Grange University Hospital (Specialist and Critical Care Centre),
- 3 Local General Hospitals - Royal Gwent, Neville Hall, Ysbyty Ystrad Fawr
- 5 Community Hospitals - County, Ysbyty Aneurin Bevan, St Woolos, Chepstow and Monnow Vale
- 4 Mental Health Hospitals - St Cadoc's, Llanfrechfa, Maindiff Court, Ysbyty'r Tri Chwm
- 8 Locality based Mental Health Units and 1 Residential Unit on LGH site, 4 unoccupied units across Gwent.
- 30 Locality based Community clinics
- Nearly 300WTE General Practitioners and salaried GPs
- 375 General dental practitioners in 79 practices
- 131 Community pharmacies
- 69 Optometry premises

Velindre University NHS Trust (VUNHST)

2.3.8 The Trust is operationally responsible for the management of the following two divisions:

- Velindre Cancer Centre;
- Welsh Blood Service;

- Host for the NHS Wales Shared Services Partnership (NWSSP)on behalf of the Welsh Government (WG) and NHS Wales:

2.3.9 Velindre Cancer Centre located in Whitchurch, Cardiff and is one of the ten largest regional clinical oncology centres in the United Kingdom and the largest of the three centres in Wales. The Trust is the sole provider of non-surgical specialist cancer services to the catchment population of 1.5 million across South East Wales, from Chepstow to Bridgend and from Cardiff to Brecon. Additionally it provides more specialist radiotherapy services across the whole of South Wales. Velindre Cancer Centre employs around 863 (751WTE) members of staff and has approximately 70 volunteers who provide a range of 'added value' roles across the centre. The Trust also works in partnership with a wide range of third sector, charities, Higher Education Institutions (HEIs) and Industry/Commercial Partners to deliver high quality cancer care and undertake clinical research.

2.3.10 Velindre Cancer Centre is responsible for the delivery of non-surgical treatment including Radiotherapy and Systemic Anti-cancer Therapy (SACT), recovery, follow-up and specialist palliative care. These services are provided by specialist teams using a well-established multi-disciplinary team (MDT) model of service for oncology and palliative care, working closely with local HB partners, and ensuring services are offered in appropriate locations in line with best practice standards of care. Following their specialist cancer treatment, Velindre Cancer Centre supports patients during their recovery and through follow up appointments.

2.3.11 The following patient services are delivered in outreach settings in Health Board (HB) locations across South East Wales from Velindre Cancer Centre:

- SACT delivery,
- Outpatient appointments,
- Inpatient reviews; for patients receiving care and treatment in HBs
- Health Board MDTs; and
- Research and Education
- Acute Oncology services.

2.3.12 However, all Radiotherapy activity is currently delivered at the Velindre Cancer Centre.

2.4 Overview of Cancer Services in South East Wales

2.4.1 The planning and delivery of cancer services in South East Wales is the responsibility of the four Health Boards (HBs) (Aneurin Bevan University Health Board, Cardiff ad Vale University Health Board; Cwm Taf Morgannwg University Health Board and Powys Teaching Health Board) as part of their statutory responsibility to meet the health needs of the populations they serve. The HBs are supported by the Welsh Health Specialist Services Committee (WHSSC) which commissions specialist cancer services on their behalf.

2.4.2 VUNHST and the HBs work in partnership with the All Wales Cancer Network, NHS Trusts, Community Health Councils, Voluntary and Charitable Organisations and Public Health Wales.

2.4.3 The four Health Boards, in conjunction with VUNHST and other stakeholders have formed the South East Wales Collaborative Cancer Leadership Group (CCLG). To provide effective system leadership for Cancer Services across South East Wales and deliver improvements in outcome and service experience for the catchment population through Collaborative Cancer Programmes of work within the region The CCLG fully supported the RSC OBC and the development of this FBC is in line with this support from CCLG.

The Cancer Pathway

2.4.4 The delivery of cancer services across Wales generally conforms to a well-defined pathway of care which includes the following five key stages:

Table 2-1: The Cancer Pathway

Cancer Prevention: Enhancing public awareness and education to make informed decisions about lifestyle choices that promote a healthy, cancer free population.
Cancer Diagnosis: Cancer can be identified through a National Screening Programme or where cancer symptoms are identified by the patient/health care professional. If cancer is suspected the patient is assessed by a multidisciplinary team in the Health Board (often supported by Velindre Cancer Centre staff) and cancer may be diagnosed.
Treatment: The treatment options for every patient are discussed and considered by multi-disciplinary teams (MDTs). The treatment options include surgery, non-surgical treatment e.g., Radiotherapy or Systemic Anti-Cancer Therapy (SACT), a combination of these treatments and supportive care. Care often straddles organisational boundaries.
Recovery/Follow Up: Regular follow up appointments are important to monitor recovery, manage and reduce the after-effects of treatment and to ensure any signs of cancer relapse/recurrence are identified at their earliest stage.
End of Life Care: Sadly, not all patients survive cancer – openness about the need to plan end of life care is essential. A focus on living and dying well, early identification of needs and access to fast, effective palliation are important to reduce distress for both the patient and their family.

The Single Cancer Pathway (SCP)

2.4.5 The Suspected Cancer Pathway (SCP) aims to ensure that patients begin a first definitive treatment no later than 62-days after the point of suspicion of cancer. Such an ambition necessarily presents capacity challenges at all points of the patient pathway, not least in relation to treatment delivery.

2.4.6 A direction of travel in the field of radiotherapy is the adoption of a revised suite of time to treatment measures in the near future in Wales. These measures, developed by the Clinical Oncology Sub-Committee (COSC), will replace the extant JCCO measures. The COSC quality measures are supported by definitions which better reflect the ever increasing complexity of radiotherapy planning and will require the great majority of patients referred for radiotherapy treatment to begin their treatment within 21-days of referral. This is in step with the overarching ambition of the SCP, but again will pose significant capacity challenges.

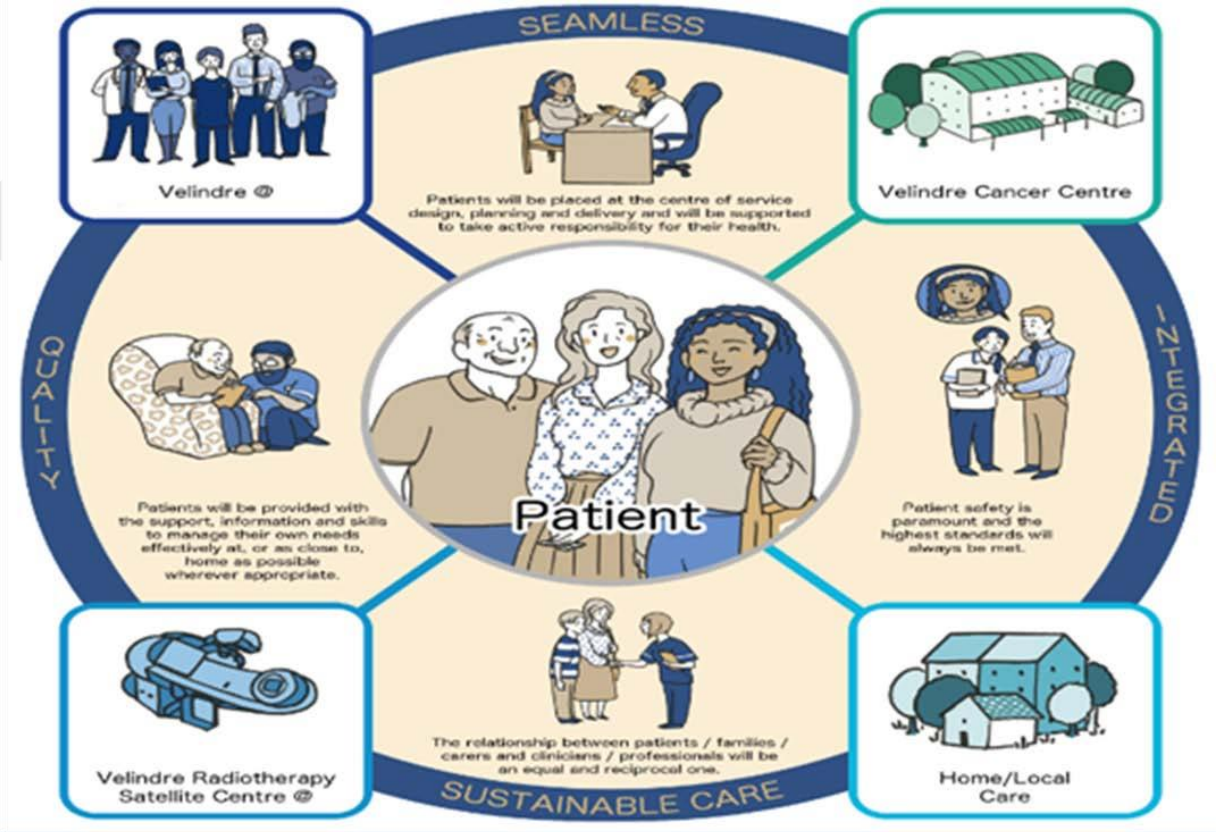
2.4.7 It is obvious that efforts to achieve the SCP timescales and the adoption of the new COSC quality will exacerbate issues associated with the availability of treatment capacity at VCC due to rising demand.

Transforming Cancer Services (TCS) Programme

2.4.8 It is important to understand where this FBC sits in the context of the overall TCS Programme. The TCS Programme is an ambitious Programme which aims to deliver transformed Tertiary non-surgical Cancer Services for the population of South East Wales.

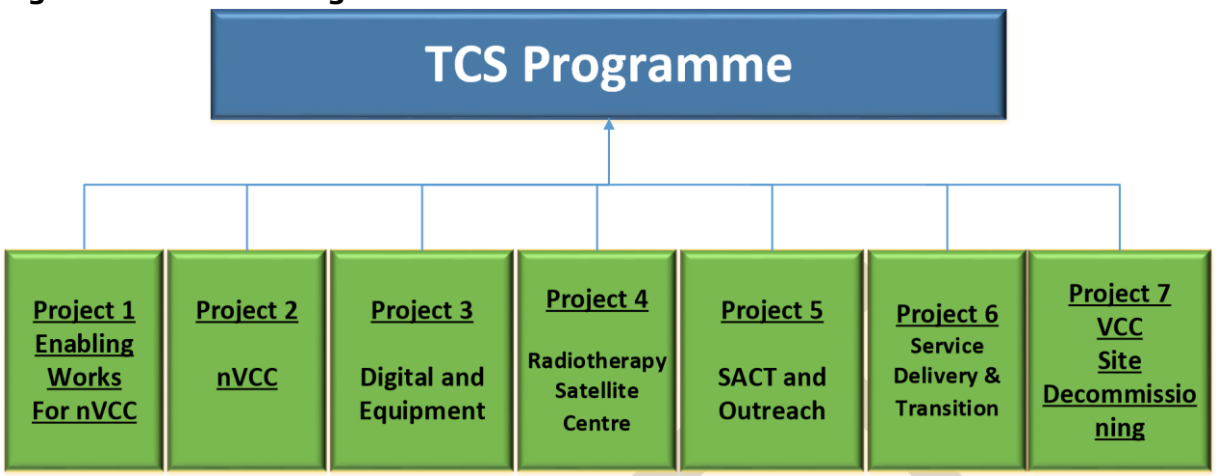
2.4.9 Through detailed stakeholder engagement the clinical model is shown below was developed and approved by HBs.

Figure 2-1: Clinical Model



2.4.10 Following agreement on the proposed clinical model 7 programmes of work/projects were developed to deliver the TCS programme:

Figure 2-2: Seven Programmes of Work



2.4.11 The Strategic Case for the TCS Programme, its links to Welsh Government Strategy and Velindre's own Cancer Strategy, are made in the TCS Programme Business Case (PBC). It is not the intention of this FBC to restate these, more to show alignment with this wider Programme's aims and objectives.

2.4.12 This FBC is also related to the Full Business Case FBC) for the new Velindre Cancer Centre (nVCC) and the FBC for the Integrated Radiotherapy Solution (IRS). The latter project aims to deliver the Trust decision to seek one prime vendor to deliver a fully integrated Radiotherapy solution and move away from the current situation of dual vendors of Radiotherapy equipment. The Integrated Radiotherapy Solution Procurement FBC is being developed from a Digital and Equipment Procurement De-coupling PBC which will be submitted to Welsh Government in May 2022.

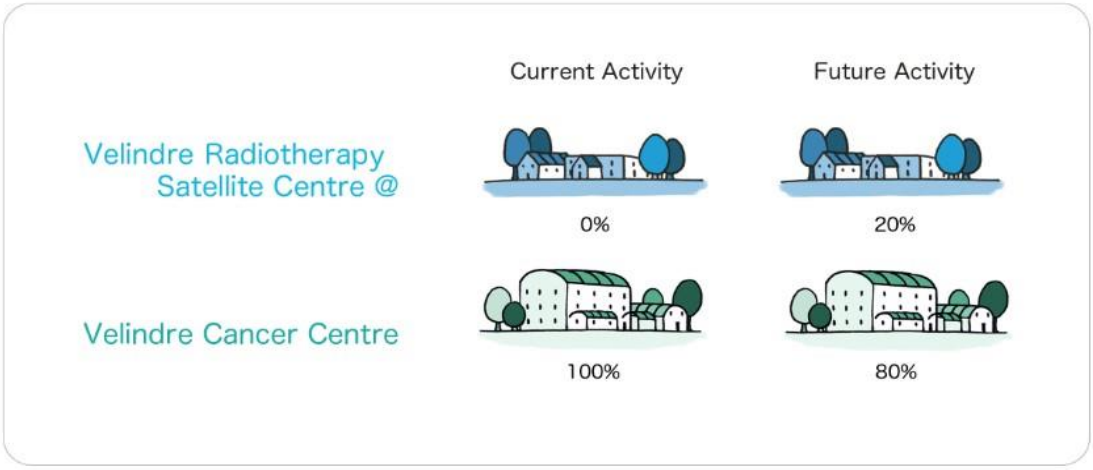
2.4.13 The Clinical Model within the TCS PBC, and as outlined in diagram above describes how services will be delivered in the future and is predicated on the following principles:

- The service model seeks to promote a new set of relationships which work in partnership to improve the way we collectively design and deliver services around patients' needs and to achieve these improvements in a truly sustainable way.
- The patient will be central to plans with an integrated network of services organised around them. The organising principle seeks to 'pull' high quality care towards the patient that is accessible in their preferred location and will support them achieving their personal goals during treatment and subsequently living with the impact of cancer.
- Patient safety is paramount, and the highest standards will always be met.
- The relationship between patients / families / carers and clinicians / professionals will be an equal and reciprocal one.

- Patients will be provided with the support, information, and skills to manage their own needs effectively at, or as close to, home as possible wherever appropriate.
- Patients will be treated at their closest centre where appropriate and safe to do so (removal of HB boundaries).
- Optimising information technology, quality improvement systems, patient involvement, education and embracing innovative approaches to healthcare will all be essential to achieve high levels of service quality in a sustainable way.

2.4.14 To deliver the principles of the new clinical model, care will be delivered differently and at different locations. This will require a number of infrastructure and technology projects as well as service change projects to be established including this business case for a **Radiotherapy Satellite Centre** to provide radiotherapy treatment for approximately 20% of patients (provided by 2 new linear accelerators).

Figure 2-3: Current & Future Activity



2.4.15 This means better access for patients, reduced travel for patients, associated improved outcomes, and less use of transport services. This will mean that fewer patients need to travel to VCC for their radiotherapy. These Benefits are the focus of this business case.

Preferred Operational Model

2.4.16 The TCS Programme undertook an appraisal of a wide range of operational delivery models for all its services and as outlined in the OBC after evaluation (financial and non-financial).

The preferred operating scenario was:

Table 2-2: Preferred Operating Scenario

Radiotherapy Service	5 days a week, 9.5 hours a day at both nVCC and RSC 7-day Radiotherapy service for emergency patients and for urgent palliative patients who are treated at VCC

2.4.17 Following the determination of the clinical model and the preferred operating model it was necessary to determine an appropriate location for the satellite centre.

Process for Identifying a Preferred Site

2.4.18 In 2017 a process was undertaken with HBs and CHCs to determine a preferred location for Velindre's Radiotherapy Satellite Centre. Full details of the process were included in the OBC.

2.4.19 The Evaluation Panel, comprising HB, Trust and CHC representatives:

- Approved the evaluation report;
- Approved the key findings and results outlined within the report;
- Approved the 'preferred' site location option to host the Radiotherapy Satellite Centre as being Nevill Hall Hospital (site 8) based upon the analysis presented.

2.4.20 This FBC is based on this Site Selection Evaluation as set down by the Joint Leadership Team at the IIB Meeting 24 July 2019 and the Projects response to the Welsh Government approval letter to proceed dated 28th November 2019.

Project Partnering Arrangements

2.4.21 Following the selection of ABUHB as the site for the RSC the 2 organizations developed project partnering arrangements where both organsiations will develop and operate the RSC as a partnership with clearly defined roles and responsibilities for each organization within the partnership agreement.

2.4.22 ABUHB will build and provide the landlord services and facilities for the RSC building.

2.4.23 VUNHST will provide the clinical services and own the associated clinical equipment within the RSC.

2.5 Strategic Policy Context

2.5.1 This section of the Full Business Case (FBC) summarises the strategic context for the Radiotherapy Satellite Centre (RSC) Project.

Strategic Context in Wales

2.5.2 The Welsh Government has published a wide range of national strategies which provide the framework for the planning and delivery of public services in Wales. These are supported by a range of policies, frameworks and guidance which relate more specifically to health and social care.

