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Prifysgol Felindre
Velindre University
NHS Trust

Full Business Case: March 2023

new Velindre Cancer Centre (nVCC)

Strategic Case

STRATEGIC CASE

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1 INTRODUCTION AND PURPOSE

Introduction

- 1.1 The scope of the new Velindre Cancer Centre Project is to develop a new fit for purpose Velindre Cancer Centre (nVCC). The nVCC will deliver the majority of specialist non-surgical cancer services for the population of South-East Wales.
- 1.2 On the 19th of March 2021, the Welsh Government announced its approval of the nVCC Outline Business Case (OBC), this approval enabled the formal procurement of the nVCC to commence via a competitive dialogue procedure.
- 1.3 The outcome of the nVCC procurement is nearing Financial Close (FC) and this progress allows for the population of this Full Business Case (FBC) which is aligned to the Successful Participants (SP) tender.
- 1.4 The nVCC OBC revisited the project's earlier Strategic Outline Case assumptions and identified a preferred way forward. This FBC will also revisit those assumptions and confirm strategic alignment, value for money and a means to implement the preferred solution which is part of Velindre's approved Clinical Operating Model.
- 1.5 The construction of a new nVCC is currently planned to be completed during 2025.

Purpose

- 1.6 The purpose of this Full Business Case (FBC), is therefore to:
 - Confirm that the Project Spending Objectives (PSOs) have been reviewed and are still valid;
 - Confirm that the preferred way forward identified in the nVCC OBC remains unchanged;
 - Identify the marketplace opportunity which offers optimum Value for Money (VfM);
 - Set out the commercial and contractual arrangements for the negotiated deal(s);
 - Confirm the deal(s) are still affordable; and
 - Put in place the detailed management arrangements for the successful delivery, monitoring and evaluation of the scheme.
- 1.7 In seeking approval, this FBC will provide assurance on the points outlined above to the Trust Board, the Trust's Commissioners and Welsh Government.

2 STRATEGIC CASE STRUCTURE AND CONTENTS

Context of Proposed investment

- 2.1 The Trust and its partners are committed to providing safe, efficient and effective care to all our patients. To achieve this from a cancer services perspective, it is essential that a nVCC is developed. The key drivers supporting the case for investment are:
- The Welsh Government’s health and cancer policy to improve the quality of cancer treatment and care; to further improve the experience of care; and patient outcomes.
 - Continuing growth in the incidence of cancer and the demand for cancer services across Wales; with incidences expected to grow at approximately 2% per annum.
 - The role of Velindre Cancer Services and Velindre Cancer Centre in the South-East Wales region as being the sole provider of highly specialist non-surgical tertiary oncology for the resident population.
 - The need to keep pace with the advances in treatments and technology which support the provision of cancer care that achieves the required clinical standards.
- 2.2 The bullet point themes above will be explored and introduced as a “golden thread” running through this FBC and are at the heart of the Trust’s ambition and business needs.
- 2.3 Of note, there are currently significant limitations relating to the fabric and functionality of the existing Velindre Cancer Centre which was built in 1956, these are:
- i. The existing Velindre Cancer Centre has insufficient space and if built on a ‘like for like’ basis, and in line with Health Building Notes (HBN’s), it would have a footprint of circa 28,000m² compared to the existing building footprint of 17,777m²;
 - ii. There is no expansion space on the existing Velindre Cancer Centre. This severely limits, the Trust’s ability to expand its footprint to meet the increasing demand for its clinical services across a range of specialities / departments.
 - iii. A high proportion of accommodation at the existing VCC is non-compliant with statutory requirements and creates challenges in maintaining high levels of patient safety and confidentiality.
 - iv. The existing patient environment at the VCC is sub-optimal in promoting patient dignity, experience and well-being.

- v. The existing VCC has limitations in its ability to provide the most up to date treatments for patients to support improved outcomes and quality of life.
 - vi. There is insufficient car parking at the existing VCC.
- 2.4 Therefore, it is clear that the existing Velindre Cancer Centre is significantly inhibiting the Trust's ability to both maintain and progress its clinical services. Conversely, the nVCC project is critical to the successful delivery of the Trust's long-term Cancer Strategy and the delivery of the benefits set out within the Trusts Transforming Cancer Services in South-East Wales programme (TCS).
- 2.5 The TCS Programme is an ambitious programme that aims to deliver transformed tertiary non-surgical Cancer Services for the population of South-East Wales. It is described in detail below.

TCS Programme Scope

- 2.6 It is important for the reader of this nVCC FBC to be able to “locate” where the nVCC Project sits within the wider TCS Programme which has seven interdependent projects that will deliver the Trusts approved strategies and Clinical Operating Model. The projects are led by a number of defined Boards within Velindre University NHS Trust. These arrangements are set out in more detail in the Management Case.
- 2.7 The wider TCS Programme has been developed to deliver a number of aspects of the Welsh Governments strategic cancer/wider policy requirements (Healthier Wales; Cancer Quality Statement; Well-being for Future Generations (Wales) Act 2015; Decarbonisation Plan) and Velindre Cancer Services Strategy “Building our Future Together 2017 – 2027”.
- 2.8 The seven TCS Projects are briefly described in Table 1 overleaf:

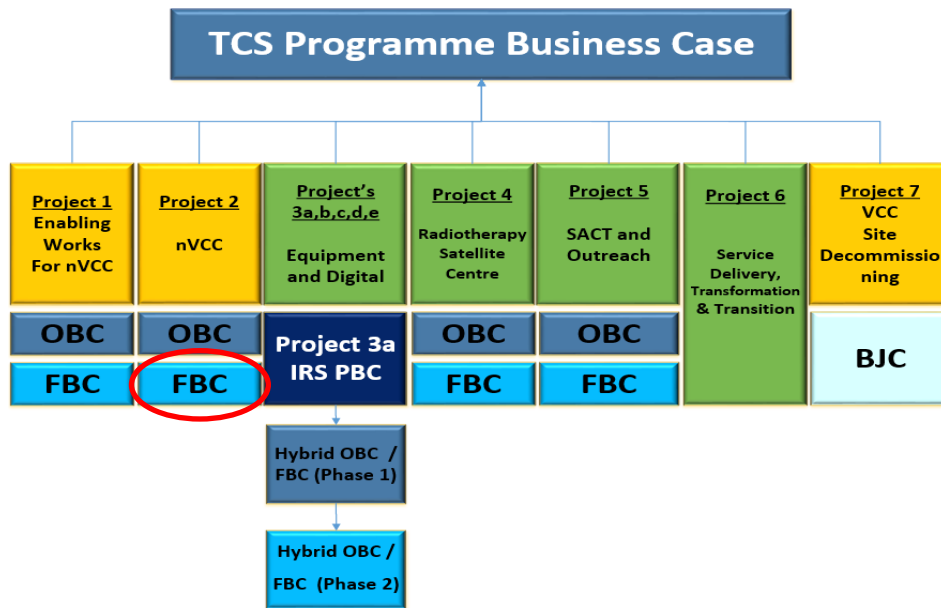
Table 1 - TCS Projects Described

Project Number / Name		Description
1	Enabling Works	All enabling works needed to provide primary and secondary access to the new Velindre Cancer Centre Site (including the provision of utilities).
2	New Velindre Cancer Centre	The re-provisioning of a new Velindre Cancer Centre in the Whitchurch area of Cardiff.
3	Digital and Equipment	The provision of integrated Digital Information and Equipment Services across the TCS Programme. This Project oversees the Integrated Radiotherapy Solution (IRS) Project.
4	Radiotherapy Satellite Centre	Provision of a Radiotherapy Satellite Centre at Nevill Hall Hospital.
5	SACT and Outreach	The Provision of Systemic Anti-Cancer Therapy (SACT) and Outpatient services embedded in Local Health Boards.
6	Service Delivery Transition and Transformation	This project is responsible for establishing and transforming all service delivery functions across the clinical model. It is also responsible for planning and implementing the transition between the old and new cancer centre.
7	Site Decommissioning	The decommissioning of the old Velindre Cancer Centre brownfield site.

2.9 To implement the TCS Programme, as described in the TCS Programme Business Case (PBC), a suite of Business Cases is required. It is important that these business cases are seen in the context of the other investment cases that are being developed.

2.10 Figure 1 sets out the TCS Programmes Business Case Framework and how it aligns to the seven defined projects.

Figure 1 - TCS Programme Business Case Framework



2.11 This FBC seeks investment for the nVCC Project (Project 2 circled above). Other business cases within the TCS Programme have been approved and an update is set out in the Table 2 below:

Table 2 - TCS Programme Business Case Status

Project Number / Name		Approval Status
1	Enabling Works	Full Business Case Approved
2	new Velindre Cancer Centre (nVCC)	Full Business Case Complete (includes digital)
3	Digital and Equipment	Integrated Radiotherapy Solution – Full Business Case approved other digital equipment in this case for nVCC
4	Radiotherapy Satellite Centre (Lead by ABUHB)	Full Business Case Approved
5	SACT and Outreach	Business Case Process not yet commenced
6	Service Delivery Transition and Transformation	No Business Case Required – Transition costs included within nVCC Full Business Case
7	Site Decommissioning	Business Justification Case (BJC) will be commenced following this Business Case submission

Business Case Approvals and Timeline

2.12 The approval process for this FBC is outlined in the Table 3 below.

Table 3 - nVCC FBC Approval Timeline

Approval Step	Purpose	Submission Target Date
Phase 1: Draft FBC excl. Commercial Case to Trust Board	For review	January 2023
Phase 1: Draft FBC excl. Commercial Case to Trust Commissioners and Welsh Government	For review	January 2023
Phase 2: Final FBC incl. Commercial Case to Trust Board <i>(dependent on Financial Close being achieved)</i>	For approval	February 2023
Phase 3: Final FBC to Health Board Commissioners	For approval	February 2023
Phase 4: Final FBC to Welsh Government	For approval	March 2023

Structure and content of FBC

2.13 The FBC has been prepared in accordance with HMT Green Book and Welsh Government Better Business Case guidance. Table 4 below outlines the approach that has been applied to the Five Case model.

Table 4 - nVCC FBC Structure and Content

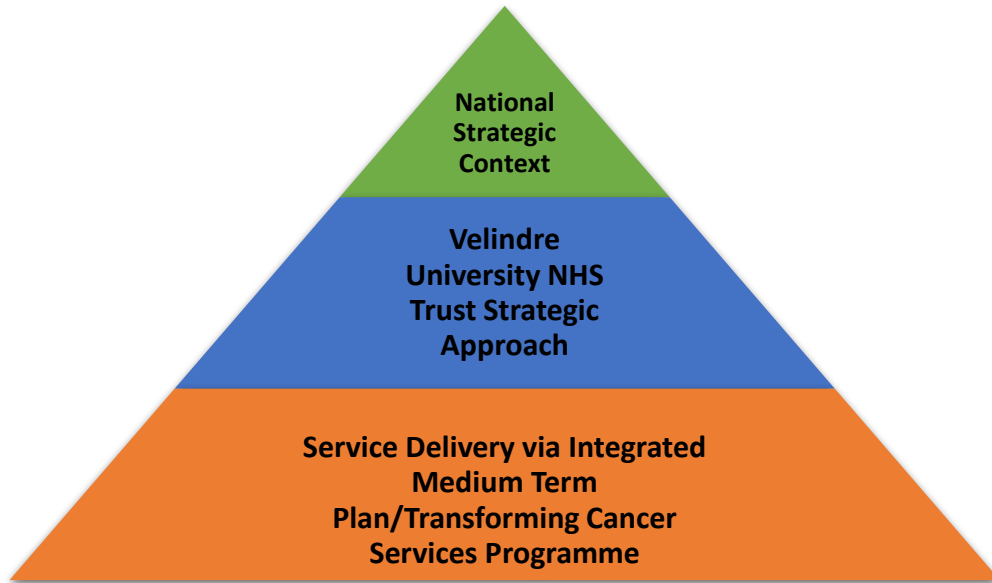
Chapter	
Strategic Case	Sets out the strategic context and the case for change, together with the supporting investment objectives for the scheme.
Economic Case	Completes an economic appraisal that outlines the main benefits of shortlisted options. Appraises the economic costs, benefits and risks for the short-listed options based on the results of the procurement process. Demonstrates the preferred option continues to meet the needs of the service and optimises value for money.

Chapter	
Commercial Case	Describes the procurement process adopted and outlines the content and structure of proposed contract and associated contractual arrangements. Provides the results of the procurement process and final proposed contractual arrangements.
Financial Case	Sets out the financial implications of the preferred option based on the results of the procurement process. Confirms funding arrangements and affordability and explains any Balance Sheet impact.
Management Case	Demonstrates that the scheme is achievable and can be delivered successfully to cost, time and quality.

Strategic context of proposed investment

- 2.14 This section of the Full Business Case (FBC) summarises the strategic context for the development of a new Velindre Cancer Centre (nVCC) Project by explaining how the nVCC Project supports the delivery of local, regional and national policy goals.
- 2.15 Specifically, in Figure 2 overleaf it considers the fundamental drivers behind these proposals including:
- Links to national strategy and policy.
 - The Trust’s enabling Strategies and Programme Arrangements linked to the above National Drivers, and;
 - The Service Delivery / Business as Usual needs: the need to maintain business as usual activities and to regularly and routinely replace major medical equipment.