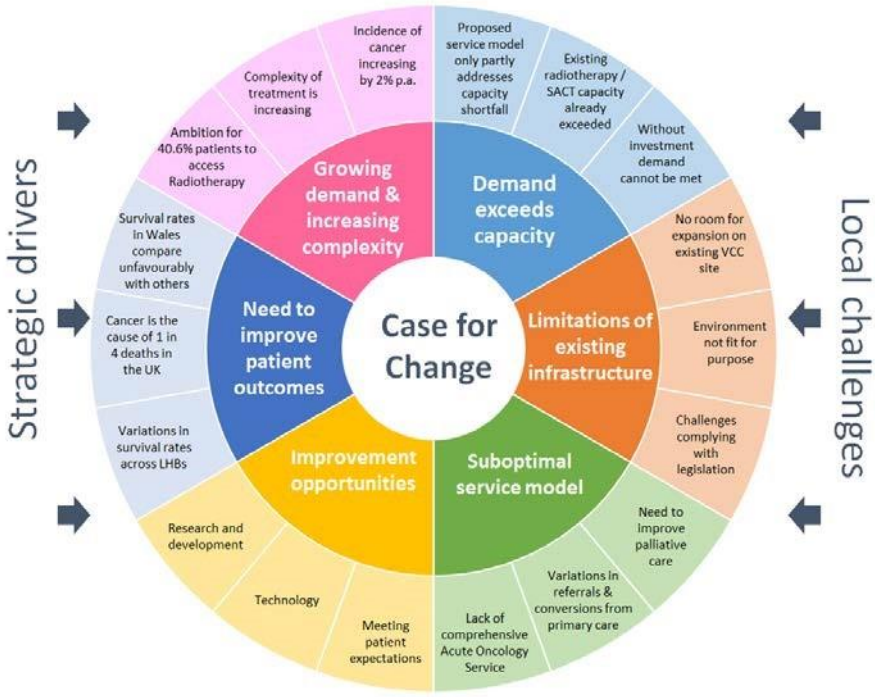
2.5.3 In addition, the TCS Programme and its partner organisation continually scans the environment at a population, national, regional and local level to develop our knowledge and intelligence on key issues which we need to take account of in the strategic planning and delivery of services.

2.5.4 The TCS Programme Business Case (PBC) outlines the strategic context for the Transforming Cancer Services Programme and describes how the Programme is central to VUNHST's ability to deliver key national and local strategic objectives, especially in relation to those outlined in the following strategic documents:

- Well-being of Future Generations (Wales) Act (2015)
- A Healthier Wales: Our Plan for Health and Social Care
- Prudent Healthcare: Securing Health and Well-being for Future Generations
- Together for Health – Cancer Delivery Plan
- The Velindre University NHS Trust Cancer Strategy; and
- Velindre Cancer Centre Strategy for Radiotherapy

Note: It has been agreed with commissioners, through the collaborative scrutiny process, that the PBC is extant and for contextual understanding only. However, the PBC will remain a 'live' document which will be updated at key milestones in the Programme and is currently being updated.

Figure 2-4: Strategic Drivers and Local Challenges



2.5.5 Clinical outcomes for cancer patients in Wales compare unfavourably with other countries.

National context. The Quality Statement for Cancer in Wales

2.5.6 Clinical outcomes for cancer patients in Wales compare unfavourably with other countries.

2.5.7 The Welsh Government's Quality Statement for cancer builds on the work of the 2012 and 2016 Cancer Delivery Plans. Published in March 2021 it describes a five year phase of cancer service development, which must take advantage of the widespread consensus that has emerged on priority areas, bring programmes to fruition, and maintaining the national leadership and local engagement that has been achieved. This will ensure that there is a long-term and consistent approach to improving outcomes as envisaged in the Wellbeing of Future Generations Act and demonstrated by international experience.

2.5.8 This statement discusses how over the past decade, cancers have been one of the most common causes of death in Wales and this is likely to remain so in the decades ahead due to the ageing nature of the population. It is vital that cancer is effectively prevented where possible, that cases of cancer are detected at earlier more treatable stages, and that complex treatment pathways are optimised; while throughout people are properly supported and co-produce their care. Ultimately, the aim is to improve population survival and reduce cancer mortality rates.

2.5.9 Quality attributes of cancer services in Wales are based around the following themes:

Equitable
Equity of access and consistency in standards of care. A workforce planned to meet forecasted demand.

Safe
System level focus on recovery to pre-pandemic waiting list volume. More resilient regional services.

Effective
More cases of cancer are detected at earlier, more treatable stages through more timely access to diagnostic investigations.

Evidence-based surgical techniques, radiotherapies, systemic anti-cancer therapies and genomic therapies are routinely available. All eligible patients are offered access to research trials and Wales provides excellent supporting infrastructure for cancer research.

Efficient
Clinicians working in cancer pathways work at the top of their license or are supported to improve their skill mix and are also enabled to take part in the quality assurance cycle and research activity

Person centred
Person-centred cancer care is culturally embedded and supported by a common approach to assessing and managing people's Needs.

Timely
Cancer services are measured and held accountable using metrics that reflect the quality of patient care and its outcomes. Timeliness of cancer pathways is measured across their entire length, beyond first definitive treatment and including recurrent disease

2.5.10 All the HBs within SE Wales, and within the remit of this business case, along with VUHNST have used these pillars as the basis for their plans for cancer services to meet the needs of their local population .

Local Strategic Context in VUNHST and ABUHB

2.5.11 As mentioned above both VUNHST and ABHB have Cancer Strategies and delivery plans for cancer services which have shared ambitions.

2.5.12 ABUHB Cancer Strategy *Cancer Services: Delivering a Vision 2020-2025* has the following ambition:

Figure 2-6: ABUHB Vision

ABUHB Vision:
Improve prevention, optimise treatments, patient outcomes and reduce health inequalities for our population and those we serve.

2.5.13 Velindre is currently developing a strategy for the Trust which will set out a mission, vision, and strategic goals between now and 2032.

'*Destination 2032: Helping Us to Deliver Our Strategy for the Next Decade*' sets the following vision for cancer services for the next ten years:

Figure 2-7: VUNHST Vision – Healthy People, Excellent care, Inspirational learning is set out in three areas:

VUNHST Vision Statement:

Healthy People:

We will be an organisation that support s people in being as healthy as possible (mind and body), given their situation in life. By people we mean staff, donors, patients, and the communities we serve

Excellent care:

We will be an organisation that delivers clinical services of the highest quality, safety, and experience with outcomes that compare favourably with those of our national and international peers; is highly regarded by the people we work for and with; exceed expectations and attracts the best people to come and work for us.

Inspirational Learning:

We will be an organisation that develops the culture, facilities and Learning partnerships that provides first class research, development and innovation to thrive and drive up the quality of care; learning opportunities for all our staff, patients, families and donors

2.5.14 At the heart of the TCS Programme is the delivery of a patient centred service model that will allow Commissioners to commission sufficient capacity to deal with growing and changing demand for services, whilst improving clinical outcomes for the population of South East Wales.

2.5.15 ABUHB Cancer Strategy: *Cancer Services: Delivering a Vision 2020-2025* affirms the commitment to continue to deliver the best possible care and support for everyone affected by cancer and sets out its ambition to be an exemplar in its delivery of cancer services. ABUHB's Cancer Strategy and the HBs plans for Nevill Hall Hospital (NHH) include the development of the RSC as a key driver to deliver its ambitions. In the HB's plan the RSC at NHH will operate alongside key other cancer services including local SACT treatments, Acute Oncology Services (AOS) and specialist palliative care.

2.5.16 This FBC will provide the case for the RSC to support the existing, and in due course new, Velindre Cancer Centre in its provision of Radiotherapy services for the population of South East Wales. The nVCC will provide a hub to deliver the many of specialist non-surgical cancer services for South East Wales but with radiotherapy services closer to home for a proportion of the catchment population delivered via a Satellite Centre. As such it is critical to the delivery of the overall TCS Programme and is therefore aligned to the wider healthcare strategic context, at both a local and national level.

2.6 Existing Arrangements Radiotherapy

2.6.1 The purpose of this section of the business case is to describe the current service delivery arrangements for the services covered within the scope of the RSC Project;

Service Delivery Arrangements, including equipment

2.6.2 VUNHST delivers specialist non-surgical cancer services, including Radiotherapy to a catchment population of 1.5million people using a hub and spoke service model. For some specialist Radiotherapy treatments the catchment population is all of Wales.

2.6.3 Services are currently provided across South East Wales from one of two main treatment locations:

- **Velindre Cancer Centre:** The hub of the Trust's specialist cancer services is a specialist treatment, training, research, and development Centre for non-surgical oncology; and
- **Outreach Centres:** outpatient and SACT treatments are delivered on an outreach basis within facilities across South East Wales, including District General Hospitals and from patients' own homes.

2.6.4 Currently all radiotherapy treatments are provided at VCC hub**.**

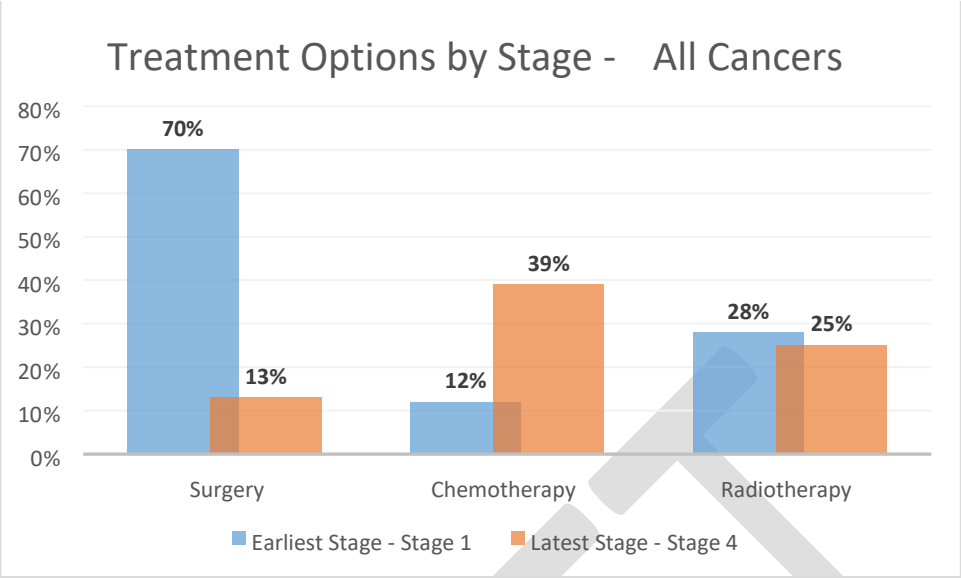
2.6.5 Radiotherapy plays a vital role in the treatment of cancers with:

- 40% of all patients cured of cancer are cured by radiotherapy
- It also can offer patients the choice of organ preservation and avoid the need for major or disfiguring surgery.

2.6.6 With rapid developments in the technology the role of Radiotherapy continues to expand in the treatment of cancers.

2.6.7 Radiotherapy is a flexible treatment modality which is used with a curative or palliative intent, at a consistent rate, regardless of cancer staging as shown by the following graph:

Figure 2.8: Treatment Options by Stage



2.6.8 The current radiotherapy department is based on a single site at the Velindre Cancer Centre (VCC) with a full range of radiotherapy facilities and equipment to deliver the service:

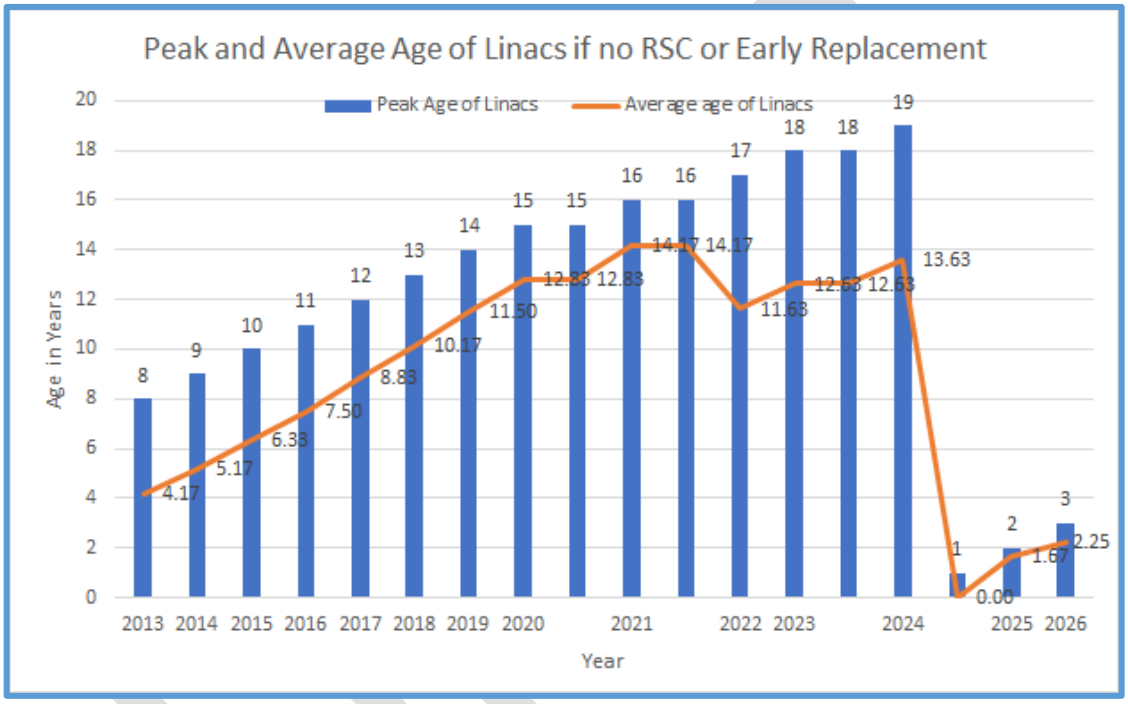
2.6.9 Recent years has seen an increase in the complexity of linear accelerators which impacts on repair, QA and maintenance time to safeguard the reliability and high accuracy of the machines, which is particularly important given the increasing trend of higher doses over less fractions.

2.6.10 The life expectancy of a Linear Accelerator (LINAC) is 10 years and it is important that the linacs are fit for purpose and not beyond their life expectancy which leads to increased risks about breakdowns and failures, which in turn affects the sustainability of a safe and reliable radiotherapy service.

2.6.11 The LINACs at VCC are ageing with an average age of 11.6 as at 2022; with a peak age of 17 years which is well beyond the expected lifespan. The table below show the aging profile of machines at VCC and four of the Trust's treatment machines being considerably over they recommended life in 2023. Should the RSC not go ahead as planned, and no early procurement of treatment machines approved, the situation at Velindre Cancer would worsen.

Table 2-3: Aging Profile of Machines at VCC

Planning Scanario - No Early Replacement of Linacs - wait for RSC 2023 and nVCC 2024 as previosly planned																														
		Location	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020		2021		2022	2023		2024		2025	2026
																		Transition YR		Transition YR			Transition YR		Transition YR			
LA10	Std	RSC																						0	1	1	2	3
LA9	Std	RSC																						0	1	1	2	3
LA8	Std	VCC							0	1	2	3	4	5	6	7	8	9	9	10	10	11	12	12	13	0	1	2
LA7	Std	VCC						0	1	2	3	4	5	6	7	8	9	10	10	11	11	12	13	13	14	0	1	2
LA6	Std	VCC	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	15	16	16	17	18			0	1	2
LA5	Std	VCC								0	1	2	3	4	5	6	7	8	8	9	9	10	11	11	12	0	1	2
LA4	Stereo	VCC										0	1	2	3	4	5	6	6	7	7	8	9	9	10	0	1	2
LA3	Std	VCC			0	1	2	3	4	5	6	7	8	9	10	11	12	13	13	14	14	15	16			0	1	2
LA2	Stereo	VCC												0	1	2	3	4	4	5	5	6	7	7	8	0	1	2
LA1	Std	VCC				0	1	2	3	4	5	6	7	8	9	10	11	12	12	13	13	14	15	15	16	0	1	2
Total											6	7	7	8	8	8	8	8	8	8	8	8	8	8	8	10	10	10
Avg Age											4.17	4.43	5.43	5.63	6.63	7.625	8.625	9.625	9.625	10.625	10.625	11.625	12.625	8.375	9.375	0.2	1.2	2.2
Peak Age											8	9	10	11	12	13	14	15	15	16	16	17	18	15	16	1	2	3



2.6.12 The RSC is an important development to ensure VUNHST is able to continue to deliver safe and effective Radiotherapy services.

Benchmarking

2.6.13 VUNHST regularly submits data into the Radiotherapy Data Set (RTDS) alongside other Radiotherapy centres in Wales and England. This allow the centre to undertake benchmarking against other centres in areas of operational efficiency.

2.6.14 In addition as part of the development of TCS programme we have taken the opportunity to benchmark the efficiency of our service.

2.6.15 Benchmarking exercises were undertaken during recent years with a number of leading Cancer Centres from across the UK including:

- The Beatson West of Scotland Cancer Centre;

- The Clatterbridge Cancer Centre NHS Foundation Trust;
- Leeds Teaching Hospital NHS Trust; and
- The Royal Marsden NHS Foundation Trust.

2.6.16 These benchmarking exercises indicated that VUNHST compares favourably with other UK Radiotherapy centres in respect of throughout and efficiency and, therefore, additional capacity cannot be fulfilled by improved efficiency with the current service.

2.7 Business Needs

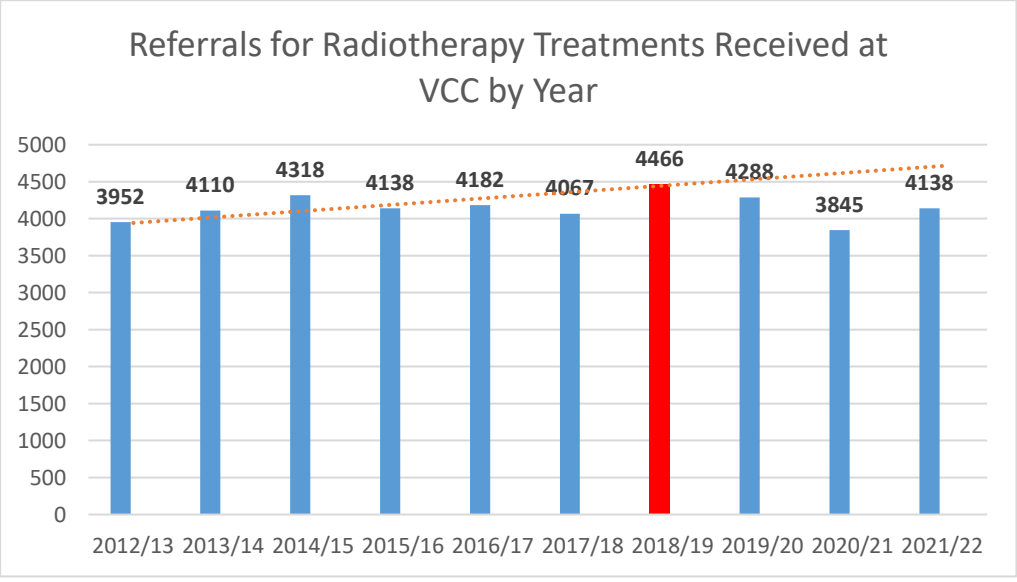
2.7.1 This section will review the clinical growth assumptions and demonstrate that additional capacity is required to meet the forecast increases in demand for Radiotherapy.

2.7.2 Earlier sections outlined the role radiotherapy plays in the treatment of cancers. Regardless of the future delivery of systematically more rapid diagnosis, increased screening capacity and public health initiatives, radiotherapy will remain a valid and effective clinical option for the treatment of a large proportion of all patients with cancer.

2.7.3 There are challenges inherent in attempting to forecast future demand for radiotherapy services given changes in clinical indications, incidence and changing treatment complexity. The TCS Programme has developed clinical growth assumptions which in turn have informed the development of this Full Business Case. TCS assumptions estimate that demand for radiotherapy services in south-east Wales will increase at a rate of 2% per annum to 2030/31.

2.7.4 It is apparent that demand for specialist cancer treatment is increasing. This demand is represented in the most immediate sense by the receipt of increasing numbers of patient referrals. Such an increase has been observed by the radiotherapy service at Velindre Cancer Centre in recent years.

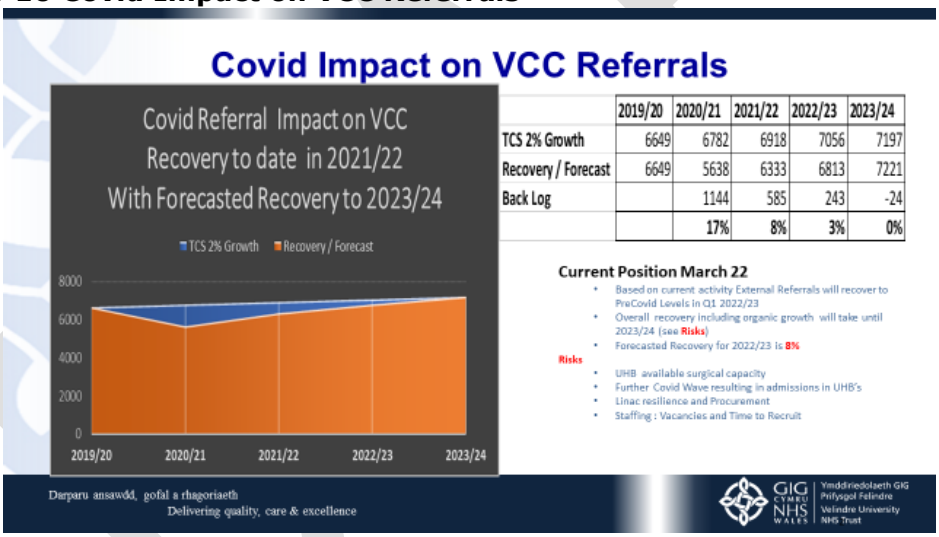
Figure 2-9: Referrals for Radiotherapy Treatments



2.7.5 The graph above details the number of individual patient referrals for treatment with radiotherapy received at Velindre Cancer Centre from 2012/13 to 2021/22, inclusive. The dotted line overlaid on the graph describes an increase in referrals of 2% per annum from a base in 2012/13. Although there are year on year fluctuations, the graph serves to illustrate that the actual historical growth in referrals has been in step with the 2% clinical growth assumption for radiotherapy within TCS plans.

2.7.6 Prior to the pandemic 2018/19 represented the largest number of referrals (4466) received for the radiotherapy treatment at Velindre Cancer Centre in any given year. This follows an earlier peak in 2014/15 (4,318 referrals). Referrals to Velindre Cancer Centre, including Radiotherapy, were impacted by covid in 2020-2022. There was a reduction in referrals in the early days of Covid pandemic but the typical month on month referrals have since increased, subject to periodic Covid related fluctuations, and are currently marginally above pre pandemic levels. This is assumed to be due to the well documented backlog in cancer activity that is currently being experienced. Following the pandemic, it is expected that these growth levels will again be seen in radiotherapy. Such marked increases in demand present stark capacity challenges which will become more acute as the clinical growth assumption underpinning the TCS Programme materialise.

Figure 2-10 Covid Impact on VCC Referrals



2.7.7 However, as shown in Figure 2-10 above the original TCS assumptions of 2% average increase in referrals per annum have been assessed as still relevant in projecting capacity requirements.

2.7.8 Following the pandemic it is expected that these growth levels will again be seen in radiotherapy. Such marked increases in demand present stark capacity challenges which will become more acute as the clinical growth assumption underpinning the TCS Programme materialise.

2.7.9 There are a number of factors that influence the demand for Radiotherapy including:

1) Increasing incidence of cancer

It is recognised that the rate of cancer incidence in the United Kingdom and Welsh populations has been increasing over time. Cancer incidence in the United Kingdom increased by 12% between the early 1990s and the late 2010s and is expected to increase by a further 40% by 2035. This would represent 514,000 new cases of cancer in the United Kingdom compared to the 359,960 reported in 2015. Within Wales it is forecast incidence will increase by 2% pa over the next 10 years.

As mentioned earlier in this case the Wales Cancer Quality Statement has a focus on earlier detection and diagnosis of cancer. These patients will then require treatments including Radiotherapy. It is also likely to shift the balance towards a higher number of radical treatments as cancers get detected earlier.

2) Increasing population

The increased rate of incidence is driven, in part, by the fact that the population is growing and ageing. Welsh Government's most recent *Future Trends Report* forecasts that the population of Wales will increase by 5% between the mid2010s and the mid-2030s. Although population level estimates of future changes in incidence take some account of forecast changes in population level and demographic, the anticipated increase to the population of certain areas in south-east Wales in the coming decades are marked. For example local authority population projections, prepared by *Statistics for Wales* on behalf of Welsh Government in 2016, indicate that the population of Newport will increase by approximately 12,000 by 2039 and that of Cardiff will be 26% larger in 2019 than in 2014, an increase which would represent more than 90,000 extra residents.

It is acknowledged that cancer incidence is higher among the over 65s and the same report predicts that the overall proportion of the Welsh population aged 65 and over will increase from 20% to 25% over the same period.

3) Increasing complexity of treatments

New techniques and developments are impacting on cancer treatments, Including radiotherapy.

New techniques in the planning and delivery of Radiotherapy are improving accuracy of treatments for example to avoid critical organs which helps reduce long term side effects which can be debilitating, but also improves survival. Developments continue to lead to growth in complexity and create an increase demand on resources including pre-treatment and treatment capacity, increased time to plan, treat and an increase in the rate of re-planning.

One new technique is hypo fractionation which involves high volumes but over shorter fractionation regimes. Whilst this enables fewer visits

by patients it requires an increase in accuracy and specification of planning and dosimetric delivery of treatments. This demands more high quality treatment planning but also longer set up time and imaging at the time of treatments. Thus it is predicted that the throughput of treatments per hour will reduce. These, together with the commensurate increase for Quality assurance checking to ensure treatments are delivered in an optimum and safe manner, are having an impact on demand for radiotherapy.

Another example of developments is in chemo radiation with the potential for combination drug therapies that may provide opportunity for enhanced update of radiation by cancer cells or to protect healthy tissues during Radiotherapy.

4) Current uptake levels of RT

Analysis of the update rates of Radiotherapy in Wales show it to be about 37% against best practice of approximately 41% which suggest there are people in Wales who could benefit from Radiotherapy that are not currently receiving it.

It is acknowledged that the proximity of the population to specialist services assist in ensuring greater access and uptake of these services. There is evidence that the uptake of RT treatment by patients diminishes with the distance travelled by patients to reach radiotherapy centres. The provision of a satellite will provide improved access to patients as their travel time will be reduced. The Royal College of Radiologists indicate a journey time of less than 45 minutes is appropriate

Previous work analysing potential sites has shown that a satellite centre will improve the number of patients who live within 45 minute drive of a radiotherapy treatment centre in SE Wales. As the population ages to this should ensure that as many patients as possible can access the relevant treatments. Therefore, it is anticipated that a Radiotherapy satellite centre in South East Wales will also lead to an increase in the update of Radiotherapy treatments.

5) Rapid developments in techniques

Velindre Cancer Centre has always had an excellent reputation for delivering high quality radiotherapy to it patients. It has been instrumental in delivering practice changing clinical research and has always been an early adopter of new technologies such as IMRT and stereotactic radiotherapy. The pace of innovation, clinical and technological change and complexity in cancer services is rapid. It is important that the radiotherapy service at Velindre Cancer Centre be at the forefront of cancer treatment, delivering a range of high quality, people centred services, which can benefit the Welsh population, whilst balancing innovation and research with accurate, timely, effective, efficient use of resources.

2.7.10 Within these demand increases it is projected that the most prevalent tumour types will remain as now. In 2035, approximately a third of all cancers reported in men are anticipated to be cancers of the prostate and a similar proportion of all cancers reported in women will be cancers of the breast.

2.7.11 These drivers and demographic developments strongly indicate that over the coming years the demand for RT will continue to rise and require sufficient and resilient capacity to be made available. The need for this increased capacity for Radiotherapy services in South East Wales is shown in graphs below and it is this which underpins the development of this FBC.

Figure 2-11: Radiotherapy Activity

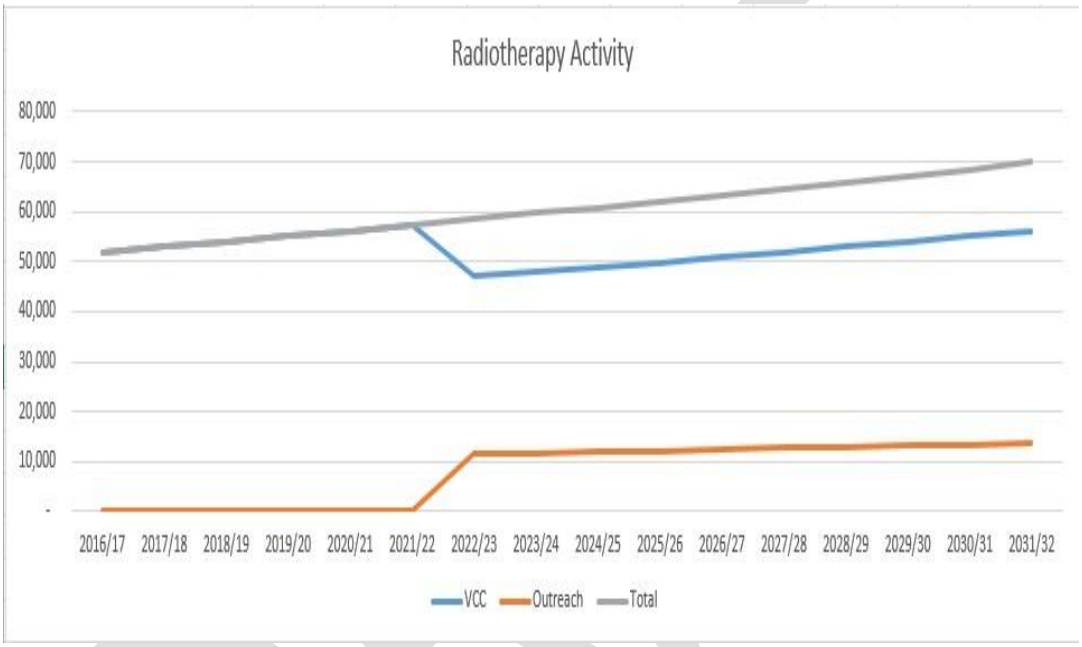
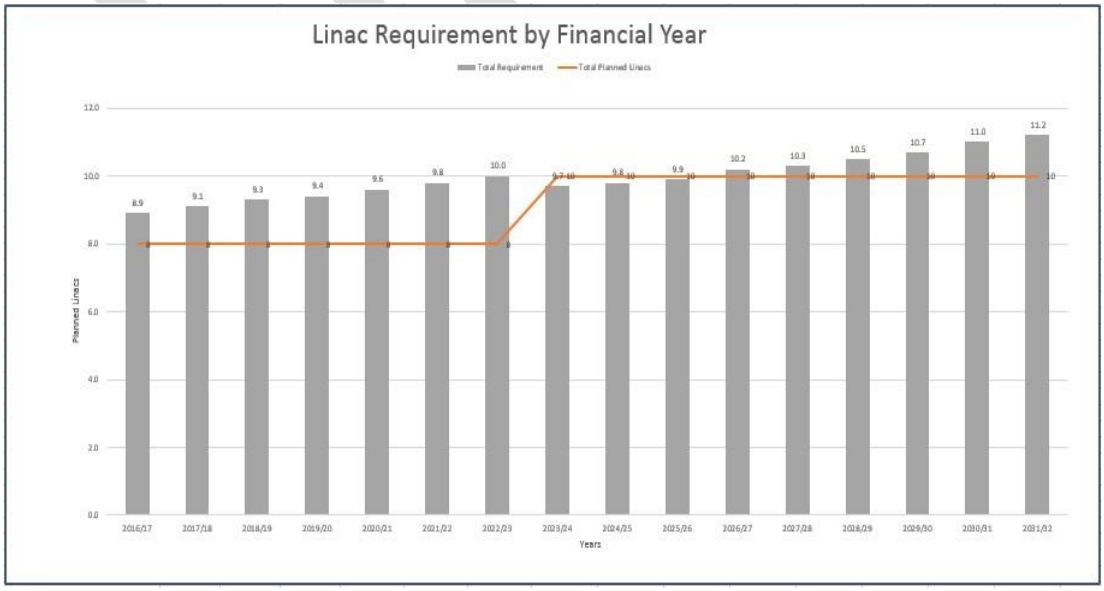


Figure 2-12: Linac Requirement by Financial Year



2.7.12 In summary the key drivers for the drivers for a RSC are:

- Improve access rates for Radiotherapy treatments, as rates are low in Wales compared to best practice and 50% of all cancer patients will benefit from receiving radiotherapy as part of their cancer management and in 40% of cases it contributes to a cure.
- Currently there is a poor patient experience for patients who travel significant distance for radiotherapy, often every weekday for many weeks.
- A RSC will contribute to the National policy: Healthier Wales –as it delivers care at home/locally where possible
- This type of networked model is used by leading cancer centres around the world delivering good outcomes
- Both Organisations are keen to increase access to research and trials and it is planned that local access to radiotherapy will increase availability and update of Radiotherapy trials

2.8 Key Radiotherapy Service and Capacity Requirements

2.8.1 The purpose of this section is to:

- Summarise the methodology which has been applied for forecasting future capacity requirements of South East Wales Cancer Services;
- Provide an overview of the service and capacity requirements and functional requirements; and the Major Medical equipment requirements.

2.8.2 It is important to highlight the relationship between the nVCC FBC, IRS FBC and the RSC FBC in terms of whole system capacity and delivery.

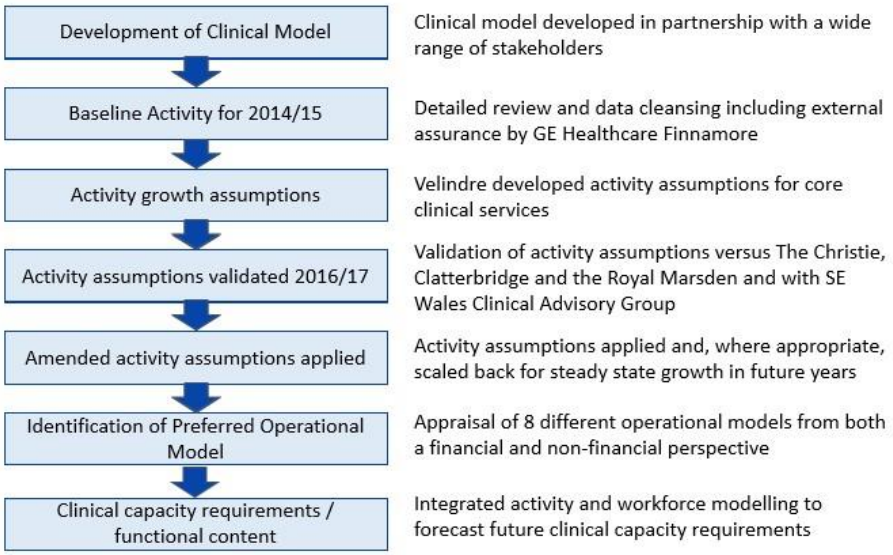
Modelling Future Capacity Requirements

2.8.3 The TCS Programme has developed a comprehensive activity model to forecast future capacity requirements for as set down in the nVCC OBC South East Wales Cancer Services. 2016/17 was been used as the baseline activity year for the model. The 2016/17 data set was been subject to rigorous review, including external validation, to ensure the accuracy of the data.

2.8.4 The functionality of the model has been subjected to quality assurance tests by the Trust's Technical Advisors, by GE Healthcare Finnamore and by the TCS Programme Team.