Figure 2 - Fundamental Policy Drivers



2.16 Figure 3 below summaries the main National strategic drivers linked to this FBC.

Figure 3 - Strategic Context in Wales for Health Services

National Context



Statutory Duties and Key Policies:

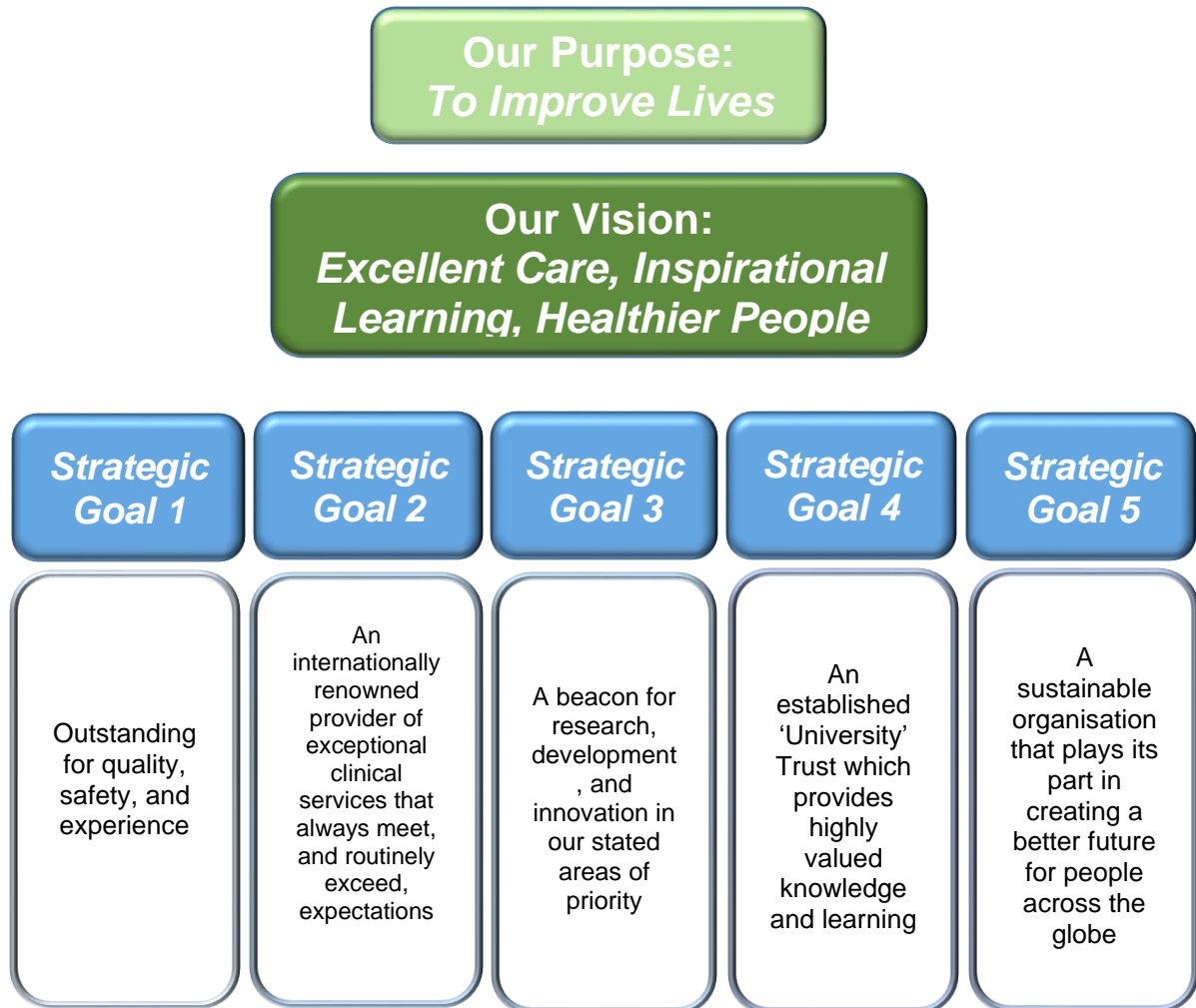
- **A Healthier Wales 2018**
- **Well-Being of Future Generations Act (2015)**
- **Health and Social Care (Quality and Engagement (Wales) Act 2020**
- **Public Health Wales Act (2017)**
- **Social Services and Well-being Act (2014)**
- **Nurse Levels (Wales) Act (2016)**
- **Equalities Act 2010**
- **Welsh Language (Wales) Measure (2011)**
- **Equality Act (2010)**
- **Health & Safety at Work Act (1974)**
- **Socio-economic Duty 2021**
- **A Healthier Wales**
- **Prudent Health Care/Value Based Health Care**
- **Working Differently- Working Together**
- **De-carbonisation strategy**
- **WG Digital Strategy**
- **National Clinical Plan and National Clinical Framework (2021)**
- **Cancer Quality Statement (2022)**



Velindre University NHS Trust's Strategic Response

2.17 In response to the regional and national policy drivers Velindre University NHS Trust has developed its Corporate Strategy called 'Destination 2032'. This Strategy sets out a new purpose, vision and set of strategic goals for the Trust and was approved during 2022. The approach is set out in Figure 4 below:

Figure 4 - VUNHST Purpose, Vision and Goals



2.18 In support of Velindre's, Purpose, Vision and Goals that make up 'Destination 2032', the following divisional service strategies have been developed:

- Welsh Blood Service Strategy 2022 – 2027
- Velindre Cancer Strategy 'Shaping our Future Together 2017- 2027'

2.19 These are also supported by a range of refreshed enabling strategies / frameworks which are available upon request:

- Quality and Safety Framework
- Clinical and Scientific Strategy (being developed)
- Sustainability Strategy 2022 – 2032
- Workforce Strategy 2022 – 2032
- Digital Strategy 2022 – 2032
- Estates Strategy 2022 – 2032.

Alignment with Velindre Cancer Services Strategy ‘Shaping our Future Together 2017 – 2027’ and the Transforming Cancer Services Programme

2.20 Velindre Cancer Services strategy ‘Shaping our Future Together 2017 – 2027’ sets out five strategic priorities, these are set out in Table 5 below:

Table 5 – The Five Strategic Priorities and Aims of ‘Shaping our Future Together 2017 – 2027’

Priority	Aim
Strategic Priority 1:	Equitable and consistent care, no matter where; meeting increasing demand.
Strategic Priority 2:	Access to state-of-the-art, world-class, evidence-based treatments
Strategic Priority 3:	Improving care and support for patients to live well through and beyond cancer
Strategic Priority 4:	To be an international leader in research, development, innovation and education
Strategic Priority 5:	To work in partnership with stakeholders to improve prevention and early detection of cancer.

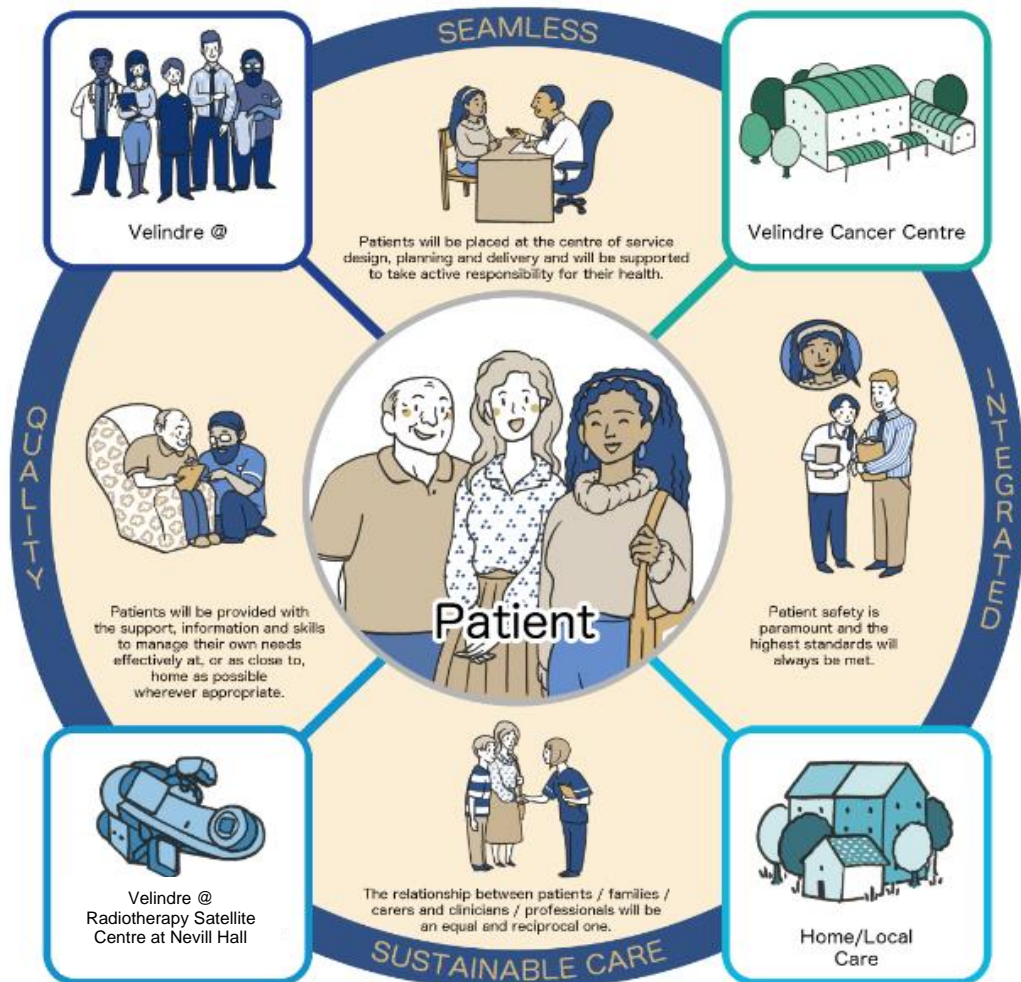
2.21 The Trusts range of strategies, together with the Velindre Cancer Service strategy ‘Shaping our Future Together 2017 – 2027’, are directly aligned to the Welsh Governments range of strategic policy goals and requirements. The delivery of these strategies (priority; timelines) are managed through the Integrated Medium Term Planning (IMTP) process with delivery managed and

monitored via the Trusts' established performance management and governance arrangements.

Translating Strategic Plans into the delivery of improved quality of care: the Clinical Operating Model

2.22 The TCS Programme used the Velindre Cancer Service strategy 'Shaping our Future Together 2017 – 2027 to support the development of a Clinical Operating Model. This was facilitated through workshops/events/meetings involving more than 400 people - professionals, patients and public from a range of organisations including Health Boards, Third Sector and the Community Health Council (CHC). The clinical model is set out in Figure 5 below:

Figure 5 - Approved Clinical Model



2.23 The clinical operating model within the TCS PBC describes how services will be delivered in the future. The founding principles were as follows:

- The service model seeks to promote a new set of relationships which work in partnership to improve the way we collectively design and deliver tertiary non-surgical cancer services around patients' needs and to achieve these improvements in a truly sustainable way.
- Patients are central to our 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 supports them achieving their personal goals during treatment and subsequently as they live 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.
- 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.

2.24 The Clinical Operating Model will see more care delivered within patients' homes; and locally through the development of a number of Velindre@ facilities on Local Health Board sites across South-East Wales, providing chemotherapy, outpatient, and support services; a Radiotherapy Satellite Centre (RSC) in Nevill Hall Hospital, Abergavenny; and the redevelopment of the Velindre Cancer Centre on a new site in Whitchurch, Cardiff.

2.25 To deliver the principles of the new Clinical Operating 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.

2.26 These key elements of the model and their functions are described briefly below:

- **Health Boards:** A range of cancer care occurs within the Health Boards, with a proportion of patients having all their care delivered by the Health Board teams. For other patients who need non-surgical treatment, their care needs to be seamlessly planned with the non-surgical aspects of the pathway, as patient care can often transition from one team to another. The Velindre Outreach facilities and collaborative working will support this approach.

- **Velindre Outreach Centres:** These facilities will provide (if clinically indicated) SACT, outpatient services, education and information provision and ambulatory care procedures within Health Boards.
- **Velindre Radiotherapy Satellite Centre:** The Radiotherapy Satellite Centre (RSC) at Nevill Hall has recently had its Full Business Case approved. The centre once implemented will provide radiotherapy treatment for approximately 20% of our patients (provided by two new Radiotherapy treatment machines and one CT Simulator).

The benefits of the RSC investment include better access and reduced travel for patients and less use of transport services. This will mean that fewer patients need to travel to the VCC for their radiotherapy.

- **new Velindre Cancer Centre:** The new Velindre Cancer Centre will provide specialist and complex cancer treatment including SACT, radiotherapy (including brachytherapy and unsealed sources) and specialist palliative care, inpatient facilities (being open for admission 24 hours/day, 7 days/week), a specialist acute oncology assessment unit and outpatient services, radiology, and nuclear medicine.

Assurance of the clinical operating model and its ability to deliver high quality, safe services which meet the expectations of patients and families

External advice from the Nuffield Trust

- 2.27 In December 2020, a number of concerns were raised regarding the ability of the Trust's proposed clinical operating model to achieve the range of expected benefits. The focus of the concerns were primarily related to the proposed regional networked model of care. This was mainly due to the current Velindre Cancer Centre not being co-located on an acute site as this business case proposes.
- 2.28 In recognition of the concerns raised, the Trust commissioned the Nuffield Trust to provide independent advice on the proposed regionally networked model of care. This advice included the proposed location of the nVCC in Whitchurch as part of that model.
- 2.29 The Terms of Reference for the advice was jointly agreed between the Trust and Local Health Board partners. The Nuffield Trust published its conclusions in December 2020 in a paper entitled 'Advice on the proposed model for non-surgical tertiary oncology services in South-East Wales' which can be found appended to this business case at **FBC/SC1**.
- 2.30 The Nuffield Trust's Independent Advice was made publicly available and was considered by Velindre University NHS Trust Board and Local Health Board

partners who accepted the report in full, together with all of the recommendations contained within it.