2.8.5 A summary of the process followed in forecasting future capacity requirements is shown in Figure 2-13.

Figure 2-13: Methodology for Forecasting Future Capacity Requirements



Clinical Growth Assumptions

2.8.6 The TCS Programme has developed a set of clinical growth assumptions for its core services. These clinical growth assumptions have been developed in partnership with clinical colleagues from across South East Wales and are informed by cancer incidence projections provided by the Welsh Cancer Intelligence and Surveillance Unit (WCISU).

2.8.7 The assumptions, following the availability and validation of 2016/17 activity data, have been reviewed by the VCC Senior Management Team and by the VCC service and clinical leads respectively. The main output of this review was a reduction in assumed growth rate for Radiotherapy from 4% to 2% between 2016/17 and 2030/31.

2.8.8 The clinical growth assumptions have been approved by the TCS Programme Management Board and by the TCS Programme Clinical Advisory Board and also reviewed in light of most recent activity.

Table 2-4: Clinical Growth Assumptions for Radiotherapy Services

Service	Annual Clinical Growth Assumption
	2016/17 – 2030/31
Radiotherapy	2%

2.8.9 In addition a validation exercise has been undertaken to compare the Trust's clinical growth assumptions against the following Cancer Centres from across the UK.

- The Beatson West of Scotland Cancer Centre;
- The Clatterbridge Cancer Centre NHS Foundation Trust;
- The Christie Cancer NHS Foundation Trust;

- Leeds Teaching Hospital NHS Trust; and
- The Royal Marsden NHS Foundation Trust.

2.8.10 This validation exercise demonstrated that the clinical growth assumptions were in line with those from other Cancer Centres across the UK, where comparable data is available. It can also be that radiotherapy services at Velindre Cancer Centre has observed growth in recent years in keeping with the assumption.

Forecast Capacity Requirements

2.8.11 Following the activity and capacity modelling process outlined above, the TCS Programme has been able to establish its core capacity requirements. For Radiotherapy these equate to 10 Linear Accelerators.

2.8.12 Given the above activity projections, and based on the agreed operating model referred to above the following planning assumptions were developed for the RSC:

- Radiotherapy Satellite with 2 x operational Linacs. However, there is expansion space to support the installation of two more linacs if required in the future.
- 2 x Operational bunkers on day of opening
- On-treatment review and education
- 1 x CT Simulator
- Good effective and integrated radiotherapy and clinical information systems, for example to enable panning and delivery of treatments.

2.8.13 There will be a phased clinical implementation at the RSC:

- Phase 1 – Less complex / high volume tumour sites
- Phase 2 – Transition to a wider range of tumour sites

Table 2-5: Phased Implementation

Initial Activity	Proposed Activity	Exclusions
Breast Prostate & SABR Planned & unplanned Palliative Emergency	Urology Upper & Lower GI Lung & SABR Gynae Lymphoma Head & Neck Thyroid Neuro Electrons Chemo-radiation Research	Stereotactic Paediatrics Superficial (DXR) Brachytherapy TBI Sarcoma Benign Conditions Whole CNS Research (Early Phase)

Research (subject to risk assessment)

2.8.14 To deliver the required service model the RSC will require access to service provided by ABUHB including pharmacy to enable the delivery of chemoradiation treatments and emergency medical cover. An SLA has been established for the delivery of these.

Workforce

2.8.15 This section of the FBC sets out the Workforce requirements for the Radiotherapy Satellite Centre (RSC) based at Neville Hall Hospital, Abergavenny**.**

2.8.16 Radiotherapy services are provided by 3 main workforce groups: Consultant clinical oncologists, Radiographers, and medical physicists.

2.8.17 Currently all provisions for Radiation Services and the associated workforce are located at Velindre Cancer Centre, Whitchurch Cardiff.

2.8.18 The Workforce requirements for the RSC are based on the following assumptions:

- Radiotherapy planning and treatment based around 2 linear accelerators
- CT simulator with virtual simulation facilities
- Treatment planning
- Mould room
- On- treatment review clinics
- A range of Clinical cases will be treated at the satellite unit, commencing with Breast and Prostate with additional tumour sites being phased in.

Required Workforce Provision

2.8.19 There are two aspects to the workforce required for this business case:

- Ongoing workforce (revenue) requirements for the delivery of the service once the centre opens.

- The workforce requirements to commission the IRS at the RSC, being procured as a contractual option via the IRS business case, and to commission the other associated equipment for installation into the RSC. This expenditure will be capitalised.

Recurring Revenue Workforce

2.8.20 The Workforce for the Satellite Unit will be provided by both Velindre Cancer Centre and Aneurin Bevan Health Board as identified below:

Service	Health Board Provider	Additional Resource
Radiotherapy Service	Velindre Cancer Centre	Yes
Medical Physics Service	Velindre Cancer Centre	Yes
Facilities	Aneurin Bevan	Yes
Therapies – Physiotherapy, Dietetics, Occupational Therapy, Speech & language Therapists, welfare rights	Aneurin Bevan	No – current pathways to provide service
Medical - Emergency	Aneurin Bevan	No - current pathways to provide service
Clinical Psychology	Aneurin Bevan	No - current pathways to provide service
Pharmacy	Aneurin Bevan	Yes
IT	Aneurin Bevan	Yes

Velindre University NHS Trust Workforce

Radiotherapy and Oncology Services

2.8.21 The workforce requirements below takes into account of the Society of Radiographers Principles of Safe Staffing for Radiotherapy and Oncology Services and the legal obligations to comply with HCPC Standards of Conduct, Performance and Ethics. The workforce is consistent with that approved at the OBC Stage.

Job Role	Expected Banding	WTE
Consultant	Threshold 8	1
Medical Sec	Band 4	1
Senior Leader	Band 8B	1
Consultant Radiographer	Band 8B	1
Advanced Practitioner	Band 7	2
Superintendent Radiographer	Band 8A	1
Senior Therapy Radiographer	Band 7	7
Treatment Radiographer	Band 6	8

Treatment Radiographer	Band 5	5
Radiotherapy Helpers/booking clerk	Band 2	2
Review Assistant	Band 4	1
Total		**31**

Medical Physics and Engineering

2.8.22 The numbers below have taken into recommendations for adequate staffing levels set out by the Institute of Physics and Engineering in Medicine and the expectations services to appoint of the Ionising Radiation Medical Exposure Regulations, 2017 and 2018, collectively referred to as IR(ME)R. The workforce is consistent with that approved at the OBC Stage

Job role	Expected banding	WTE
Consultant Clinical Scientist	Band 8c	1
Clinical Scientist/Medical Physics Expert	Band 8a	3
Linac or computer engineer	Band 7	4
Dosimetrist	Band 6	2
Total		**10**

Aneurin Bevan University Health Board Establishment

Job Title	Band	WTE
Domestics	Band 2	2
Porters	Band 2	1
IT Support	Band 5	0.5
Pharmacy technician	Band 5	0.25
Total		**3.75**

Staffing requirements to commission the capital equipment

2.8.23 The commissioning costs for the key equipment for RSC is outlined in the IRS FBC which shows a requirement for the RSC for 9 posts with a financial value of £539k.

2.8.24 ***Appendix 1*** provides full details of the resources identified within the IRS business case for the commissioning process.

2.8.25 Some of the posts identified in the IRS Commissioning Plan for the commissioning of the IRS at both Phases 1 and 2 will cease their commissioning role when the RSC service becomes operational and transfer into posts delivering the clinical service operationally at the RSC. To ensure an accurate interface of revenue and capital costs, the integrated workforce plan has fully identified at a post level the commissioning and operational requirements and the relationship between them. This detailed work has ensured that the commissioning workforce, and their associated costs, have been excluded from the advance recruitment revenue costs that commissioners have agreed to support (with a lead recruitment time of 4.5. months).

Delivering the staffing requirements

2.8.26 Both ABUHB and VUNHST have People Strategies which will provide the framework to deliver the staffing requirements outlined above. Velindre University NHS Trust, which will provide significant majority of the staff for this unit, has a People Strategy that will bring our workforce through to 2032 with the overall mission for people employed by the Trust to be healthy, delivering great care and growing through inspirational learning. The strategy focuses on:

> **Skilled and Developed People:** an employer of choice for staff already employed by us, starting their career in the NHS, or looking for a role that will fulfil their professional ambitions and meet their personal aspirations
>
> **Planned and Sustained People:** having the right people with the right values, behaviours, knowledge, skills, and confidence to deliver evidence-based care and support patient and donor wellbeing.
>
> **Healthy and Engaged People:** Within a culture of true inclusivity, fairness and equity across the workforce. A workforce that is reflective of the Welsh population's diversity, Welsh language, and cultural identity

2.8.27 Given that the workforce groups involved in delivering radiotherapy are challenging disciplines to recruit into in the current market, the delivery of the recruitment plan is key to manage this risk. The clinical service has developed an integrated workforce plan, based on the strategy mentioned above, to capture the key drivers increasing demand for the workforce (including the IRS Implementation Plan) that maps out the workforce requirements over the transition and implementation periods, considering the interdependencies of ongoing programmes of work. The integrated workforce plan will not remain static and will be a live document updated on an ongoing basis as activities are delivered and the implementation matures. In addition, in order to manage the recruitment risk to the IRS and RSC Projects, and the critical nature of radiotherapy services in treating cancer, the Trust has recruited a number of key posts at risk.

2.8.28 Workforce growth will be phased in the following way:

- A first wave of recruitment (at Trust Risk) has commenced and is ongoing.
- Radiation Services will develop a further recruitment attraction campaign for prospective candidates to fill expanding establishment.
- A second wave of recruitment is currently being planned.
- Campaigns for a third wave of additional posts will begin in 2023 giving adequate time for advertising, recruitment, and on-boarding processes.
- Lead in time for appointment to posts will be 4.5 months prior to the Satellite Unit opening to allow for training and embedding into the service.

2.9 Spending Objectives

2.9.1 The purpose of this section is to outline the Spending Objectives for the RSC Project. The Project Spending Objectives (PSOs) provide a basis for appraising potential options and for post-project evaluation.

Project Spending Objectives

2.9.2 The following RSC PSOs were developed in partnership at a stakeholder workshop, which was attended by representatives with a broad range of service views. In presenting the RSC PSOs it is important to emphasise that:

- The scope of the FBC is limited to the development of the RSC to support the existing, and in the future, a new VCC; and
- The FBC for the RSC will focus on the additional infrastructure costs directly attributable to the RSC and the variable clinical and facilitate costs that result of a step up in radiotherapy capacity to meet modelled demand.

Table 2-6: Project Spending Objectives

Project Spending Objective	Description
Project Spending Objective 1	To provide access to **quality** and **safe** radiotherapy services that optimises patient **outcomes.**
Project Spending Objective 2	To provide sufficient **capacity** to meet future **demand** for services.
Project Spending Objective 3	To **improve patient, carer** and **staff experience.**
Project Spending Objective 4	To provide **capacity** and **facilities** to support the delivery of high quality **education**, **research**, **technology** and **innovation.**

2.9.3 The PSOs were approved by the RSC Project Board who provided assurance to the Health Board and Trust Board that they were:

- Aligned with the national context for healthcare developments in Wales;
- An alignment with the TCS Programme;
- Aligned with the scope and strategic context of the nVCC Project;
- Specific, measurable, achievable relevant and time-constrained (SMART); and
- Focused on business needs and vital outcomes rather than potential solutions.

Performance Metrics

2.9.4 To support the delivery of these objectives a number of key performance metrics have been developed and mapped against the five drivers for investment outlined within the Welsh Governments Business Case guidance.

Table 2-7: nVCC FBC Project Spending Objectives – Key Performance Metrics

Project Spending Objective	Performance Metrics
PSO1 - To provide access to **quality** and **safe** radiotherapy services that optimise patient **outcomes**	• Percentage compliance with Health Building Notes • Compliance assessment against BREAM • Percentage assessment against WHTM Estate Code (Category A Condition of Buildings) • PROM outcome measures • Access rate to Radiotherapy treatments
PSO2 – To provide sufficient **capacity** to meet future **demand** for services	• Waiting times (reported by HBs) against the Suspected Cancer Pathway targets • Compliance against the COSC quality measures (once formally introduced) • Percentage utilisation of equipment / accommodation: • Linear accelerator utilisation of non-clinical accommodation utilisation
PSO3 – To **improve patient, carer,** and **staff experience**	• Percentage of patients rating their experience as excellent • Percentage staff satisfaction • Percentage recruitment of workforce • Percentage retention of workforce •REM measures •Reduced travel times for patients and carers with resultant better experience and reduction in carbon footprint
PSO4 - To provide **capacity** and **facilities** to support the delivery of high-quality **education**, **research**, **technology,** and **innovation**	• Percentage of patients who have the opportunity to participate in clinical radiotherapy research trials • Percentage of patients for each cancer site entered into radiotherapy clinical trials each year Increased integrated and cross organisation • MDT learning and education

2.10 Scope of the Radiotherapy Satellite Centre Project

2.10.1 As previously described the scope of the Project is limited to the building of an RSC and the following is outside of the scope of the RSC Infrastructure Project:

- All other variable clinical costs of modelled demand growth (excluding radiotherapy which is included within the FBC) which will be considered through the commissioning LTA framework and, therefore, excluded from the RSC FBC;
- All other service development Projects e.g. Rehabilitation which will be subject to separate Business Cases and therefore excluded from the RSC FBC;
- All other outreach capital Projects e.g. SACT services, which will be subject to separate Business Cases and therefore excluded from the RSC FBC; and
- All Digital Projects which the Trust needs to complete irrespective of the RSC Project. These will be the subject of separate Business Cases.

Potential Business Case Options

2.10.2 The scope of the Project is well defined. There are two potential options for delivering the objectives of the Project apart from the Status Quo:

- Do Nothing;
- Option 1: 10 Linear Accelerators at Nvcc
- Option 2: 8 Linear Accelerators at Nvcc and 2 Linear Accelerators within the RSC.

2.10.3 As outlined earlier, the location of the RSC has been previously determined through an independently led options appraisal.

Capacity and Functional Requirements

2.10.4 As outlined earlier the activity and capacity analysis has demonstrated the following Functional Content requirements is 10 linacs i.e. 2 additional linacs from current levels and when compared to the planned Nvcc.

2.11 Project Risks, Constraints, Dependencies and Assumptions

Risks

2.11.1 Identifying, mitigating, and managing the key risks is crucial to successful delivery. Without effective management of the key risks, it is likely that the Project would not deliver its intended outcomes and benefits within the anticipated timescales and spend.

2.11.2 A full risk register for the RSC Project has been developed which includes the following categories:

Business risks: Risks that remain 100% with the Health Board and Trust and include political and reputational risks,
Service risks: Risks associated with the design and build and operational phases of the Project and may be shared with other organisations; and

External Non-System risks: Risks that affect all society and are not connected directly with the proposal. They are inherently unpredictable and random in nature.

2.11.3 The RSC risk register, which is attached at ***Appendix 2,*** is managed by the Project Team. The role of the Project Team in managing risks is described within the Management Case.

Constraints

2.11.4 The main constraints in relation to the RSC Project are outlined below in Table 2-8:

Table 2-8: Main Constraints of the RSC Project

Constraint	Overview
Financial Constraints	The infrastructure solution for the RSC must be deliverable within the (including VAT but excluding equipment) capital funding agreed with the Welsh Government and the revenue resources agreed with Commissioners.
Timescale Constraints	The RSC must be operational in line with the Programme requirements and as agreed with the Welsh Government.
Service Continuity	Delivery of patient services must be maintained during the period of construction.
Compliance with Statutory Requirements	The RSC must be fully compliant with all relevant statutory compliance requirements.

Dependencies

2.11.5 A number of dependencies have been identified in relation to the RSC Project. These are provided in Table 2-9 below:

Table 2-9: Main Dependencies of the RSC Project

Dependency	Overview
Capital Funding Availability	Access to capital funding is critical to deliver the Project, including the procurement of Major Medical equipment and IM&T and essential Enabling Works.
Revenue Funding Availability	Access to revenue funding is essential to support the recurring revenue implications associated with the RSC Project.

Welsh Government Approval	The Full Business Case must be approved by Commissioners and the Welsh Government.
Partnership Working	Co-production in the design and implementation of the Project that involves all stakeholders is essential to the Project's success.
Wider Health Strategy and Governance	It is important that general health strategy and governance in Wales, that underpins the RSC Project remains broadly consistent over the period of change.

Assumptions

2.11.6 The key assumptions underpinning the RSC Project are provided in Table 2-10 below:

Table 2-10: Main Assumptions for the RSC Project

Assumption	Overview
Implementation of the wider TCS programme	It is assumed that the following capital Projects identified within the TCS Programme are funded and the RSC has been 'sized' on the basis of this assumption. • VCC (and nVCC) at Whitchurch; and • Non-surgical cancer Outreach centres across South East Wales delivering SACT and Outpatient services.
Clinical Growth Assumptions	The RSC has been 'sized' on the basis of a number of clinical growth assumptions (in conjunction with the nVCC OBC), summarised below:
Assumption	**Overview**
	• Radiotherapy activity will increase by 2% per annum through to 2031

Flexibility for Expansion on the Site of the Radiotherapy Satellite Centre

2.11.7 It is important to highlight that there is planned expansion space (equivalent to accommodation for 2 additional linear accelerators plus supporting equipment etc.) on the identified site for the RSC. This expansion capacity is important to the TCS Programme Risk Management Strategy in the event that the clinical growth assumptions prove to be understated.

2.12 Conclusion

2.12.1 The Strategic Case has demonstrated the compelling case for investment to support the development of an RSC. The key factors supporting the case for investment are:

- Demand for Radiotherapy is forecast to increase over the forthcoming years and there is currently insufficient capacity to meet this demand;
- There is no expansion space on the existing Velindre Cancer Centre to, for example, install any additional linear accelerators, which limits the Trust's ability to expand its capacity in response to increasing demand for clinical services,
- Patient access to radiotherapy services in Wales is lower than in the rest of the United Kingdom and location of radiotherapy centres have been identified as a contributing factor; and
- The new Velindre Cancer Centre, has been sized on the basis that an RSC would be delivered in advance of its opening in accordance with the TCS Clinical Model.
- The RSC provides additional radiotherapy service capacity to the patients of South East Wales to meet demand significantly in advance of any other potential service development.

3.0 ECONOMIC CASE

3.1 Introduction

3.1.1 The purpose of the Economic Case in the Full Business Case (FBC) is to revisit the options that were identified as part of the Outline Business Case (OBC) and confirm that the preferred option continues to offer optimum value for public money following the conclusion of the procurement process.

3.1.2 The FBC will confirm that the Preferred Option continues to offer best value for public money by:

- Revisiting the OBC Options to confirm they remain valid and outline any changes.
- Detailing the procurement process and evaluation of Best and Final Offers (BAFOs).
- Confirming the ranking of the options remains unchanged by updating the Economic Appraisal with latest cost and benefit assumptions, including the results of the procurement process.
- Demonstrating the Preferred Option offers best value for money.

3.1.3 The conclusion confirms that the preferred option offers best value for money.

3.2 Revisiting the Options

3.2.1 In line with HM Treasury Green Book and NHS Wales Infrastructure Investment guidance, the Options Framework was used in the OBC to identify and evaluate the long list of options and agree a shortlist of options to evaluate value for money.

Critical Success Factors

3.2.2 This involved agreeing Critical Success Factors (CSFs), which are the attributes essential for successful delivery of the Project. These are outlined in the table below.

Table 3-1 Critical Success Factors

CSF	Description
Strategic fit	• Meets agreed Project Spending Objectives, related business needs and service requirements; and • Provides holistic fit and synergy with other strategies, programmes and projects.
Potential value for money	• Optimises public value (social, economic, environmental) in terms of potential costs, benefits, and risks.
Supplier capacity and capability	• Matches the ability and capacity of potential suppliers to deliver the required services; and • Is likely to be attractive to potential suppliers.
Potential affordability	• Can be funded from available sources of finance; and • Aligns with sourcing constraints.
Potential achievability	• Is likely to be delivered given the Health Board and Trust's and partner organisations' ability to respond to the changes required; • Matches level of available skills required for successful delivery; • Facilitates the continued delivery of services throughout the duration of the project; and • Delivers an operational RSC in line with the Programme agreed with the Welsh Government.

3.2.3 These CSFs were used alongside the Project Spending Objectives (PSOs) to evaluate possible options for the delivery of the Project.

The OBC Longlist Assessment

3.2.4 The Options Framework provides a systematic approach to identifying and filtering a broad range of options for a Project. It was used in the OBC to identify the options for the solution to deliver the Radiotherapy Satellite Centre Project and to conduct the following assessment:

- Assess how well each option meets the PSOs and CSFs
- Identify the main advantages and disadvantages of the option.
- Determine whether the option will be carried forward as either the preferred way forward or a possible solution, or discounted.

3.2.5 The scope of the Project was a fixed point that had already been determined as part of the overall Transforming Cancer Services in South-East Wales (TCS) Programme. Specifically, this involves increasing Radiotherapy capacity in South-East Wales with the implementation of two Radiotherapy treatment machines, in addition to the eight treatment machines currently located at the existing Velindre Cancer Centre (VCC) which are expected to be replaced and relocated to the new Velindre Cancer Centre (nVCC) as part of the Integrated Radiotherapy Solution (IRS) Project.

3.2.6 The options appraisal in the OBC therefore focused on identifying and assessing options for the solution to deliver this. The TCS Programme Delivery Board determined the possible options to be appraised and these are presented in the table below.

Table 3-2 the OBC Options

Ref	Option	Description
1.1	**Do Nothing**	Continue with existing arrangements and retain the current Radiotherapy capacity (8 Radiotherapy treatment machines).
1.2	**Do minimum**	Implement 2 additional Radiotherapy treatment machines at nVCC, with no satellite provision.
1.3	**Intermediate**	Develop a new Radiotherapy Satellite Centre (RSC) at Nevill Hall including 2 Radiotherapy treatment machines.

3.2.7 The advantages and disadvantages of each of these options were identified as part of the OBC. These have been reviewed for the FBC and confirmed they remain valid as outlined in the table below:

Table 3-3 Advantages and disadvantages of options

Advantages	Disadvantages
1.1 Do Nothing	
• Does not require any capital investment.	• Service will be unable to accommodate forecast demand in the future. • Does not increase access closer to home so reduces Programme benefits associated with reduced patient travel and improved uptake of services. • Does not align with the TCS strategy concerning improving the overall cancer pathway and so will impact on delivery of other Programme benefits.
1.2 Do Minimum: 2 additional treatment machines at nVCC	

Advantages	Disadvantages
• Potentially reduces capital costs by negating the need to develop an additional facility.	• Does not increase access closer to home so reduces Programme benefits associated with reduced patient travel and improved uptake of services. • Physical challenges of accommodating 2 additional Radiotherapy treatment machines on nVCC site. • Reduces expansion capacity on nVCC site. • Does not provide additional capacity during development of nVCC so creates a significant risk that demand will exceed capacity during this time. • Does not mitigate risks associated with recruiting and retaining staff in one geographical location. • Requires an increase in revenue service payment cost.
1.3 Intermediate: New Radiotherapy Satellite Centre at Nevill Hall	
• Improves access to care closer to home, leading to increased uptake of treatment which will result in improved patient outcomes. • Ability to provide additional capacity during the nVCC transitional period. • Flexibility of workforce working, larger recruitment pool and flexibility between sites.	• Increased capital due to the introduction of an additional building.

3.2.8 Each option was also assessed against the PSOs and CSFs. The results of this, including the overall assessment of each option, are presented in the table below:

Table 3.3-4 Assessment of options

		1.1 Do Nothing	1.2 Additional Capacity at nVCC	1.3 New RSC at Nevill Hall
PSO1	To provide access to quality and safe radiotherapy services that optimises patient outcome	X	?	✓
PSO2	To provide sufficient capacity to meet future demand for services	X	?	✓
PSO3	To improve patient, carer and staff experience	X	✓	✓
PSO4	To provide capacity and facilities to support the delivery of high quality education, research, technology and innovation	?	✓	✓
CSF1	Strategic fit	X	?	✓
CSF2	Potential value for money	X	?	✓
CSF3	Supply side capacity / capability	✓	✓	✓
CSF4	Potential affordability	✓	✓	✓
CSF5	Potential achievability	X	?	✓
Assessment		Baseline	Possible - Carry forward	Preferred way forward

3.2.8 Following this assessment it as concluded that:

- Development of the RSC at Nevill Hall (Option 1.3) was identified as the preferred way forward because it best meets the spending objectives and the critical success factors, by providing increased capacity, greater workforce resilience and access to care closer to home which will lead to improved patient outcomes. This option offers a significant advantage in terms of providing additional capacity in advance of the nVCC opening.

- Do nothing (Option 1.1) was carried forward as a baseline only to allow comparison of the options. It is not a feasible option as it does not provide enough capacity to meet growing demand and since it will not achieve spending objectives, is not likely to represent value for money.

- Providing additional Radiotherapy capacity at nVCC (Option 1.2) only partly meets the spending objectives in terms of providing additional capacity but creates some risks in terms of timescales and does not deliver access to care closer to home. It was carried forward as a possible option for evaluation as part of the economic appraisal.

The OBC Shortlist

3.2.9 The RSC Project Board reviewed the shortlist of options by testing the following:

- 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?

3.2.10 Following this review, the shortlist of options was approved by the RSC Project Board and notified to Welsh Government in a letter to Rob Hay dated 28th November 2019. The final shortlist of **three** options includes:

- **The Do Nothing Option:** This option provides a benchmark for assessing the value for money of all options. It attempts to optimise existing arrangements as far as possible in order to improve the organisation's capability to meet current and some future demand for core services. It requires investment in outsourcing services to meet demand beyond that available from internal capacity.

- **The Do Minimum Option:** This option offers a realistic way forward to meet future demand for core services through the expansion of a purpose built nVCC. This option requires single stage implementation which will be funded through a Public Private Partnership (Building) and NHS Capital Funding (Equipment).

- **The Intermediate Option (Preferred Way Forward):** This option requires the development of a purpose-built RSC operating in partnership with Aneurin Bevan University Health Board. This option offers a phased implementation which will be funded from NHS Capital Funding (Building and Equipment).

The OBC Economic Appraisal

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

Table 3-5 OBC Economic Appraisal results (£'000)

	Do Nothing	Do Minimum (nVCC Extension)	Preferred (RSC)
Initial capital costs	0	2,299	27,086
Lifecycle capital costs	0	0	3,349
Total capital costs	**0**	**2,299**	**30,435**
Transitional costs	0	712	712
Outsourcing during transitional period	0	14,488	0
Recurring revenue costs	616,664	199,563	144,520
Total revenue costs	**616,664**	**214,763**	**145,232**
Quantified risks - capital costs	0	0	1,707
Optimism bias	0	0	1,358
Revenue expected risk value	0	5,569	3,147
Total risk costs	**0**	**5,569**	**6,212**
Total costs	**616,664**	**222,632**	**181,880**
Benefits	0	0	(582,733)
Total benefits	**0**	**0**	**(582,733)**
Net Present Social Value (undiscounted)	**616,664**	**222,632**	**(400,854)**
Net Present Cost (discounted)	242,925	96,158	83,589
Total benefits (discounted)	0	0	(374,190)
Net Present Social Value (discounted)	**242,925**	**96,158**	**(290,601)**
Rank	**3**	**2**	**1**
Benefit Cost Ratio (discounted)	**0.00**	**0.00**	**4.48**
Rank	**2**	**2**	**1**

3.2.12 This demonstrated that the development of a new Radiotherapy Satellite Centre (RSC) at Nevill Hall, including two Radiotherapy treatment machines, offered best value for money and should therefore be carried forward as the Preferred Option.

3.3 Results of the Procurement Process

3.3.1 The purpose of this section is to provide a summary of the procurement process and how the Best and Final Offers (BAFOs) were evaluated, and the preferred bidder selected.

Procurement Process

3.3.2 The procurement process was undertaken as per the procurement strategy, route and evaluation that was outlined in the Commercial Case of the OBC.

Procurement Results

3.3.3 The FBC Commercial Case outlines in detail the most economically advantageous tender and sets out the commercial and contractual arrangements that have been negotiated.

3.3.4 It outlines the procurement results for the construction (professional) services and each of the work packages that were outlined in the Strategic Case.

3.3.5 The resulting cost assumptions are incorporated within a revised Economic Appraisal as outlined in the subsequent sections of this Economic Case.

3.4 Updated Cost Assumptions

3.4.1 The purpose of this section is to present revised cost assumptions including firm costs that have emerged as a result of the procurement process and any further refinements required.

Capital Costs

3.4.2 The capital requirements differ for each of the three shortlisted options and include:

Do Nothing:
- Requires some outsourcing of services to address demand requirements.
- Assumes the nVCC will be built / be commissioned in 2025.

Do Minimum (nVCC Extension):
- Construction of an extended nVCC to meet the additional capacity required across the South-East Wales Region.
- nVCC designed and sized in line with additional service scope and in line with relevant Health Building Notes.
- Expansion zones identified through the design of the nVCC to facilitate the potential future introduction of new services.

Preferred (RSC):
- Construction of the RSC to supplement the existing (and new) Velindre Cancer Centre;
- Designed and sized in line with existing service scope and in line with relevant Health Building Notes.
- Expansion zones in the nVCC identified through the design of the RSC and nVCC to facilitate the potential future introduction of new services.

3.4.3 The capital cost calculations and assumptions developed at OBC have been refreshed by the Health Board and Trust and their Technical and professional Advisors and have been shared and agreed with NHS Wales Shared Services.

3.4.4 Since the OBC, the capital costs for the Preferred Option have been finalised to include the following adjustments:

- Construction and general equipment costs for the Radiotherapy Satellite Centre have been updated based on the results of the procurement process and at £31.9m (excluding VAT) are within the approved sum uplifted for inflation, decarbonisation, and scope changes such as digital.
- The cost of the major equipment (i.e. two Radiotherapy treatment machines) being procured as part of the IRS Project are now included.

3.4.5 The capital costs for the Do Minimum option have been uplifted to the same price base as the Preferred Option (i.e. uplifted from the OBC BCIS PUBSEC Index 250 to the FBC Index 277).

3.4.6 For further details refer to the Capital Cost Forms in the Estates Annex.

3.4.7 The revised assumptions used to calculate the costs are provided below.

Table 3-6 Main Capital Cost Assumptions

	• Construction costs have been calculated by the Project's Technical Advisors and the nVCC Project Team based on BCIS PUBSEC Index 277. • Capital cost forms (FB forms) are completed based on the results of procurement process. • The phasing of the capital costs is based on the Project plan. • Appropriate on-costs have been applied to cover capital expenditure associated with utilities, communications, external building works, and auxiliary buildings. • Appropriate fees have been determined by the Project's technical advisors, based on industry norms. • Equipment estimates cover IM&T, medical and non-medical equipment as provided by the technical advisors. Other equipment (Group 3 and 4 items) has been determined, by the technical advisors based on industry norms. • Contingencies reflect the capital risks within each of the shortlisted options and are based on an assessment by the Project and its Technical and Professional Advisors. The calculation is provided in the Estates Annex. • It is assumed that the Do Minimum option (nVCC extension) will be delivered via the MIM funding model and so only equipment related costs are included within capital (all building-related costs included within revenue costs).

3.4.8 The revised capital costs are outlined in the table below. For the purposes of the FBC, costs exclude VAT.

Table 3-7 Capital Costs (£'000)

	Do Nothing	Do Minimum (nVCC Extension)	Preferred (RSC)
Construction costs	0	0	22,042
Fees	0	0	3,091
Non works costs	0	0	2,324
Equipment costs	0	2,548	2,871
Quantified risk	0	0	1,620
RSC capital costs	**0**	**2,548**	**31,948**
IRS equipment	0	6,080	6,080
IRS commissioning	0	585	585
IRS capital costs	**0**	**6,665**	**6,665**
Total capital costs excluding VAT	**0**	**9,213**	**38,613**

3.4.9 An analysis of the phasing of total capital costs for the Project is outlined in the following table:

Table 1-8 Capital Costs by Financial Year (£'000)

Financial year	Do Nothing	Do Minimum (nVCC Extension)	Preferred (RSC)
Year 0 - Prior Years	0	0	2,818
Year 1 - 2022/23	0	37	7,277
Year 2 - 2023/24	0	285	18,469
Year 3 - 2024/25	0	8,892	9,651
Year 4 - 2025/26	0	0	399
Total capital costs excluding VAT	**0**	**9,213**	**38,613**

3.4.10 Following the upfront capital investment, the Trust will continue to require an annual capital allocation to finance new and replacement items of equipment. These costs are not included within the costs summarised in the above tables.

3.4.11 In addition to the upfront capital investment, the Health Board and Trust and their appointed Technical Advisors estimated the lifecycle cost associated with each of the shortlisted options. The assumptions used to calculate the costs are provided below and it is assumed that the calculation of these costs remain largely unchanged since the OBC, other than:

- Uplift price base to 2021/22.
- Reflect latest Project timescales.

Table 3-9 Lifecycle Cost Assumptions

	• Lifecycle costs are calculated over the full 60-year appraisal period in line based on average cost per m2 in line with similar projects. It is assumed to commence in 2024/25 following completion of the Project. • All lifecycle costs for the Do Minimum option (nVCC extension) are assumed to be included within the annual MIM charge.

3.4.12 An analysis of the annual lifecycle costs of the project is provided in the following table:

Table 3-10 Total Lifecycle Costs (£'000)

Cost category	Do Nothing	Do Minimum (nVCC Extension)	Preferred (RSC)
GIFA m2	N/A	N/A	2,533
Annual lifecycle costs	N/A	N/A	60

Non-Recurrent Costs

3.4.13 The Trust requires non-recurring revenue funding to ensure the delivery of the Project and to cover the commissioning phase.

3.4.14 The assumptions used to calculate the costs are provided below and it is assumed that the calculation of these costs remain largely unchanged since the OBC, other than:

- Uplift price base to 2021/22.
- Reflect latest Project timescales.

Table 3-11 Main Transitional Cost Assumptions

	• Non-recurring costs are to be incurred to facilitate Pre-Commissioning in 2024/25

3.4.15 The resulting Project running costs and commissioning costs are outlined in the table below:

Table 3-12 Transitional Costs (£'000)

Cost category	Do Nothing	Do Minimum (nVCC Extension)	Preferred (RSC)
Pre-commissioning costs	0	726	726
Total Costs	**0**	**726**	**726**

Recurring Revenue Costs

3.4.16 The recurring revenue costs reflect the ongoing running costs required for each of the options.

3.4.17 Costs will differ for the three shortlisted options in relation to the operational requirements of each, the main elements of which are described below:

- **Do Nothing:** Includes the costs to source additional demand outside of the capacity of the facility.
- **Do Minimum (nVCC Extension):** Includes the costs associated with operating additional capacity within an extended nVCC.
- **Preferred (RSC):** Includes the costs associated with operating the service remotely from the VCC.

3.4.18 Since the OBC, the recurring costs for the Preferred Option have been finalised to include the following adjustments:

- All costs inflated to 2021/22 prices.
- Final SLA agreed for IT costs.
- Utilities, Hard FM, and Soft FM costs updated to reflect latest floor plans for the RSC.
- Rates estimate agreement with Advisors.
- Revised model of expenditure for the following:
  - Consumables costs linked to proposed clinical mix and volumes.
  - Patient transport costs linked to EASC and private transport volumes, adjusted for local delivery.
  - Travel costs based on assumed rotation of nVCC and RSC staffing.
  - Equipment and IM&T maintenance costs based on indicative operational costs.
- The ongoing revenue costs associated with the major equipment (i.e. two Radiotherapy treatment machines) being procured as part of the IRS Project are now included.