- 2.31 The Nuffield recommendations cover the wider cancer system in South-East Wales and not simply the non-surgical tertiary oncology elements of it. The South-East Wales Collaborative Cancer Leadership Group (CCLG) received the report and accepted the recommendations in full and are providing the regional leadership to deliver them.
- 2.32 Welsh Government considered the Nuffield Trust report as part of the approval of the Outline Business Case for the nVCC in 2021.
- 2.33 The CCLG, Local Health Boards and Velindre University NHS Trust continue to make progress against the recommendations. The current position is set out in **FBC/SC2**; which was approved by the CCLG at its quarterly meeting in November 2022.

Programme Enabling Strategies / Ambitions – relevant to nVCC Project

- 2.34 To support the delivery of the assured Clinical Operating Model there are a number of approved enabling strategies within the TCS Programme that link strongly to this FBC, these are:

Figure 6 - TCS Enabling Strategies / Ambition



TCS Equipment Strategy

- 2.35 The Equipment Strategy agreed with Welsh Government has been updated since OBC, but primarily remains extant with the main principles as follows in Table 6:

Table 6 - Equipment Strategy Approach

Category	Approved Decision
Replacement Options	<ul style="list-style-type: none"> • Extend the operational life of some existing equipment assets where possible, preventing replacing this equipment in the existing VCC and then having to transfer into nVCC.

	<ul style="list-style-type: none"> • accept some accelerated depreciation where it is not economically viable to consider transferring to the nVCC • replace all other items as new in nVCC.
Transition Options	Replace as many Radiotherapy Treatment Machines as possible in the nVCC, but acknowledge that a minimum of 2 Linacs will have to transfer.
Maintenance Options	Maintenance of major equipment will be delivered via a co-produced model, this will be made up of In-house and Vendor support (as now) for Linacs.
Transfer Options	Transfer major clinical equipment if economically viable (most likely CT Sims).

2.36 The updated TCS Equipment Strategy can be found at appendix **FBC/SC3**.

Cognitive by Design (Digital Strategy)

- 2.37 At OBC stage the Trust had outlined its vision for future digital services by producing a strategy called Cognitive by Design. This vision and the Trust's planning and capability in this area had been subject to an external assurance review carried out by a company called Channel 3 (C3) at OBC stage. As part of this FBC submission the digital strategy has been reviewed by Velindre's Chief Digital Officer. The output of this review confirms that Cognitive by Design remains aligned in terms of the Trust's vision and alignment to National Digital Strategies.
- 2.38 Since the OBC submission, VUNHST has been progressing significant developments in Information Management and Technology (IM&T) systems. These have been a combination of national programmes, internationally used systems and bespoke local developments all of which have enabled an improvement in services for professionals, patients, and donors.
- 2.39 The Trust has prioritised the development of its IM&T Strategy to support the identified organisational and clinical priorities and to ensure that next generation IM&T is used to transform service delivery.
- 2.40 At the heart of the informatics delivery are the four principles from the "Informed Health and Care: A Digital Health and Social Care Strategy for Wales" (2015). These are:
- a) Information for you (the patient).
 - b) Supporting Professionals (digital tools).
 - c) Improvement and Innovation (better use of information / whole systems approach).
 - d) A Planned Future (joint planning regional and national).
- 2.41 The VUNHST approach is also aligned to the wider and more recent "Digital Strategy for Wales" (2021) and the missions that deal with:
- a) Digital services – deliver and modernise services so that they are designed around user needs and are simple, secure and convenient.
 - b) Digital inclusion – equip people with the motivation, access, skills and confidence to engage with an increasingly digital world, based on their needs.
 - c) Digital skills- create a workforce that has the digital skills, capability and confidence to excel in the workplace and in everyday life.
 - d) Data and collaboration – services are improved by working together, with data and knowledge being used and shared.
- 2.42 VUNHST has produced an ambitious strategic informatics programme, "Digital Excellence", which up to 2032, will implement a range of national technology solutions, while growing our capacity, capability, and culture to build innovative digital services.
- 2.43 Since the OBC the Trust has used its assured digital vision, plans and expertise

to inform, influence and optimise the competitive dialogue process to achieve a digitally enabled nVCC which can support the Trust, its staff and patients in achieving digital excellence.

- 2.44 The outlined approach is based on the fundamental premise that high quality healthcare in the 21st century cannot be delivered with out of date or obsolete legacy systems, and/or paper-based information recording and delivery.
- 2.45 By utilising IM&T as a critical enabler to support service transformation, Velindre University NHS Trust aims to fundamentally redesign administrative, operational and clinical processes into simple services around patients, donors and colleagues needs. These will maintain high levels of data quality, and not only ensure information is accurate and up to date, but also embed state of the art technologies to deliver exceptional services.
- 2.46 The enablement of, and connectivity of patients, donors and colleagues is critical to the success of the Digital strategy. To this end, the Trust is working with colleagues from across NHS Wales to ensure mobile computing requirements, patient engagement systems, as well as digital staff communication tools are at the forefront of the Digital Programme. We will continue to look to national programmes such as Digital Services for Patients and the Public (DSPP) to deliver the strategic framework for digitally transforming our services.
- 2.47 To ensure the Trust continues to provide the most effective informatics services, we will continue to explore further opportunities for standardisation of processes, rationalising systems and solutions, alignment of resources, where possible, and share best practice both from across the divisions, and also externally, by incorporating the lessons from other Health Board/Sector experiences.
- 2.48 The updated Trust Digital Strategy 'Digital Vision for the new Velindre Cancer Centre' can be found at appendix **FBC/SC4**.

Environmental / Sustainability (Green Credentials)

- 2.49 Velindre University NHS Trust has developed a Sustainability Strategy and is aware of its legal obligations under the Well-being of Future Generations Act 2015. Additionally, the Welsh Government Environment Act 2016 mandates that public organisations must be carbon neutral by 2030, five years after the planned go live of the nVCC.
- 2.50 It has therefore been an imperative that the Trust factored into its procurement process the requirement for the Successful Participant (SP) to deliver a design capable of supporting this future compliance with Welsh Government Policy and relevant Acts. It is anticipated that not preparing for this future legislation now on such a large-scale development would lead to greater costs and disruption in an attempt to retrofit compliance at a later date.
- 2.51 To enable this approach the bidders were given a brief which was mapped against the seven goals of the Well-being of Future Generations Act (WFGA)

2015 and their response was evaluated as part of the final tender submissions, specific sections of the Trust Brief are set out in Table 7 below:

Table 7 – nVCC Sustainability Brief

Goal	The Brief
<p>A globally responsible Wales –</p> <p>A nation which, when doing anything to improve the economic, social, environmental, and cultural well-being of Wales, takes account of whether doing such a thing may make a positive contribution to global well-being.</p>	<p>While Velindre is acting primarily to improve the health of the Welsh population the Green section of the nVCC Design Brief takes account of the contribution this might make to global well-being, in particular global warming.</p> <p>The Green section specifically asks for: -</p> <ul style="list-style-type: none"> • Designs that minimise energy use and the environmental impact of building materials. • Design features which encourage active travel. <p>The practical section calls for designs which will minimise maintenance and avoids where possible reliance on expensive mechanical equipment.</p>

- 2.52 As a result, the SP’s design will deliver one of the “Greenest” hospital developments with further opportunities available to meet the 2030 aspiration to be carbon neutral.
- 2.53 Therefore, given the importance of the sustainability agenda the green credentials and their benefits will feature strongly in the FBC’s Economic, Commercial and Management Cases.

Strategic Alignment: Summary

- 2.54 Velindre University NHS Trust strategic approach and plans are fully aligned with the Welsh Governments strategy and policy and the Programme for

Government 2021-26 which prioritises Cancer Treatment and the need to address COVID-19 backlog and waiting times.

2.55 It is also fully integrated and aligned with the South-East Wales regional cancer strategies and plans; with strategic regional leadership provided by the CCLG.

2.56 The nVCC project, and its associated Project Spending Objectives, will support the delivery of national, regional, and local ambition by:

- **Providing effective, high quality and sustainable healthcare** by creating a 21st century NHS that tackles health inequalities and focuses on prevention. Specifically, by improving access to Radiotherapy services.
- **Building an economy based on the principles of fair work, sustainability and the industries and services of the future** by building an economy based on sustainable jobs. Specifically, by creating skilled jobs and apprenticeships.
- **Building a stronger, greener economy as we make maximum progress towards decarbonisation** by developing a modern and productive infrastructure which acts as an engine for inclusive and sustainable growth.
- **Embedding our response to the climate and nature emergency in everything we do by delivering a green transformation.** Specifically, through greater green energy.

3 EXISTING ARRANGEMENTS

Introduction

- 3.1 The purpose of this section of the FBC is to provide an overview of Velindre University NHS Trust and the existing arrangements at the current Velindre Cancer Centre.
- 3.2 The latter will describe the current arrangements for the delivery of services covered within the scope of the nVCC project; provide a description of the existing Velindre Cancer Centre estate and supporting infrastructure; and outline the existing land arrangements. Together, they will provide a baseline for identifying the business needs and for measuring future improvements.

Velindre University NHS Trust Overview

- 3.3 The purpose of this section is to provide an overview of Velindre University NHS Trust (the Trust) and Velindre Cancer Centre and to summarise the role of the Velindre Cancer Centre in delivering non-surgical specialist cancer services to the population of South-East Wales now and in the future.
- 3.4 The Trust has evolved significantly since its establishment in 1994 and is operationally responsible for the management of the following two divisions:
- Velindre Cancer Centre; and
 - the Welsh Blood Service.
- 3.5 The Trust is also responsible for hosting the following organisations on behalf of the Welsh Government (WG) and NHS Wales
- NHS Wales Shared Services Partnership (NWSSP); and;
 - Health Technology Wales (HTW).

Velindre Cancer Centre (Existing Arrangements)

- 3.6 Velindre Cancer Centre is located in Whitchurch on the North-West edge of Cardiff and is one of the ten largest regional clinical oncology centres in the United Kingdom (UK Radiotherapy Equipment Survey, 2008), it is the largest of the three cancer centres in Wales. Velindre Cancer Centre is housed in a building – parts of which are almost 70 years old – and therefore it does not

have the facilities, space or modern infrastructure required to meet future service standards and predicted activity.

3.7 The Velindre Cancer Centre is responsible for the delivery of non-surgical treatment to the catchment population of 1.5 million across South-East Wales. The service provision includes radiotherapy and SACT, recovery, follow-up and specialist palliative care. Following their specialist cancer treatment, Velindre Cancer Centre continues to support patients during their recovery and through follow up appointments. A significant proportion of Outpatient and SACT activity is already delivered in Health Board settings by Velindre Cancer Centre staff, although this did reduce somewhat as a result the COVID-19 pandemic but is now normalising. However, all Radiotherapy activity is currently delivered at the Velindre Cancer Centre.

3.8 Specialist teams provide care using a well-established multi-disciplinary team (MDT) model of service for oncology and palliative care, working closely with local partners and ensuring services are offered in appropriate locations in line with best practice standards of care. The range of services delivered by Velindre Cancer Centre includes:

1. Radiotherapy;
2. Systemic Anti-Cancer Therapies (SACTs);
3. Inpatients;
4. Ambulatory care;
5. Outpatient services;
6. Pharmacy;
7. Specialist radiology/imaging;
8. Nuclear Medicine;
9. Specialist Palliative care;
10. Acute Oncology Service (AOS);
11. Living with the impact of cancer;
12. Education and Learning; and
13. Research, Development and Innovation.

3.9 The following patient services are delivered in outreach settings across South-East Wales from the Velindre Cancer Centre in Health Board settings:

1. SACT delivery;
2. Outpatient appointments;

3. Inpatient reviews; for patients receiving care and treatment in HB locations
 4. Health Board MDTs; and
 5. Research and Education.
- 3.10 The Trust also works in partnership with a wide range of partners to deliver high quality cancer care and undertake clinical research. Partners include:
1. Voluntary sector;
 2. Third sector;
 3. Higher Education Institutions (HEIs); and
 4. Industry/Commercial Partners.

Planning of Cancer Services in South-East Wales

- 3.11 The planning and delivery of cancer services in Wales is the responsibility of the seven Health Boards as part of their statutory responsibility to meet the health needs of the populations they serve.
- 3.12 The Health Boards are supported by the Welsh Health Specialist Services Committee (WHSSC), which commissions specialist cancer services on their behalf.
- 3.13 The four Health Boards in South-East Wales served by Velindre Cancer Centre are:
- Aneurin Bevan University Health Board;
 - Cardiff and Vale University Health Board;
 - Cwm Taf Morgannwg University Health Board; and
 - Powys Teaching Health Board.
- 3.14 The Health Boards also work in partnership with the Wales Cancer Network, NHS Trusts, Community Health Councils, Voluntary Organisations and Public Health Wales.

Regional Leadership and Collaboration of Cancer Services in South-East Wales

- 3.15 In 2019, the four South-East Wales Health Boards listed above and Velindre University NHS Trust, in conjunction with other stakeholders including Public

Health Wales and the Wales Cancer Network (WCN), established the South-East Wales Collaborative Cancer Leadership Group (CCLG).

- 3.16 The CCLG oversees Collaborative Cancer Programmes across the South-East Wales region, providing leadership and coordination with a focus on benefit delivery for patients. Thus, putting into practice, the national policies, standards and procedures for the benefit of patients. The CCLG functions at a regional level in support of the work of the Wales Cancer Network and other partner organisations.

The Cancer Pathway

- 3.17 The delivery of cancer services across Wales is set out in a well-defined pathway of care which includes the five key stages outlined below in Table 8.
- 3.18 The approach is also consistent with the National Optimal Pathways (NOPs) developed by the Wales Cancer Network through their multidisciplinary Cancer Site Groups. The NOPs set out what should happen according to professional guidance and standards for any patient in Wales presenting with a certain type of cancer through their cancer pathways.
- 3.19 The NOPs are available in Welsh Health Circular (2022) 021.