3.4.19 The revenue costs for the Do Minimum option (nVCC Extension) have been updated in accordance with the changes made to the RSC option to ensure a like-for-like comparison. In addition, the increased annual charges associated with the MIM delivery vehicle have been estimated based on the latest Annual Service Payment (ASP) for the nVCC as at 1st April 2022.

3.4.20 The revenue costs for the Do Nothing option (Outsourcing) have been updated to reflect current service costs with outsourced providers. This estimate is predicated on sufficient capacity being available at current price levels.

Table 3-13 Recurring Revenue Cost Assumptions

- Costs are at 2021/22 prices.
- Costs are based on forecast workforce and operating requirements to provide Radiotherapy services for the level of demand that is expected to exceed current/future nVCC capacity, depending on the option:

Do Nothing

- Since this option does not address the capacity constraints, costs to outsource unmet demand to an external provider have been estimated.

Do Minimum (nVCC Extension)

- Costs have been estimated for the additional workforce and operating costs required to provide increased capacity on the nVCC site.
- In addition, an estimate has been made of the increased annual charge associated with the MIM delivery vehicle. This has been calculated based on the estimated capital costs of nVCC extension, on a proportional basis (i.e. the estimated annual charge for the main nVCC scheme in relation to estimated capital costs) and is on a like-for-like basis (including quantified risk but excluding Groups 2, 3, and 4 equipment).
- At the end of the MIM term, this will be replaced by lifecycle costs.

Preferred (RSC)

- Costs have been estimated based on the workforce and operating costs required to deliver services from the Radiotherapy Satellite Centre at Nevill Hall.

3.4.21 Annual recurring revenue costs have been estimated for each of the options from 2024/25 onwards following the commissioning of the new facilities under the RSC option. It is anticipated that costs will continue at these levels from that point forward.

3.4.22 The summary of the full year annual recurring revenue costs from 2025/26 are outlined in the following table:

Table 3-14 Future Recurring Revenue Costs 2025/26 (£'000)

Cost category	Do Nothing	Do Minimum (nVCC Extension)	Preferred (RSC)
Pay costs	0	1,944	2,113

Non-pay costs	0	833	870
Cost of outsourcing	5,406	0	0
Additional MIM charge for nVCC extension	0	1,371	0
RSC operating costs	**5,406**	**4,148**	**2,983**
IRS operating costs		395	395
Total recurring revenue costs	**5,406**	**4,542**	**3,378**

3.4.23 In addition, the Do Minimum option includes the cost of outsourcing unmet demand has been included for 16 months reflect the capacity constraints during the additional construction period required to deliver this option.

Assessing the Cost of Risk

3.4.24 A range of risks have been identified for the Project, some of which can be quantified and a financial value determined. Other risks are either qualitative or cannot be attributed to specific aspects of the Project, such as revenue risks, the impact of which is excluded from this economic appraisal.

3.4.25 For the purposes of assessing the costs of risk for the Project the following capital risks have been calculated including:

- Quantified capital risks: which are included in the capital cost contingencies; and
- Expected risk value as outlined below.

3.4.26 It is assumed that optimism bias is no longer required at FBC stage as this is now fully incorporated into the Quantified Risk value, given the degree of certainty around design and pricing at this point.

Expected risk value

3.4.27 In addition, an expected risk value has been calculated to reflect the risk of delays to the programme for each of the option.

3.4.28 The impact of any delay is increased outsourcing costs which are estimated to cost £5,406k p.a.

Table 3-14 Expected risk value assumptions

	Do Nothing	Do Minimum (nVCC Extension)	Preferred (RSC)
High impact	N/A	12-month delay (25% probability)	9-month delay (25% probability)
Medium impact	N/A	6-month delay (40% probability)	4.5-month delay (25% probability)
Low impact	N/A	3-month delay (25% probability)	1-month delay (10% probability)
No impact	N/A	No delay (10% probability)	No delay (45% probability)
Expected risk value (£'000)	-	2,771	1,556

Estimating the Value of Benefits

3.4.29 As outlined in the Strategic Case, the Project delivers benefits in a variety of areas some of which can be quantified and valued financially.

3.4.30 For the purposes of the economic appraisal, we have focused on quantifying benefits which differentiate between the options, are measurable and evidence-based, and can be monetised using recognised methodology. This includes the following:

- Additional capacity available to meet forecast demand
- Reduced travel time for patient and carers
- Improved access to treatment and clinical trials leading to better clinical outcomes

3.4.31 The approach used to calculate a monetary value for each of these benefits was developed as part of the OBC and refined following the receipt of scrutiny queries from the Infrastructure Investment Board (IIB). An overview of the revised approach is outlined below:

Additional capacity - The additional capacity provided in both the Do Minimum (nVCC extension) and the RSC options, avoid the need to outsource activity to external providers in the long term, resulting in lower revenue costs when compared to the Do Nothing option. The RSC option also avoids the need to outsource activity to external providers in the short term as this can be delivered 16 months earlier than the Do Minimum option. Since these costs and savings are accounted for within recurring revenue costs they are not stated as separate benefits in the table below.

Reduced travel time - It is estimated that around 6,343 attendances p.a. will benefit from closer proximity to the RSC at Nevill Hall, saving patients and carers around 2,957 hours of travel time each year.

Applying a value of time travelled based on Department for Transport's (DfT) Transport Appraisal Guidance (TAG) Data Book – specifically, other travel not related to business or commuting – results in an equivalent annual societal benefit £30k p.a.

In addition, the reduced travel time will result in a reduction in carbon dioxide emissions. Assuming an average speed of 30-miles per hour and based on the DfT TAG Data Book forecast emissions associated with average fuel consumption and vehicle type applying the economic value of carbon emissions, this creates a societal benefit equivalent to £42k p.a. The detailed calculations for these assumptions are available in Appendix FBC/E3.

Improved access - It is estimated that current uptake of Radiotherapy services in Wales is 37% (Based on MALTHUS modelling). Given that best practice guidance is uptake of 41% and there is evidence to suggest that distances of over 45 minutes to access services is a barrier to treatment, it is reasonable to assume that the introduction of a satellite radiotherapy centre at Nevill Hall will increase uptake to at least 39%, equating to an estimated 231 referrals each year (based on average referrals for the last 3 years and ignoring any impact of growing demand related to demographic growth or increased incidence rates).

The increased uptake of treatment is expected to have a direct impact on clinical outcomes, including cancer survival rates. Applying current survival rates of 49.9% (Based on assumptions within the TCS Programme Benefits Paper) would result in 115 additional cancer survivors each year. It should be noted that this is likely to increase in line with improvements to survival rates, for instance if the target survival rate of 71% was achieved (as outline in the TCS Programme Benefits Paper), this would equate to 164 additional cancer survivors. However, for the basis of the RSC business case, current survival rates have been applied.

The social value of the life years gained by cancer survivors as a result of the improved access can be quantified by using the concept of Quality Adjusted Life Years (QALYs). QALYs are widely used in health, transport and welfare policy domains. Although there is a limited evidence-base to draw on reasonable assumptions can be made as follows:

- Average QALY for cancer survivors is difficult to establish but the TCS Programme Benefits Paper identified a paper which suggested that a reasonable assumption is 0.3 per year of survival.
- Based on TCS Programme Benefits paper it is estimated that average 5 life years gained for each survivor.
- Value of QALY is based on standard NHS assumption of £60k per QALY.

This results in a societal benefit equivalent to £10,375k p.a., detailed workings are available in ***Appendix 3.***

3.4.32 In addition, there are a number of benefits which are relevant to the case but are difficult to reasonably quantify in monetary values and/or do not differentiate between the options and so have not been incorporated within the economic appraisal. These are outlined in the Benefits Register in ***Appendix 9***, and include:

- Patients have access to seamless pathway of care in a single place
- Improved patient and carer experience
- More resilient and flexible workforce
- Improved staff satisfaction (although may be dis-benefit for some staff members - additional travel)
- Improved safety and compliance with standards
- Better sustainability, resilience and future proofing
- Opportunities to attract further investment

3.5 Economic appraisal

3.5.1 Based on the updated assumptions outlined in section 3.4 a discounted cash flow for each of the options has been prepared in line with the requirements of HM Treasury Green Book guidance. The key assumptions used in this analysis are summarised below:

Table 3-15 Key Assumptions Used in the Economic Appraisal

- Costs and benefits are calculated over a 60-year appraisal period.
- Baseline (Year 0) will be 2021/22
- Costs and benefits use real base year prices – all costs are expressed at 2021/22 prices in line with the baseline costs.
- The following costs are excluded from the economic appraisal:
  - Exchequer 'transfer' payments, such as VAT;
  - General inflation;
  - Sunk costs; and
  - Non-cash items such as depreciation and impairments.
- A discount rate of 3.5% is applied to the economic appraisal for years 1-30 and 3.0% for years 31 onwards, with the exception of QALY benefits which are discounted at 1.5% in line with HMT Green Book guidance.
- No financial benefits are incorporated.
- Quantified risks including Quantified Capital Risk and Optimism Bias are included based on the approach outlined above.

3.5.2 The results of the discounted cash flow are outlined in the following table:

Table 3-16 FBC Economic Appraisal Results

Expenditure Heading	Do Nothing	Do Minimum (nVCC Extension)	RSC
Initial capital costs	0	9,213	36,973
Lifecycle capital costs	0	1,866	3,471
Total capital costs	**0**	**11,079**	**40,444**
Transitional costs	0	726	726
Outsourcing during transitional period	0	7,208	0
Recurring revenue costs	306,810	220,605	194,739

Total revenue costs	**306,810**	**228,540**	**195,465**
Quantified risks - capital costs	0	0	1,620
Optimism bias	0	0	0
Revenue expected risk value	0	2,771	1,566
Total risk costs	**0**	**2,771**	**3,186**
Total costs	**306,810**	**242,389**	**239,095**
Benefits	0	0	-585,010
Total benefits	**0**	**0**	**-585,010**
Net Present Social Value (undiscounted)	**306,810**	**242,389**	**-345,916**
Net Present Cost (discounted)	120,863	101,292	108,719
Total benefits (discounted)	0	0	-374,968
Net Present Social Value (discounted)	**120,863**	**101,292**	**-266,249**
Rank	**3**	**2**	**1**
Benefit Cost Ratio (discounted)	**0.00**	**0.00**	**3.45**
Rank	**2**	**2**	**1**

3.5.3 The Economic Appraisal demonstrates that the Preferred Option continues to offer the best Net Present Social Value of the three options, suggesting that it offers best value for money in terms of whole life costs and benefits.

3.5.4 It also offers the best benefit cost ratio at 3.45 suggesting that it offers best value for money in terms of the relationship between benefits and costs.

3.5.5 The detailed analysis of the Comprehensive Investment Appraisal (CIA) model is provided in ***Appendix 4.***

3.6 Sensitivity Analysis of the Preferred Option

Decision Analysis

3.6.1 The Economic Appraisal demonstrates that the Preferred Option has the best overall Net Present Social Value, indicating this option delivers the best value for money of the shortlisted options.

Sensitivity analysis and switching

3.6.2 The results of the Economic Appraisal above have been subject to a sensitivity analysis to examine the impact of movements in capital and revenue costs.

3.6.3 Switching value analysis has been applied to areas of material cash flows to identify the extent that costs must change in order for the Net Present Social Value to equal that of the preferred option. The results of the analysis are presented below:

Table 3-17 Switching Values

Costs	Do Minimum
Revenue costs	-257.4%
Net Present Cost	-242.7%

3.6.4 The results above demonstrate that for the Do Minimum Option to rank as the Preferred Option its Net Present Social Value would need to improve by 242.7%.

3.6.5 The Do Nothing option has been excluded since it delivers no benefits and is not a feasible option.

3.6.6 In addition to the switching analysis, alternative scenarios have been used to consider how options may be impacted by future uncertainty and provide an assessment of risk in the ranking of options including:

1. Revenue costs of RSC increase by 25%
2. Benefits reduce by 25%
3. Exclude expected risk value

3.6.7 The results of the sensitivity analysis are shown in the table below:

Table 3-18 Results of sensitivity scenario analysis

Scenario	Revised NPC		
	Do Nothing	Do Minimum (nVCC Extension)	RSC
NPSV	120,863	101,292	-266,249

RSC revenue costs +25%	**120,863**	**101,292**	**-248,965**
RSC benefits -25%	**120,863**	**101,292**	**-172,507**
Exclude expected risk value	**120,863**	**98,793**	**-267,661**

3.6.8 This analysis demonstrates that while each of these scenarios change the Net Present Social Value, none of them have any impact on the ranking of options and therefore this analysis supports the identification of the Preferred Option.

3.7 Conclusion

3.7.1 The options appraisal undertaken at OBC has been updated with the results of the procurement process and refined cost and benefit assumptions. The results of this confirm that the Preferred Option – to develop the Radiotherapy Satellite Centre at Nevill Hall Hospital, Abergavenny – continues to offer best value for money.

3.7.2 The Preferred Option offers best Net Present Social Value and delivers a wide range of benefits which are complementary with local and national priorities as well as the delivery of a range of short and long term objectives to support the improvement of specialist non-surgical cancer service delivery across South East Wales.

4.0 COMMERCIAL CASE

4.1 Introduction

4.1.1 As required by the Five Case Model template this section of the Full Business Case (FBC) explains the proposed Deal in respect of the preferred option outlined in the Economic Case.

4.2 Required Services

4.2.1 This FBC states a requirement for the delivery of a Satellite Radiotherapy Unit at Nevill Hall Hospital under the NEC3 Engineering & Construction (ECC) Form of Contract and Designed for Life: Building for Wales Framework.

4.2.2 The Estates Annex provides information on the detailed design of the project the content of which having been thoroughly reviewed throughout the design process by the VUNHST and ABUHB client teams and NHS Shared Services.

Equipment & ICT Infrastructure

4.2.3 The procurement of all Groups 2, 3 and 4 equipment, and major medical equipment for the Project will be funded through Welsh Government capital funding and procured via the assistance of Shared Services Procurement Services.

4.2.4 Equipment and ICT costs have been calculated based on equipment lists provided by VUNHST and ABUHB, these are included in the Estates Annex. The vast majority of equipment will be purchased and owned by VUNHST with only a very small amount of equipment being required by ABUHB.

4.2.5 The capital costs now include the major equipment being procured as part of the IRS, these were excluded from the OBC costs. The procurement of this equipment is currently being progressed as part of a much larger procurement for both the existing Velindre site and the proposed new Velindre Cancer Centre by VUNHST. The FBC for the larger procurement is planned to be submitted to Welsh Government in May 2022.

4.2.6 VUNHST will be responsible for the specification, procurement, installation, commissioning, maintenance, replacement and disposal of all major medical equipment for the unit. The tale below provides a summary of the major medical equipment required:

Department	Equipment	Number Required
Radiotherapy	Linear Accelerator	2
Radiotherapy	CT Simulator	1

4.2.7 The table below identifies the equipment costs, including VAT, applicable to each organisation including IRS:

	Groups 2 ,3,4 equipment & ITC	IRS	Total
VHNHST	£3,414,240	£7,998,275	£11,412,515
ABUHB	£30,660	0	£30,660

4.3 Proposed Charging Mechanisms

4.3.1 There will be no ongoing service provision and therefore no recurring charges by the SCP following completion of the proposed new unit.

4.4 Risk Transfer

4.4.1 The general principle is that risks should be passed to "the party best able to manage them", subject to value for money (VFM). The UHB has carefully considered those risks best placed with the Supply Chain Partner (SCP) and those it will bear itself. This has been achieved at FBC stage through series of structured risk workshops and regular risk register review meetings, involving the UHB, SCP, Project Manager and Cost Advisor. Further information on the proposed Risk Management Strategy for the project, together with the quantified risk registers for the preferred option, is included in the Estates Annex.

4.4.2 Under the Designed for Life: Building for Wales Framework, which is described at length in the following section of the Procurement Strategy, the NEC3 Engineering & Construction (ECC) Form of Contract is used. The Engineering & Construction Contract is a "collaborative" contract that requires each project to include a Risk Register with risk allocated to the party best able to deal with it. The early involvement of the Supply Chain Partners means that they are fully briefed about risks in the project and accept ownership of risks than would normally be the case under a more traditional form of contract.

4.4.3 The table below shows how the project risks have been apportioned under a predominately Public Capital Funded procurement. The total assessed "Risk" cost at FBC stage is currently £1.620 million plus VAT for the preferred option. This is split ABUHB £1.081 million and SCP £539k.

Risk	ABHB	SCP	Shared
Design			Y
Site availability	Y		
Planning	Y		
Approval and Funding	Y		
Construction		Y	
Technical Commissioning		Y	
Operational Commissioning	Y		
Operating risk	Y		
Revenue risk	Y		
Technological and Obsolescence	Y		
Legislative Change	Y		

4.5 Contract Length

4.5.1 A stage 4, 5 & 6 Programme has been prepared by the SCP in full consultation with the Project Manager and UHB. The Programme fully complies with the requirements of the NEC3 ECC contract and the Designed for Life Framework. The Accepted Programme as required by the contract contains a detailed and comprehensive Programme of activities and the Completion Date is clearly identified.

4.5.2 Throughout Stages 5 & 6 the Accepted Programme will continue to be issued by the SCP to the Project Manager on a monthly basis for acceptance, including a mark-up of actual progressed achieved in the month and a strategy for recovering any lost time, in order to effectively monitor progress as work proceeds and robustly manage the project programme to ensure timely delivery of the project.

4.6 Proposed Key Contractual Clauses

4.6.1 The contract will be in accordance with the All Wales Designed for Life 4 Building for Wales Framework. The contract will be the NEC 3 Form of Contract. The conditions of contract are the core clauses and the clauses for main option C: Target Contract and Secondary Options – X1, X2, X4, X5, X7, X15, X16, X18, Y(UK) and Z of the NEC Engineering and Construction Contract (June 2005), with amendments dated September 201. The additional Z clauses comprise the standard Deigned for life: Building for Wales Framework amendments.

- This contract is based on the following key principals:
- Clarity – The Contract is written in plain language
- The Risk Register is a key project and contract management tool
- Foresight and Early Warning Notifications
- A Target Cost and Cost not to be exceeded.
- Timely two-way communication
- Compensation Events
- Monthly Accepted Programme is sued as a key project and contract management tool

4.6.2 Key external professional roles appointed on behalf of the Employer include, direct client appointments for the Project Manager and Supervisor. A Cost Advisor has also been appointed to support the Project Manager and Health Board.

4.7 Personnel Implications (including TUPE)

4.7.1 TUPE (*Transfer of Undertaking Protection of Employment*) does not apply to this investment as there is no change to the employing organisation. However, there will be implications for a small number of VUNHST staff in terms of a change in location of employment. This will be managed using the VUNHST's Management of Change Policy.

4.8 Procurement Strategy

4.8.1 The project falls within the terms of the All Wales Designed for Life 4 Building for Wales Framework.

4.8.2 The Health Board had appointed External Project managers and External Cost Advisers.

4.8.3 A "Cost not to be exceeded" has been agreed with the SCP and this is included in this FBC submission. Whilst approval of the FBC is awaited the Target Cost will be agreed and all necessary contractual documentation will be drawn up in readiness for a speedy exchange of contracts and start on site.

4.8.4 A Value for Money Report has been prepared by the Cost Advisor which is attached at ***Appendix 5.*** This describes the work packages procurement and evaluation process that has been undertaken to arrive at the "Cost not to be Exceeded".

4.8.5 The Health Board is also in the process of procuring the appointment of a Supervisor, in order to perform the required duties in the NEC3/ECC Contract.

4.9 Pain /Gain Share

4.9.1 The All Wales Designed for Life 4 Building for Wales Framework defines the Pain / Gain Share arrangements.

4.9.2 From Stage 4 onwards (Construction and Project Closure), the Gain Share will be limited to the first 5% of any savings between the total of the Prices and the Price for Work Done to Date arising during Stages 4, 5 and 6 and will be equally apportioned 50:50% between the Health Board and the SCP. Savings over this amount (i.e. less than 95% of the) will accrue 100% to the Health Board. To summarise the *Contractor's* share percentages and the *share ranges* are:

Share Range	***Contractor's* Share Percentage**
Less than 95%	Nil
From 95% to 100%	50%
Greater than 100%	100%

5.0 THE FINANCIAL CASE

5.1 Introduction

5.1.1 The purpose of this section is to set out the indicative financial implications of the preferred option (as set out in the Economic Case) and proposed deal (as described in the Commercial Case).

5.2 Capital Costs

5.2.1 The preferred option is Option 3 the construction of a new Satellite Radiotherapy Unit at Nevill Hall Hospital. The estimated outturn costs for the preferred option is £46,180 million, the detail of which is set out below:

	FBC Option 3 - £'000m
Works Cost	22,042
Fees	3,091
Non-Works	2,324
Equipment (VT £2.845, AB £0.026)	2,871
Contingency	1,620
Sub-Total	**31,948**
VAT	6,390
VAT Recovery on fees	(156)
Total VAT	**6,234**
Total Capital Cost (for comparison with uplifted OBC)	**38,182**
Satellite Integrated Radiotherapy Solution (IRS)	6,665
VAT on IRS	1,333
Total IRS	**7,998**
Total Project Capital Cost For Approval	**46,180**
Below the line Exceptional Market Volatility Risk including VAT	***1,356***

5.2.2 The submitted and approved OBC was indexed at Pubsec 250 providing a forecast Outturn Capital Cost totalling £25.379M exclusive or VAT (£30.285M inclusive of VAT). During the development Stage 3 (OBC to FBC) several Post OBC submission Client amendments were requested to be included following support from NWSSP-SES and WG. These amendments included modifications to the Treatment Rooms radiation protection (e.g., eliminating projects both internally and externally in the design and

increased FFL from floor slab to soffit), enhancements to Access & Security, Digital Wayfinding, ANPR Controls to dedicated patient parking, and the inclusion of Piped Medical Gases. These client additions provide an enhanced equivalent OBC Outturn Cost of £27.702m exclusive of VAT / £33.064M inclusive of VAT prior to any escalation adjustments (i.e. at Pubsec 250 = base).

5.2.3 Taking into account committed capital expenditure during the development of Stages 2 and 3, £3.330M exclusive of VAT, provides an adjusted forecast of Outturn Capital Costs as £24,372M excluding VAT at Pubsec 250. The inflationary adjustment is calculated by taking this adjusted forecast measured at Pubsec 250 and adjusting this to the published forecasted Pubsec Index (294) representing the mid-point of construction, this being 3Q23. This provides an adjustment of £4.289M exclusive of VAT, or £5.147M inclusive of VAT. This is the inflationary adjustment used in the comparator from OBC to FBC.

5.2.4 With the inflationary adjustment taken into consideration the forecasted comparable OBC Outturn Capital Cost becomes £33.064M plus, Inflationary adjustments £5.147M, i.e. Forecast Outturn Capital Cost £38.211M.

5.2.5 A more detailed breakdown of the capital cost calculations is contained within the FB Forms in the Estates Annex and a Value for Money report recommending acceptance of the "Cost not to be exceeded" is attached at ***Appendix 5.*** The "Cost not to be exceeded" is £29,587,769.

5.2.6 The total FBC capital cost, (excluding IRS), is £38,182 million, which is within the above uplifted approved OBC sum, i.e. uplifted for inflation, Decarbonisation and SMART of £38,211 million A more detailed reconciliation comparing the FBC costs with the uplifted OBC, is attached at ***Appendix 6.***

5.2.7 The capital costs now include the major equipment being procured as part of the IRS, these were excluded from the OBC costs. The procurement of this equipment is currently being progressed as part of a much larger procurement for both the existing Velindre site and the proposed new Velindre Cancer Centre by VUNHST. The FBC for the larger procurement is planned to be submitted to Welsh Government in May 2022.

5.2.8 The detailed cash flow for the preferred option is contained with the FB forms in the estates annex and is summarised below:

	Prior years	**2022/23**	**2023/24**	**2024/25**	**2025/26**
Total*	£3,321,639	£8,834,723	£22,224,302	12,693,784	462,035

*** includes anticipated market volatility costs**

5.2.9 The FBC assumes all capital costs and inflation will be funded by Welsh Government in each of the years as per the above, in accordance with current Welsh Government policy.

5.2.10 The following key assumptions have been made in the capital case:

- Capital costs are reported at BCIS Pub Sec Index Level 277.
- Costs included for Fees are based on typical rates assuming the scheme is procured through the Designed for Life: Building for Wales procurement programme

- Non-Works Costs are based on estimated capital costs that will be incurred in developing the scheme through to Operational Completion and include Planning Fees, Artworks and Commissioning costs
- A Contingency allowance of £1.620 million plus VAT has been included based on a quantified Risk Register. The Risk Register is included in the Estate Annex
- VAT has been applied at the rate of 20% to all cost components. It is assumed that VAT recovery will be applicable to all professional fees. Further detailed advice on the VAT reclaim will be sought imminently following agreement of the Target Cost.

5.2.11 Equipment and ITC costs are based on detailed schedules provided by VUNHST and ABUHB, these are included in the Estates Annex. The table below identifies the spilt of the equipment and ITC capital costs between Velindre and ABUHB, all costs include VAT:

	Groups 2 ,3,4 equipment & ITC	**IRS**	**Total**
VHNHST	£3,414,240	£7,998,275	£11,412,515
ABUHB	£30,660	0	£30,660

5.2.12 Capital costs reflect the capital requirements of the Project that will be funded from a Capital Resource Allocation. In this instance the capital resource will flow to both organisations, VUNHST and ABUHB. The former will own and be responsible for the ongoing maintenance and replacement of almost all of the proposed equipment. ABUHB will own and be responsible for the proposed new building, associated site infrastructure works and a relatively small amount of equipment.

5.3 Revenue Costs

5.3.1 The preferred option (Option 3) is the construction of a new Satellite Radiotherapy Unit at Nevill Hall Hospital

5.3.2 The costs have been updated from the OBC with the total revenue cost of the NHH RSC option to commissioners amounting calculated as £2.983m (an increase of £0.436m from the Option 3 revenue cost included in the OBC of £2.547m). The revised revenue cost is broken down as follows

	Option 3 - NHH RSC £
Workforce	
Radiotherapy Delivery	1,453,481
Medical Physics Delivery	555,748
Facilities	74,074
IT	19,679
Pharmacy	9,840

Pay	**2,112,822**
Non Pay	
Utilities	110,382
Hard FM	80,179
Rates	96,300
Soft FM	9,192
Consumables	33,500
Patient Transport	29,329
Equipment Maintenance	395,000
IM&T Maintenance	44,194
Pharmacy	708
Travel	71,500
Non Pay	**870,284**
TOTAL COST	**2,983,106**

5.3.3 The revenue projections are based on the delivery of the following levels of activity which are unchanged from the OBC:

Treatment Type	**No of Fractions**
Prostate Fractions	7,434
Breast non-DIBH	3,234
Breast DIBH	3,234
Palliative Treatment	1,699
Total	**15,600**

5.3.4 A full cost analysis of Option 3 and the other options, including a comparison with the OBC costings, is set out in ***Appendix 7***. Costs have been updated as follows:

- Costs inflated to 2021-22 Prices including the 21-22 workforce wage awards and non-pay inflation. At this stage it is not possible to update the prices to 2022-23 levels due to the uncertainties around the 2022-23 pay award.
- There have been no changes to the workforce assumptions
- Non pay assumptions updated to reflect latest building squared dimensions
- Consumables costs updated to reflect proposed clinical case mix and volumes
- Patient transport assumptions based on latest EASC/Private Transport volumes
- Equipment Maintenance and IM&T Maintenance updated to reflect current operational costs
- Travel costs updated to reflect proposed staffing rotation.

NB There have been no changes to the workforce assumptions.

Transitional Costs

5.3.5 Non-recurring revenue costs reflect expenditure that the Health Board and Trust will incur in order to deliver the Project but will not recur over time. They are largely one off, up-front costs. Non-recurring costs are to be incurred in the following areas:

- Pre Commissioning Costs; and
- Commissioning

5.3.6 Velindre has discussed the profile of pre-commissioning costs, specifically on the 3-6 month maximum lead in time for recruitment of posts. The proposed costs remain on a staggered basis based on market availability of staff, associated programmes and procurements that enable the Satellite Centre and lead in training times. This position will continue to be challenged and scrutinised as part of the commissioner review and internal Velindre Project management.

5.3.7 The table below sets out the pre-commissioning costs which have been uplifted to 2021-22 prices:

	£
Phasing	523,000

Distribution of Recurring Revenue Costs

5.3.8 The Collective Commissioning Group (CCG) have considered and agreed the approach to the distribution of revenue costs to inform the OBC and FBC processes.

5.3.9 The methodology was developed through the following stages

- Identification of recurring revenue costs in the establishment of the RSC
- ABUHB costs to be recharged to Velindre under a Service Level Agreement.
- Velindre to charge HBs under LTA arrangements
- Identification of the proposed activity case-mix at the RSC
- Calculation of the income to Velindre of the proposed activity case-mix using the new Velindre Contractual LTA Framework.

5.3.10 The key assumption used is activity undertaken at the RSC will be chargeable as any other Velindre activity.

5.3.11 When the full cost tariff is compared to the RSC cost proposal, it shows that the cost proposal is 86% of the full cost tariff.

	Recurring Revenue Costs £000
RSC Cost proposal	2,983,106
Tariff Income at Full Cost Rates using activity case mix	3,459,202
Comparator as % of Full Cost Tariff	86%

5.3.12 Actual costs are to be charged under the LTA Framework mechanism on activity residency with the costings underpinning the Velindre Contractual Framework being updated to reflect the 86% stepped cost.

5.3.13 On a notional basis, the RSC cost proposal split by commissioners using the percentages shares in current LTA arrangements would result in the following:

Commissioners	**Split %**	**Recurring Revenue Costs £**
Swansea Bay UHB	0.64%	19,092
Aneurin Bevan UHB	39.24%	1,170,571
Cardiff & Vale UHB	28.69%	855,853
Cwm Taf Morgannwg UHB	27.78%	828,707
Hywel Dda UHB	1.51%	45,045
Powys THB	2.14%	63,838
WHSSC	0.00%	0
Total Recurring Revenue Costs	**100%**	**2,983,106**

5.3.14 To ensure full cost recovery by VUNHST under the LTA contractual framework, the full and marginal rates in the LTA mechanism would need to be re-costed to include the RSC development.

Transitional Revenue Costs

5.3.15 The commissioner shares have been utilised to distribute the transitional (non-recurrent) revenue costs of the Project over Commissioners.

	Split %	**Costs £**
Swansea Bay UHB	0.64%	3,347
Aneurin Bevan UHB	39.24%	205,225

Cardiff & Vale UHB	28.69%	150,049
Cwm Taf Morgannwg UHB	27.78%	145,289
Hywel Dda UHB	1.51%	7,897
Powys THB	2.14%	11,192
WHSSC	0.00%	0
Total Transitional Revenue Costs	**100.00%**	**523,000**

Cost Inflation and Risk Sharing

5.3.16 The CCG has agreed an approach to risk sharing where the cost base will be reviewed prior to commissioning the RSC.

5.3.17 The CCG has agreed to an appropriate inflation mechanism, whereby the agreed commissioner quantum will be uplifted using CPI.

5.3.18 It was agreed that further scrutiny of the costs base will be required prior to commissioning of the new Centre. At this time, any costs that have increased outside of ABUHB and VUNHST's control would require separate discussion.

5.3.19 As identified above, it is recommended that the costs be reviewed prior to commissioning. It is acknowledged that FBC approval will result in the risks being borne by VUNHST and/or ABUHB as appropriate (unless a case is made otherwise as identified below).

5.3.20 In that regard, Commissioner funding for professionally supported cost increases, outside of Velindre's control, should not be unreasonably withheld. Further, cost drivers such as pay awards, mandated standards and unavoidable external policies would also be accepted as reasonable factors for post approval support.

5.3.21 It has been agreed that the cost distribution will apply to these, and any future variant of the FBC cost, unless Commissioners collectively agree to the application of another method at some point in the future.

5.3.22 The preferred option results in an NHS saving of £1.2m costs for MIMs financing payments. Commissioner Health Boards will appreciate Welsh Government consideration of a proportion of this avoided cost be made available to mitigate the recurrent revenue costs of the preferred option.

Collaborative Commissioning Leadership

5.3.23 The Financial Framework identified that the RSC FBC has focused on the additional costs of this new building and service at a projected level of activity. The actual level of activity and case-mix required will be addressed through the commissioning and planning cycle irrespective of the provision of a new building.

5.3.24 It is necessary to highlight that, although not a decision dependent factor, the additional variable clinical costs of demand, and the associated approach to provide further additional resources through a new Commissioning LTA Framework, are

important business factors that require determination and collaborative commissioning agreement.

3.3.27 The FBC is predicated on the implementation of the new VCC contractual framework which is currently being implemented with commissioners.

5.4 Depreciation and Impairment

5.4.1 As the capital consequences of this project are shared between both ABUHB and VUNHST there are two profiled summary of the depreciation and impairment costs associated with the preferred option are set out in the tables below:

Preferred Option Depreciation and Impairment
ABUHB Consequences

DEL / AME FUNDING REQUIREMENTS	2022/23	2023/24	2024/25	Recurring
Option 3	£000	£000	£000	£000
ABUHB DEL Depreciation Building	0	0	143	286
ABUHB DEL Depreciation Equipment	0	0	3	6
ABUHB Accelerated Depreciation	395	0	0	0
ABUHB AME Impairment	0	0	23,154	0
ABUHB Total Requirement	**395**	**0**	**23,300**	**292**

Velindre Consequences

DEL / AME FUNDING REQUIREMENTS	2022/23	2023/24	2024/25	2025/26 recurring
Option 3	£000	£000	£000	£000
Depreciation - DEL Buildings	0	0	0	0
Depreciation - DEL Equipment & IT	0	0	609	812
Accelerated Depreciation	0	0	0	0
Impairment - AME	0	0	0	0
Velindre Total Requirement	**0**	**0**	**609**	**812**

5.4.2 Impairment on the Radiotherapy Unit itself has been calculated based on advice from the District Valuer. The asset value post impairment has been depreciated over the estimates of useful economic life provided by the District Valuer.

5.4.3 The FBC assumes all impairment and depreciation will be funded by WG in each of the years as per the above, in accordance with current WG policy. ***Appendix 8*** provides the Depreciation and Impairment calculations.