Table 8 – The National Cancer Pathway Described

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 multi-disciplinary 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 aftereffects 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.

Service Delivery Arrangements

- 3.20 The Trust delivers specialist non-surgical cancer services to a catchment population of 1.5 million people using a hub and spoke service model. Services are currently provided across South-East Wales from:
- **Velindre Cancer Centre:** The hub of the Trust's tertiary cancer services is a specialist treatment, training, research and development centre for non-surgical oncology; and
 - **Outreach Centres:** Some services are delivered on an outreach basis within facilities across South-East Wales, including District General Hospitals and from patients' own homes.
- 3.21 Patients are referred to Velindre Cancer Centre for treatment by the following routes:
- Following referral by a GP to the relevant HB; or
 - Following presentation as an emergency at an A&E department.
- 3.22 Prior to referral to Velindre Cancer Centre, all patients will have been investigated and diagnosed with a solid tumour. Some patients may have already undergone surgery. Velindre Cancer Centre's role is to deliver specialist and tertiary cancer treatment until the patient can be referred back to their host HB for ongoing treatment, management, and follow-up.
- 3.23 An overview of the core services delivered by the Trust at the Velindre Cancer Centre and the existing functional capacity of the Centre to deliver these services (e.g., number of inpatient beds), is provided in Table 9 overleaf.

Table 9 – Existing Functional Capacity

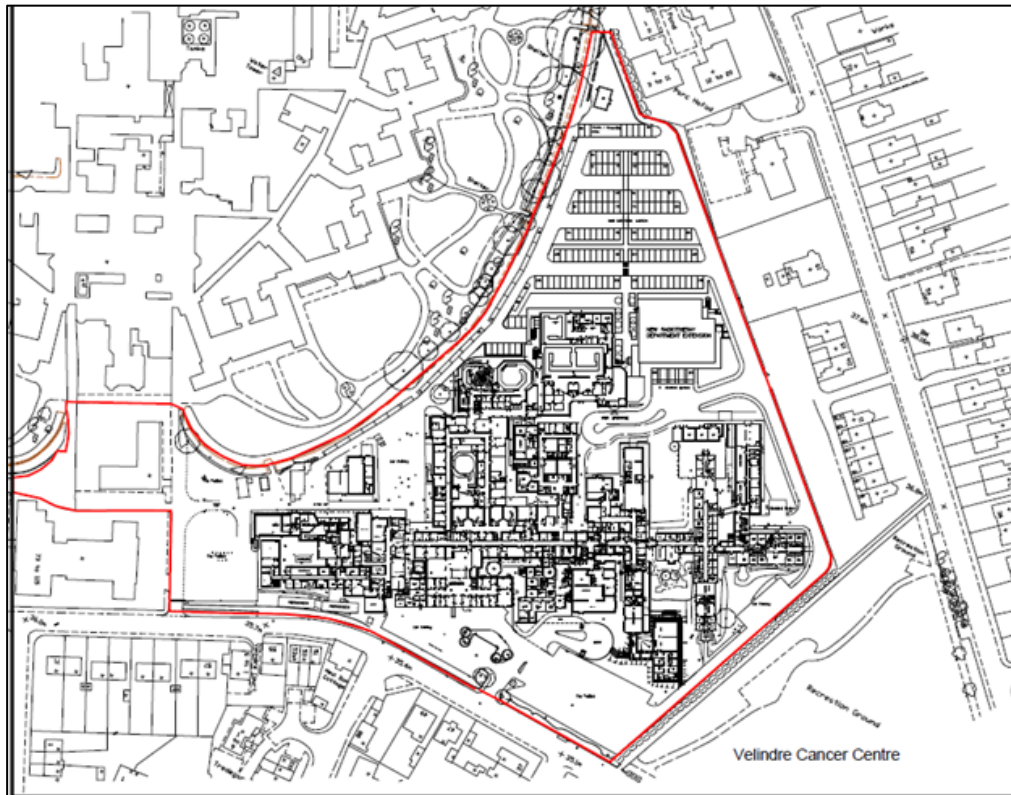
Service	Overview	Velindre Cancer Centre	Functional Content (February 2020 Pre-COVID)
Outpatients	<ul style="list-style-type: none"> • Outpatient services include consultation, examination, follow-up, SACT assessment, phlebotomy, psychology, clinical trials, therapy services and specialist palliative care. 	<ul style="list-style-type: none"> • Outpatient clinics are held five days a week. • Outpatient clinics are distributed across morning and afternoon sessions (2 sessions a day). 	<ul style="list-style-type: none"> • Velindre Cancer Centre has 26 Outpatient consultation rooms.
Radiotherapy	<ul style="list-style-type: none"> • Radiotherapy services include radical, palliative and emergency planning and treatment, brachytherapy, chemo-radiotherapy and radiotherapy research. 	<ul style="list-style-type: none"> • The radiotherapy service provides core services for 9.5 hours per day, 5 days per week. • The service provides an emergency service at weekends. 	<ul style="list-style-type: none"> • Velindre Cancer Centre has 8 Linear Accelerators (Linacs).
Systemic Anti-Cancer Therapies	<ul style="list-style-type: none"> • SACT services cover a range of biological therapies and cytotoxic chemotherapies. • SACT services include: <ul style="list-style-type: none"> ○ Intravenous, oral and subcutaneous treatments; ○ Research including early and late phase trials; and ○ Stratified, targeted and personalised treatments and vaccine therapies. 	<ul style="list-style-type: none"> • The SACT service operates Monday to Friday between 08:00 – 18:00 hrs. 	<ul style="list-style-type: none"> • Velindre Cancer Centre has 19 SACT chairs across two units.

Service	Overview	Velindre Cancer Centre	Functional Content (February 2020 Pre-COVID)
Inpatients	<ul style="list-style-type: none"> • Inpatient services cover elective and non-elective admissions including: <ul style="list-style-type: none"> ○ Elective SACT admissions; ○ Toxicity management of SACT; ○ Outpatients requiring hydration prior to treatment; and ○ Patients receiving Radiotherapy and SACT treatments. 	<ul style="list-style-type: none"> • The inpatient service operates a 7 day/24-hour service. 	<ul style="list-style-type: none"> • Velindre Cancer Centre has 47 Inpatient beds and 2 isolation beds.

Velindre Cancer Centre Infrastructure

3.24 Velindre Cancer Centre was built in 1956 and in the intervening period has been subject to extension and redevelopment. It consists of traditional build, single and two storey accommodation. The current site plan is provided below in Figure 6.

Figure 6 – Current Velindre Cancer Centre Site Plan



3.25 Approximately 30% of the estate pre-dates 1964 in terms of its construction. This is evident in the value of current backlog maintenance recently recorded in all Wales Estate Facilities Performance Management System (EFPMS). The definition of condition in terms of backlog can be identified as:

- **Condition A:** as new and can be expected to perform adequately to its full normal life;
- **Condition B:** sound, operationally safe and exhibits only minor deterioration;
- **Condition C:** operational but major repair or replacement is currently needed to bring up to condition B;
- **Condition D:** operationally unsound and in imminent danger of breakdown; and
- **Condition X:** supplementary rating added to C or D to indicate that it is impossible to improve without replacement.

3.26 Tables 10 & 11 below set out the backlog maintenance estimated as of April 2020.

Table 10 – Backlog Maintenance Position (as at April 2020)

Measure	Unit	Value
Cost to eradicate High Risk Backlog	£	85,013
Cost to eradicate Significant Risk Backlog	£	1,623,329
Cost to eradicate Moderate Risk Backlog	£	4,740,688
Cost to eradicate Low Risk Backlog	£	2,496,082
Risk Adjusted Backlog Cost	£	1,875,521
Cost to achieve Physical Condition B	£	1,257,583
Cost to achieve Statutory Health and Safety Compliance Standard B	£	113,121
Cost to achieve Fire Safety Compliance Standard B	£	98,632
Total	£	12,289,969

Table 11 – Backlog Maintenance Position – Percentage of patient occupied floor area (as at April 2020)

Measure	Unit	Value
Percentage of total occupied floor area in physical condition C plus D	%	35
Percentage of patient occupied floor area not in Statutory Health and Safety compliance	%	5
Percentage of patient occupied floor area not in Statutory Fire Safety compliance	%	5

3.27 From the previous EFPMS submission, the cost to eradicate high risk and significant risk backlog has decreased. This is due to the moderate capital investment associated with water infrastructure at the Velindre Cancer Centre.

3.28 Over 90% of the Estate fire safety is being managed within category B, a very similar position as the previous year. Risk Adjusted Backlog has also shown a small decrease, since 2015/16. It must be stated that the overall condition of the building is condition B. However, space availability and site restrictions prevent future investment from achieving spatial compliance or functional suitability without considerable investment and disruption to the existing facilities and surrounding community.

- 3.29 To achieve and maintain overall Physical Condition B investment has increased from £0.735m in 2012/13 to £1.3m in 2020-21. This represents a 71% increase over this time frame.
- 3.30 Table 12 below provides an overview of the asset profile for the current Velindre Cancer Centre. This demonstrates that there has been little modernisation in the existing infrastructure over recent years. This has led to a reduction in the quality of the patient environment and subsequently in the overall patient experience.

Table 12 - Overview of the Asset Profile

Age and Asset Profile	%
Age Profile – 2005 to present	14
Age Profile – 1995 to 2004	18
Age Profile – 1985 to 1994	22
Age Profile – 1975 to 1984	6
Age Profile – 1965 to 1974	12
Age Profile – 1955 to 1964	29
Age Profile – 1948 to 1954	0
Age Profile – pre 1948	0

Velindre Cancer Centre Footprint

- 3.31 The existing Velindre Cancer Centre has a footprint of approximately 18,000m². A breakdown of the space necessary to deliver services is summarised in Table 13 below:

Table 13 – Existing Velindre Cancer Centre Footprint (February 2020 Pre-COVID)

Functional Area	m ²
Radiotherapy	5,126
Inpatients	1,879
SACT & Ambulatory Care	1,024
Outpatients & Therapies	1,280
Imaging and Nuclear Medicine	1,069
Pharmacy	637
Hospital Clinical / Non-Clinical Administration & Support Services	4,369
Hospital Education, Training and Associated Support Services	349
IM&T	144

Functional Area	m ²
SPR & On Call	12
Staff Facilities	299
Mortuary	47
Catering & Restaurant	377
Hospital Main Entrance	581
Central FM Areas	583
Total Gross	17,777

Existing Major Medical Equipment

- 3.32 The delivery of non-surgical cancer services is dependent upon having access to a range of major medical equipment – this is essential to support the safe and effective delivery of patient care. All major medical equipment which is currently operational at the Velindre Cancer Centre, and which has a unit value of over £0.125m (excl. VAT), is summarised in Table 14 below.

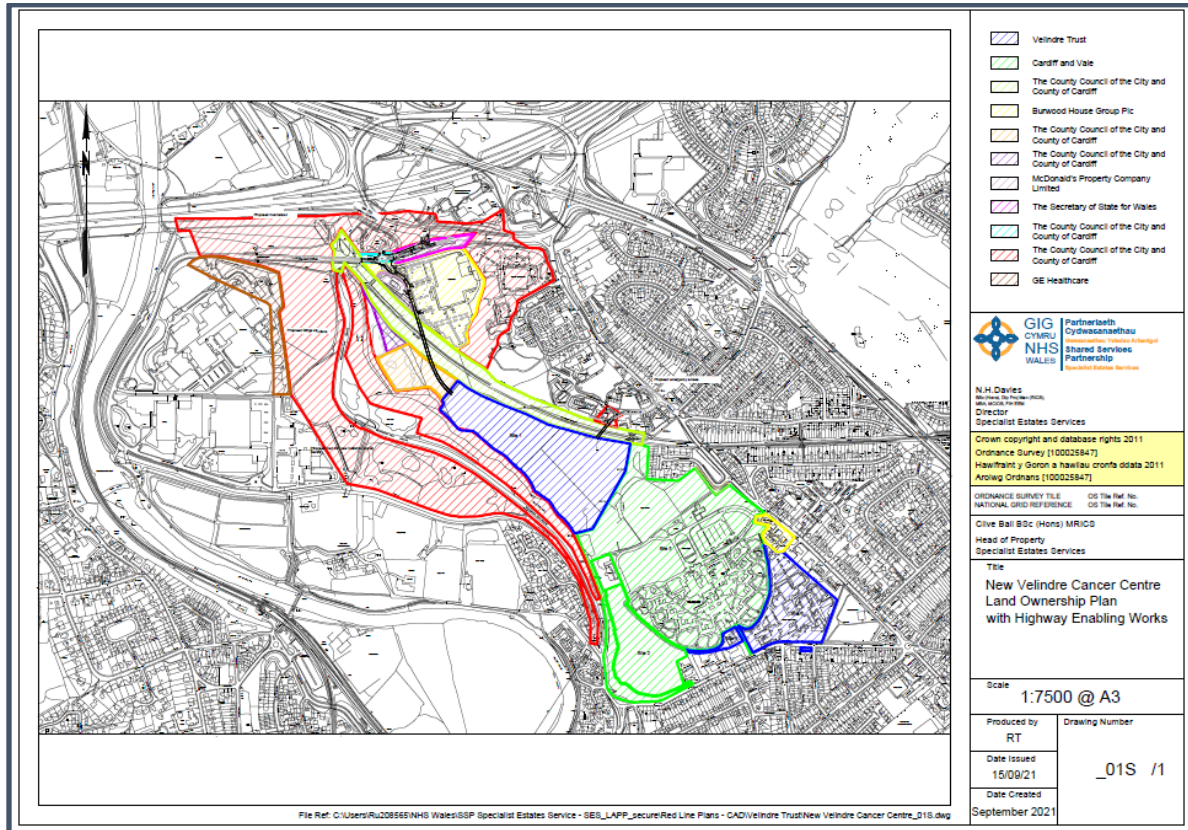
Table 14 – Summary of Major Medical Equipment – Existing Cancer Centre

Department	Equipment	Total
Radiotherapy	Linear Accelerators	8
Radiotherapy	CT Simulators	2
Radiotherapy	Brachytherapy System	1
Radiology	MRI Scanner	1
Radiology	CT Scanner	1
Radiology	Imaging Systems (Plain Film/Fluoroscopy System)	2
Nuclear Medicine	Gamma Camera	1

Existing Land Ownership

3.33 The current land ownership arrangements are set down overleaf in Figure 7:

Figure 7 – Current Land Ownership Plan



3.34 The land owned by the Trust is identified in the map above (in blue). It consists of the land transferred from Cardiff and Vale University Health Board (CVUHB) in April 2021 which is the development site for the nVCC and land used by the current Velindre Cancer Centre. The existing VCC site will be decommissioned once the nVCC is operational and the ownership of this land will be transferred to CVUHB.

3.35 The land owned by CVUHB is identified in the map (in green) above and contains the non-operational Whitchurch Hospital site. In addition, the Trust has developed a letter of comfort with CVUHB for a southern emergency and ancillary access being provided to the nVCC site via the Whitchurch Hospital site.

4 CASE FOR CHANGE

Introduction

4.1 This section of the FBC establishes the case for change for the development of a new Velindre Cancer Centre by:

- Outlining and reaffirming the Project Spending Objectives (PSOs) which provided a basis for appraising potential options and for post-project evaluation; and,
- Providing a clear understanding of the business needs (what is required to close the gap between existing arrangements and what is required in the future). A key aspect will be the 'rightsizing' of the new Velindre Cancer Centre.

Project Spending Objectives

4.2 The following nVCC Project Spending Objectives (PSOs) were developed in partnership at a stakeholder workshop, which was attended by representatives with a broad range of service views. In presenting the nVCC PSOs it is important to emphasise that:

- The scope of the FBC is limited to the replacement of the existing VCC with a new VCC; and
- The FBC for the new VCC will focus only on the additional infrastructure costs directly attributable to the nVCC. The rationale is, that variable workforce costs as a result of modelled demand is a cost pressure that will need to be addressed irrespective of the decision on the replacement of the VCC and can be taken forward with Commissioners as part of the Long-Term Agreement (LTA) commissioning framework.

4.3 Table 15 overleaf sets out the agreed project spending objectives that have been reaffirmed and revalidated as part of the development of this FBC.

Table 15 – Project Spending Objectives

Project Spending Objective	Description
Project Spending Objective 1	To build a new hospital 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.

4.4 The PSOs were approved by the nVCC Project Board who provided assurance to the Trust Board that they were:

- Aligned with the national context for healthcare developments in Wales;
- 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.

4.5 The PSOs were subsequently shared and agreed with Welsh Government officers.

Performance Metrics

4.6 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. These are set out in Table 16 overleaf.

Table 16 – nVCC OBC Project Spending Objectives – Key Performance Metrics

Project Spending Objective	Performance Metrics
<p>PSO1 – To build a new hospital that supports quality and safe services</p>	<ul style="list-style-type: none"> • Number of Velindre Acquired Healthcare Associated Infections • Percentage compliance with Health Building Notes • Compliance assessment against BREAM • Percentage assessment against WHTM Estate Code (Category A Condition of Buildings)
<p>PSO2 – To provide sufficient capacity to meet future demand for services</p>	<ul style="list-style-type: none"> • Percentage of patients receiving radical radiotherapy treated within 28 Days • Percentage of patients receiving palliative radiotherapy treated within 14 Days • Percentage of patients receiving emergency radiotherapy treated within 2 Days • Percentage of non-emergency chemotherapy patients treated within 21 Days • Percentage of urgent therapies outpatients seen within 2 Weeks • Percentage utilisation of equipment / accommodation: <ul style="list-style-type: none"> ○ Linear accelerator utilisation ○ SACT chair utilisation ○ Inpatient bed utilisation ○ Non-clinical accommodation utilisation
<p>PSO3 – To improve patient, carer and staff experience</p>	<ul style="list-style-type: none"> • Percentage of patients rating their experience as excellent • Distance (m2) between key clinical functions • Percentage staff satisfaction • Percentage recruitment of workforce • Percentage retention of workforce
<p>PSO4 – To provide capacity and facilities to support the delivery of high-quality education, research, technology and innovation</p>	<ul style="list-style-type: none"> • Percentage of patients who have the opportunity to participate in clinical research trials at VCC • Percentage of VCC Site Specific Teams (SSTs) to include national or international leaders • Percentage of patients recruited into interventional clinical trials for each cancer site • Percentage of patients for each cancer site entered into clinical trials each year • Percentage of clinical trials sponsored by VCC • Percentage of portfolio trials who have a VCC chief investigator

5 BUSINESS NEEDS

5.1 There are a range of business needs which this FBC seeks investment to address. These are set out below and tend to fall into two main areas. These are:

- a) The current VCC infrastructure deficiencies relating to an aging estate and its constraints on service delivery, future expansion and backlog maintenance.
- b) The inability of the existing VCC to fulfill future anticipated activity increases and confirmation of the appropriate sizing of the nVCC.

Infrastructure Deficiencies: Overview

5.2 Velindre is widely acknowledged as providing high quality, patient focussed cancer services through a compassionate and caring culture where staff consistently go the 'extra mile' to meet the needs of patients.

5.3 However, the current Velindre Cancer Centre infrastructure is making it increasingly difficult to maintain this high standard of care, particularly in relation to patient and staff safety and welfare, and in patient privacy and dignity. The following section of the FBC focuses on the deficiencies of the existing Velindre Cancer Centre and the key factors influencing the need to replace the existing Velindre Cancer Centre.

The Existing Patient Environment at the Velindre Cancer Centre is Sub-optimal and does not Promote Patient Recovery and Well Being

5.4 It is widely recognised that the physical environment at the Velindre Cancer Centre is not fit-for-purpose and is not appropriate for providing high quality, patient centre services.

5.5 The current estate has also been extensively developed over its lifecycle. This has been in incremental fashion and without a 'development control plan'. This has left the Velindre Cancer Centre with a number of 'add-ons' leading to deficiencies in circulation and service adjacencies, which are not consistent with current health care design standards and efficient means of patient care. For example, Figure 8 overleaf illustrates the current poor adjacency between the current pharmacy and outpatient's department. These would ideally be immediately adjacent to each other.

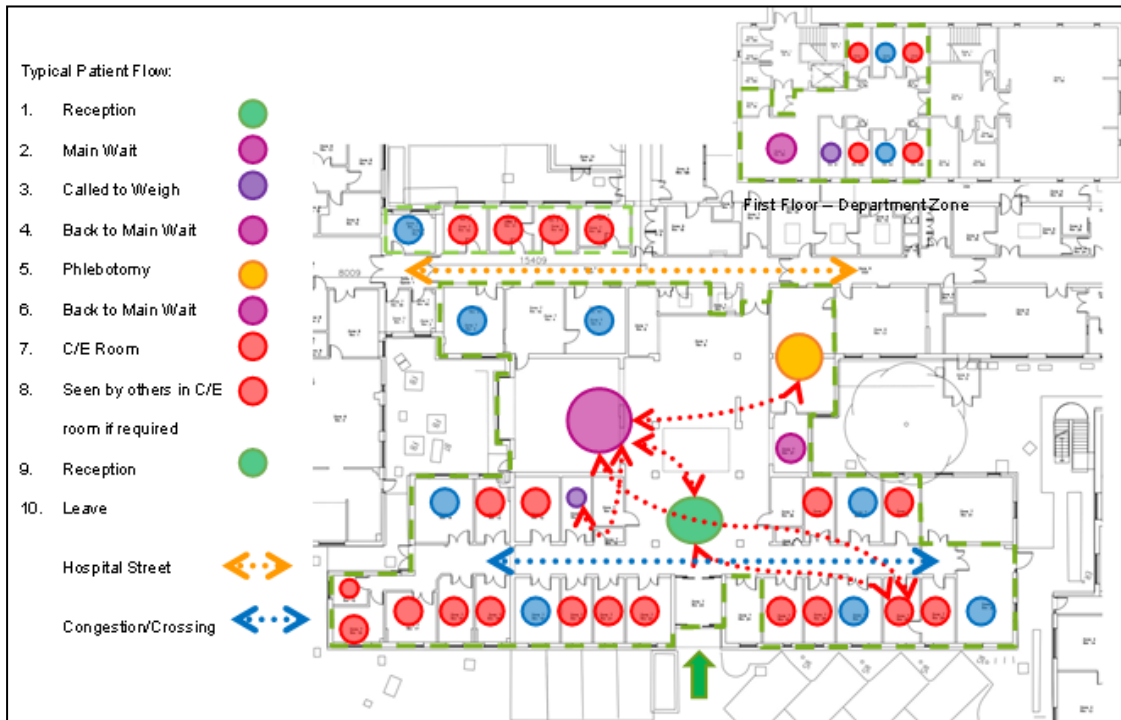


Figure 8 – Example of a Typical Inefficient and Inconvenient Patient Journey within the Outpatients Department at the Velindre Cancer Centre

5.6 The example provided, which is replicated across the hospital, shows that:

- There is no separation between patients, visitors, staff and external workers;
- There are multiple crossovers in terms of the movement of patients, visitors, staff and goods. This provides a poor patient and visitor experience, is inefficient for staff and provides a potential safety risk;
- The adjacencies of services are inappropriately located, and this results in poor service flow and workforce inefficiencies;
- The locations of those services, which a patient may need to access, are sub-optimal. Patients are required to make multiple journeys to access such services e.g., to be weighed, and
- The main entrance to the outpatient department is located immediately outside a doctor’s consultation room.

5.7 Examples of the infrastructure deficiencies across the Velindre Cancer Centre estate are provided from Figure 9 through to Figure 11 below.



Figure 9 – Example of Narrow Circulation Space

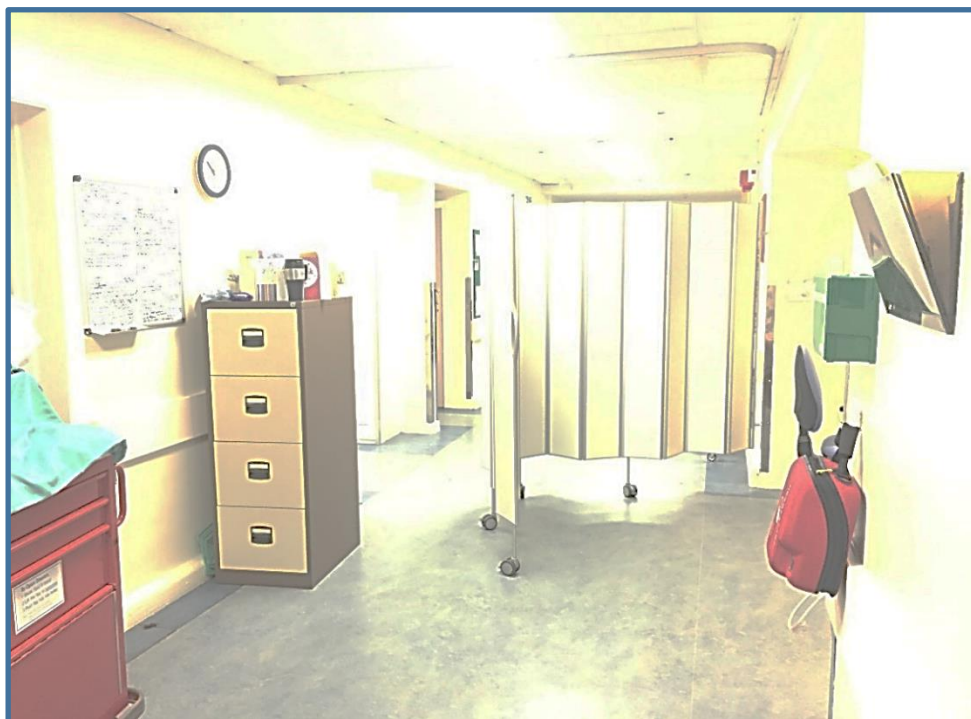


Figure 10 – Example of Crossover of Patient and Working Areas

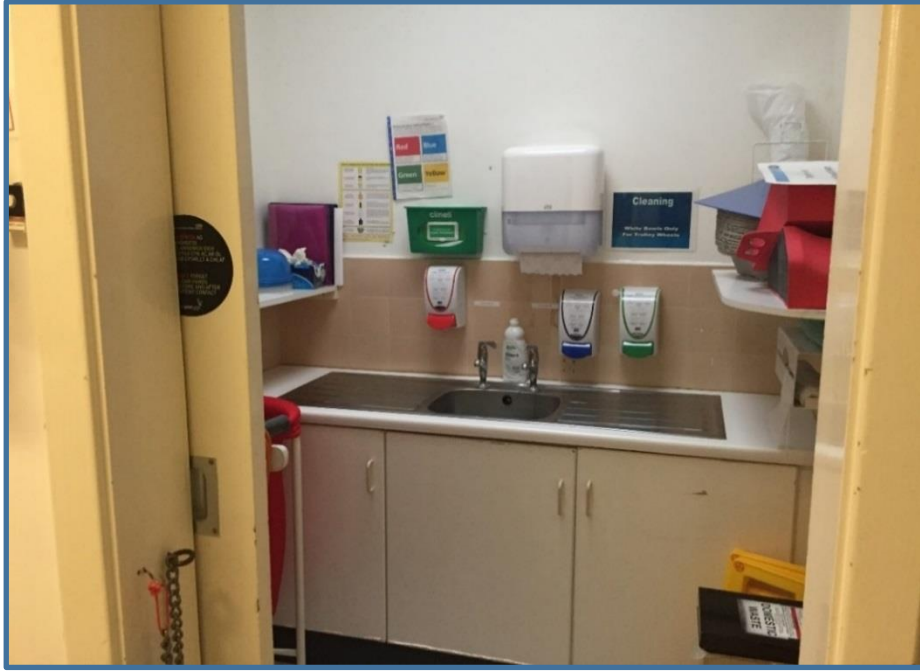


Figure 11 – Example of Cramped Support Accommodation

A High Proportion of the Accommodation at the Existing Velindre Cancer Centre is Non-Compliant with Statutory Requirements

- 5.8 If the Velindre Cancer Centre is to maintain standards for the longer term, it will not only need the major arteries of infrastructure to be upgraded and/or replaced, but also the secondary, more localised infrastructure. There are many risks associated with these works. Phasing, decant and isolation issues will have a major impact on patient care and experience. With limited space, decant facilities are not guaranteed to be on the Velindre Cancer Centre site.
- 5.9 The performance in terms of functional suitability and space utilisation has generally been maintained at status quo over the last three years. However, this does not identify key areas of concern in relation to non-compliance against Health Building Notes (HBN).
- 5.10 It is evidenced that approximately 75% of the existing estate does not comply with current space standards. As an example, existing outpatient consultation rooms range from as low as 9m² compared to guidance, which identifies a 16m² requirement.
- 5.11 To demonstrate and evidence the high-level 'non-compliance' of the existing Velindre Cancer Centre, the Trust undertook a comparative sizing exercise. This involved comparing the current hospital footprint against the required footprint for a new hospital as if it was built in compliance with HBNs and current relevant standards. This analysis showed that the footprint of the existing Velindre Cancer Centre would increase from the current footprint of

17,777m² to circa 28,000m² if it was built today on a 'like for like' basis i.e. same functional content number of inpatient beds.