5.5 Impact on the Organisation's Operating Cost Statement and Balance Sheet

5.5.1 This section examines the impact of the proposed investment on the Health Board and Trust accounts. It should be noted that the following summarised extracts from the Statement of Comprehensive Net Expenditure (SOCNE) and Statement of Financial

Position (SOFP) only model the impact of the capital and revenue changes of the proposed investment outlined in the tables below. It does not reflect the overall forecast position of the Health Board. As with the Depreciation calculations two sets of tables are provided:

ABUHB - Impact on the Organisations Statement of Comprehensive Net Expenditure (SOCNE)

	2022/23	2023/24	2024/25	2025/26 recurring
Option 3	£000	£000	£000	£000
Revenue Cost Impact	0	0	791	1,171
Depreciation - DEL Buildings	0	0	143	286
Depreciation - DEL Equipment & IT	0	0	3	6
Accelerated Depreciation	395	0	0	0
Impairment - AME	0	0	23,154	0
Total Costs	**395**	**0**	**24,091**	**1,463**

ABUHB - Impact on the Organisations Statement of Financial Position (SoFP)

	2022/23	**2023/24**	**2024/25**	**2025/26**
Option 3	£000	£000	£000	£000
Non-Current Assets b/f:	3,728	12,168	33,074	12,825
Non-Current Assets Additions:				
Equipment & IT	0	31	0	0
Assets Under Construction / Buildings	8,846	20,876	3,050	0
Total Additions	8,846	20,907	3,050	0
Non-Current Assets Impairment:				
Assets Under Construction / Buildings			-23,154	
Total Impairments	0	0	-23,154	0
Non-Current Assets Depreciation:				
Buildings	-11		-143	-286
Equipment & IT			-3	-6
Accelerated Depreciation	-395	0	0	0
Total Depreciation	-406	0	-146	-292
Closing NBV Impact on SoFP	**12,168**	**33,074**	**12,825**	**12,241**

VUNHST - Impact on the Organisations Statement of Comprehensive Net Expenditure (SOCNE)

	2022/23	2023/24	2024/25	2025/26 recurring
Option 3	£000	£000	£000	£000
Revenue Cost Impact	0	174	2407	2744
Depreciation - DEL Buildings	0	0	0	0
Depreciation - DEL Equipment & IT	0	0	609	812
Accelerated Depreciation	0	0	0	0
Impairment - AME	0	0	0	0
Total Costs	**0**	**174**	**3016**	**3556**

Velindre - Impact on the Organisations Statement of Financial Position (SoFP)

	2022/23	2023/24	2024/25	2025/26
Option 3	£000	£000	£000	£000
Non-Current Assets b/f:				
Buildings	0	0	0	0
Equipment & IT	0	0	0	0
Assets Under Construction	0	0	0	0
Non-Current Assets Additions:				
Equipment & IT	0	0	7296	0
Assets Under Construction / Buildings	0	0	0	0
Total Additions	0	0	7296	0
Non-Current Assets Impairment:				
Assets Under Construction / Buildings				
Total Impairments	0	0	0	0
Non-Current Assets Depreciation:				
Buildings				
Equipment & IT			-609	-812
Accelerated Depreciation	0	0	0	0
Total Depreciation	0	0	-609	-812
Closing NBV Impact on SoFP	**0**	**0**	**6687**	**-812**

5.5.2 As shown in the extracts above, all assets will be shown on the Health Board's and Trust balance sheets. Whilst the unit is being built it will be shown as a non-depreciating asset under construction. The asset will be valued on completion and recorded on the balance sheet at that value in accordance with the Health Board's accounting policies.

5.6 Conclusion

5.6.1 In developing the Financial Case, ABUHB and VUNHST has worked closely with its specialist advisors, Commissioners and the Welsh Government to agree the Financial Framework to be adopted and present a robust assessment of the overall capital and revenue consequences of the proposed Project.

5.6.2 In assessing affordability, the Health Board and Trust has carefully considered the timing of expenditure and how this will impact on commissioners and other stakeholders, including the presentation of the professionally agreed approach to the distribution of the agreed revenue costs.

6.0 MANAGEMENT CASE

6.1 Introduction

6.1.1 The FBC Management Case sets out the management arrangements which will successfully deliver the RSC Project to time, cost and quality.

6.2 Project Management Arrangements

6.2.1 The Health Board and Trust have will continue to manage the delivery of the project via a Project Board and Project Team. Individual responsibilities will however change during the course of the construction, should the FBC be approved, to reflect the need for VUNHST to take the lead in the operational and service commissioning. At that point there will need to be two SROs, ABUHB taking the lead for the provision of the facility and VUNHST taking responsibility for service commissioning and operational readiness.

6.2.2 The key individual roles and responsibilities required to support the delivery of the RSC Project are set out below:

Table 6-1: RSC Project Leadership Team

Role	Name/Status	Responsibility
Senior Responsible Owner (SRO)	Nicola Prygodzicz ABUHB / Carl James VUNHST	The Senior Responsible Owner (SRO) is responsible for ensuring that the Project's objectives are delivered on time and within the desired cost and quality constraints. The SRO oversees the effectiveness of the Project Management Team ensuring that the Project Management structure is appropriate to ensure the project objectives are delivered and that the benefits are realised. At the appropriate time in the programme the SRO responsibility will be shared between ABUHB and VUNHST to reflect the increasing importance of service commissioning and operational readiness.
Project Director	Andrew Walker ABUHB	The Project Director reports to the SRO and is operationally accountable for project delivery of the RSC including the operational delivery of the RSC Procurement through the appropriate processes which he will lead. The Project Director will provide leadership and positive team working to create an environment that facilitates effective project delivery.

Director of Commercial and Strategic Partnerships **VUNHST**	Huw Llewellyn	The Director of Commercial and Strategic Partnerships is the Project Director for the TCS Digital and Equipment Project and along with the RSC Project Director will ensure that the interface between the RSC Project and the TCS Digital and Equipment Project is effective. The Director of Commercial and Strategic Partnerships will advise on the commercial, partnership, management, financial and economic aspects of the Project process and provide strategic advice to the RSC Project and on its interface with the nVCC and IRS Projects.
TCS Service Director **VUNHST**	Andrea Hague	The Trust Director of Service Transformation is responsible for leading a group of operational managers in order to ensure that a service and operational focus is maintained in all aspects of the RSC project. The post holder is responsible for identifying, developing, agreeing and delivery of all operational and clinical aspects of the Velindre Service at the RSC. This will include workforce, operational procedures and processes, facility requirements for interface management and commissioning.

6.2.3 Senior Clinical Leadership is provided to the Project through two key posts; one from each of the partner organisations.

Table 6-2: RSC Project - Clinical Leads

ABUHB Clinical Lead	Ian Williamson	The Health Board's clinical lead is responsible for leading a group of clinicians to ensure that a 'local' clinical focus is maintained in all aspects of the RSC project and that patient experience and quality is always a primary consideration.
VCC Clinical Lead	Tom Crosby	The Trust's clinical lead is responsible for leading a group of clinicians to ensure that a 'specialist' clinical focus is maintained in all aspects of the RSC project and that patient experience and quality is always a primary consideration.

6.2.4 These officers comprise of the RSC Project Board along with other colleagues from the Health Board and Trust as set down below:

Table 6-3: RSC Project Board

Name	Role
Nicola Prygodzicz	Executive Director of Planning, Digital and IT, ABUHB (Chair)
Carl James	Executive Director of Planning, Digital and IT, VUNHST
Andrea Hague	Director of Service Transformation , VUNHST (Deputy Chair)
Andrew Walker	Strategic Capital and Estates Programme Director, ABUHB
Huw Llewellyn	Director of Commercial and Strategic Partnerships, VUNHST
Ian Williamson	Lead Clinician, ABUHB
Prof. Tom Crosby	Lead Clinician, VUNHST
Suzanne Jones	Assistant Director of Finance, ABUHB
Lorraine Morgan	Programme Manager – Strategic Capital and Estates, ABUHB
Kathy Iken	Lead for Operational Implementation, VUNHST

6.2.5 The Officers above will be supported by a Project Team including a range of "Technical" ABUHB and Velindre Clinical and Technical Leads, as set out below, as well as a team of External Advisors (see Section 5.9).

Table 6-4: RSC Project Team

Name	Role
Andrew Walker	Strategic Capital and Estates Programme Director ABUHB (Chair)
Andrea Hague	Director of Service Transformation , VUNHST (Deputy Chair)
Lorraine Morgan	Programme Manager – Strategic Capital and Estates, ABUHB
David Osborne	Finance Lead, VUNHST
Phil Meredith	Finance Lead, ABUHB
Suzanne Jones	Assistant Director of Finance, ABUHB
Jacqui Couch	Clinical Transformation Manager, VUNHST
Bernadette McCarthy	Radiotherapy Services Manager, VUNHST
Kelly Jones	Capital Accountant, ABUHB

Jason Hoskins	Assistant Project Director nVCC (Technical), VUHNST
Gareth Daniels	ITC Lead VUNHST
Tony Millin	Head of RT Physics, VUNHST
Mark David	Operations Manager, VUNHST
Amanda Jenkins	Workforce Lead, VUNHST

6.2.6 The delivery of the Project is being managed in accordance with the PRinCE2 ('Projects in a Controlled Environment') methodology suitably adapted for local circumstances in order to meet the needs of this Project. The Project management arrangements will therefore be driven by outputs, or in the PRINCE2 terminology, "Products". All products will be formally signed off by the RSC Project Board before being approved (if appropriate) by the TCS Programme Delivery Board or the Health and Trust Boards as appropriate.

6.2.7 The Infrastructure Project Execution Plan (PEP) will be updated pre commencement of construction and will include all the management controls required to ensure the RSC Project, and its contracted firms, meet their fiduciary obligations with respect to the implementation of the Project.

6.2.8. The preparation of the FBC has been supported by an External Project Manager and External Cost Advisor both of which have been appointed from the All Wales Designed for Life: Building for Wales Framework:

- The **Project Manager** (Gleeds Management Services) has and will continue to perform the role in accordance with the Outline Schedule of Duties for Project Managers, as defined at Framework level, unless otherwise amended and agreed with the Health Board. This role encompasses a project management role of the technical aspects of the business case process and subsequent design, procurement, construction and project closure stages under the NEC3 Form of Contract.

- The **Cost Advisor** (Lee Wakemans) has and will continue to oversee the financial management of the capital expenditure, in conjunction with the Health Board Finance Directorate. They will monitor project costs, implement rigorous verification and checking of all costs presented by the SCP, and deliver a project from a Health Board perspective which is affordable and provides value for money.

6.2.9 In addition to the above a Health Care Planner (Archus) has been appointed to lead the preparation of the FBC Economic Case.

Project Plan

6.2.10 The Estates Annex includes the detailed construction programme. The table below highlights the key project milestones:

Milestone	Date
Submission of FBC to WG	May 2022
WG Approval	July 2022
Start on Site	August 2022
Construction Completion	February 2024
Linac Commissioning Period & Anticipated Beam on Date	February to July 2024

6.3 Change Management

6.3.1 The table below sets out the core plan and the main tasks identified to date:

Table 6-5: Change Management Plan

Area	Planned tasks
Planning phase	✓ Appoint key Project roles and Change Managers, confirming responsibilities and leadership ✓ Confirm stakeholders and interested parties both within and outside ABUHB and VCC ✓ Develop core plan in more detail, identifying high level milestones for the Change Management Plan, mapped to the overall Project Plan ✓ Confirm involvement of HR, managers and other individuals/groups in the process
Communications and stakeholder engagement	✓ Confirm communications lead and protocols (route and timing of approval of communications) ✓ Develop communications routes, including face to face briefings bulletins, intranet pages ✓ Formulate and agree key communications messages against high level milestones ✓ Set up stakeholder map and engagement plan ✓ Launch change Programme ✓ Ongoing communications work
Training and development	✓ Complete detailed workforce planning to identify 'shadow' structures, roles and competencies for those roles ✓ Work with staff through workshops and other training to clarify the workings of the new Service Models and how these will impact in practice ✓ Identify training and development required to fulfil roles and competencies ✓ Develop training plan, aligned to pilot work and overall milestones in implementation plan ✓ Link training and development into communications plan

Piloting	✓ Identify and confirm areas where piloting of new models and practice will be implemented ✓ Confirm schedule of pilot work, mapped against high level project and change management milestones ✓ Agree feedback arrangements from pilots and how this links into training/development, communications and overall change management plan ✓ Execute pilots, feedback and report progress
Full Implementation	✓ Identify scheduling/phasing of full implementation at VCC ✓ Using results of piloting and training work, develop detailed implementation and transition plan, mapped to project phasing ✓ Discussion and agreement with key staff ✓ Execute implementation and transition plans

6.4 Benefits Realisation

Benefits Realisation Strategy

6.4.1 The TCS Programme team has been working closely with the Welsh Government and other partners to ensure that the management of the RSC Project benefits are robust. This work has included the identification and quantification of Project Benefits where possible. This has then allowed for the quantified benefits to influence the Economic Case where the choice of the preferred option is made. The quantification of benefits relating to the RSC reflect the wider societal benefits within the wider TCS Programme. These are included only where they can be directly attributable to the provisioning of the RSC.

6.4.2 This Project is about the provisioning of the RSC to improve clinical outcomes. It delivers a key aspect of the clinical model and increases integration with local services and support for further research and education. The use of a quantified benefits assessment methodology brings significant rigour to how the benefits have been assessed and informed the preferred option.

6.4.3 This brings into sharp focus the need to ensure that the Project maximises the delivery of the benefits associated with the RSC Project.

Benefits Mapping and Assurance

6.4.4 One of the most important features in benefits realisation is to ensure that the perceived benefits identified as part of the preferred option will deliver the Project Spends Objectives (PSOs).

6.4.5 As previously described in the Outline Business Case, the benefits associated with the Project have been captured and presented.

6.4.6 All Benefit Groups have been matched to a beneficiary, whether this be a patient, carer, ABUHB and Velindre University NHS Trust, other Local Health Boards, or at a Governmental level or societal level.

Benefits Realisation Plan

6.4.7 A formal Benefits Realisation Plan was prepared for the Outline Business Case and this has been updated for the Full Business Case, this is attached at ***Appendix 9*****.** The plan is designed to enable benefits, and dis- benefits, that are expected to be derived from the RSC Project, to be planned for, managed, tracked and realised.

6.4.8 The Benefits Realisation plan will help demonstrate whether the scheme's investment objectives are able to generate the desired 'measures for success. This can be assessed by tracking the desired outcomes and subsequent benefits of the RSC Project.

6.5 Risk Management

6.5.1 The overall arrangements for the management of risk is undertaken at Project Board level. Issues with the highest risk scores are routinely discussed at the Project Board. This covers risks related to the *construction itself* and *service* risk. There are Risk Registers for each.

6.5.2 Responsibility for the former, i.e. the management of the construction risk register, rests with the external Project Manager. The Risk Register is reviewed on a quarterly basis via the Construction Progress meetings that are attended by the Supply Chain Partner, the external Project Manager, the external Cost Advisor, Health Board and Trust staff.

6.5.3 The current costed project risk register that has informed the Project contingency sum is included within the FBC Estates Annex.

6.5.4 The Service / Operational Risk Register is managed by the TCS Services Director. This Risk Register is reviewed regularly via the Project Team and the Project Board. The latest version as attached as an ***Appendix 2*** to this FBC.

6.5.5 The Project Team will consider and mitigate risk and maintain those which can be actively managed by this Group. However, when a risk is deemed so potentially severe post mitigation that it could impact on the overall delivery of the RSC (to time, cost or Quality) the risk will be escalated to the RSC Project Board for more senior oversight. The RSC Project Board will manage risk that directly affects their prescribed deliverables. The members of the RSC Project Board will review the Risk Register at each meeting adding, reassessing or closing risks as necessary and where consideration will also be given to the escalation of risks to the TCS Programme Delivery Board and/or the Health Board and/or the Trust Board as appropriate.

6.6 Contract Management

6.6.1 This FBC states a requirement for the delivery of a Radiotherapy Satellite Centre on the Nevill Hall Hospital site, under the NEC3 Engineering & Construction (ECC) Form of Contract and Designed for Life: Building for Wales Framework.

6.6.2 The Commercial Case sets out in detail the overall approach and arrangements for the management of the construction contract.

6.7 Post Project Evaluation

5.7.1 A Post Project Evaluation (PPE) incorporates the Project Evaluation Review (PER) and the Post Implementation Review (PIR). The Post Project Evaluation plan for both these elements will be developed and will be undertaken after the operational commissioning of the new facility.

Post Evaluation Review (PER)

6.7.2 The purpose of the PER is to improve project appraisal at all stages of the project from preparation of the business case through to the design, management and implementation of the scheme and will be timed for 6 months following the commissioning of the new facility.

6.8 OGC Gateway Review Arrangements

6.8.1 A Gateway Review was undertaken in March 2022 and the project was rated as "Amber". The Gateway Report is attached at ***Appendix 10*****.** The recommendations of that review have or are being addressed in the context of the preparation of the final FBC and ongoing Project Governance arrangements. These are set out below:

Ref. No.	Recommendation	Urgency (C/E/R)	Target date for completion
1.	**The early work by the Project team with AB CHC, patients and patient groups should continue through to implementation and the high standard of communications to patients and public should be maintained.**	R - Recommended	Ongoing as part of the implementation of the project
2.	**A more detailed workforce plan with supporting evidence should be completed.**	C- Critical	A Workforce Plan has been produced and is attached as an Appendix to this FBC
3.	**SRO and joint partners to commit to the procurement process, in**	C- Critical	The IRS procurement process is progressing with a view to selection of a preferred supplier and

Ref. No.	Recommendation	Urgency (C/E/R)	Target date for completion
	order not to delay any further.		submission of a FBC to WG in May 2022.
4.	**Continue the dialogue with Natural Resources Wales to ensure speedy resolution of environmental issues, emphasising delay will deny the population of the area access to life saving Radiotherapy treatment.**	C- Critical	Natural Resources Wales will be formally consulted as part of the Planning Application process. The Planning Application was submitted on 1st April 2022.
5.	**Welsh Government should be asked to fund the enabling works to avoid the use of scarce discretionary capital.**	E- Essential	WG have advised that they will not approve any further enabling works prior to FBC approval.
6.	**A lessons learned document should be compiled and made available to others likely to undertake major projects, for example the related project for the nVCC.**	R - Recommended	A lessons learned document produced post construction of the Grange University Hospital has been shared with the Project Board and Project Team. Relevant issues will be addressed going forward in the review of service and capital risk registers
7.	**The Project should develop and agree a more detailed Integrated Assurance and Approvals Plan (IAAP) which should clarify how and when key decisions are to be**	E- Essential	This will be undertaken post FBC approval

Ref. No.	Recommendation	Urgency (C/E/R)	Target date for completion
	made within the governance structure.		
8.	**An external review of the governance should be undertaken to clarify the arrangements necessary to move beyond the FBC and into implementation and benefits delivery.**	E- Essential	This will be undertaken post FBC approval.

6.8.2 A further review, Gateway Review 4 – Readiness for Service, will be undertaken once contracts are in place and when planning for transition and implementation is well developed.