- 5.12 This analysis, which is summarised in Table 17, has been presented to, and validated by, NHS Wales Shared Services and WG Officers.

Table 17 – Comparison of the Existing Velindre Cancer Centre Footprint versus a New Build Velindre Cancer Centre on an Equivalent Basis

Functional Area	Current VCC (m ²)	VCC built 'in line' with HBNs
Radiotherapy	5,126	8,046
Inpatients	1,879	3,183
SACT & Ambulatory Care	1,024	1,873
Outpatients & Therapies	1,280	1,720
Imaging and Nuclear Medicine	1,069	1,840
Pharmacy	637	1,106
Hospital Clinical / Non-Clinical Administration & Support Services	4,369	4,491
Hospital Education, Training and associated Support Services	349	497
IM&T	144	439
SPR & On Call	12	91
Staff Facilities	299	891
Mortuary	47	171
Catering & Restaurant	377	1,022
Hospital Main Entrance	581	1,380
Central FM Areas	583	1,360
Total Gross	17,777	28,110

External Site Constraints

- 5.13 Another major challenge for the Velindre Cancer Centre site relates to car parking. Table 18 overleaf identifies the current allocation of parking 'on site'.

Table 18 – Parking Arrangements (as at February 2020 Pre-COVID)

Type of Parking Space	No of spaces
Visitor/patients spaces	165
Emergency vehicle parking spaces	4
Visitor Cycle parking	10
Staff parking spaces	176
Consultant parking spaces	25
Staff Cycle parking	25
Total	405

- 5.14 The Trust undertook a traffic analysis. This demonstrated that the Trust has a significant shortfall in the availability of both patient and staff car parking today which is further compounded by the predicted number of patients expected over the coming years.

Summary – Infrastructure Deficiencies

5.15 In summary, the main physical challenges related to the patient environment include the following:

- 100% of the current inpatient accommodation is well below the required standard for modern healthcare.
- There is no overnight accommodation available for families and visitors.
- The majority of circulation routes are too narrow for the volume of traffic and patients and staff/families have to stand tight to the wall in the main corridor if a trolley or wheelchair is passing, as there is insufficient room for two-way traffic.
- Patients, staff and services have to cover large distances due to the poor adjacencies that have resulted from piecemeal design and developments e.g., the pharmacy department at the furthest point away from the outpatient's department.
- The main outpatient reception area is located in direct visual line with a vast number of consultant rooms leading to privacy issues during consultation/treatment.
- The relatively short distances between patient waiting areas and clinical areas presents difficulties when communicating sensitive or confidential information.
- The hot and cold-water infrastructure across the estate is insufficient and there is no spare capacity to accommodate any increases in demand for services.
- The current backup power generation resilience of the site is insufficient and only covers approximately 55% of the site, mainly clinical areas, but excluding the Linac treatment machines.
- The existing working environment often causes staff to make compromises as they deliver care. For example, using smaller hoists in patient rooms due to the limited space.

5.16 The facilities also present a range of challenges for patients and families:

- The facilities do not always provide patients with their basic and fundamental needs e.g., the showers on the 1st floor ward are shared.
- Patient dignity is compromised due to the lack of space and privacy for inpatients. For example, there is little space between beds on the first floor. There is a similar picture for outpatients where the design of the consulting rooms does not allow for total privacy.
- The majority of the inpatient, outpatient and therapies environment is not synonymous with a Cancer Centre that supports well-being and healing.

- There is insufficient car parking This results in patients having long waits on occasions trying to find a space to park. This causes additional stress during what can already be a challenging time for patients and families and at worst can result in patients being late for their appointments.

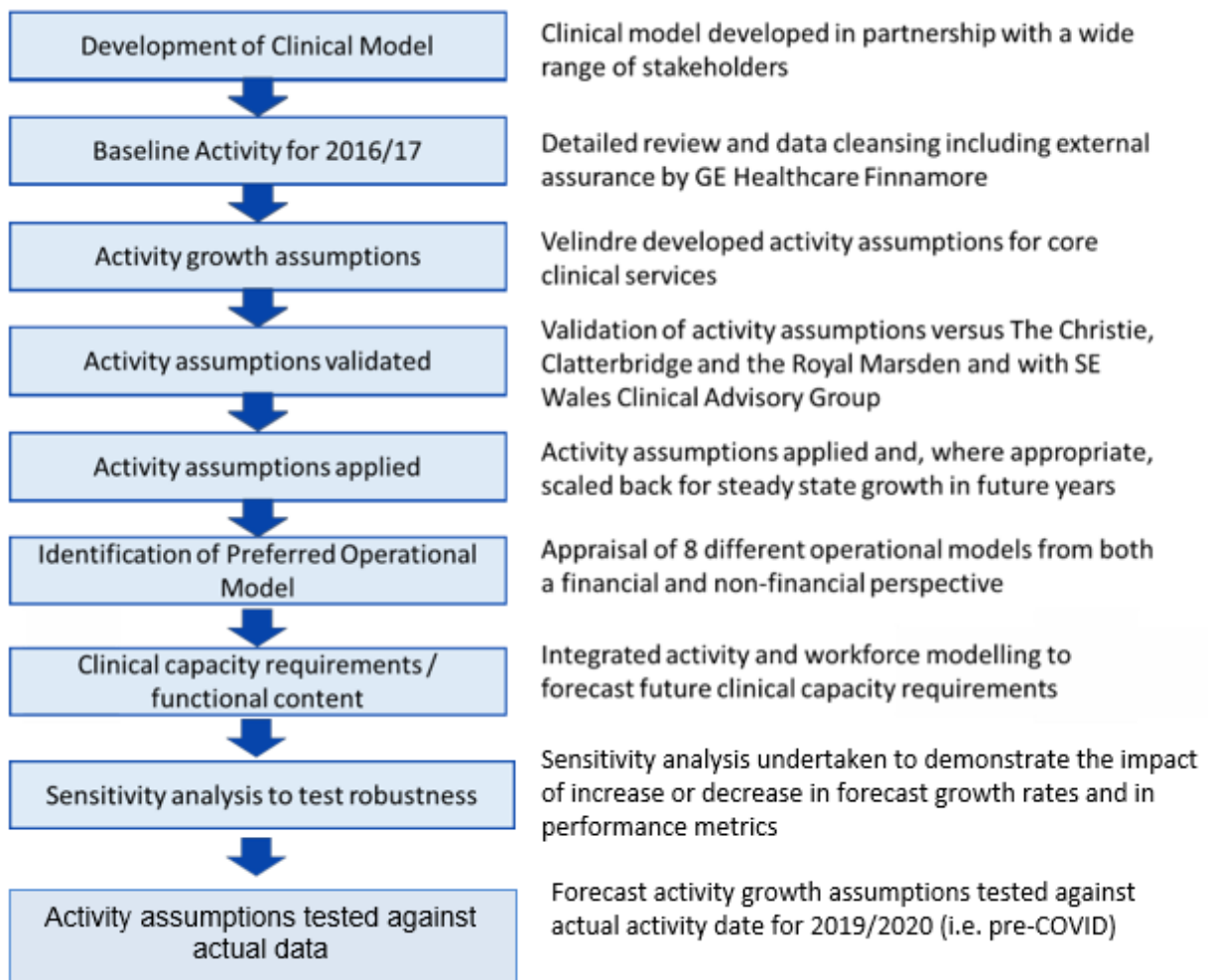
Forecasting Future Activity, Actual Activity, and links to our Service Design

- 5.17 This section of the Strategic Case concentrates on the methodology used to determine the future forecasting of activity and how this has informed the design of the nVCC and our Clinical Operating Model. The section will set out:
- the methodology which has been applied for forecasting future activity and capacity requirements in relation to the new Velindre Cancer Centre (nVCC)
 - Summarise the forecast activity and capacity requirements for the new Velindre Cancer Centre.

Forecasting Future Activity and Capacity Requirements

- 5.18 The Trust has developed a comprehensive activity model to forecast future capacity requirements for the nVCC.
- 5.19 A summary of the process followed in forecasting future activity and capacity requirements is shown in Figure 12 below. This methodology was approved by the nVCC OBC Collaborative Scrutiny Group and remains relevant for FBC purposes.

Figure 12 - Methodology for Forecasting Future Capacity Requirements



Note: the final step shown above was completed subsequent to the approval of this methodology with the purpose of providing assurance that the capacity outputs detailed within the OBC are still valid

Activity Assumptions

- 5.20 The Trust developed a set of activity assumptions for its core services. These clinical growth assumptions were developed in partnership with clinical colleagues from across South-East Wales and were informed by cancer incidence projections provided by the Welsh Cancer Intelligence and Surveillance Unit (WCISU).
- 5.21 The activity assumptions were set across two-time frames. The first time frame was through to 2021/22 where the Trust, and Health Board colleagues, believed it had a fair degree of certainty in terms of forecasting future activity. The second timeframe was from 2022/23 - 2031/32 where there was, at the time of developing the OBC, less certainty when forecasting future demand (e.g., stratified approach for SACT versus greater incidence of cancer) and the Trust therefore opted to revert to the forecast incidence of cancer (2%) as provided by WCISU in 2016/17 and reconfirmed as a valid planning assumption in 2022/23.
- 5.22 The clinical growth assumptions were supported by Health Board cancer clinical leads and were agreed by Health Board's Officers as part of the nVCC OBC Collaborative Scrutiny process, they are set out below in Table 19 below.

Table 19 - Clinical Growth Assumptions for Core Services

Service	Annual Clinical Growth Assumption
	2016/17 - 2022/23
▪ Radiotherapy	2%
▪ SACT	5%
▪ Inpatients	2%
▪ Outpatients and Ambulatory Care	2%

- 5.23 In addition, a validation exercise was undertaken to compare the Trust's activity 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
 - The Royal Marsden NHS Foundation Trust.
- 5.24 The validation exercise demonstrated that the Trust's activity assumptions were in line with those from other Cancer Centres across the UK, where comparable data was available.

Clinical Operational Model

- 5.25 The Trust evaluated a number of different operational models which were subsequently approved by the Trust's commissioners and as previously stated and have been subject to external independent assurance by the Nuffield Trust.
- 5.26 The primary objective of this appraisal was to identify a model which could provide the sufficient levels of service capacity, which responded to the needs of patients and families and which made effective and efficient use of resources.
- 5.27 At OBC eight different operating scenarios were evaluated by a multidisciplinary group, including the current operational model. The different scenarios considered extended working hours as well as five, six and seven day operational models. The outcome of the options appraisal has then informed the requirement for the new Velindre Cancer Centre and were tested during the competitive dialogue process, which has led to the final design.
- 5.28 The assessment undertaken was based upon:
- A non-financial assessment of options against the Projects Spending Objectives and Critical Success Factors
 - A financial (capital and revenue) assessment of options.
- 5.29 The preferred operating scenario (Scenario 8) scored the highest based on a combined non-financial and financial score. This scenario included the following components for core patient services:
- **Radiotherapy service** - 5 days a week, 9.5 hours a day (7-day Radiotherapy service for category 1 emergency patients and for urgent palliative patients).
 - **Outpatient service** – 5 days a week, 2 sessions a day
 - **SACT service** – 5 days a week, 12 hours a day
 - **Inpatient service** – 7 days a week, 24 hours a day.
- 5.30 Once the preferred operating scenario was agreed the Trust developed its Clinical Operating Model which has already been set out in the Section 3 of this Strategic Case.
- 5.31 In parallel the Trust has undertaken a detailed analysis to understand where treatments should be best delivered and what the percentage split should be, this is set out in Table 20 overleaf.

Table 20 - Percentage Activity Delivered by Location

Service	VCC	Outreach	Home
Radiotherapy	80%	20%	0%
SACT	45%	45%	10%
Inpatients	100%	0%	0%
Outpatients	55%	35%	10%

5.32 This section now further explores the clinical growth assumptions by service area for; Radiotherapy, Systemic Anti-Cancer Therapies, Outpatients and Ambulatory Care and Inpatients. It sets out the growth assumptions and compares these with actual activity since the OBC to ensure there still remains good alignment.

Radiotherapy Service

Clinical Growth Assumption:

5.33 In line with the methodology, outlined in Table 19 above, the forecast clinical growth assumption for radiotherapy services was 2% from 2016/17 through to 2022/23. This was agreed and approved by all commissioning Health Boards as part of the nVCC OBC Collaborative Scrutiny process and set out in Table 21 below:

Table 21 - Radiotherapy Growth Assumption

Service	OBC Annual Clinical Growth Assumption
	2016/17 - 2022/23
Radiotherapy	2%

Actual Radiotherapy Activity Versus 2% Growth Assumption (2019 comparison (pre-COVID)):

5.34 Using our most recent full-year ‘pre-COVID’ data (2019) this demonstrates that actual radiotherapy activity (fractions) delivered supports our original baseline planning assumption of a 2% increase in activity year-on-year with a variance of less than 1% over the three-year time period. This provides a high level of assurance that the physical capacity (number of linacs) planned within the nVCC is appropriate based upon actual activity recorded post the submission of the nVCC OBC, this figure does not take into account the increasing complexity of Radiotherapy Treatments. The actual and forecasted figures are set in Table 22 overleaf.

Table 22 - Forecast v Actual RT Activity

Service	Activity Measure	2016/17 (baseline)	Forecast 2019/20	Actual 2019/20	Difference (total / %)
Radiotherapy	Fractions	51,915	55,092	54,899	193 (≤1%)

5.35 The forecast and actual fractions set out in Table 22 above generate a requirement of the following numbers of Linear Accelerators, set out in Table 23 below and these numbers are accommodated in the nVCC design.

Table 23 - Linac Requirement Based on Activity

Service	Description	2016/17 (baseline)	2025/26 (nVCC)
Radiotherapy	Linacs	8	8

Note: The implementation of the Radiotherapy Satellite Centre (RSC) at Nevill Hall will also provide 2 additional linacs in the community i.e., 20% of total activity.

Actual Radiotherapy Activity (COVID) / Forecast Radiotherapy Activity (Post-COVID):

5.36 Table 24 below sets out actual radiotherapy activity post COVID-19 pandemic.

Table 24 - Post COVID Activity

Service	Activity Measure	Actual 2019/20	Actual 2020/21	Actual 2021/22	Current % increase in 2022/23 (ytd)	Forecast increase in 2023/24
Radiotherapy	Fractions	54,899	36,861	40,507	8%	6%

5.37 The COVID-19 pandemic, commencing in March 2020, caused a significant fall in radiotherapy activity due to a number of factors including:

- Reduced presentations to GP's
- Reduced LHB referrals
- Disruption to routine screening, and
- Reduced capacity due to social distancing, increased infection control procedures and reduced workforce to deliver services.

5.38 However, actual demand for radiotherapy has increased significantly since March 2021 (circa 10% year-on-year) and is expected to continue to increase over the next year(s).

Radiotherapy Summary and Conclusion

Key Points:

- The 2% activity growth assumption, included within the nVCC OBC, has been reviewed at FBC and is supported by actual activity up to 2019/2020.
- Based upon forecast activity, tested against actual activity to 2019/20, there is an appropriate number of linacs included within the nVCC FBC to meet service demand. This will ensure that the Trust has capacity to meet all relevant performance targets.
- The implementation of the Radiotherapy Satellite Centre (RSC) at Nevill Hall will also enable the achievement of the TCS planning assumption i.e., 80% of activity delivered at nVCC and 20% in the community.

Systematic Anti-Cancer Therapies (SACT)

Clinical Growth Assumption:

5.39 In line with the methodology, outlined in Table 19, the forecast clinical growth assumption for SACT services was 5% from 2016/17 through to 2022/23, noted in Table 25 below. This was agreed and approved by all commissioning Health Boards as part of the nVCC OBC Collaborative Scrutiny process.

Table 25 - SACT Clinical Growth Assumption

Service	OBC Annual Clinical Growth Assumption
	2016/17 - 2022/23
SACT	5%

Actual SACT Activity Versus 5% Growth Assumption (2019 comparison (pre-COVID)):

- 5.40 Using our most recent full-year 'pre-COVID' data (2019) demonstrates that actual SACT activity (attendances) delivered supports our original baseline planning assumption of a 5% increase in activity year-on-year with a variance of less than 1% over the three year time period. This provides a high level of assurance that the physical capacity (number of SACT chairs) planned within the nVCC is appropriate based upon actual activity recorded post the submission of the nVCC OBC. The SACT attendances are set out in Table 26 below:

Table 26 - Actual SACT Activity v Growth Assumption

Service	Activity Measure	2016 (baseline)	Forecast 2019	Actual 2019	Difference (total / %)
SACT	Attendances	22,685	26,107	26,282	175 (≤1%)

Forecast Capacity Requirements at the New Velindre Cancer Centre

- 5.41 The forecast and actual activity set out in Table 26 above generates a requirement of the following numbers of Linear SACT Chairs as set out in Table 27 below.

Table 27 - SACT Chair Requirements nVCC

Service	Description	2016/17 (baseline)	2021/22	2025/26 (nVCC)
SACT	Chairs	17	19	20

Note: Implementation of the SACT Clinical Operating Model, as outlined in Table 20, will result in 55% of total activity being delivered across South-East Wales.

Actual SACT Activity (COVID) / Forecast SACT Activity (Post-COVID):

- 5.42 The Covid-19 pandemic, commencing in March 2020, caused a significant fall in activity for SACT due to a number of factors, including:
- Reduced presentations to GP’s
 - Reduced LHB referrals
 - Disruption to routine screening, and
 - Reduced capacity due to social distancing, increased infection control procedures and reduced workforce to deliver services.
- 5.43 However, actual demand for SACT services has increased significantly since March 2021, and is expected to continue to climb over the next year(s), and, in line with our forecast growth assumption of 5% through to 2022 and 2% thereafter (Note – not flat line - ‘ups and downs’), as set out in Table 28 below.

Table 28 - SACT activity

Service	Activity Measure	Actual 2019	Actual 2020	Actual 2021	Actual 2022	Forecast increase in 2023/24
SACT	Attendances	26,107	20,618	26,001	29,121	6%

Summary and Conclusion:

Key Points:

- The 5% activity growth assumption, included within the nVCC OBC, has been supported by actual activity up to 2019/2020.
- Based upon forecast activity, tested against actual activity though to 2019/20, there is an appropriate number of SACT chairs included within the nVCC FBC to meet service demand. This will ensure that the Trust has capacity to meet all relevant performance targets.
- The implementation of the SACT Clinical Service Model will result in 55% of total activity being delivered across South-East Wales.

Outpatients and Ambulatory Care

Clinical Growth Assumption:

- 5.44 In line with the methodology, outlined in Table 19, the forecast clinical growth assumption for Outpatient services was 2% from 2016/17 through to 2022/23. This was agreed and approved by all commissioning Health Boards as part of the nVCC OBC Collaborative Scrutiny process and is set out in Table 29 below.

Table 29 - Outpatients Growth Assumption

Service	OBC Annual Clinical Growth Assumption
	2016/17 - 2022/23
Outpatients and Ambulatory Care	2%

Actual Outpatient Activity Versus 2% Growth Assumption (2019 comparison (pre-COVID)):

- 5.45 Using our most recent full-year 'pre-COVID' data (2019) demonstrates that actual Outpatient activity (attendances) supports our original baseline planning assumption of a 2% increase in activity year-on-year with a variance of less than 1% over the three-year time period. This provides a high level of assurance that the physical capacity (number of Outpatient rooms) planned within the nVCC is appropriate based upon actual activity recorded post the submission of the nVCC OBC, set out in Table 30 below.

Table 30 - Outpatient Forecast V Actual

Service	Activity Measure	2016 (baseline)	Forecast 2019	Actual 2019	Difference (total / %)
Outpatient	Attendances	58,403	63,779	63,609	170 ($\leq 1\%$)

Note: Excludes research, palliative care, clinical psychology and radiotherapy review and planning activity.

Forecast Capacity Requirements at the New Velindre Cancer Centre

- 5.46 The forecast and actual activity set out in Table 29 above generates a requirement of the following numbers of Outpatient rooms as set out in Table 31 below.

Table 31 - Outpatient Room Requirements

Service	Description	2016/17 (baseline)	February 2020	2025/26
Outpatients	Rooms	26	26	30

Note: Implementation of the Outpatient Clinical Operating Model, as outlined in Table 20, will result in 45% of total activity being delivered across South-East Wales.

Actual Outpatient Activity (COVID / POST-COVID):

- 5.47 Unlike other service at VCC the Covid-19 pandemic, commencing in March 2020, resulted in a significant increase in activity for Outpatients due to a number of factors, including:
- Increased virtual clinics to support patients who weren't able to attend VCC in person
 - Growth in SACT activity which impacted Outpatient capacity requirements
 - Reduced capacity within Health Boards
 - Increased number of MDT sessions

- 5.48 The post COVID-19 activity is set out in the Table 32 below.

Table 32 - Outpatient Activity Post COVID-19

Service	Activity Measure	2016 (baseline)	Actual 2020	Actual 2021	Actual 2022
Outpatient	Attendances	58,403	66,583	84,097	88,802

Note: Excludes research, palliative care, clinical psychology and radiotherapy review and planning activity.

5.49 However, and despite the actual significant increase in demand for Outpatient services over the last three years, we are confident that the annualised (compounded) activity planning assumption used to size the nVCC is still robust and valid as a large proportion of additional Outpatient activity is / will be supported through digital solutions.

Summary and Conclusion:

Key Points:

- The 2% activity growth assumption, included within the nVCC OBC, has been supported by actual activity up to 2019/2020.
- Based upon forecast activity, tested against actual activity though to 2019/20, there is an appropriate number of Outpatient rooms included within the nVCC FBC to meet service demand. This will ensure that the Trust has capacity to meet all relevant performance targets.
- The implementation of the Outpatient Clinical Service Model will result in 45% of total activity being delivered across South-East Wales.

Inpatients

Clinical Growth Assumption:

- 5.50 In line with the methodology, outlined in Table 19, the forecast clinical growth assumption for inpatient services was 2% from 2016/17 through to 2022/23. This was agreed and approved by all commissioning Health Boards as part of the nVCC OBC Collaborative Scrutiny process, this is set out in Table 33 below.

Table 33 - Future Growth Assumptions of Inpatients

Service	OBC Annual Clinical Growth Assumption
	2016/17 – 2024/25
Inpatients	2%

Actual Inpatient Activity Versus 2% Growth Assumption (2019 comparison (pre-COVID)):

- 5.51 Using our most recent full-year 'pre-COVID' data (2019) shows that inpatient activity, as measured by occupied bed days actually reduced from 2016 (nVCC OBC submission) – 2019. However, this was not related to an evidenced reduction in demand for inpatient services at VCC. Instead, a capacity constraint was placed upon the service during this time period as there was a requirement to undertake essential estates works to the inpatient wards in order to improve the patient environment and to ensure compliance with our statutory compliance responsibilities. In order to facilitate these works there was a requirement to close beds / wards for sustained periods of time.
- 5.52 In addition, and during the same time period, we made significant enhancements to our inpatient service model which resulted in shift towards an enhanced ambulatory / assessment care model; this reduced the number of inpatient admissions at VCC. Table 34 below sets out inpatient activity.

Table 34 - Inpatient Bed Availability

Service	Activity Measure	2016 (baseline)	Forecast 2019	Actual 2019
Inpatients	Oncology Bed Available	43	43	28 (Constraint capacity)

5.53 Over the course of 2020 – 2022 (COVID impacted timeframe) we continued to experience reduced inpatient activity at VCC. However, and although full-year data for 2022 is not available at the time of producing this FBC, data which we have available for September – November 2022 shows that total inpatient activity is returning in line with pre-COVID levels, this is set out in Table 35 below.

Forecast Capacity Requirements at the New Velindre Cancer Centre

Table 35 - Inpatient Activity Post COVID-19

Service	Activity Measure	Current Capacity at VCC	February 2020	2025/26 (nVCC)
Inpatients	Oncology Beds	34	39	31
	Assessment / Ambulatory Care Spaces	8	8	17
	Isotope Cubicles	2	2	3
	Total	44	49	51

Inpatient Services – An Evolving Service Model

5.54 In line with the recommendations from the Nuffield review in relation to the he VCC / regional clinical model there have been significant changes and enhancements to the inpatient clinical service over recent years and subsequent to the approval of the nVCC OBC (Note: the majority of these improvements were already being progressed prior to the publication of the Nuffield review). Fundamental to these changes has been the transition to a more resourced ambulatory / assessment care model. Key to supporting this service development has been the implementation of a regional acute oncology service. The development of the inpatient service model has, and will continue, to deliver a number of quantifiable benefits. These include:

- Reduced average length of stay at VCC and in Local Health Boards.
- Reduced inpatient admissions at VCC and in Local Health Boards.
- Patients admitted to the most appropriate location for their treatment ‘first time’.

- Increased oncology presence within Local Health Boards.
- Improved patient experience.

5.55 The New Velindre Cancer Centre – A Flexible Inpatient Design Solution which is built around Patient Experience, Quality and Improving Outcomes.

5.56 The design of the Inpatient areas at the nVCC has responded to the feedback received from our clinical teams and other key stakeholders. This feedback emphasised the need for:

- Flexibility in the design covering a range of areas:
 - Ability, on the day of opening the nVCC, to only open the number of beds which are required at that point in time to reduce the risk of any 'non-required' costs
 - Ability to use the space within the designed inpatient areas for alternative uses
 - Ability to continue, over time, the development of our inpatient service model by reducing the number of oncology beds and increasing the number of ambulatory / assessment spaces
- The requirement for additional ambulatory / assessment care spaces and less traditional oncology beds
- The requirement for additional single oncology bedrooms as a proportion of total rooms

Key Points:

- Inpatient activity has been impacted by the following since 2019:
 - Essential estates work to the inpatient wards, requiring the closure of inpatient beds.
 - Workforce shortages due to a variety of reasons and which have been outside of the control of the Trust.
 - Impact of COVID from 2020 – 2022.
- In line with the recommendations from the Nuffield review of the clinical model there have been significant changes and enhancements to the inpatient clinical service. This has been supported by the transition to a more focused ambulatory / assessment care model. Key to supporting this service development has been the implementation of a regional acute oncology service.
- Although the nVCC has space to accommodate 31 oncology beds the hospital has been designed in a way to promote flexibility of use i.e. can increase / decrease the number of beds as appropriate and / or use for alternative uses e.g. increased ambulatory care provision.
- Inpatient beds will only be made available (opened) if and when demand presents.

Overall Summary and Conclusion of Growth and Activity Assumptions:

- 5.57 The clinical growth assumptions and actual activity that support the need to replace the existing cancer centre and inform the size of the nVCC have been reviewed and updated between OBC and FBC and have been set out in the preceding section. Despite activity and service delivery changing as a result of the COVID-19 pandemic there is still a compelling case for investment.
- 5.58 Based on the update activity it remains clear that the existing estate is severely constrained and inhibits the Trust in delivering its services now. The site is landlocked by building and infrastructure owned by the Trust, which renders any expansion of the site boundary unviable. The only possible option for expansion would be onto the staff and patient car park but this has been discounted, as it would impact on an already sub-optimal parking facility.
- 5.59 This therefore represents a very immediate and high-risk issue for the Trust given the current pressure on the system. This is compounded by the anticipated growth in demand for services. While planning is underway to mitigate capacity limitations in the short term, it is imperative that a long-term solution is established urgently.
- 5.60 Without significant transformation, the Velindre Cancer Centre faces a very immediate and high risk in our ability to continue to deliver services and to maintain current performance levels.

Sizing of the nVCC

- 5.61 Following the activity and capacity modelling process outlined above, the Trust has been able to establish its core capacity requirements, referred to hereafter as the 'Do Minimum' requirements, in relation to:
- Building footprint requirement for the nVCC;
 - Functional content requirements e.g., number of Inpatient beds, for the nVCC; and
 - Major Medical equipment requirements for the nVCC.

Building Footprint for the New Velindre Cancer Centre – Do Minimum

- 5.62 The activity and capacity analysis has demonstrated that the required building footprint for the nVCC, based upon the Do Minimum service requirements, is 30,689m² compared to the existing Velindre Cancer Centre footprint of 17,777m². This analysis, which is summarised in Table 36 overleaf has been presented to, and validated by, NHS Wales Shared Services and WG Officers.

Table 36 - Do Minimum Building Footprint for the New Velindre Cancer Centre

Functional Area	m ²
Radiotherapy	8,090
Inpatients	3,534
SACT & Ambulatory Care	2,067
Outpatients & Therapies	2,034
Imaging and Nuclear Medicine	2,073
Pharmacy	1,518
Hospital Clinical / Non-Clinical Administration & Support Services	4,726
Hospital Education, Training and associated Support Services	669
IM&T	439
SPR & On Call	91
Staff Facilities	1,41
Mortuary	171
Catering & Restaurant	1,022
Hospital Main Entrance	1,855
Total Gross	30,689

Functional Content Requirements for the New Velindre Cancer Centre – Do Minimum

5.63 The activity and capacity analysis has demonstrated the following Functional Content requirements for core service delivery at the nVCC, based upon the Do Minimum service requirements. Table 37 summarises these requirements compared against functional capacity, which is currently available at the existing Velindre Cancer Centre (Feb 2020 Pre-COVID).

Table 37 - Functional Content Requirements for Core Services within the New Velindre Cancer Centre

Department	Existing (Feb 2020 Pre-COVID)	nVCC	Variance
Radiotherapy Linear Accelerators	8	8	0
Outpatient Consultation Rooms	26	30	+ 4 rooms
SACT Chairs	19	20	+1 chair

Department	Existing (Feb 2020 Pre-COVID)	nVCC	Variance
Inpatients	49	51	+ 2 beds

Note: Inpatient beds reflects capacity that is subject to the confirmation of the clinical model but could represent 'flexible' bed capacity.

Major Medical Equipment Requirements for the New Velindre Cancer Centre – Do Minimum

- 5.64 The activity and capacity analysis has identified the Major Medical equipment requirements for the nVCC, based upon the Do Minimum service requirements. The Major Medical equipment requirements for the nVCC, with a unit value of over £0.125m (excl. VAT), compared to Major Medical equipment, which is currently operational at the existing Velindre Cancer Centre (Feb 2019 Pre-COVID) are summarised in Table 38.

Table 38 – Major Medical Equipment Requirements for the New Velindre Cancer Centre

Department	Equipment	Existing (2018)	nVCC	Additionality
Radiotherapy	Linear Accelerator / Treatment Machines	8	8	0
Radiotherapy	CT Simulator	2	2	0
Radiotherapy	Brachytherapy System	1	1	0
Radiotherapy	MR SIM	0	1	1
Radiology	MRI Scanner	1	2	1
Radiology	CT Scanner	1	2	1
Radiology	Imaging System (Plain Film/Fluoroscopy System)	2	2	0
Nuclear Medicine	Gamma Camera	1	2	1
Pharmacy	Robotic Dispensing System	0	1	1

Conclusion

- 5.65 In summary, this section of the FBC examined in detail service activity from the original base line, through Covid, to today and compared then with the Trusts approved growth assumptions for all major service areas. This analysis has demonstrated that the Trust's forecast growth assumptions have been accurate to within very small margins of variance against actuals. Therefore, there is a high degree of confidence that the activity and future growth assumptions can be relied upon in terms of the design of the nVCC and wider Clinical Model.

6 POTENTIAL SCOPE OF THE NEW VELINDRE CANCER CENTRE PROJECT

Introduction

6.1 The scope of the Project is limited to the building of a nVCC. In taking forwards this scope, the Trust sought formal approval from commissioners and from the Welsh Government in relation to the Outline Business Case (OBC) for a nVCC. In seeking approval of the OBC, the Trust provided assurance in relation to:

- The need for a nVCC;
- The Preferred Option identified within the OBC;
- The building footprint of the nVCC;
- The additional costs directly attributable to the nVCC; and
- The Project Management and Governance arrangements for delivering the nVCC Project.

6.2 The following has been confirmed as outside of the scope of the nVCC Infrastructure Project:

- All variable clinical costs of modelled demand which will be considered through the development of the commissioning LTA framework and therefore excluded from the nVCC OBC;
- All service development Projects e.g., Acute Oncology Service, which will be subject to separate Business Cases and therefore excluded from the nVCC OBC;
- All outreach capital Projects e.g., Radiotherapy Satellite Centre, which will be subject to separate Business Cases and therefore excluded from the nVCC OBC; and
- All Digital Projects which the Trust needs to complete irrespective of the nVCC Project. These will be the subject of separate Business Cases.

Potential Business Case Options

6.3 Although the scope of the Project is well defined, there was the potential to develop a range of options for delivering the objectives of the Project. The range of options have been considered against a continuum of need ranging from:

- Minimum scope: Core and essential service requirements/outcomes which are currently provided by VCC;
- Intermediate scope: Core and desirable service requirements/outcomes which the Project can potentially justify on a cost/benefit and thus value for money basis; and
- Maximum scope: Core, desirable and optional service requirements/outcomes which the Project can potentially justify on a cost/benefit and thus value for money basis.

6.4 The outcome of this is outlined in Table 39 and was used as the starting point to develop the longlist of options within the Economic Case of the OBC.

Table 39 - Potential Project scope

Service / Function	Minimum	Intermediate	Maximum
Radiotherapy	✓	✓	✓
SACT	✓	✓	✓
Inpatients	✓	✓	✓
Specialist Palliative Care	✓	✓	✓
Outpatients	✓	✓	✓
Ambulatory Care	✓	✓	✓
Radiology and Nuclear Medicine	✓	✓	✓
Pharmacy	✓	✓	✓
Acute Oncology Service (existing arrangements)	✓	✓	✓
Research and Development (existing arrangements)	✓	✓	✓
Learning, Technology and Innovation (existing arrangements)	✓	✓	✓
Research and Development (enhanced scope)		✓	✓
Learning, Education and Innovation (enhanced scope)		✓	✓
Capacity to introduce PET CT Service		✓	✓
Capacity to introduce Proton Beam Service			✓
Capacity to introduce Advanced Technologies, including: <ul style="list-style-type: none"> • Platform specific stereotactic service • Cyclotron service 			✓
Relocation of Trust Corporate Function			✓

7 PROJECT RISKS, CONSTRAINTS, DEPENDENCIES AND ASSUMPTIONS

Risks

- 7.1 Identifying, mitigating, and managing the key risks is crucial to successful delivery, since the key risks are likely to be that the Project will not deliver its intended outcomes and benefits within the anticipated timescales and spend.
- 7.2 A full risk register for the nVCC Project has been developed which includes the following categories:
- **Business risks:** Risks that remain 100% with the Trust and include political and reputational risks;
 - **Service risks:** Risks associated with the design, build, financing 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.
- 7.3 The nVCC risk register is managed by the Project Management Office (PMO). The exact role of the PMO in managing risks is described within the Management Case.

Constraints

- 7.4 The main constraints in relation to the nVCC Project are outlined in Table 40.

Table 40 - Main Constraints of the nVCC Project

Constraint	Overview
Financial Constraints	The infrastructure solution for the nVCC would be ideally deliverable within the affordability threshold of c£299m (including VAT but excluding equipment) at 2021-22 prices funding cap agreed with the WG.
Timescale Constraints	The nVCC must be operational in line with the Programme agreed with the Welsh Government.
Service Continuity	Delivery of patient services must be maintained during the period of construction.
Compliance with Statutory Requirements	The nVCC must be fully compliant with all relevant statutory compliance requirements.

Dependencies

7.5 A number of dependencies have been identified in relation to the nVCC Project. These are provided in Table 41.

Table 41 - Main Dependencies of the nVCC Project

Dependency	Overview
Capital Funding Availability	Access to capital funding is critical to deliver the Project, especially in relation to the procurement of Major Medical equipment and IM&T.
Revenue Funding Availability	Access to revenue funding is essential to support the recurring revenue implications associated with the nVCC Project.
Welsh Government Approval	The Full Business Case must be approved by the WG.
Partnership Working	Co-production in the design and implementation of the Project that involves all stakeholders from across the health and social care economy 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 nVCC Project remains broadly consistent over the period of change.
Site Enabling Works	The site enabling works Project, which is outside of the scope of this FBC, must be completed by the start of construction for the nVCC.

Assumptions

7.6 The key assumptions underpinning the nVCC Project are provided in Table 42

Table 42 - Main Assumptions for the nVCC 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 nVCC has been 'sized' based on this assumption. <ul style="list-style-type: none"> • Radiotherapy Satellite Centre at Nevill Hall Hospital; and • Non-surgical cancer Outreach centres across South - East Wales delivering SACT and Outpatient services.
Clinical Growth Assumptions	The nVCC has been 'sized' on the basis of a number of clinical growth assumptions, summarised below:

Assumption	Overview
	<ul style="list-style-type: none"> • Radiotherapy activity will increase by 2% per annum through to 2025; • SACT activity will increase by 5% per annum through to 2025; • Outpatient activity will increase by 2% per annum through to 2025; • Inpatient activity will increase by 2% per annum through to 2025; and • Radiology and Nuclear Medicine activity will increase by 9% per annum through to 2025.

Flexibility for Expansion on the Site of the New Velindre Cancer Centre

7.7 It is important to highlight that there is approximately 6,500 m² of expansion space (compared to the approved Outline Planning Application) on the identified site for the nVCC. This expansion capacity is fundamental to the Trust's mitigation strategy in the event that either:

- a) **The other capital Projects within the TCS Programme are not supported; or**
- b) **The clinical growth assumptions prove to be understated.**

7.8 Conversely, the Trust has identified alternative uses for some of the proposed nVCC accommodation in the event that clinical growth assumptions do not fully materialise.

8 CONCLUSION

8.1 The Strategic Case has demonstrated a compelling case for investment to support the replacement of the existing Velindre Cancer Centre. The key factors supporting the case for investment are:

- The existing patient environment at the Velindre Cancer Centre is sub-optimal and does not promote patient recovery and well-being;
- There is insufficient patient and family car parking at the existing Velindre Cancer Centre;
- A high proportion of accommodation at the existing Velindre Cancer Centre is non-compliant with statutory requirements and creates challenges in maintaining high levels of patient safety;
- The existing Velindre Cancer Centre, built on a 'like for like' basis and in line with Health Building Notes, would have a footprint of circa 28,000m² compared to the existing building footprint of 17,777m²; and
- There is no expansion space on the existing Velindre Cancer Centre. This severely limits, the Trust's ability to expand its footprint to meet the increasing demand for its clinical services across a range of specialities / departments.

9 APPENDICIES

For Information

The following appendices are available in support of this chapter.

Appendix Reference	Title
FBC/SC1	Nuffield Trust Report – ‘Advice on the proposed model for non-surgical tertiary oncology services in South-East Wales’
FBC/SC2	Nuffield Trust Recommendations and Progress Summary
FBC/SC3	TCS Equipment Strategy (draft)
FBC/SC4	Digital Vision for the new Velindre Cancer Centre